

# Forest Expert Program



**Projektabschlussbericht**





With support from



by decision of the  
German Bundestag

Project manager



Progress Report

Forest Expert Program

## Forest Expert Program Progress Report (Sachbericht)

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(Deutscher Forstverein e.V.)

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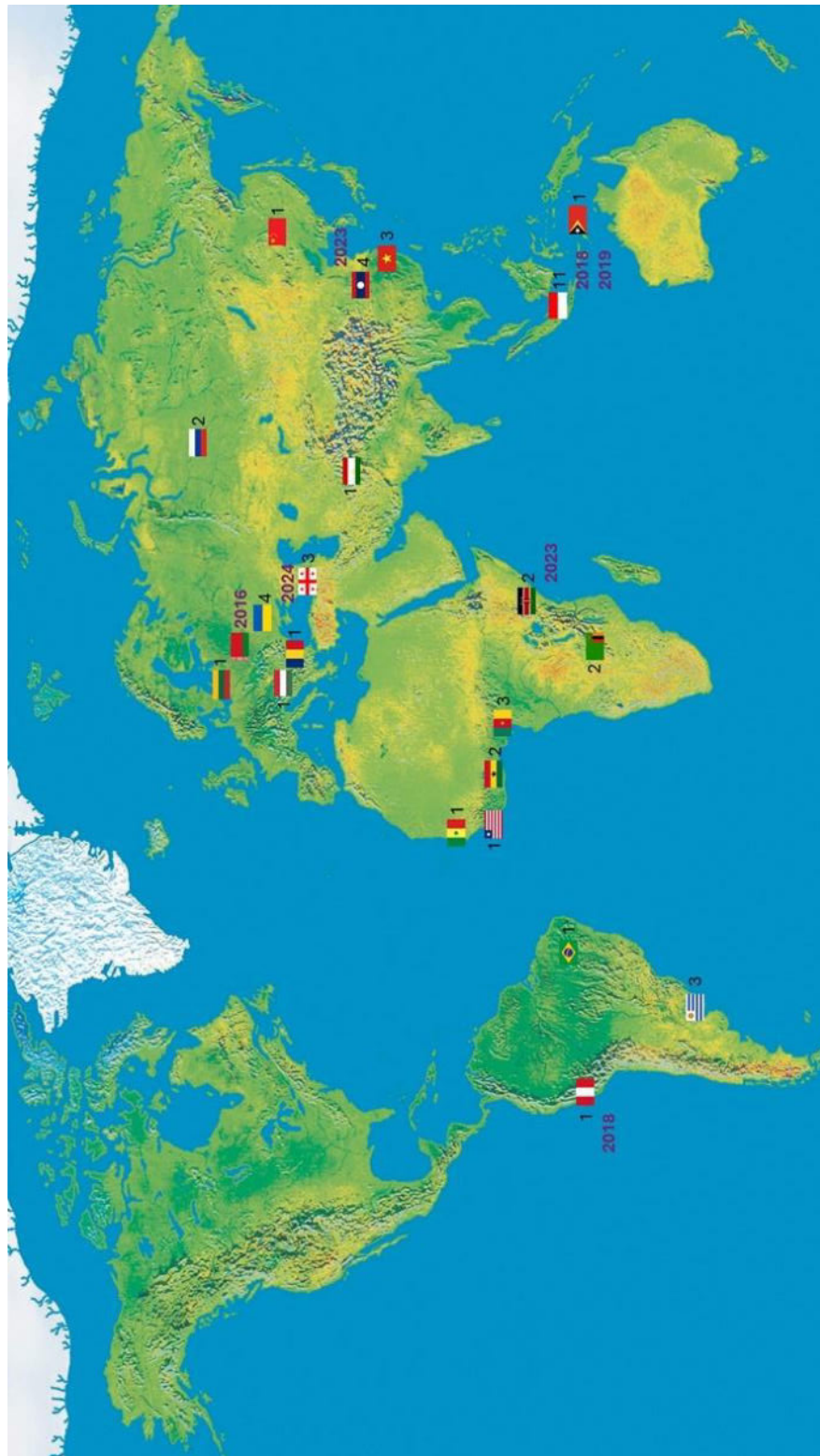
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## 1. Overview map

Please find below an overview map indicating the origin countries of the Forest Expert Program Participants Trainees and delegations since 2016 (number of trainees in black, number of delegations in purple):



## 2. Subject and Objectives of the Project

### 2.1 Subject and objectives of the project

The Forest Expert Program (FEP) was conceived to provide international forest experts with advanced training on Germany's model of multifunctional and sustainable forest management. It aimed to share German expertise on balancing ecological, economic, and social functions of forests while fostering global networks for knowledge exchange. The program's purpose aligned with BMEL's international forestry cooperation goals. The Forest Expert Program (FEP) offered targeted, practical learning opportunities for forestry experts from partner countries. The goal was to transfer Germany's knowledge on sustainable and multifunctional forestry and strengthen global professional networks. The program's objective was to enable participants to act as multipliers of this knowledge back home, applying principles in policy, forest education, and forestry practice.

### 2.2 Scientific and technical state of the art at the beginning of the project.

Germany had decades of experience with sustainable forestry practices, supported by extensive research in forest management, forest pedagogy, biodiversity conservation, and climate change adaptation. This state-of-the-art foundation allowed the program to build on proven approaches and extend them to an international audience. Before Forest Expert Program started, Germany already had a rich base of forestry expertise, recognized internationally for integrating ecological, economic, and social priorities. Topics like sustainable forest management, forest pedagogy, climate change adaptation, biodiversity conservation, and multifunctional forest use were already well researched and provided a foundation for the program to build upon.

The German Forest Society (Deutscher Forstverein, DFV) and its predecessor organizations have been committed to the dissemination and scientific support of sustainable forestry since the 19th century. The exchange between science and practice has always been at the forefront of these efforts. The conferences and excursions offered by the DFV are designed to connect forestry professionals and to analyse and discuss, using concrete examples, the opportunities and risks of different forest management approaches. According to its statutes, the German Forest Society is dedicated to promoting forestry and forest science, along with the associated education and training — in particular through personal exchange of experience.

The German Forest Society pursues these aims beyond Germany's borders as well. Through its regional branches and its international network, the German Forest Society has accumulated many years of experience in international knowledge exchange. Not least through its partnerships with foreign forest societies, its activities within the European Forest Institute's network (EFN) and the FAO/UNECE Forest Communicators' Network (FCN), the DFV has built comprehensive expertise in the field of international



forestry. Numerous members distinguished themselves through international cooperation and serve as advisors. Through this project, this expertise could be utilized even more extensively. As an association with a broad spectrum of members from all areas of forestry in Germany, the DFV offered the opportunity to establish professional exchange at all levels. The Forest Society already possesses considerable international experience; however, the specific content addressed in this project went beyond its previous scope and could only be realized with appropriate support.

The goals pursued by the German Federal Government in international forest policy received effective support through this pilot project. International forestry partners gained insights into the work of forestry institutions in Germany. They can use this experience in their home countries and act as multipliers. There was also an expectation that these insights into institutions independent of the Federal Government would underscore the consistency and effectiveness of a focused forest policy. It is both necessary and invaluable for decision-makers and professionals from countries where the principle of sustainable forest management has not yet been satisfactorily implemented to have the opportunity for direct contact and observation of its practical application. Successful projects in international cooperation depend, not least, on the thorough training of multipliers.

## 2.3 Methods applied.

The Forest Expert Program used a blended approach combining a one-week introductory seminar and afterwards a tailored 3 week internship at German host institutions. Participants attended field visits, workshops, and engaged with practitioners from different forest ownerships, national parks, universities, NGOs, and research institutes as well as responsible ministries and administrations. This methodology ensured learning was practical and highly relevant. Activities included field excursions, case study work, and guided discussions with German experts. The approach was immersive and flexible, matching host institutions to the participant's professional focus (e.g., sustainable forest management, forest education, climate policy, or silviculture).

## 3. 3. Results and Utilization of the Project

### 3.1 Main results.

From 2020 to 2024, 26 participants from almost 20 countries successfully took part in the Forest Expert Program. These experts represented ministries, forest agencies, universities, NGOs, and development projects. Various host institutions across Germany contributed, providing placements that showcased Germany's multifaceted approach to sustainable forest management. COVID-19 delayed the 2020 start, but by 2021 the program was fully operational. Results include expanded international collaboration, improved skills for participants, and contributions to forestry practice in partner countries.

The following pages given an overview about the participants and host institutions.

| Year of selection | Family Name | Given Name       | Country  | Institutions                                                                                                                                                                                             |
|-------------------|-------------|------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2020              | Kramarenko  | Ihor             | Ukraine  | German Forst Society, Georg-August University Göttingen, State Forest Enterprise Sachsenforst, Federal Ministry of Food and Agriculture, Hessian Ministry of Agriculture                                 |
| 2020              | Uiru        | Benjamin Karanja | Kenya    | German Forst Society, Georg-August University Göttingen, Private Forest of Arenberg, Forest Owner Association Oberammergau, Bavarian State Forest Seed Center                                            |
| 2020              | Mekembom    | Yves             | Cameroon | German Forst Society, Georg-August University Göttingen, City of Göttingen, Lower Saxony Forestry Training Centre (NFBz), Lower Saxonian Forest District of Seesen, Hessian Forest District of Melsungen |
| 2020              | Ambara      | Josef            | Cameroon | German Forst Society, Georg-August University Göttingen, City of Göttingen, Lower Saxony Forestry Training Centre (NFBz), Lower Saxonian Forest District of Seesen, Hessian Forest District of Melsungen |

|                |            |          |           |                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|------------|----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2020           | Ha Van     | Thien    | Vietnam   | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Hessian Forest District of Bad Hersfeld, Technical University of Dresden, Forest Academy of Pfaffroda                                                                                                                                                |
| 2021           | Bashutskla | Ulyana   | Ukraine   | German Forst Society, Georg-August University Göttingen, Research Institute for Post-Mining Landscapes (FIB), State Forest Enterprise Sachsenforst, Institute of Forest Ecosystems, Eberswalde University for Sustainable Development                                                                                                                               |
| 2022<br>(self) | Sidiq      | Mohammad | Indonesia | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Ministry for the Environment, Agriculture, Nature Conservation and Consumer Protection of the State of North Rhine-Westphalia, European Forestry Institute (EFI), Regional Forest District Ruhrgebiet, Regional Forest District Märkisches Sauerland |



|      |                     |              |         |                                                                                                                                                                                                                                                                                                                                            |
|------|---------------------|--------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2022 | Degenhardt Goldbach | Juliana      | Brazil  | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Thünen Institute for Forest Genetics, Forest Nursery Vogt, Forest Genetics and Plant Breeding Conference, Bavarian office for Forest Genetics (AWG)                                                                         |
| 2022 | Dzadamia            | Lasha        | Georgia | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Thünen Institute for Forest Ecosystem Services, National Park Hainich, Bavarian Forest District Office Neureichenau                                                                                                         |
| 2022 | Adu                 | Ernest Obeng | Ghana   | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Thünen Institute for Forest Ecosystem Services, Mecklenburg-Western Pomeranian Ministry of Agriculture, State Forest of Mecklenburg-Western Pomerania different State Forest Enterprises and Forest Service and Energy GmbH |

|      |            |              |         |                                                                                                                                                                                                                                                                                                             |
|------|------------|--------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2022 | Nguyen     | Thanh Tung   | Vietnam | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Hessian Forest District of Bad Hersfeld, Technical University of Dresden, Forest Academy of Pfaffroda, Lower Saxony Elbe Valley Biosphere Reserve, Chamber of Agriculture Schleswig-Holstein |
| 2022 | Lattनावong | Vilatsay     | Laos    | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Technical University of Dresden, Forest Academy of Pfaffroda, Rhineland-Palatinate State Forest of Wittlich                                                                                  |
| 2022 | Sam        | Richard Nuse | Liberia | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Technical University of Dresden, State Forest Enterprise Saxonia Central Office and Forest District Plauen, Forest Research Station Baden-Württemberg, Unique Forestry and landuse GmbH      |

|      |           |               |           |                                                                                                                                                                                                                                                                                                |
|------|-----------|---------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2022 | Sari      | Galih Kartika | Indonesia | German Forst Society, Eberswalde University of Sustainable Development (HNEE), German Forestry Council (DFWR), Thünen Institute for Forest Ecosystem Services, National Park Hainich, Bavarian Forest District Office Neureichenau                                                             |
| 2023 | Suprianto | Suprianto     | Indonesia | German Forest Society, Technical University of Dresden, Saxonian State Forest Enterprise, Hessian Forest District Office Hanau-Wolfgang, Lower saxonain Forest Planning Office, Forest District Office of Seesen, Greifswald Mire Centre                                                       |
| 2023 | Olachanh  | Phaithong     | Laos      | German Forest Society, Technical University of Dresden, Saxonian State Forest Enterprise, Rhineland Palatinate Forest District of Wittlich and Traben-Trarbach                                                                                                                                 |
| 2023 | Mveimané  | André         | Cameroon  | German Forest Society, Technical University of Dresden, Saxonian State Forest Enterprise, Lower saxonain Forest Planning Office, Forest District Office of Seesen, Lower Saxony Forestry Training Centre (NFBz), Forest Seed Advisory Center Oerrel, Klosterforsten Forest District Westerhof, |



|      |                 |               |         |                                                                                                                                                                                                                                  |
|------|-----------------|---------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2023 | Ntori           | Isaac Kofi    | Ghana   | German Forest Society, Thünen Institute Climate-Smart Agriculture, Lower-Saxonian Forest District Forest Office of Sellhorn and Ahlhorn, National Park Müritz,                                                                   |
| 2023 | Stankevičiūtė   | Jolanta       | Litauen | German Forest Society, Georg-August University of Göttingen, Forest Pedagogics Congress Bonn, Rottenburg University of Applied Sciences, House of Forests in Stuttgart, State Forests of Lower Saxony Forest Forum Riddagshausen |
| 2024 | Martínez Alfaro | Luis Gastón   | Uruguay | German Forest Society, Technical University of Munich, Bavarian Office for Forest Genetics, Hohenheim University, agroforestry Monitoring Project                                                                                |
| 2024 | Mulungushi      | Clarence-Gift | Zambia  | German Forest Society, Technical University of Munich, Unique forestry and landuse GmbH, Bavarian Office for Food, Agriculture and Forestry Fürstenfeldbruck, Agroforst Werratall, Viessmann Short rotation system               |

|      |         |         |             |                                                                                                                                                                                                                                                                                                            |
|------|---------|---------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2024 | Barreto | Sergio  | Timor-Leste | German Forest Society, Technical University of Munich, National Park Müritz, Mecklenburg-Western Pomeranian Forest District Office Sandhof and Forest Management Planning Unit, Lower saxony elbe floodplain biosphere reserve                                                                             |
| 2024 | Kora    | Mamadou | Senegal     | German Forest Society, Technical University of Munich, Hessian State Forest Central Administration, Forest Management Planning Unit, Division of Forestry Geoinformation, Forest Districts of Lampertheim and Meslungen, Forest Research Institute Baden Württemberg, Georg-August University of Göttingen |
| 2024 | Shamrai | Andrii  | Ukraine     | German Forest Society, Technical University of Munich, Hessian State Forest Central Forest Management Planning Unit, Division of Forestry Geoinformation, , Georg-August University of Göttingen, Thünen Institute of Forest Ecosystems                                                                    |

|             |              |          |           |                                                                                                                                                                                                                                                                    |
|-------------|--------------|----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2024        | Melissa      | Ivonne   | Indonesia | German Forest Society, Technical University of Munich, Thünen Institute of Forestry, State Forest of Schleswig-Holstein, Technical University of Dresden, Lower saxony elbe floodplain biosphere reserve, GIZ Bonn, European Forest Institute (EFI), Forest Europe |
| 2024 (self) | Keokhamphouy | Sysavath | Laos      | German Forest Society, Technical University of Munich, Rhinland-Palatinate State Forest Office Wittlich                                                                                                                                                            |

### 3.2 Potential benefits and practical usability of the results.

Participants applied their knowledge in their home countries, influencing forestry policy, improving training curricula, and implementing projects in climate change adaptation, mixed-species planting, and forest pedagogy. These applications demonstrate direct benefits and usability. Benefits include improved capacity for sustainable forest management, stronger networks, and immediate application in partner countries. Participants used their new expertise to update training programs, develop new management plans, and engage local communities. Detailed information on this can be found in the individual reports in the attachments.

### 3.3 Practical results achieved in the project

Practical results include curriculum updates in forestry universities (e.g., Lithuania), implementation of mixed-species forestry practices (e.g., Vietnam), and the establishment of community forestry initiatives (e.g., Ghana). Tangible outputs include participant-led initiatives like pilot projects in mixed-species reforestation, community fire prevention programs, and introduction of forest pedagogy techniques in schools and universities. Detailed information on this can be found in the individual reports in the attachments. Further communication between the different countries on forestry level was started and will hopefully lead to a better understanding of each other in the future.

### 3.4 Practical application and possibilities of transferring results in to practice

The results are directly transferable, as alumni embed German approaches in forestry plans, projects, and policies. The alumni network and partnerships with German hosts support ongoing application and scaling of these practices. Results are applicable in diverse ways: alumni integrate knowledge into national forestry strategies, lead workshops for peers, and adapt German methods for local conditions. The alumni network supports the ongoing transfer of these practices.

### 3.5 Recommendations from the results achieved?

Future programs should include hybrid learning modules to extend reach, and a stronger alumni framework to support long-term collaboration and mentorship between Germany and partner countries this will also help for more follow-up initiatives.

### 3.6 Possible further research questions or follow-up topics

Follow-up programs could build on Forest Expert Program's model for even broader impact. Follow-up topics include forest genetics, carbon farming integration, digital learning formats, and expanded cooperation with other natural resource sectors.

### 3.7 Previous and planned activities to disseminate the results.

Results were disseminated mainly via Instagram and the ProWald. Additionally the webpage [www.forestexperts.de](http://www.forestexperts.de) is still updated and conference presentations were being held. Alumni shared their experiences with colleagues, expanding dissemination in their own institutions.

### 3.8 Overview of all publications produced during the reporting period.

Participant reports, articles, and newsletters were produced annually.

The published articles in the ProWald can be found here:

<https://www.forstverein.de/prowald.html>

Our main channel of information about the program was and still is Instagram. All posts (over 100) can be found in the story highlight Forest Expert Program under [instagram/Deutscher.Forstverein](https://www.instagram.com/Deutscher.Forstverein)



#### 4. Annex Selected Individual reports

1. 2020 Ihor Kramarenko
2. 2020 Benjamin Karanja Uiru
3. 2020 Yves Mekembom
4. 2020 Josef Ambara
5. 2021 Ulyana Bashutska
6. 2022 Juliana Degenhardt Goldbach
7. 2022 Ernest Obeng Adu
8. 2022 Thanh Tung Nguyen
9. 2022 Vilatsay Lattनावong
10. 2022 Richard Nuse Sam
11. 2022 Galih Kartika Sari
12. 2023 Suprianto Suprianto
13. 2023 André Mveimané
14. 2023 Isaac Kofi Ntori
15. 2023 Jolanta Stankevičiūtė
16. 2024 Luis Gastón Martínez Alfaro
17. 2024 Clarence Gift Mulungushi
18. 2024 Sergio Barreto
19. 2024 Mamadou Kora
20. 2024 Ivonne Melissa



# Annex

# Annex1.

## 2020 Ihor Kramarenko

# Report on the Study Visit to Germany on Forest Management Systems

## 1. Forest Management System in Germany

Germany's forest governance system is characterized by strong institutional structure, a clear division of competencies across administrative levels, and the integration of economic, ecological, and social objectives. The system operates under a federal approach, whereby each federal state (*Bundesland*) maintains its own forestry administration while adhering to overarching national strategies.

### Key Principles:

- **Subsidiarity:** Decisions are taken at the lowest effective administrative level.
- **Functional Separation:** Policy (ministries), oversight (forest inspection), and management (state-owned enterprises) are institutionally distinct.
- **Sustainable Development:** The overarching goal is to ensure ecological, economic, and social balance within the forestry sector.

### Governance Levels:

1. **Federal Level** – *Federal Ministry of Food and Agriculture (BMEL)*:
  - Develops national legal frameworks and strategies.
  - Coordinates inter-state policies.
  - Represents Germany in international platforms (EU, FAO, etc.).
2. **State Level (Länder)** – Ministries of the individual federal states:
  - Adopt region-specific forest laws and policies.
  - Oversee implementation and management of public forests within their territory.
3. **State Forest Enterprises (Landesforsten)**:
  - Manage forests owned by the respective states (~32% of forest area).
  - Operate with financial autonomy within ecological and social constraints.
4. **Forest Inspection Services (Forstaufsicht)**:
  - Monitor legal compliance across all ownership types (state, municipal, and private).
  - Empowered to impose penalties, demand restoration measures, and audit forest management plans.



## 2. Private Forest Ownership – Challenges and Solutions

### Structure of Private Forest Ownership:

- 48% of Germany's forest area is privately owned.
- Approximately 2 million private forest owners, most of whom manage small plots (1–10 ha).
- Many owners are non-professionals lacking forestry education or resources.

### Key Challenges:

- Highly fragmented forest ownership.
- Lack of professional knowledge among private owners.
- Difficulty in fulfilling legal and silvicultural requirements without technical support.

### Support Instruments for Private Forest Owners:

1. **Advisory Services (*Forstliche Beratung*):**
    - Free guidance from state forest services on harvesting, protection, restoration, and forest accounting.
    - Government foresters assist with documentation and planning forest operations.
  2. **Voluntary Forest Cooperatives (*Forstbetriebsgemeinschaften, FBGs*):**
    - Cooperatives of private forest owners for joint forest management.
    - Enable cost-sharing, shared equipment use, and collective timber marketing.
    - Publicly supported via subsidies for administrative and operational needs.
  3. **Financial Support Programs (*Förderprogramme*):**
    - Subsidies for reforestation, planting of mixed forests, pest control, and biodiversity conservation.
    - Some programs cover up to **90% of costs**, especially for environmentally focused measures.
  4. **Simplified Regulation:**
    - Simplified forest management plans are accepted for small private forests.
    - State advisory staff assist in the preparation of required documents.
- 

## 3. Experience for Ukraine

- **Establish forest cooperatives** based on the German FBG model – particularly relevant for smallholder or community-owned forests.
- **Develop regional advisory services** under the State Forest Resources Agency of Ukraine to support private owners.
- **Implement subsidy schemes** to promote sustainable forestry practices – such as afforestation with mixed species and biodiversity enhancement.

- **Introduce digital tools and platforms** – as Germany has, including online maps, management plan templates, and e-application systems.

---

## 4. Conclusions and Recommendations for Ukrainian Forest Policy

| Area                            | German Experience                                                                       | Recommendations for Ukraine                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Institutional Separation</b> | Ministries create policy; enterprises manage forests; inspections ensure compliance     | Split the State Forest Resources Agency into strategic (policy) and operational units |
| <b>Private Owner Support</b>    | Cooperatives (FBGs), subsidies, advisory services                                       | Launch pilot programs to support forest owner associations in communities             |
| <b>Public Participation</b>     | Mandatory consultation with NGOs and local communities                                  | Establish local advisory councils under forest districts                              |
| <b>Monitoring and Data</b>      | Public access to digital maps and reports                                               | Develop a forest information system (LIS) and ensure transparency of harvest data     |
| <b>Sustainability Approach</b>  | Integrated across all governance levels, aligned with FSC/PEFC certification frameworks | Incorporate sustainability standards (e.g., FSC/PEFC) into state forestry policy      |

Kramarenko Ihor  
Forestry expert  
Ukraine

## **Speak Up, Don't Stay Silent! Insights from a Study Visit to Germany**

One of the key lessons I learned during my study trip to Germany, as part of the Forest Expert Program, is the importance of **speaking up and engaging in dialogue**. Silence solves nothing — only honest and open communication can lead to sustainable forest governance.

### **Main Focus: Forest Governance in Germany**

The central theme of my visit was to study the functioning of state institutions in the field of forest management in Germany. I had the opportunity to meet with representatives of both governmental and non-governmental organizations involved in forest governance.

### **Common Challenges Across Europe**

Germany faces many of the same challenges that other European countries do:

- global climate change;
- public demand for sustainable use of forest resources;
- the need to expand protected areas;
- calls from the timber industry for increased logging volumes.

All of these issues are actively discussed and addressed in Germany, with broad participation from institutions, the public, professional communities, and concerned citizens.

### **Open Dialogue as a Basis for Consensus**

One of the most important aspects of addressing these challenges is genuine and honest discussion among all stakeholders. The resulting decisions are well-founded and mutually agreed upon, reflecting a broad social consensus.

Another key insight is the willingness to find and maintain a balance between the interests of different groups. With active forest use and an annual logging volume of around 76 million cubic meters, environmental conservation, expansion of protected areas, and compliance with EU requirements for sustainable resource use become increasingly critical.

### **The Structure of Forest Governance in Germany**

Effective state policy plays a central role in the development of sustainable forestry. This is ensured through:

- clear institutional responsibility;
- predictable and goal-oriented decision-making;
- alignment between national plans and actions across federal states.

### **Responsible Authorities:**

- Federal Ministry of Food and Agriculture – responsible for forest policy;
- Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection – responsible for nature protection policy.

“State Forests”

Forest management in federal states is carried out by state forest agencies — Landesforsten. These organizations are responsible for economic activity in state-owned forests, in line with objectives set by the respective ministries. Importantly, they are institutionally separated from political influence.

As a result, decisions about forest operations are made by a single responsible body, avoiding overlap and duplication of functions.

### **Private Forests: The Dominant Ownership Model**

In Germany, private forests account for 48% of the total forest area, making them the dominant form of forest ownership. These forests are typically small, averaging only 3 hectares, and are owned by nearly 2 million individuals.

Although the large number of small private owners poses challenges for active forest management, it also creates opportunities for conservation and biodiversity initiatives at the local level.

### **Conclusion**

Germany's experience demonstrates a high level of forest policy development, one that takes into account the interests of all stakeholders while aligning with the European Union's sustainable forestry goals — always with a firm foundation in Germany's national priorities.

This approach can serve as a valuable example for Ukraine and other countries striving to build an effective, transparent, and sustainable forest governance system.

Kramarenko Ihor  
Forestry expert  
(Ukraine)

## Annex 2.

### 2020 Benjamin Karanja Uiru



## **THE MAIN FORMATIVE EXPERIENCE**

50% of forests in Germany are owned by private forest owners. Majority of those forest owners are family and they are not supposed to sell. The remaining portion of forests in Germany are owned by the state and community.

The forested land in Germany belongs to the state, the community or is privately owned. The German government does inventory after every 10 years after which the data collected is made available to the public since the inventory is usually funded by the public revenue that is, the taxes.

Forests in Germany have a very rich history that is passed on from one generation to another. As the chairman of Tree Growers of Nyandarua, I visited very well managed Tree Growers Association of westallgay where Andreas Tager is the Chief Executive Officer of the association. I witnessed high level of honesty and transparency in Andreas as he manages the forests of the owners. There are also trained foresters who are entrusted in managing private forest owners whether small scale or large scale. I do pure farm forestry leading by example. During the training period, I participated in 20 program activities.

## **INTRODUCTORY CHAPTER**

Farm Forest Association of Kenya (FFSPAK) recommended me to the Forest expert program (FEP).

Farm Forest Association of Kenya (FFSPAK) is the umbrella or Apex association covering our regional association.

The other institution involved was the Kenya Forest Service (KFS)

In Kenya, I am the chairman of the Tree Growers Association of Nyandarua which is a regional association that is under the national association called FFSPAK.

Kenya has 47 counties and Nyandarua is one of the counties. We are close to three thousand small scale forest producers in the association which I chair.

My expectation from the training is to be equipped with the knowledge and skills concerning forest management, marketing of forest produce and learn how to lead an association effectively.

Due to covid impact on every sector of the economy and low profit in forest enterprises and association in general, I had to fund my transport to Germany. My family supported me greatly. This is because they have seen the benefit of practicing farm forest on our family forest enterprise. THANK YOU, MY FAMILY,

# REPORT

## Week One

I arrived a day late but I managed to catch up with the rest of the trainees. Two were from Cameroon, and other two from Ukraine. I spent the week in Gottingen University.

Lena Schrocker took us through importance of forest for example in the area of climate, employment and supply of wood products. People must rise up like carol who dedicated her life in protecting forests in early years of forestry that is about 125 years ago.

After the second world war, german forests were cut down to build destroyed cities. Another reason was for payment to united states of America and France after losing war to them even after starting it. Germany became defforested but today they have 35% forest cover. Lesson learnt is that we should not leave the responsibility of forests to the government instead it should be a collective responsibility.

Dr Lutz Fehrmann and Christopher illein made it clear to me about forest inventories, the beneficiaries and about climate mitigation.

At the end of week one we visited a large private forest owner called Christian Eber. I learnt that it is important to donate some trees to nature and also for flora and fauna. I also learnt that if you own a forest of 50 hectares and above, it is important to have a forest plan. The forest owners are also very sensitive to biodiversity and are ready to work with the government in matters environment conservation where they also receive subsidies from the government.

## Week two

I travelled to the northern part of Germany where witnessed the forest damage by back beattle. I also understood that reafforestation is very costly and government has to assist. I did the crossing harz from north to south from the beautiful town of wernigerode to Northhausen in Thuringnia,I experienced the lively interplay of the full beauty of this low mountain range.

After visiting the Brofen I learnt that the western shoulder belongs to the rainiest location in Germany. The western side is clearly of maritime character as a result of the westerly winds that drive clouds into the area, leading to rainfall on the brocken. I experienced an adventure of one of the last great steam locomotives. This route network is 1404km with a gauge of 1000mm.I went through Harzquerbahn, Seeketalbahn and Brocken Bahn. Many thanks to Lorenz who spent the second week with me.

It was amaizing to learn from Diana a private forest owner who sells trees to people who want their loved one's ashes buried close to the tree.

I met with Maximillian who owns a castle that has a forest that sustains it. He is a large forest owner.

### **Week three**

I had a good training on how to manage tree nursery and seed collection. This was done by Mr Thomas who is a Soate forester in Nagold. Since 1947, forestry seeds are harvested and prepared in soate-Seed Kich in Nagold centred between the black forest and Swaibian Alb, two large forest areas, the state, the soate seed kiln supplies mainly forestry commissions and nurseries of the province with high quality seeds and in order to secure healthy and efficient forests. The following tasks are part of the operation.

1. Development of sustainable treatment and storage method for forest seeds
2. Consultation of forest administration and tree nurseries
3. Cooperation with research institutes in regard of seed treatment method
4. Training of seed harvesting and development of various harvesting methods.
5. Continuous education as well as public relation

At bad Wildbad I visited the pedestrian suspension bridge in the heart of the black forest you look down at the tops of magnificent black forest pines.

### **Week four**

I spent my final week at a private forest enterprise at Aronberg Oberrkail. I was in able hands of forester Tarlach Wholers. I learnt that private forest owners maintain among other things, the most prominent water purification the largest recreation area and largest carbon storage area.

Tarlach Wholers trained me on how to calculate timber in cubic meters are used in Kenya where is done in tonnage. It was also a good experience going hunting with Tarlach at night in the forest. From Tarlach it was evident that forestry is conducted in a sustainable and future proof manner. Only in harmony with nature can all the functions of forests be reliable and sustainably maintained especially in the face of impending climate change.

## Annex 3.

### 2020 Yves Mekembom



# Report

2. August 2025

## Personal Details

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| Family Name     | <b>MEKEMBOM</b>                                          |
| First Name      | <b>Yves Nathan</b>                                       |
| Gender          | Male                                                     |
| Date of Birth   | 19 <sup>th</sup> May 1974                                |
| Nationality     | Cameroonian                                              |
| Passport Number | 0650837 of 24 July 2017                                  |
| Email Address   | <a href="mailto:mekembom@yahoo.fr">mekembom@yahoo.fr</a> |

## 1. Short Summary

Yves Nathan Mekembom is a Forestry Engineer, graduated at the Faculty Agronomy and Agricultural Sciences (FASA), University of Dschang-Cameroon in 2005. He is also a trained and experienced auditor in FSC and Sustainable Agriculture Network (SAN) schedules and has carried out several audits in Central Africa sub-region in more than three countries.

He is Presently Controller N°3 at the National Brigade of Control of Forest Operations in the Ministry of Forestry and Wildlife Cameroon. This unit is in charge of implementation of the national strategy for forestry and wildlife control and application of legal framework of forestry. On the daily basis, this Unit carry out control of compliance with laws in Forest Management Units, Council Forest, Communal forest, community forests, protected areas and other permits.

He is very interested with issues related to Sustainable forest management, Forest certification, Sylviculture of timber and NTFP species, biodiversity conservation and climate change.





### 2. Introductory Chapter

I was recommended to apply for the Forest Expert Program by Mrs Stefanie Morich by then working with GIZ-ProFE in the South West region, Cameroon, The Ministry of Forestry and Wildlife and GIZ-ProFE were involved in the process as collaborating through a Memorandum of understanding.

I work presently with the National Brigade of control of forest operations in the Ministry of Forestry and Wildlife Cameroon, A unit in charge of implementation of the legal frameworks and national strategy for forestry and wildlife control in order to ensure sustainable forest management in Cameroon.

As a national controller, my main expectation was to improve my professional skills, specifically in:

- Economic planning, digital data information system, timber data intake, afforestation;
- Management of Communal, council and private forests;
- Nature conservation in commercial forests and protected areas;
- Education and training in forest domain (Forestry schools, protected areas, forestry workers, staff and education Centre).

My transport to Germany worked very well and was supported by GIZ-ProFE, project, thanks to Mister Didier Bastaing.

### Time Schedule

- Please update the information on your schedule

| Date       | Institution                                    | Programme                                                                                                                                                                                                                                                                                                            |
|------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30-08-2021 | Forest Experts Seminar at Göttingen University | <ul style="list-style-type: none"> <li>- Introduction, BLE Presentation, BMEL Project activities (Jessica Rebola Lichtenberg);</li> <li>- Presentations of the trainees (Yves Nathan Mekembom, IGOR, Joseph Ambara and Uliana)</li> </ul>                                                                            |
| 31-08-2021 | Forest Experts Seminar at Göttingen University | <ul style="list-style-type: none"> <li>- Administration (Sabine Kühling), German Forest Society,</li> <li>- The role of the German Forest Society and Forest Politics in Germany (Lena Schröcker);</li> <li>- City Tour in Göttingen</li> </ul>                                                                      |
| 01-09-2021 | Forest Experts Seminar at Göttingen University | <ul style="list-style-type: none"> <li>- Forest Inventory and remote sensing (Dr. Lutz Fehrmann);</li> <li>- Forest Economics and sustainable landuse planning (Prof. Carola Paul);</li> <li>- Introduction to the Faculty of Forestry and the German training system for forester (Prof. Dr. Dirk Jäger)</li> </ul> |
| 02-09-2021 | Forest Experts Seminar at Göttingen University | <ul style="list-style-type: none"> <li>- Field trip in the private forest Eberi (Christian Eberi);</li> <li>- Presentation of the Centre of Biodiversity and sustainable land use(CBL) (Dr Simone Pfeiffer)</li> </ul>                                                                                               |
| 03-09-2021 | Forest Experts Seminar at Göttingen University | Field Trip National parc Hainich Klimaturm (Prof. Dr, Alexander Knohl)                                                                                                                                                                                                                                               |



## Forest Expert Program

|            |                                                    |                                                                                                       |
|------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 04-09-2021 | Weekend                                            | Weekend                                                                                               |
| 05-09-2021 | Weekend                                            | Weekend                                                                                               |
| 06-09-2021 | Forest District Seesen                             | PEFC Audit (EVA Schlossmacher)/ Management planning (Henning Geske)                                   |
| 07-09-2021 | NFBZ                                               | Training of Forestry Staff, Information Management (Stefanie Morich)                                  |
| 08-09-2021 | Lower Saxonian Forest Planing office               | Work of the Lower Saxonian Forest Planning office, Forest Planning, Inventory (Wolf Kleinschmit)      |
| 09-09-2021 | Forest District Lauterbach                         | Timber from harvest to trade (Stefanie Morich)                                                        |
| 10-02-2021 | Forest District Seesen                             | Management planning in practice (Henning Geske, Stefanie Morich)                                      |
| 11-09-2021 | Weekend                                            | Weekend                                                                                               |
| 12-09-2021 | Weekend                                            | Weekend                                                                                               |
| 13-09-2021 | Private Forest Owner Association Baden-Württemberg | - Work of the "Forstkammer" (Jerg Hilt)<br>- PEFC Certification (Dirk Teegelbekkers/ Benjamin Lorenz) |
| 14-09-2021 | Communal Forest Eslingen                           | (work in the Communal forest Eslingen, Benjamin Lorenz, Jan Martens and Ingo HANAK)                   |
| 15-09-2021 | Communal Forest Remscheid                          | Work of the Communal Forest Remscheid (Markus Wolf)                                                   |
| 16-09-2021 | Communal Forest Remscheid                          | Work of the Communal Forest Remscheid (Markus Wolf)                                                   |
| 17-09-2021 | Communal Forest Remscheid                          | Work of the Communal Forest Remscheid (Markus Wolf and Roland Daamen)                                 |
| 18-09-2021 | Weekend                                            | Weekend                                                                                               |
| 19-09-2021 | Weekend                                            | Weekend                                                                                               |
| 20-09-2021 | National Park Kellerwald-Edersee                   | Forestry in the National Park (Inka Lücke)                                                            |
| 21-09-2021 | Forest District Melsungen                          | Sustainable Forest Management in State Forest (Petra Westphal)                                        |
| 22-09-2021 | Forest District Melsungen                          | Sustainable Forest Management in State Forest (Petra Westphal)                                        |
| 23-09-2021 | Communal Forest Göttingen                          | Work of the Communal Forest (Torsten Gundlach)                                                        |
| 24-09-2021 | Communal Forest Göttingen                          | Work of the Communal Forest (Torsten Gundlach)                                                        |
| 25/09/2021 |                                                    | Departure to Hannover end of the Program                                                              |

With support from



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### 3. Report

#### **Week 1: from 30 August to 03 September 2021: Göttingen**

The first week was focused on the introduction of the Forest Expert Programme and the presentations and the overall situation of forest management and forest research in Germany. This activity was punctuated by indoor classes at the Department of Forestry of the University of Göttingen. Field visits were also organized for good understanding of the concepts. In the same period, the five Trainees from Cameroon (02), Ukraine (02) and Kenya (01) made individual presentations including academic background, professional experience, the present daily activities in the home country and above all, the expectations in relation with the Forest Expert Training Programme. At the end of the week, participants were split to follow specific topics following their expectations in the application procedure.

The presentations included:

- Presentation 1: Research for international and sustainable forest management by Jessica Rebola LICHTENBERG;
- Presentation 2: Forestry in Germany by Lena SCHRÖCKER.
- Presentation 3: Forest inventories and monitoring in Germany by Dr. Lutz FEHRMAN and Prof. Dr. Christophe KLEIN;
- Presentation 4: History and management of forests in Germany;
- Presentation 5: Forestry research and education at the University of Göttingen by Prof. Dr. Dirk JAGER;
- Presentation 6: Centre of Biodiversity and sustainable Land use (CBL) by Dr. Simone PFEIFFER.

Each presentation was followed by exchanges and questions to facilitate the understanding of the participants.

Forests cover approximately 11.4 million hectares in Germany, which is equal to one third of Germany's national territory. They are valuable ecosystems, carbon sinks and recreation areas and also important suppliers of raw materials in wood-based industry. Forest management in Germany is based on a tried-and-tested, integrative concept that aims to ensure a sustainable, multi-functional forestry sector.

German Forests are divided into four types as ownership is concerned, namely;

- Community forests: 19% (2 220 445 ha)
- State forests: 4% (403 464 ha)
- State forests: 29% (3,309,537 ha)
- Private forests: 48% (5 485 679 ha)

Hans Carl Von Carlowitz (1645-1714) and Goerg Ludwig Hartig (1795) are known as the fathers of sustainable forest management in Germany. The legal framework of forest management in Germany includes European rules, the federal law and local laws of each federal State based on its specificities. In general, the federal forestry law does not provide for a management plan, however:

- There are exceptions for areas >100 ha in some states;
- There are special rules for state forests and
- There are rules that apply for companies with a net profit of more than 50,000 € (including the need for accounting and therefore a forest inventory);
- Any management plan must comply with the state forestry law;
- Any management plan must comply with the law on nature conservation and any related provisions;



- Any management plan must comply with "FFH Natura 2000";

As forest inventory is concerned, there are three main types of forest inventory, namely National forest inventory, Forest management inventories and Stand-wise management planning management compartment. The first national inventory took place from 1986 to 1989 and is repeated every ten years corresponding to the rotation. The methodology consists of establishment of 4x4km sampling data plots which made 78000 plots in the entire country. Specifically,

- Plots of 5 m circular radius for dead wood evaluation;
- 10m radius plots to assess ground vegetation;
- 25m radius for special habitat.

Forest sector contribute less than 2% of the national income.

Concerning training programmes in forestry in Germany, forestry training at university level is available at four universities: Göttingen, Tharandt (Dresden), Freising (Munich) and Freiburg; there are also Eleven vocational school available.

The Centre of Biodiversity and Sustainable Land Use (CBL) has the following main tasks

- The fulfillment of inter-faculty academic tasks in research, teaching, studies and further education in the field of biodiversity ;
- The promotion of young scientists;
- The promotion of knowledge transfer and scientific communication through the planning and implementation of conference series, symposia, guest lectures and workshops;
- Cooperation with national and international institutions;
- Organizing, coordinating and supporting the implementation of interdisciplinary projects in the fields of biodiversity and sustainable land use and their application;
- Promoting education by supporting the implementation of curricula.

The first field activity led by Dr. Dirk JÄGER, was carried out in the application forest of the Department of Forestry. The trainees had the opportunity to learn forest inventory in practice: How to set a sample plot, the calculation of basal area with the dendrometer and especially interpretation of observations and the results of the different types of management conducted in this forest.

**02/09/2021:** Through the visit private forest owned by Mr. Christian EBERT, we could apprehend the modes of management of the private forests and especially the compensation of the State of Lower Saxony government through the granted subsidies and technical through the forest services to promote sustainable forest management and biodiversity conservation. According to the explanations of Mr EBERT, management plan is compulsory for forests with surface area of more than 50ha in Germany. This forest was extended by buying from other local private forests during the land use reform after the 2<sup>nd</sup> world war when it was forbidden for an individual to own more than 100ha forest. With 300ha today the production of the forest is 2500-3000 Euro per year. In order to ensure sustainability, 06 habitat trees/ha should be left during Harvesting. As compensation, Forest owners receive 200 Euro per habitat tree and 200EU/ha/year for conservation from the Lower Saxony government. We also learned that it is forbidden to harvest more than the possibility of the forest and also compensation is provided in hot spots of presence of totally conserved animals due to their concentration. As forest regeneration is concerned, the choice of species depends on their adaptation to climate change.



**03/09/2021:** The visit to the Hainich National Park was mainly focused on the visit of the climate research station installed in the heart of the park as well as the research device on carbon stock, climate in relation to tree growth. The participants were given a guided tour of the university town of Göttingen.

At the end of this first introductory week the particular programs of the participants/trainees were decided.

Need of forest management plan in Germany

- Generally, by law, no forest management plan is required for less than 50ha forest;
- Exception 100ha in some federal states;
- Special rules apply for public forest;
- Spruce, pine, Oak and beech are the main species in German forests.

### **week 2 : from 06 to 10 September 2021: Bad Lauterberg, Seesen**

**06/09/2021** The Lower Saxony Forest Planning Office(NFP)

The program in Lower Saxony started with the forest district of Seesen. In the absence of Mrs. Eva SCHLOSSMACHER of the PEFC, who was unable to attend due to illness, the initial program of the first day (September 06) was readjusted. We started with a presentation of the District by Mr. Henning GESKE, head of the District, and then we went to the forest. During his presentation, Mr. Henning GESKE presented the forestry district under his control. From his presentation, we retain that the forest district of Seesen is part of the 24 forest districts that the State of Lower Saxony counts. It has a total area of 13,200 ha and also manages cooperative forests of 3,200 ha with a staff of 85 employees of all grades. In terms of forest production, the Seesen Forestry District exploits 90,000 m<sup>3</sup> annually, with an estimated annual increment of 100,000 m<sup>3</sup>. It is composed of 11 forestry sub-districts. After this presentation, we went to the forest in one of the sub-districts of Seesen accompanied by Stephanie Morich, Deputy Director of the Education Centre. This field trip allowed us to witness harvesting activities in practice. We also had to appreciate the disaster caused to Spruce trees by bark beetles.

### **07/09/2021: Forest Education Centre of Lower Saxony (NFBz)**

The second day was spent in the territory of the state of Lower Saxony led us to the Forestry Education Centre of Lower Saxony located in Munchenhof. Mrs. Stéfanie MORICH, the deputy director of this centre presented us the education centre as well as the quality and the type of teaching which is given there. From the presentation, this centre provides education of forest workers, training of own staff and third parties and develops forestry practices in forest management. There is interim exam one and half years after and the final exam three years after organized by Chamber of agriculture and the examination board. The centre is a vocational school that provides both practical training at the workplace and basic education in the education centre. This centre accommodates about 40 students each year, 30 of whom are from the state and 10 from private forests, communal forests and contractors. We also discussed with Mr Mikael Thatner, the Director of the Centre on challenges of forest management and education in Germany.

We later had a guided tour in the centre to have a look on the infrastructures and commodities available in the centre. We also discussed on the principles of sustainable forest management in Germany and particularly in Lower Saxony.

### **08/09/2021 The Lower Saxony Forest Planning Office(NFP)**

In the Lower Saxony Forest planning Office, after the welcome address, trainees were entertained in.

- GIS in the NLF
- How to become a forester in Lower Saxony?





- Forest management facility NLF
- Nature conservation and FFH in the NLF
- Forest biotope mapping in the Lechlumer Holz practice
- IT in the NLF
- Fovea pole detection

There are three career paths to become a forest manager in Germany in General and particularly in Lower Saxony:

1. **Education as a forestry worker:** work with the chainsaw, planting trees and practical work in the woods. 3 years of education in a dual system of theory and practice with the possibility to become a machine operator. There are various fields of application of trainees (e.g. forest worker, educator, cemetery forest, silviculture, etc).

2. **Forest Ranger:** with a background in B.Sc. at university you have to carry out 2 years internship with subsequent examination at Lower Saxony State Forests. A forest Ranger manages approximately 2000 ha of state and/or private forests and is responsible to Select trees for harvest, plan plantings, instruct forestry workers, sell timber, hunting management, and any other technical task.

3. **Forest Manager** with a 5-years program M.Sc Forestry at the university and successful 2 years of internship followed by a state examination at L.S. State Forest. Teaching content: Biotope mapping, soil science, forestry management, administrative law, work in a forestry office, travel time within Germany, various internships. Responsibilities of a forest manager include Management of 15.000 to 25.000 hectares of state and private forests, supervisor of forest rangers, budget management, forestry management (at Forest Planning Office in Wolfenbüttel) and various project positions in the management.

As Control and planning of forest management is concerned, the procedure of Forest management includes: 10-year cycle of standwise analysis, forest inventory, biotope mapping, data evaluation and digitization, planning for every single territory, discussion and exchange with local management, and publication of the 10 years' valid plan. Data collection combined inventory system including districtwise sample plot system, standwise inventory and mapping of ecological sensitive areas and rare species.

### **09/09/2021:** Forest Management in Lower Saxony from inventory to marketing

Led by Mrs Stefanie Morich, we were entertained by Jorg Helmker and Kilian Nega in Lauterberg District. The exercise consisted in calibration and evaluation of the volume of piles of logs in yards using smartphone and the camera. Information collected was sent to the finance office in Bad Lauterberg for billing. We also exchange on specification of wood and pricing.

In the finance office, a working session with Mrs Christine Feddersen allowed us to understand marketing of wood.

**10/09/2021** the team supervised by Mr Henning Geske, Forest Manager at the Lower Saxony Forestry Office Seesen and Mr By RAIHEN, Sub district manager of District 7 Wolfshagen accompanied by Moritc Marten, Praktikant in internship from Scod Addf-Grimme Gesant. The exercise consisted on the presentation and discussions on the management plan of 2022. From the exchanges, it appeared that the sub district has 63 blocs. After avaluation of the climatic conditions of each bloc evaluation of the standort, protection areas and the possibility witch was estimated to 10000m<sup>3</sup>/ha and the volume to be harvested was estimated at 5055m<sup>3</sup> in 2022. After that planning of exploitation activities, other activities such as hunting, regeneration and recreation were also presented. Material were also discussed as well as selling activities. A field visit was then organized to assess regeneration activities decision making and planning of thinning and logging.

The trainees had the opportunity to participate at the release of a Lynx in the forest as a strategy to biological control of Roe and red Deers.



The 13 Principles of Forest Management in the „Niedersächsische Landesforsten “(State-Forests in Lower Saxony)

1. soil protection and site-appropriate tree species selection
2. deciduous forest and mixed forest propagation
3. ecological compatibility
4. preference for natural forest regeneration
5. improvement of the forest structure
6. target diameter use
7. preservation of old trees, protection of rare and endangered plant and animal species (species protection)
8. securing a network of protected forest areas including forests with natural forest development
9. guaranteeing special forest functions
10. forest edge design (transition zone around forest) and maintenance
11. ecological forest protection (f.e. against pests)
12. ecosystem-compatible wildlife management
13. ecologically compatible use of forestry technology

### **week 3 from 13<sup>th</sup> to 17 September 2021: Stuttgart, Remscheid and 13-09-2021: Work of the forest Chamber "Forstkammer"**

**Mr Jerg Hilt** presented the Current forest policy issues from the point of view of one Forest owners association. He presented Forest ownership in Baden-Württemberg, followed by the Baden-Württemberg Forestry Chamber, its Tasks and Structures. He continued by the Current forest policy issues specifically: 1st state election BW, Campaign 8 and the 3rd forest crisis 2018.

The Baden-Württemberg has 1.35 million hectares of forest representing 40% of the land area) ownership comprises State forest (24%), Communal forest (40%) and Private (36%). Communal forests have 1,100 owners while private forests are owned by 240,000 individuals. Regional distribution is very different and sometimes in extreme Mixed situation. The role of the forest chamber is to represent the non-governmental forest property in Baden-Württemberg to the people's representatives, the government and the public as well as to support and advise the members. According to the basic law, in Article 14, Ownership and inheritance rights are guaranteed. Contents and limits are determined by the laws. (2) Ownership obliges.

Its use is intended at the same time as the Serving the common good.

- Representing the interests of those who own the forest and therefore also those who own it to bear (legally) responsibility.
- Every forest owner should take over the forest within the framework of the law manage his / her ideas.

The task of the forest chamber is to represent the non-state forest property in Baden-Württemberg vis-à-vis the Representation of the people, the government and the public as well as the support and advice of the members the main actions are:

**Lobbying:** discussions with members of parliament, government, administration, press work, Campaigns, events (public general assembly, parliamentary Evening)

**Public relations:** information about forest / forest ownership, press, social media

**Member service:** professional and legal advice, information events, Membership magazine, newsletter ...

### **Forestry Chamber – Structures**

Forestry Chamber has: board of directors, committee, General meeting of approximately 14,000 members representing municipalities, private individuals, other corporations (Hunters, Business Administration, communal forest, small private forest and Nature Conservation, etc)





### PEFC Forest Certification in Germany

Benjamin Lorenz, Certification speaker and Technical Officer at PEFC Germany.

After presentation of land use in Germany, which are mainly agriculture (50%), forest (33%) and other uses (17%), he presented the situation of forest area in this country. From this presentation, forest covers a total Area of 11,400,000 ha, owned by 1,800,000 owners. PEFC-certified Forest Area covers about 8,500,000 ha with 280,000 owners. There is no regional PEFC certification in only two states out of the 16 federated states.

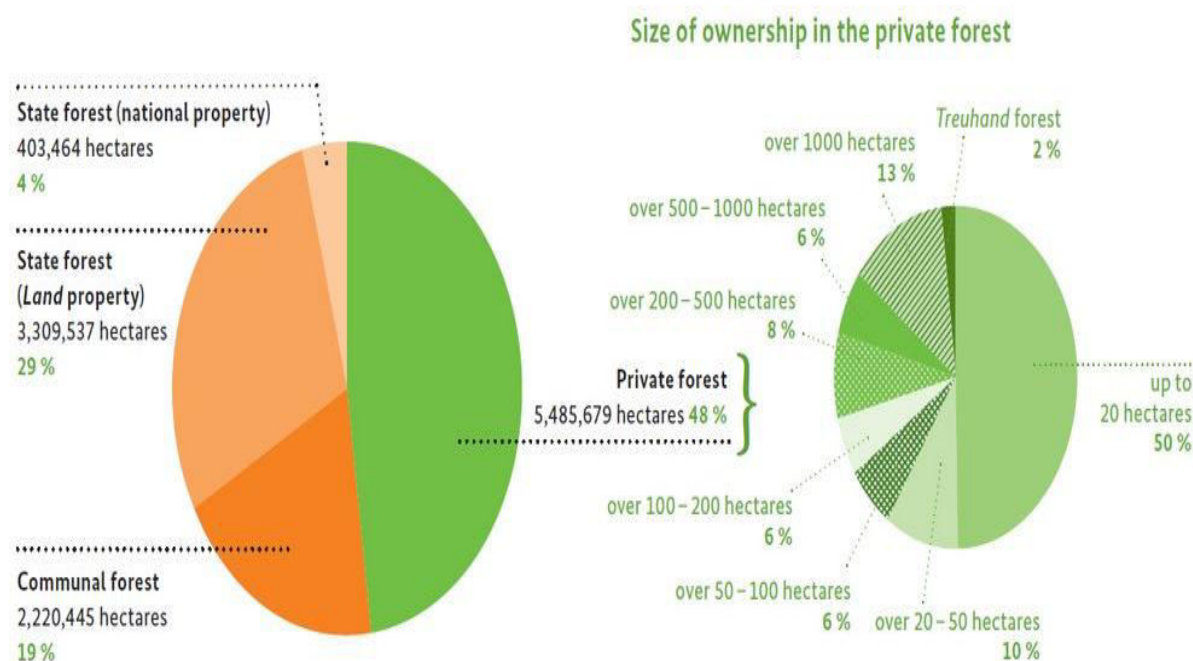


**Figure. Ownership of forests in Germany**

Forestry in Germany is composed of coniferous and deciduous trees dominated by four main tree species, namely Spruce, pine, beech, oak are the most common tree species. 77 % of the German forests are PEFC certified, covering 8.5 million hectares, managed by 295,000 forest owners (all state forests, 7,100 private forests, 940 forestry associations, 3,100 municipalities). 1.4 million hectares are FSC certified. Compare to FSC, Forest owners prefer PEFC scheme due to the low certification fees (0.18 Euro/ha/year for forest above 100ha and 0.5 Euro/ha/year for forest below 100ha surface area compare to FSC scheme where the same fees are 18000 Euro per holding per year. Certified forest owners receive from the federal government of Germany a compensation called Corona and climate change aid of 100 Euro/ha for PEFC Scheme and 125 Euro/ha in the FSC certification scheme.

### 14-09-2021 Field visit of communal forest City of Esslingen am Neckar

The Forest District Manager Mr Ingo Hanak and Benjamin Lorenz, entertained the trainees Esslingen communal forest covers 1700 ha and is managed by two foresters, 4 trainers and 02 masters. The city of Esslingen has 60-70000 inhabitants. The objectives of the management are, protection, recreation and Economic. There is a long term inventory at the state level and there is also inventory. The forest revenues contribute 250 M euros in the revenue of the Council. Road construction and logging are carried out by service providers. Products are sold to local sawmill and fire wood is collected by local communities. Control is based on the demonstration of what they do according to activities planned. After control, individual sanctions are



applied to defaulters and court cases are opened for any damage caused in the forest. We talk also discussed about regeneration and hunting activities.

### **15-09-2021 Remscheid**

During our stay in the state of North Rhine-Westphalia we were welcomed and entertained by Mr. Markus WOLF, Director of the Green Spaces, Cemeteries and Forests Division and President of the Remscheid Forestry Cooperative. In two days we were mainly marked by two main subjects, the meeting with the head of the municipal forest of Remscheid and the field visit in the Neyetal forest. The third day we exchanged with the advisor of Ministry of Climate Protection, Environment, Agriculture, Nature and Consumer Protection of the state of North Rhine-Westphalia. In the course of our discussions with Mr. Markus WOLF, we had the forest types in this state. The Remscheid Forestry Cooperative was created in 2013 and currently has 205 members and an estimated 67 hectares of forest. The forest area covers approximately 852 132 ha distributed as follows:

- Community forests (communal forests, community forests): 20%;
- State forests: 13% and
- Private forests: 67%.

In relation with the organization of the communal forest, the division of green spaces, cemeteries and forests is subdivided into four departments, among which the one in charge of forests figures prominently. This department is responsible for the management of 3,000 hectares of forest spread over 3 forest districts and is made up of 18 employees (3 foremen, 7 lumberjacks, 6 apprentices). Through the visits to the forests under the guidance of Mr. Markus Wolff, we were able to see the reality of the forest management problems he faced by forest managers. The implementation of a management guided by the search for sustainability in multifunctional forests related to species diversity. We also visited sites of natural regeneration and were able to appreciate the difference in terms of species diversity between the natural and artificial regeneration plots. Moreover, in the terms of our multiple outings in the forest we also observed the negative impact of wildlife in general and deer in natural forests.

We also had the opportunity to visit the museum of Lennep dedicated to the physicist and Nobel Prize of Physics (1901) Wilhelm Conrad Röntgen, who was born in this city. During this visit, the history of X-rays was presented to us.

### **16-09-2021 Nayertal forest regeneration**

The next day we made a field trip, where we visited some damaged forests regenerated (Nayertal Forest regeneration) after the storm. While in the field, we discussed on the scientific aspect of control of bark beetle infestation, we went through several regenerated stands and talked about the criteria that are behind each one. We lastly discussed on the challenges of forest regeneration including invasive species management, Hunting management and challenges and communication between stakeholders. When hunting is not properly done, it becomes a constraint to the achievement of management objectives in terms of sustainability. Water availability appeared as an important factor that insures Spruce resistance to bark beetle attack. It was noticed that spruce trees located around the lake and near water bodies were more resistant to bark beetle attacks due to the fact that they are able to produce a resin that makes them unattackable by the bark beetle. However, in dried areas, this field trip to the Neyetal forest allowed us to see once again the significant damage caused by the bark beetle to the spruce. We also discussed on challenges in forest management, perception of corruption in the forest sector in Germany as well as communication between stakeholders.

### **17-09-2021 Dusseldorf**



The last day in the state of North Rhine-Westphalia, Mr. Markus Wolff led us to the capital city of Dusseldorf, more precisely to the Ministry of Climate Protection, Environment, Agriculture, Nature and Consumer Protection of the state of North Rhine-Westphalia.

From the working session with Mr. Roland DAAMEN, Advisor to the Minister in Division III - 3 of Forest Policy, Forest Sovereignty and Nature Conservation in the Forest, the state of North Rhine-Westphalia is made up of 16 forest districts and that the policy of the Ministry is oriented towards the multifunctionality of the forest. In this state as everywhere in Germany, clear-cutting of the forest is forbidden. Thus, the state of North Rhine-Westphalia, in order to promote its policy of sustainable forest management, imposes compensation for mixed reforestation when clear-cutting is carried out in exceptional/unusual cases such as bark beetle damage to spruce that is going on since 2018. In addition, funds are granted to private forest owners to carry out reforestation by establishing mixed forests. We discussed also the challenges of forest management as objectives differ from forest managers, Hunters and private owners.

### **Week 4: from 20<sup>th</sup> to 24 September 2020: Hessen, Melsungen and Goettingen**

20/09/2021 National Park, Kellerwald Edersee, Hessen

#### **Kellerwald-Edersee National Park**

At the national park of Kellerwald-Edersee, two steps were done: A presentation of the park by Mrs. Inka LÜCKE, Press office, responsible for communication in the park, followed by discussions and field visit to the park. In her presentation, Ms. Inka LÜCKE addressed important points of the National Park of Kellerwald-Edersee including its history and its management objectives, and its biodiversity potential. From the presentation, this park, which was one of the 41 forest districts of the state of Hessen, now has been gazette as a National Park and certified by IUCN in 2004 and accommodates more than 10,000 species. Since 2011 it is UNESCO World Heritage. Following the exchanges, we retained that the philosophy that guides the interventions in the park is "LET NATURE BE NATURE". It is managed by 20 rangers divided in 3 groups.

The field visit in the park gave us the opportunity to appreciate the natural dimension of the park in terms of biodiversity, the ecotourism site around the river Edersee as well as the research activities carried out there.

#### **21/09/2021: Melsungen**

The visit of the forest district of Melsungen began with the presentation made by Mrs. Petra WESTPHAL, head of the district. From the lecture, we learned that the state of Hessen is made up of 42% of forest and includes 42 forest districts including the forest district of Melsungen. One of the districts has been converted into the Kellerwald National Park. The latter consists of 20,000 ha of forest divided in state forests (15 000 ha), Communal forests (2 650 ha) and Private forests (2 850 ha) shared between 300 to 400 owners.

The district of Melsungen is subdivided into 12 sub districts. Each sub district is headed by a forester during 20 years. Most of the district managers are due retirement in two years. Since 2018, choice is made on species adapted to dry situation as soils are not rich. She emphasized on the fact that the first objective of her intervention in the process of management of its forests is the promotion of natural regeneration of multi species and heterogeneous stratus since 1985. Decision to plant new trees depends on the potential of wildlings found in place generally when the surface is more than 0.5ha. In this process, they intervene through reforestation if and only if nature is unable to allow the objectives to be achieved in a specific area. Following Ms. Westphal, Ms. Katharina KRUHM and Mr. Daniel MÖLLER discussed with us the issues of digitization in connection with forest management and monitoring in the Melsungen forest district. It appeared that every personnel in the district has a smart phone use for data collection



and transfer to the data base. We also discussed on the main challenges of forest management in the district and monitoring of interventions in private forests appeared to be one of the most difficult to follow up as owners are not sometimes present during monitoring and spaces are very small.

### **22/09/2021: Melsungen**

The next day was spent in the forest district of Melsungen, in the sub-district of Landerfeld. Under the leadership of Mrs. WESTPHAL, we were received by the head of the subdistrict, Mr. Manfred DEIST, who presented the characteristics of the subdistrict in terms of area, human resources and the main management activities. In addition, we discussed issues related to forestry training in the district, training activities for forestry workers and occupational safety for visitors, that occupy a prominent place in the management policy of the district in general and the sub-district in particular. We followed in the field the interventions of Bernd LAUTEBRAND, Thomas LAUTEBRAND and attended a demonstration of a directional felling with a felling wedge by the student workers.

### **23/09/2021: Communal Forest Göttingen City (State of Lower Saxony)**

Mister Torsten Gundlach presented work of the Communal Forest. This forest was bought from other owners approximately 680 years ago. The forest city office is a part of the city Administration of Göttingen and is managed by three foresters, one office clerk and six forest workers. Approximately 1800ha are managed by this unit. The forest is made of 26 tree species based on information, counting and results of the last forest planning carried out in 2010. In this population, beech represents 65%. Other hard wood such as sycamore, European Ash and European Cherry are 27%, Oak 1% and Spruce 4%. Other conifer like pines, yew trees and larches represent 3% of the population. In the last three years, there is reduction of spruce population due to thunderstorm and bark beetle gradations. The stock of wood is estimated at 420m<sup>3</sup>/ha in 2021, the growth increase 7.7m<sup>3</sup>/ha/a, the allowable cut at 4,6m<sup>3</sup>/ha/a the wood harvesting is 4500-5800m<sup>3</sup> showing that the quantity of the timber and wood harvest is lower than the growth.

The main goals of the Göttingen city forest are recreation, conservation and forest management. Financing the tasks and goals of this city forest team is instructed to do with part of the taxes of the local government of Göttingen, grant of funding programme of the Lower Saxony, the Federal republic of Germany and the European Union, selling of the wood of the past harvesting season, sale of game meat donations, selling of tickets for using "Bismarkturm" Tower, selling of hunting licences, forest tours for a fee and leasing of agriculture land. The control in the communal forest is more financial, generally wood is auctioned to best financial offer of the bidder according to the quality of the wood. When the price is concluded, the bill is established and transmitted to the city treasury. As resources from hunting meat, the city produce 10 - 12000 Euro/year.

The important laws that foresters have to follow and manage the city forest include:

- Federal forest act (Bundeswaldgesetz);
- Lower Saxony law on forests and landscape regulations (Niedersächsisches Gesetz über den Wald und die Landschaftsordnung);
- Federal Nature Conservation Act (Bundesnaturschutzgesetz);
- Lower Saxony Nature Conservation Act (Niedersächsisches Naturschutzgesetz);
- And other various regulations and dispositions.

### **24/09/2021 Göttingen city**

The next day, at the end of the working session with the Finance Controller of the Göttingen City, the forest exploitation of the communal forest alone is very insufficient for its management. All the activities of the Göttingen city including the communal forest are planned. The visit to





the municipality of Göttingen ended with a visit to the forest to see the various management, research and conservation activities that are carried out there.

### Major lessons learned:

#### Similarities with forest management in Cameroon:

- Clean cutting is prohibited by law;
- It is forbidden to change the vocation of the production forest without authorization;
- The forest should not be exploited beyond the possibility given by the inventories;
- Council don't have sufficient equipment and qualified workers to carry out all the forest management activities and have to sub-contract some to service provider.

#### Specificity of Germany

- The forestry profession is stratified and there is formal training adapted to each job at university or vocational level;
- The main enemies of forest management in Germany are the bark beetle and the deers;
- The German state subsidizes to encourage biodiversity conservation and certification;
- Subcontracted activities are services that forest owners pay to service providers;
- Forest products collected in forests are marketed by the owners (State, Municipality or individuals);
- The management of the communal forest is a budgeted activity in the commune action plan;
- As perception of corruption is concerned, it is forbidden to receive a gift of more than 10 Euro in Germany;
- Forest control is more accentuated on the financial aspects. Although illegal forest activities are rare, any damage in the forest is solved either by exclusion to forest activities or court case while in Cameroon forest control concerns all the aspects from inventory to commercialization;
- Rotation in German production forest is 10 years in Germany while it varies from 25 to 30 years in Cameroon;
- Most of the forests are planted;
- It is forbidden to sell standing trees;
- As a response to climate change and to ensure resilience of ecosystems and sustainability of the forest, diversification of species is promoted in forest regeneration as well as the choice of well adapted species in poor soil conditions;
- Recreation and free leisure of the populations in all forests is guaranteed by the forestry law in Germany;
- Hunting is a forest management activity, in particular that of roe deer and reindeer, which are the main threats to forest regeneration while it is forbidden in production forest in Cameroon.

### Difficulties

The training of forestry experts went well on the whole, some difficulties were encountered, in particular:

- The didactic material and the presentations mainly in German for a training planned in English which made comprehension difficult for learners;
- There was not a forum for sufficient interactions between the trainees to facilitate exchange of experience.
- The organization of trips to reach the new sites sometimes could not allow to easily locate places.



### Elements of improvement

- Make the presentations available to learners in the language planned for the training;
- Organize working session between trainees and organiser to discuss the main issues in forest sector worldwide;
- Make arrangements for the orientation of learners for communication and travel to reach meeting places with resource persons and trainers as well as the routes to follow (maps, communication facilities).

As compared to my main expectations which were to improve my skills in:

- Economic planning, digital data information system, timber data intake, afforestation;
- Management of Communal, council and private forests;
- Nature conservation in commercial forests and protected areas;
- Education and training in forest domain (Forestry schools, protected areas, forestry workers, staff and education Centre).

This training has fulfilled more than my expectations while applying to the programme as technical aspects of forest management are concerned. It has allowed to consolidate the fact that forest management is closely related to the local situation and will go a long way to improve my daily work in my home country.

### 4. Final comment

In general, the Forest Expert program for my training five intensive weeks in Germany was the best possible, because I have visited so many places and met so many professionals who are working in the forests of Germany. It allowed me to understand in a global way how the sector works and where the new lines of work go in the future. My feedback is highly positive, since not only the personal treatment was excellent, but every institute that received us gave the necessary knowledge and they were always willing and predisposed to dispel any doubt I had.

It was very inspiring to be able to see the solid knowledge bases in which the whole forestry sector in Germany is developed and to understand the mental pictures that the Germans have in relation to their forests.

I want to thank Mrs. Sabine Kühling and the German Forest Society (DFV) for the organization of the programme despite the multiple postpones due to the COVID-19 pandemic and who was always supporting us and worried to make our entire stay in Germany perfect. Without a doubt she has achieved it.

Punctually I want also to thank the GIZ-ProFE Cameroon who funded and the Minister of Forestry and wildlife who authorized my participation to this program. I take to Cameroon a lot of experiences and practical knowledge that are doubtless very useful in my country and will definitely go a long way to improve my work experience.

### Additional Documents

|                                |                      |
|--------------------------------|----------------------|
|                                | Grant Holder         |
| Date, 14/11/2021<br>Signature, | Yves Nathan MEKEMBOM |



## Annex 4. 2020 Josef Ambara

## **Learning from the German experience in Sustainable Forest Management: Report on the participation in the Forest Expert Program**

From 29 August to 25 September 2021, I had the privilege of participating in the "Forest Expert Program" in Germany. Cameroon has the second largest forest area in the Congo Basin after the Democratic Republic of Congo. Thus, the issue of sustainable forest management is a major concern for Cameroon. In this context, German technical cooperation through the project Support to the implementation of the rural sector development strategy forest-environment components (2016-2019) and subsequently the Forest-environment project (2020-2022) is supporting Cameroon in the sustainable management of natural resources. The objective of the Forest-environment project is that the environment and forest resources of Cameroon are developed in a sustainable manner by local actors.

The objective of the participation in the Forest Expert Program was to draw inspiration from the German experience in general and communal forest management in order to capitalise on the lessons learned at regional and local levels. The program in its planning allowed us to visit the following regions and institutions in turn:

- Four (04) visited forest states (Lower Saxony, Baden-Württemberg, North Rhine-Westphalia and Hesse);
- Three (03) municipal forests (Göttingen, Remscheid and Esslingen);
- Two (02) national parks (Hainich and Kellerwald-Edersee);
- One (01) private forest (Mr Christian EBERL's forest);
- One (01) private forest (Mr Christian EBERL's forest); One certification body (PEFC);
- Two forestry associations (Baden-Württemberg private owners' association and Remscheid forestry cooperative);
- A forestry training centre (Lower Saxony Forestry Training Centre);

In addition, there was a meeting with the advisor to the Minister of Agriculture of the State of North Rhine-Westphalia.

From the exchanges and observations in the field, several points or axes of interest that could be the subject of in-depth reflection with a view to a capitalisation option were identified.

### **1. FOREST MANAGEMENT IN GERMANY: AN EXCLUSIVE COMPETENCE OF THE STATES UNDER FEDERAL LAW**

The Federal Republic of Germany has 11,400,000 ha of forests spread over 16 states. At the legal level, there is a federal law (Bundeswaldgesetz) which indicates the main guidelines for forest management. However, at the local or operational level, each state that has forests develops forestry legislation according to its own context that does not deviate from the fundamental principles of the federal forestry law. The main advantage of this principle of decentralisation of forest management is that it facilitates the dissemination of a single strategy that integrates the specificities and bio-physical characteristics of each state. Furthermore, at the state level, the

administrative organisation is totally different from that of the forests. In this respect each Lander is divided into forest districts which are also subdivided into subdistricts (Reviers). Thus, Lower Saxony has 24 forest districts and Hessen has 40, to mention only these two states. The advantage of this forestry organisation is that it relieves forestry management of administrative burdens and facilitates the efficient implementation of forestry policy. A true decentralisation of forest management.

## **2. FOREST OWNERSHIP: A FAIR AMOUNT OF FREEDOM OF ACTION COMBINED WITH INCREASED RESPONSIBILITY**

Overall, there are four main types of forest in Germany. The so-called state forests, the so-called community forests (municipal forests, community forests, church forests), the federal forests and the private forests. Although the concept of ownership is not always clear, there are fundamental principles governing forest management in Germany, including the prohibition of clear-cutting and the principle of compliance with the law. However, it has to be said that forest ownership suggests a multi-speed forest management. While management is very rigorous in state-owned forests, it should be noted that it is not without difficulties in private forests. To remedy this, the state provides subsidies to private owners to support them in their forest conservation efforts. Furthermore, the fact that each owner sets the objectives for his or her forest within the existing legislative and regulatory framework allows forests to play a full role at all levels of management.

## **3. MULTIFUNCTIONAL FORESTRY CLOSE TO NATURE: A LEITMOTIV UNANIMOUSLY SUPPORTED AT ALL COSTS**

According to German forestry legislation, the forest must fulfil three main functions in the same area, namely the conservation, recreation and production functions. In practice, these three functions cannot have the same importance in each type of forest. In other words, the spirit is that the forest should be multifunctional regardless of the forest type. In the four states we visited, it was found that in the state and communal forests, for example, the functions in order of importance were: recreation, conservation and finally production. In this order, it is clear that the function that substantially generates income is in third place. In other words, the other two functions that require investment are achieved through external funding. In other words, the states' objectives are to provide and mobilise funding for the recreation and conservation functions that forests should fulfil. At the strategic level, it is with this in mind that states allocate subsidies and implement incentives to encourage and support private owners and municipalities in their conservation efforts.

On the other hand, at a practical level, the option chosen by states to ensure that these three functions are fully fulfilled is natural regeneration. In other words, to let nature itself produce its best. This is what is referred to as close-to-nature forestry. In concrete terms, close-to-nature forestry means leaving the forest without human intervention so that it can replenish itself. In this process, man only intervenes in a formerly forested area when it is impossible for nature to recover. Close-to-nature forestry attempts to reconcile economic and ecological interests in an optimal way. The aim is to produce healthy, heterogeneous forests that are able to withstand any difficulties.

#### **4. FOREST MANAGEMENT: A TEN-YEAR QUESTION AND A POINT OF SYNERGY BETWEEN FORESTRY SCIENCES AND TECHNIQUES AND APPLIED RESEARCH**

As mentioned above, management inventories are carried out in almost all forest states at a frequency of 10 years. Consequently, and notwithstanding the fact that the management plan is not formally indicated as an obligation by law, it goes without saying that it is also drawn up for forests where restrictions impose it for a period of 10 years. The German experience highlights two aspects that deserve attention. Firstly, the duration of the renewal of the management plan. In concrete terms, we cannot say with conviction the fundamental reason for the choice of 10 years. However, and from experience, we can say today that despite the costs, everyone agrees that this 10-year sequence is right. In fact, even if we are unable to give the reasons why 10 years was chosen over another figure, all the foresters have confirmed that it is the ideal sequence. This is because, in practice, it gives a large margin of manoeuvre to adjust and rectify the management prescriptions if it is found that we are deviating from the pre-established objectives.

Secondly, the German experience in management has made us discover that a management plan is not only the evaluation of the wood and wildlife resource, but also the soil and wildlife studies. In fact, management decisions are a pooling of research work in fields related to forestry and the work of all forestry sciences and techniques (Ecology, Biology, Forest Entomology, Dendrology and Dendrometry). Hence the synergy of work that exists between the forestry services of each State and the research centres and/or universities. Thus, forest management in the forest states in Germany is more than a technical process but a real issue/tool for sustainable planning and forest management.

#### **5. COMMUNAL FORESTRY: A PERMANENT AND VOLUNTARY DEFICIT SPENDING UNIT**

Communal forests in Germany are parts of forests that are privately owned by the municipalities that own them. In the German context, community forests are mostly inherited forests, but also acquired by purchase. Far from being development levers in terms of economic spin-offs, communal forests are more useful to the population and the commune for recreation activities (walking, tourism etc.) and preservation of the flora and fauna in their natural state. In general, income from the exploitation of communal forests represents less than 1% of communal income. In other words, communal forests are for most communes much more of an investment than a revenue or income source. In other words, communal forests must fulfil their functions of recreation, conservation and production with the support of other communal funding. Furthermore, as mentioned above, the first two tasks assigned to communal forests are recreation and conservation. These two functions necessarily have a high cost, far greater than the income generated by the sale of wood. To borrow from the jargon of economists, we can say that the communal forest is a unit of deficit expenditure and we can add permanent. In fact, the communal forest causes much more expenditure than it generates financial gains. However, in spite of this, the municipalities with a forest have a forestry service with an average of 10 employees, including foresters, permanent forestry workers and rolling stock. This is therefore a voluntary expenditure unit. It is this willingness that should inspire and lead to change.

On the basis of the foregoing, it is clear that, irrespective of the primary function assigned to a communal forest, it inevitably requires significant mobilisation in terms of human and financial resources. Thus, management activities, including those of exploitation, must necessarily occupy a place of choice in the budgetary planning of forest communities. In this context, it is tempting to say that the management of a communal forest is first and foremost a question of will and determination. It is only after this stage that appropriate solutions can be found to achieve the objectives set.

At the end of this programme, beyond the wealth of knowledge and experience acquired, this activity also enabled us to discover the wealth of tourism in Germany and, above all, the importance of concerns related to the management of natural resources in Germany.

## Annex 5.

### 2021 Ulyana Bashutska





# Report

8. October 2021

## Personal Details

|                 |                       |
|-----------------|-----------------------|
| Family Name     | <b>Bashutska</b>      |
| First Name      | <b>Ulyana</b>         |
| Gender          | femail                |
| Date of Birth   | 20.10.1978            |
| Nationality     | Ukraine               |
| Passport Number | FZ378043              |
| Email Address   | bashutska@nltu.edu.ua |

## 1. Short Summary

Half page

For Webpage

Sum up the main/ most important / formative experience

Research work and exchange of experience with colleagues. Maintaining existing and developing new contacts with colleagues.

The experience and knowledge of the new methods of forest ecosystems ecology, recultivation and restoration on the post-mining landscapes of Germany have been gained. The results of projects on creation of sustainable forest ecosystems on post-mining landscapes for soil and climate protection are analysed. The German approaches and methods for forest recultivation of contaminated landscapes are learned.

It was discussed with experts and the rehabilitation objects were visited in practice. In addition, the illustrative material was obtained for the students (photos and videos). It was discussed with the scientists from the University of Goettingen, from the University for Sustainable Development Eberswalde, from the Institute for the Post-Mining Landscape, with the experts from Lausitzer and Mitteldeutsche Bergbau-Verwaltungsgesellschaft mbH and forest colleagues about the future possibilities of further cooperation in joint research.

Acquainted with current projects of the Federal Ministry of Food and Agriculture of Germany.

The purpose and tasks of the German association of foresters are studied. The direction of Germany's forest policy has been established. Lectures on forest inventory, sustainable forest use, as well as the system of training forestry specialists in Germany were listened to. Visited private forests and got acquainted with the work of the Centre for Biodiversity and Sustainable Land Use. The route was passed by the Heinrich National Park. The ascent to the meteorological tower was made.

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Seite 1 von 13



Get acquainted with Germany, its people and culture. The level of proficiency in German in the specialty has been improved.

### 2. Introductory Chapter

- Who recommended you and why, Which institutions were involved
- What is your position / tasks in your home country
- What were your expectations and objectives
- How transport to Germany worked / was funded

I was recommended by Professor Leonid Kopij (National Forestry University of Ukraine) and by Professor Tobias Cremer (Eberswalde University of Sustainable Development).

I will be a better scientist and teacher. Also it will contribute to solving the problem of reproduction of contaminated lands, conservation of biological and landscape diversity, which will be useful for Ukraine, and will have a positive effect on the University in terms of international cooperation. My research in the field of recultivation on the ecology of the black locust forest ecosystems in the post-industrial landscapes is desirable to continue.

I am Associate Professor, Ecology, Ukrainian National Forestry University (UNFU), Department of Ecology. My tasks in the home country are Teaching and Research.

My expectations and objectives are to recreate the vegetation of the post-mine areas to protect the soil and climate.

I arrived in Germany by plane. I paid for the transport with my own money.

### Time Schedule

- Please update the information on your schedule

| Date     | Institution                                          | Programme                                       |
|----------|------------------------------------------------------|-------------------------------------------------|
| 30.08.21 | Göttingen Universität, forstliche Fakultät           | Vorstellungen und Präsentationen von Teilnehmer |
| 31.08.21 | Göttingen Universität, forstliche Fakultät           | Forest Experts Seminar                          |
| 01.09.21 | Göttingen Universität, forstliche Fakultät           | Forest Experts Seminar                          |
| 02.09.21 | Göttingen Universität, forstliche Fakultät           | Forest Experts Seminar                          |
| 03.09.21 | Göttingen Universität, forstliche Fakultät           | Field Trip Nationalpark Hainich Klimaturm       |
| 04.09.21 | -                                                    | Weekend                                         |
| 05.09.21 | -                                                    | Weekend                                         |
| 06.09.21 | Forschungsinstitut für Bergbaufolgelandschaften e.V. | Introduction to the Institutes work             |
| 07.09.21 | Forschungsinstitut für Bergbaufolgelandschaften e.V. | BIOPLAT-EU_Workshops_2021                       |



|          |                                                      |                                                                                                                                                                      |
|----------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08.09.21 | Forschungsinstitut für Bergbaufolgelandschaften e.V. | BIOPLAT-EU_Workshops_2021/Besuch von Robinienplantagen auf dem neu gewonnenen Gelände                                                                                |
| 09.09.21 | Forschungsinstitut für Bergbaufolgelandschaften e.V. | Bekannntschaft mit den Veröffentlichungen                                                                                                                            |
| 10.09.21 | Forschungsinstitut für Bergbaufolgelandschaften e.V. | Dendrochronologie eines Kiefernbestandes mit der Beimischung von der Roteiche                                                                                        |
| 11.09.21 | -                                                    | Weekend                                                                                                                                                              |
| 12.09.21 | -                                                    | Weekend                                                                                                                                                              |
| 13.09.21 | Staatsbetrieb Sachsenforst Forstbezirk Leipzig       | Innendienst/Mein Vortrag/Jaegerpruefung                                                                                                                              |
| 14.09.21 | Staatsbetrieb Sachsenforst Forstbezirk Leipzig       | Kippenstandorte im Betreuungsrevier Neuseeland                                                                                                                       |
| 15.09.21 | Staatsbetrieb Sachsenforst Forstbezirk Leipzig       | MIBRAG Tagebauinformation/Exkursion im Wald von Oberholz (Grüner Ring Leipzig)                                                                                       |
| 16.09.21 | Staatsbetrieb Sachsenforst Forstbezirk Leipzig       | Controllingberatung OHH/Mein Vortrag/Verabschiedung W. Kühns                                                                                                         |
| 17.09.21 | Staatsbetrieb Sachsenforst Forstbezirk Leipzig       | Abnahme Kompensationsmassnahme/FFH-Vorprüfung                                                                                                                        |
| 18.09.21 | -                                                    | Weekend                                                                                                                                                              |
| 19.09.21 | -                                                    | Weekend                                                                                                                                                              |
| 20.09.21 | Thünen Institut für Waldökosysteme                   | Bodenschutz und Waldzustand                                                                                                                                          |
| 21.09.21 | Thünen Institut für Waldökosysteme                   | Waldökologie und Wirkung des Klimawandels                                                                                                                            |
| 22.09.21 | Hochschule für nachhaltige Entwicklung Eberswalde    | Agroforestry in Germany – Experiences from a 4 year model project in Brandenburg and possibilities to transfer findings to post-industrial landscapes in the Ukraine |
| 23.09.21 | Landeskompetenzzentrum Forst Eberswalde              | Besuch von Versuchsflächen                                                                                                                                           |
| 24.09.21 | Hochschule für nachhaltige Entwicklung Eberswalde    | Angewandter Waldbau                                                                                                                                                  |

### 3. Report

- Please write a minimum of five A4 page report.

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- Please ensure to cover the following items: what were your activities at every Host Institutions; what was the significance of your visit to the Host Institutions and benefits for the Home Institution
- has there been any future cooperation arrangements put in place or plans made
- please provide feedback regarding your stay and activities weaknesses and strength of the programm
- room for improvement.
- the report should have a chronological order and include all the names and positions of people you met.
- Comparison of knowledge gained and the expectations
- Benefit for future work

### Nachhaltige Waldökosysteme von postindustriellen Standorten für Boden- und Klimaschutz

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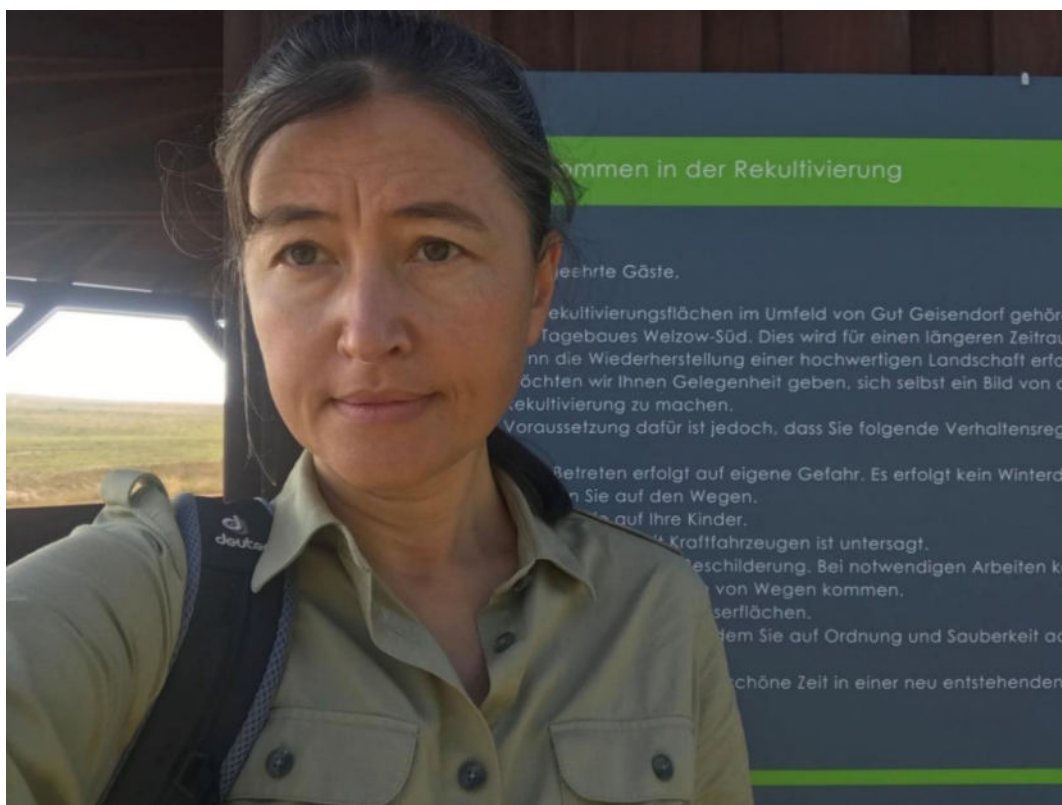








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by decision of the  
German Bundestag





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Es gab angenehme Eindrücke von der Gastfreundschaft der gastgebenden Institutionen und der fleißigen Arbeit der Organisatoren. Die Aufgabe besteht darin, die erworbenen Kenntnisse und praktischen Fähigkeiten in den pädagogischen und wissenschaftlichen Arbeiten in der Ukraine anzuwenden.

#### 4. Final comment

The result is the experience with the new methods of the ecology of forest ecosystems, the recultivation and renaturation of the post-mining landscape. There were pleasant impressions of the hospitality of the host institutions and the work of the organizers. I recommend this program to the experts and thank the Federal Ministry of Food and Agriculture of Germany and the German Forest Association.

#### Additional Documents

- documentation on your activities to share your activities
- this might be a Power Point presentation, a report in Blog style etc.





## Forest Expert Program

- Abstract / Article: Summary of your report for the Forest Experts Webpage and the Pro Wald Magazine
- We are happy about every picture we receive!

|                                                   | Grant Holder             |
|---------------------------------------------------|--------------------------|
| Date,<br>Signature,<br><br>Eberswalde, 08.10.2021 | <br><br>Ulyana Bashutska |

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by decision of the  
German Bundestag

## Annex 6.

### 2022 Juliana Degenhardt Goldbach



# Report

2. September 2022

## Personal Details

|                 |                                                                                  |
|-----------------|----------------------------------------------------------------------------------|
| Family Name     | <b>Degenhardt-Goldbach</b>                                                       |
| First Name      | <b>Juliana</b>                                                                   |
| Gender          | Female                                                                           |
| Date of Birth   | 09/12/1974                                                                       |
| Nationality     | Brazilian                                                                        |
| Passport Number | FW273737                                                                         |
| Email Address   | <a href="mailto:juliana.degenhardt@embrapa.br">juliana.degenhardt@embrapa.br</a> |

## 1. Short Summary

In September I attended the "Forest Expert Program", organized by the German Forest Society and founded by the Federal Ministry of Food and Agriculture (BMEL). The Program aimed to increase the professional exchange of experience related to forest management among forestry specialists and, thus, to train and transfer knowledge in the field of sustainable forest management around the world.

Nine participants were selected from Indonesia, Vietnam, Laos Georgia, Ghana, Liberia, and Brazil. We spent the first week at the Thünen Institut in Eberswalde, where we learned about the history of the institute and had an overview of forest management in Germany. In the same week, we also visited the German Forestry Council in Berlin, where we learned about the Federation of German Forest Owner Associations and the International Sustainable Forest Management Program of the German Federal Ministry of Food and Agriculture (BMEL).

In the second week, the participants were divided according to their specialties. Initially, I visited the Thünen Institut in Ahrensburg, where I had the opportunity to learn about some of the projects carried out at the institute, including genetic analysis of wood provenance and the use of molecular markers in the German forest inventory, as well as the genetic breeding programs to evaluate provenances of different species related to climate change. In the same week, I visited the DLG Waldtage.

In the third week, I visited the Vogt Nurserie in Pinneberg. I also attended the congress „Beiträge von Forstpflanzenzüchtung und Forstgenetik für den Wald von Morgen“.

Afterward, I traveled to Freising, where I visited the Bavarian State Institute for forests and forestry. On that occasion, I visited one of the 19 weather stations in Bavaria. I also talked to researchers in the areas of climate change modeling, phytopathology and modeling.

In the last week of the program, I visited the AWG Institute in Teisendorf. Initially, I learned about the use of molecular markers and genetic sequencing to determine genetic diversity and analysis of provenances of native and exotic species, in addition to the search for specific markers for traits linked to tolerance to abiotic stresses. I also was introduced to the strategies of evaluating



the provenances of native and exotic species to deal with climate change, due to the losses already observed in forest species throughout Germany. I also had the opportunity to visit the seed orchards and the performance tests of different provenances of native species, as well as the performance of alternative species.

The program gave me an overview of what strategies German research institutions are using to deal with the observed problems in forests caused by climate change. It also allowed me to observe the differences between the programs in Brazil and Germany, as well as detect opportunities for new research and for cooperation between institutions in the two countries.

I would like to thank the opportunity of the program, especially Dr. Sabine Kühling, and the hospitality of everyone involved in all institutions I had the opportunity to visit.

## 2. Introductory Chapter

- Who recommended you and why, Which institutions were involved

The Forest Expert Program was recommended by Dr. Erich Schaitza, the Director of Embrapa Forestry, in Brazil. In the last two years, Embrapa Forestry is strengthening innovation in the research program and trying to bring the laboratory researchers close to the forest industries, in order to foster new innovative businesses in forestry. Embrapa is a government company and part of its strategy for national forest development is fostering new innovative companies by offering them work of multidisciplinary teams in matching projects as a means of diminishing technological risk. In this sense, the program could provide an overview of how Germany forest sector is structured and how the research works to solve the main problems of the forest sector. GIZ also recommended the Program as an excellent opportunity to further support the partnership between Embrapa and GIZ in Brazil.

- What is your position / tasks in your home country

I work at Embrapa since 2005 as a researcher. I graduated in Agronomy, studied my Masters at Plant Genetic Resources and my PhD in Horticultural Sciences.

At Embrapa, I am working with plant propagation, as tools for the genetic breeding programs. I work mainly with tissue culture techniques and molecular biology of forest species.

- What were you expectations and objectives

I aimed to have an overview of how German institutions are dealing with climate change, with regard to species choice and performance evaluations of planted species and research strategies to deal with these problems.

- How transport to Germany worked/was funded

I travel to Germany on 08.26.22 and back to Brazil on 09.27.22. I paid for the tickets myself, and all the costs in Germany were paid by the Program.



### Time Schedule

| Date    | Institution                                                                       | Programm                                                                                                                                                                                                     |
|---------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27-ago. |                                                                                   | Arrival                                                                                                                                                                                                      |
| 28-ago. |                                                                                   | Weekend                                                                                                                                                                                                      |
| 29-ago. | Forest Experts Seminar at Eberswalde University of Sustainable Development (HNEE) | Introduction by German Forest Society (Sabine Kühling, Malte Campsheide); Welcome and Introduction to Seminar venue at HNEE, Presentation Forestry in Germany (Peter Spathelf),                              |
| 30-ago. | Seminar at HNEE                                                                   | Field trip to local Forest                                                                                                                                                                                   |
| 31-ago. | Seminar at HNEE                                                                   | Presentations of trainees, City tour Eberswalde                                                                                                                                                              |
| 1-set.  | Seminar at Thünen Institute                                                       | Introduction to the Work of the Insitute, Individual Program discussion                                                                                                                                      |
| 2-set.  | German Forestry Council, Berlin                                                   | Introduction to German Forestry Council, Federation of German Forest Owner Associations, International Sustainable Forest Management Programme of the German Federal Ministry of Food and Agriculture (BMEL) |
| 3-set.  |                                                                                   | Weekend                                                                                                                                                                                                      |
| 4-set.  |                                                                                   | Weekend                                                                                                                                                                                                      |
| 5-set.  | Forstbaumschule Vogt                                                              |                                                                                                                                                                                                              |
| 6-set.  | Thünen Institute for Forest Genetics (Bernd Degen); Großhansdorf                  | Introduction to the Work of the Institute                                                                                                                                                                    |
| 7-set.  | Thünen Institute for Forest Genetics (Bernd Degen)                                | Introduction to the Work of the Institute                                                                                                                                                                    |
| 8-set.  | DLG Waldtage                                                                      | Meeting with Alain Paul (Association of German Forest Nurseries)                                                                                                                                             |
| 9-set.  | DLG Waldtage                                                                      | Guided tour throuhg the Exhibition area                                                                                                                                                                      |





## Forest Expert Program

|         |                                                                    |                                                    |
|---------|--------------------------------------------------------------------|----------------------------------------------------|
| 10-set. |                                                                    |                                                    |
| 11-set. |                                                                    |                                                    |
| 12-set. | Forest Genetics/Forest Plant Breeding conference                   | see seperate program                               |
| 13-set. | Forest Genetics/Forest Plant Breeding conference                   | see seperate program                               |
| 14-set. | Forest Genetics/Forest Plant Breeding conference                   | see seperate program                               |
| 15-set. |                                                                    | travelling day                                     |
| 16-set. | Bavarian State Institute for Forests and Forestry (Kurt Amereller) | Introduction to the Work of the Insitute           |
| 17-set. |                                                                    |                                                    |
| 18-set. |                                                                    |                                                    |
| 19-set. | Bavarian office for Forest Genetics (AWG) - Dr. Muhidin Seho       | Hospitation week at the the Forest Genetics office |
| 20-set. | AWG                                                                | Hospitation week at the the Forest Genetics office |
| 21-set. | AWG                                                                | Hospitation week at the the Forest Genetics office |
| 22-set. | AWG                                                                | Hospitation week at the the Forest Genetics office |
| 23-set. | AWG                                                                | Hospitation week at the the Forest Genetics office |
| 24-set. |                                                                    |                                                    |
| 25-set. |                                                                    |                                                    |

### 3. Report

- Please ensure to cover the following items: what were your activities at every Host Institution; what was the significance of your visit to the Host Institutions and what benefits for the Home Institution
- has there been any future cooperation arrangements put in place or plans made
- please provide feedback regarding your stay and activities weaknesses and strength of the programm
- room for improvement.
- Comparison of knowledge gained and the expectations
- Benefit for future work

In September I attended the "Forest Expert Program", organized by the German Forest Society and founded by the Federal Ministry of Food and Agriculture (BMEL). The Program aimed to increase the professional exchange of experience related to forest management among forestry



specialists and, thus, to train and transfer knowledge in the field of sustainable forest management around the world.

We were welcomed at the first weekend by Dr. Sabine Kühling, head of the program and MSc. Malte Campsheide, director of the "Deutscher Forstverein". Nine participants were selected from Indonesia, Vietnam, Laos Georgia, Ghana, Liberia, and Brazil.

We spent the first day at the University of Sustainable Development (HNEE) in Eberswalde, when Prof. Dr. Peter Spathelf held a presentation about the history of the University and of the Thünen Institute in Eberswalde. In the sequence, he talked about the Forestry in Germany, when he presented the main species, and talked about the management systems and about the importance of such a system for the sustainability of the forest system and production. The restoration of forests in Germany was initiated at the 1830 since at that time 70-80% of the forests were degraded. Nowadays, 70-80% of the forests come from natural regeneration and about 30% of Germany is covered by forests. On the same day, Dr. Malte Campsheide presented the Deutscher Forstverein and talked about the forest sector in Germany.

On the second day, we had a field trip with Prof. Dr. Peter Spathelf to observe different management systems in the forest in loco. On the same day, we visited a research area in Britz, where Dr. Tanja Sanders presented her research on forest ecology and the effects of climate change. She showed us a station for water study, where several parameters of water uptake and storage are measured.

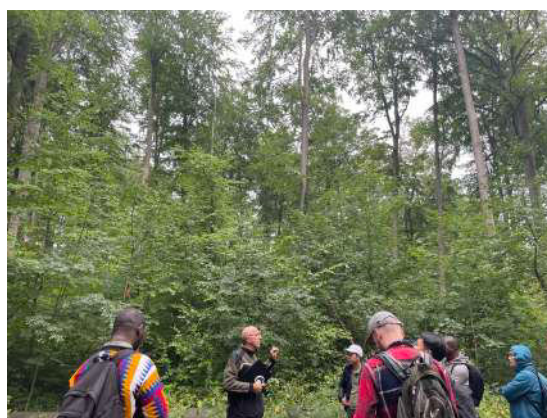


Figure 1: From the top left- right to the bottom left - right. A. Our group at Thünen Institute, in Eberswalde; B. Field trip with Dr. Spathelf; C. Field trip with Dr. Sanders; D. Dr. Dunger's presentation; E. Trainees presentation

On the third day, all the trainees present their work in their home countries and in the afternoon we made a city tour in Eberswalde.



On Thursday Dr. Karsten Dunger presented the Thünen Institute and also talked about his work regarding computer modeling to evaluate and monitor the climate change impacts on the forests in Germany. He also presented the German National Inventory that is on the course. Dr. Dunger explained how the inventory is carried out and the sampling design. The German forest area covers 11.419.124 ha and increased by 0.4% since the last inventory, in 2012. 52% are public forests and 48% are private. More than 2 million are from private forest owners.

At 09.02 we traveled to Berlin and visited the DFWR. First, we had a presentation from Dr. Eva von Schönebeck, about the German Forestry Council. In the sequence, Dr. Manfred Fischer presented the forest management program of the German Federal Ministry of Food and Agriculture (BMEL). Dr. Fischer presented bilateral projects between Germany and several countries in Europe, South America, Africa, and Asia. Seventeen projects have already been covered in different topics. In the sequence, Dr. Jessica Rebola Lichtenberg, project manager from Federal Office for Agriculture and Food presented the Research for international and sustainable forest management and presented the funding targets of the program, including the Forest Expert Program. Currently, they have projects in cooperation in Africa, South America, Europe, and Asia. The last talk was held by Kurt Hauschild, from the Federation of German Forest Owner Association (AGDW), who presented the works of the association. He also presented the forest property structure in Germany and talked about the importance of forests in climate change.



Figure 2: From left-right: A. Dr. Eva von Schönebeck's presentation; B. Our group at the DFVR.

We spend the weekend in Berlin and on Sunday I traveled to Hamburg. In the second week, the participants were divided according to their specialties.

On Monday 09.05 I visited the Vogt Nursery in Pinneberg. I was received by Lisa Vogt, at the train station. First I was introduced to the work at the Nursery by her and Armin Vogt, one of the owners. This is one of the most important nurseries in Germany and has 60 ha. It was founded in 1882 by the Armin's grandfather. The nursery is belongs to the Vogt family since the beginning and nowadays is Armin and his brother are the CEO, and their sons and daughters also work on it. The climate and soil conditions of the region are very appropriate for a nursery, since the soil is arenous, with high humidity, and mild winters and summers. The seeds of 20 species are bought from all the regions in Germany and are cultivated until the plants have 2-3 years and are able to go to the field. The seeds must be collected from at least 20 - 30 trees in every area and the plants must be sold to the same region where the seeds came from. The nursery produces about 5 - 6 million trees per year. The seedlings can be harvested and stored during the winter to be sold in the further months. Afterward, we visited the field and the storage structure of the nursery.





Figure 3: From left-right: Armin and Lisa Vogt; B. Seedlings at the Vogt Nursery

On Tuesday I traveled to Ahrensburg, to visit the Thünen Institute at Grosshansdorf. In the institute, I was welcomed by Dr. Bernd Degen, who introduced me to the program for the next three days. Firstly I talked to Dr. Birte, who is currently working on DNA extraction of 6 species (oak sessile and pedunculated, *Pinus sylvestris*, *Picea abies*, Douglas fir, and beech) to characterize the sampled trees using molecular markers (SSRs) for the German Forest Inventory. From two species, 1000 sites will be sampled, and from each site, leaves from 5 trees are being collected. For the other 4 species, 200 or 300 sites will be sampled. In the current project only the DNA extraction will take place and the samples will be stored for the next step, which needs another project.

Next, I visited the molecular biology laboratory for wood provenance identification, where Hilke Schroeder introduced me to his work. At the Thünen Institute in Ahrensburg analyses of provenance identification are carried out on trees purchased from all over the world. The work is done after extracting DNA directly from the woods, and further, the identity is proven through molecular markers.

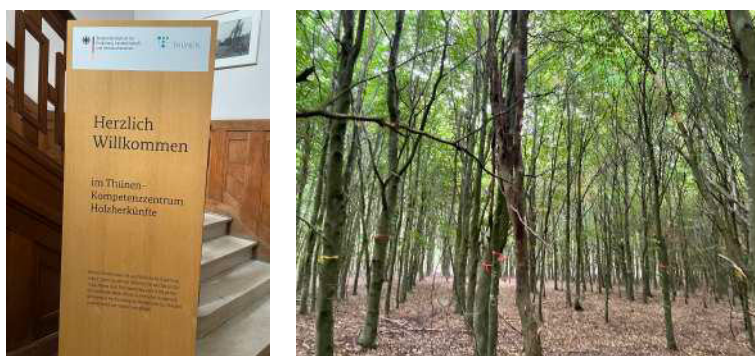


Figure 4: From left-right: A. Thünen Institute in Grosshansdorf; B. Field trip



The third meeting was with Dr. Katharina Liepe, who works with genetic breeding and species adaptation to climate change. Germany has a network of field experiments with more than 5 species, and many provenances and offspring from different origins from Germany and other European countries are tested. The tests aim to observe the adaptation of trees to the regions where the tests are implemented, and at the moment, select the trees most adapted to climate change. I had the opportunity to visit one of these tests with Dr. Mirko Liesebach. In that test, oak provenances and offsprings (including US provenances as well) dating from the 1990s are tested. Among other characteristics, differences among the provenances of the trees were evident. At the same opportunity, I visited their breeding program nursery, where genotypes selected for tolerance to biotic and abiotic stresses are propagated vegetatively.

The next day I joined a field trip with Dr. Niels Müller and Stephan. We visited a beech trial, where plant death symptoms associated with climate change are being recorded. The plants are showing early chlorosis, which is probably not linked to the arrival of autumn, but to drought since the last summers were unusually dry and hot. In this opportunity, we made an evaluation of the plants in relation to the color of the leaves, so that their relationship with the provenances of the trees can be evaluated later.

On Thursday of this second week, I traveled with Alain Paul, director of the German Nurseries Association to Paderborn, to visit the DLG Forestry Fair in Lichtenau. During the trip, we discussed the Association and also about the forestry sector in Germany in general. On this day I also had the opportunity to help to set up the nurseries sector of the fair and to talk to several nurseries owners. On the second day of the fair, I visited it together with my colleagues of the Forest Expert Program. We had a guided tour and visited the drones, machines and nurseries sectors.



Figure 5: From the top left- right to the bottom left - right. A. Entrance ticket to the fair; B. Trees at the nursery section of the fair; C. Climate change section of the fair; D. Our group at the fair; E. Wood species; F. Bricks

In the third week of the program I returned to Ahrensburg, where I attended the “7. Tagung der Sektion Forstgenetik/Forstpflanzenzüchtung - Beiträge von Forstpflanzenzüchtung und Forstgenetik für den Wald von Morgen” from Monday to Wednesday. On the second day of the con-





gress I talked to the group of Dr. Mattias Fladung, who introduced me to their researches regarding the use of dsRNA molecules for direct application on insects or fungi to control pests and diseases. I was introduced to Dr. Linus Hohenwarter from RLP Agrosience, who also works on the same subject. On Thursday morning, I returned to the iThünen institute to speak with Dr. Tobias Brüggemann regarding his research on CRISPR technology to validate gene function in poplar trees, in order to isolate genes associated with tolerance to climate change, mainly drought and heat. On the same day I traveled to Munich and from there to Freising.

On Friday I visited the Bayerische Landesanstalt für Wald und Forstwirtschaft (LWF), where I was welcomed by the vice president, Mr. Kurt Amereller, who introduced me to the institute and the main lines of research related to climate change. I then visited the plant pathology laboratory, where I was introduced to the ongoing research that assesses the effect of climate change on a fungus disease in conifer populations. The researchers are observing that the disease is spreading with rising temperatures and drought seasons in Bavaria. Afterward, I was introduced to the works with modeling and simulations of forest species responses to climate change. The simulations aim to establish the dynamics of planting the species as a function of climate change in each area and specific microclimate in Bavaria. After lunch, we visited the Bavarian Forest Ecosystem Monitoring Station in Freising, with Kurt Amereller and Hans-Peter Dietrich. This is one of 19 stations in Bavaria.



Figure 6: From left- right: A. LWF; B. Field trip with Amareller and Dietrich; C. Bavarian Forest Ecosystem Monitoring Station in Freising.

In the fourth week of the program, I visited the AWG in Teisendorf. On the first day, I was welcomed by Dr. Muhidin Seho. Initially, we talked with Dr. Barbara Fussi about the use of molecular markers and genetic sequencing to determine genetic diversity and analysis of provenances of native and exotic species. Her group is also working on the search for specific markers for traits linked to tolerance to abiotic stresses. Dr. Seho introduced me to strategies for evaluating the provenances of native and exotic species as strategies to deal with climate change, due to the losses already observed in forest species throughout Germany. At AWG I had the opportunity to visit the seed and molecular biology laboratories. I also visited the seed orchards and the performance tests of different provenances of native species, as well as the performance of alternative species in the field.

The Brazilian forest sector is mainly based on planted forests, with high productivity, and monocultures of exotic species. Despite being very different from the German management for production and the different species, during the course I visualized many areas in which the two countries could collaborate, which could be interesting for both countries. Brazil has one of the greatest biodiversity in the world, which means an immense opportunity from the point of view of research in the face of climate change regarding species adaptability and selection. At Embrapa, for example, we have, as well as in Germany, projects that study drought-tolerant species as a way of developing genetic strategies to mitigate the effects of the climate. Our genetic breeding programs also aim to select species or plants that are more tolerant to abiotic stresses.



ses. In addition to focusing on production, projects aiming at forests conservation and recovering degraded areas could also be developed together, since Germany's concern with the conservation of natural resources and the environment is evident. We also have several projects in progress in this area, and we have important international collaborations, but in the institutions I visited, there are no joint projects in progress, which could be of interest to both countries. It would be very interesting to make partnerships thinking about solving problems in a globalized way.



Figure 7. From left- right: A and B. Field trip to AWG research area; C. Seed orchard of AWG; D. Field trip with Dr. Seho.

#### 4. Final comment

I would like to thank the opportunity to participate in the Forest Expert Program, organized by the German Forest Society, especially in the name of Dr. Sabine Kühling. I would also like to thank the Federal Ministry of Food and Agriculture (BMEL) for supporting this program.

I would additionally like to thank everyone involved in all institutions for the time spent with me, for the knowledge shared during the visits, and for the kind receptivity.

This program was a unique and wonderful experience, which in addition to the learning it provided, made me open my mind to several new possibilities within my own work.

Colombo, 31 Oktober, 2022.

## Annex 7. 2022 Ernest Obeng Adu



# Report

2. August 2025

## Personal Details

|                 |                            |
|-----------------|----------------------------|
| Family Name     | <b>Adu</b>                 |
| First Name      | <b>Ernest Obeng</b>        |
| Gender          | Male                       |
| Date of Birth   | 30 <sup>th</sup> May, 1982 |
| Nationality     | Ghanaian                   |
| Passport Number | G2090967                   |
| Email Address   | ernest.obeng@giz.de        |

## 1. Short Summary

I would say the entire program was an educative and informative experience. However, to sum up my main/formative experience, I will begin with the different types of forest ownership in Germany (i.e., Federal, State, Community and Private). Having all these types of ownership under the forest laws for control, creates the foundation and the best environment for all sustainable measures like inventory, production, protection, and recreation needed to be implemented. This is very interesting for me because in Ghana, apart from the forest reserves and national parks all other areas are not controlled making them vulnerable for unsustainable practices. Usually, we try to deal with it through community forest management which also has numerous challenges. The lesson here is law creation, enforcement and control are crucial for sustainable forest management.

Furthermore, my experience with the fire monitoring station was very interesting. I have experience fire monitoring systems but not at the scale of what I saw. Wildfire management is very crucial for forest protection and sustainable forest managements as whole. All fires start small, early detection of the fire is very important for fire suppression and to have a system to detection fire in real time for the entire landscape is very helpful for firefighting. Such a system could be a game changer for the Transition and the Savanah regions of Ghana which are devastated by annual Wildfires destroying biodiversity and livelihoods.

Another interesting experience among the many I had during the program is the forest compensation and ecosystem payment systems, where companies are made to compensate for the environment damage they cause with their activities. I visited so many of such restoration sites, but this helps to maintain at minimum the forest size and put value on standing forest which is missing sometimes in community forest managements approaches in Ghana. Companies in Ghana pay nothing when they convert forest and so it was very exciting to see a system that do not only make such companies responsible but also helping to put value on standing forest which missing in our forest management strategies.





### 2. Introductory Chapter

I was recommended by my Project Team Leader to participate in the Program.

I am a Ghanaian and currently working as a Senior Technical Advisor in the “Forest Landscape Restoration through a sustainable wood energy value chain” project in the Transition and Northern part of Ghana which aims at restoring degraded forest landscapes. As a Technical Advisor on the FLR project, my responsibilities include operational planning and implementation, engagement of communities, supporting community members to reforest and rehabilitate degraded lands, facilitation of stakeholder engagements for implementation and improve energy use efficiency among others through a sustainable wood energy value chain as well as monitoring of project implementation.

My expectation for taking part in the program was to broaden my understanding in sustainable forest management and different techniques like forest inventory, forest protection and the development of forest management plans which combine different forest function like production, protection, and recreation.

My transportation to Germany was funded by GIZ Ghana.

### Time Schedule

- Please update the information on your schedule

| Date   | Institution                                                                       | Programm                                                                                                                                                                                                     |
|--------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28-Aug |                                                                                   | Arrival/Weekend                                                                                                                                                                                              |
| 29-Aug | Forest Experts Seminar at Eberswalde University of Sustainable Development (HNEE) | Welcome and Introduction to Seminar venue at HNEE, Presentation Forestry in Germany (Peter Spathelf)<br>Introduction by German Forest Society (Sabine Kühling, Malte Campsheide);                            |
| 30-Aug |                                                                                   | Field trip to local Forest.                                                                                                                                                                                  |
| 30-Aug | Seminar at HNEE                                                                   | Forest Ecology and the effect on Climate Change, Visit a research area in Britz (Tanja Sanders)                                                                                                              |
| 31-Aug | Seminar at HNEE                                                                   | Presentations of trainees, City tour Eberswalde                                                                                                                                                              |
| 1-Sep  | Seminar at Thünen Institute                                                       | Introduction to the Work of the Institute and the National Forestry Inventory (NFI)                                                                                                                          |
| 2-Sep  | German Forestry Council, Berlin                                                   | Introduction to German Forestry Council, Federation of German Forest Owner Associations, International Sustainable Forest Management Programme of the German Federal Ministry of Food and Agriculture (BMEL) |
| 3-Sep  |                                                                                   | Weekend                                                                                                                                                                                                      |
| 4-Sep  |                                                                                   | Weekend                                                                                                                                                                                                      |





|        |                                                                                         |                                                                                                |
|--------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 5-Sep  | Thünen Institute (Sebastian Schnell)                                                    | Practical Forest Inventory                                                                     |
| 6-Sep  | Ministry of Agriculture and Environment Mecklenburg-Western Pomerania (Ulf Tielking)    | Visit the Forest Sport Games (Waldsportspiele) in Neustrelitz                                  |
|        | Forest Fire Control Center Mirow (Clemens Gomlich and Beese Hubert)                     | Forest fire control center                                                                     |
| 7-Sep  | Forstamt Kaliß (Robert Radtke)                                                          | Lübtheen burnt areas and THOR project                                                          |
| 8-Sep  | Forstamt Kaliß (Robert Radtke)                                                          | Lübtheen burnt areas and THOR project                                                          |
| 9-Sep  | MELA (Sabine Kühling)                                                                   | Visit of trade exhibition for agriculture and food, fishery, forestry hunting and horticulture |
| 10-Sep |                                                                                         | Weekend                                                                                        |
| 11-Sep |                                                                                         | Weekend                                                                                        |
| 12-Sep | State Forest of Mecklenburg-Western Pomerania (Nina and Manfred)                        | Visit the central administration                                                               |
|        | Forstamt Rothemühl (Jan Meyer)                                                          | Visit the Forest Office                                                                        |
| 13-Sep | Forstamt Rothemühl (Jan Meyer)                                                          | Visit the Forest Office                                                                        |
|        | Kompetenzzentrum für forstliche Nebenprodukte, Jatznick (Gunther Baumung)               | Visit the Forest Seed Kiln                                                                     |
| 14-Sep | Forest District Schlemmin (Katja Lindenkreuz)                                           | Practical Forest Inventory Control                                                             |
| 15-Sep | Forest District Schlemmin (Marten Seidel, Mathias Regenstein)                           | Initial reforestation morning theory, afternoon practical examples.                            |
| 16-Sep | Forest District Jasnitz (Sophie Gennermann)                                             | Structure and work areas of a forest district                                                  |
| 17-Sep |                                                                                         | Weekend                                                                                        |
| 18-Sep |                                                                                         | Weekend                                                                                        |
| 19-Sep | Forest District Jasnitz (Sophie Gennermann)                                             | Visit of eco-accounting areas                                                                  |
| 20-Sep | State Forest Mecklenburg-Vorpommern / Forest Service and Energy GmbH (Bettina Thormann) | Practical Forest Management Planning, working areas of the Forest Service and Energy GmbH      |
| 21-Sep | State Forest Mecklenburg-Vorpommern / Forest Service and Energy GmbH (Bettina Thormann) | Practical Forest Management Planning, working areas of the Forest Service and Energy GmbH      |



|        |                                                                                         |                                                                                           |
|--------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 22-Sep | State Forest Mecklenburg-Vorpommern / Forest Service and Energy GmbH (Bettina Thormann) | Practical Forest Management Planning, working areas of the Forest Service and Energy GmbH |
| 23-Sep | State Forest Mecklenburg-Vorpommern / Forest Service and Energy GmbH (Bettina Thormann) | Bioenergy working areas of the Forest Service and Energy GmbH                             |
|        | Forstbaumschule, Gustrow (Mr. Boretzky)                                                 | Visit to a Forest Nursery                                                                 |
| 24-Sep |                                                                                         | Weekend                                                                                   |
| 25-Sep |                                                                                         | Departure                                                                                 |

### 3. Report

#### 1. Eberswalde University of Sustainable Development (HNEE)

- An introductory seminar was organized at Eberswalde University of Sustainable Development (HNEE) for all program participants to the program and to the forestry sector in Germany as a whole. During the seminar participants were introduced to both German forest society and Eberswalde University of Sustainable Development (HNEE). We were also given their activities and challenges. We were also introduced to the history and the practice of sustainable forest management in Germany which covered topics like, species, close to nature management, effect of high deer population in natural regeneration, hunting, silvicultural practices, types of forest ownership, forest laws, etc. Participants were also given the opportunity to give presentations about their



Participants at a local forest in Eberswalde during the opening seminar



Participants at the research station at Britz

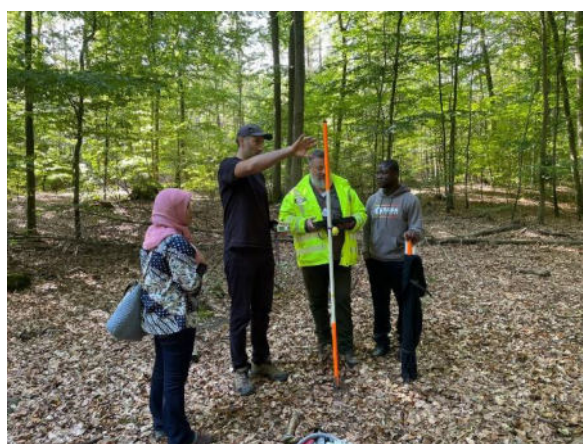
Countries, educational and professional backgrounds, and current job. Additionally, there were two field trips. First to a local forest close to the institutes to have a practical observation of the management practices learnt during the seminar and secondly to a research area in Britz to observe research activities on Forest Ecology and the effect on Climate Change on some forest species. Lastly, we had a City to familiarize ourselves



with the history and some historical sites of Eberswalde. This very significant for the participants because it provided over of the forest sector in Germany and what should be expected for the rest of the program.

### 2. Thünen Institute

- At the Thünen Institute, we had 2 sections, the first was an introductory section about the history and the activities of the institute particularly on the coordination of National Forestry Inventory (NFI). Specifically, on the NFI we were taken through the entire process of how the NFI is organized and carried out, from planning, training, field data collection, data cleaning and control, data analysis and the publication of the results. The second section was the practical aspect of data collection on the field. Here one data collection point was identified close to the institute where we first identified data collection point using the metal detector after which data such as DBH, Species, Heights, etc. and how to collect leaf samples for genetic diversity analysis were collected. The activities carried out at the Thünen Institute was quite significance since its provide a clear understanding of what forest inventory entail which is very critical for sustainable forest management.



Participants going through practical forest inventory at Thunen Institute

### 3. German Forestry Council

- At the German Forestry Council in Berlin participants were introduced to the activities of German Forestry Council, Federation of German Forest Owner Associations and German Federal Ministry of Food and Agriculture (BMEL). The meeting was very important to through more light of how key stakeholders play their role in the German forestry sector and how it compares to our home countries.



Participants during seminar at the German forest council





### 4. Ministry of Agriculture and Environment Mecklenburg-Western Pomerania

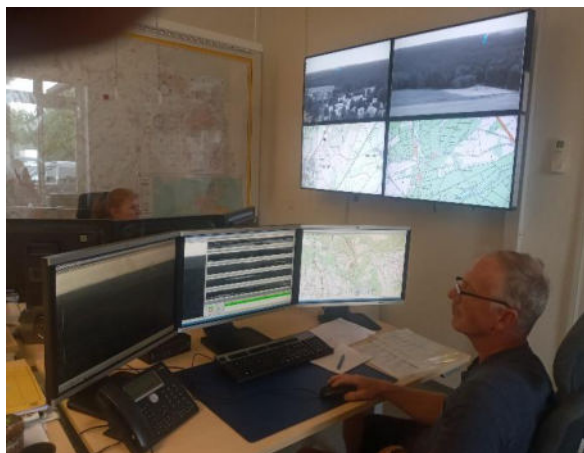
- Here I observed the Forest Sport Games (Waldsportspiele) in Neustrelitz, the ministry organized these games with school children to with the aim to help the children bond with the forest to cultivate the habit of becoming good stewards of the forest in the future. Seven groups of students went through seven different games. Award were given to the groups for participation and for the groups with the highest scores in the various games. Very interesting to appreciate how this forest games can actually develop so much interest in forest protection in the young ones. Something that can be emulated in my home country.



Students at the forest games

### 5. Forest Fire Control Center Mirow

- At the Mirow fire control centre I had an initial discussion on how wildfire is managed in general in Ghana and Germany to help as get a background as to how the two countries are managing wildfires particular in terms of logistics. I was then introduced to the fire monitoring system. This comprises of camera towers and a control room with monitoring screens to detect wildfires in real time as they occur so they can be suppressed. I visited one camera Tower close to the centre. The visit to this site was one of the most significant for me. Wildfire is a menace in some part of Ghana destroying biodiversity and fire. Detecting wildfire in real time at the landscape level is very crucial and was an eye opener for me.



The Control Room and One Camera Tower at the Mirrow fire Centre

### 6. Forstamt Kaliß

- At Forstamt Kaliß I was attached to the THOR project which is mainly focused on wildfire management. I was introduced to the project strategies and activities which include creating bare ground and green fire belts with broad leaves species. Water availability in the landscape for firefighting, fuel reduction, training and the provision of firefighting equipment to private forest owners, etc. We had several field visits to sites where these strategies are being tested including the Lübtheen burnt areas. Whiles on the field we also took the opportunity to observe the operations of the harvester and the Forwarder. It very interesting to see the strategies being implemented for wild-fire management a s compared to my home country.



At the Lübtheen bunt Areas





### 7. MELA

- I visited the MELA where I observed diverse exhibition of agriculture and forest equipment and products which including plants and animal products. There were also some exhibitions on fishing including types of fish, clothing, fishing equipment and other accessories. Additionally, hunting was also represented with items like types of games, clothing, and equipment. I witnessed the forest games at the MELA which was competitive and exciting. What was interesting here was the diverse products and equipment and participation from the public.



An aerial view of a section of the MELA

### 8. State Forest of Mecklenburg-Western Pomerania

- At the State Forest of Mecklenburg-Western Pomerania office I visited the central administration. Here I was introduced to the activities of the office which are mainly admiration, law enforcement and communication. Very significant to appreciate the works of the state forest office in Germany as it compares to that of my home country, more importantly law enforcement which is critical for sustainable forest management.



At the State Forest of Mecklenburg-Western



### 9. Forstamt Rothemühl

- At Forstamt Rothemühl I learnt about the work of a forest district. Here we started with hunting. We went through the hunting laws from training to licensing of the hunter and the hunting dog and followed it up with actual hunting later in the day. Also later in the day we attended a meeting by old hunters. We also visited a lake which is a biodiversity site for lots of animals especially birds. It also serves as a recreational site for the public for bird viewing. Very interesting was the difference between the hunting laws and practice in Germany and Ghana how they affect natural regeneration and wild animal conservation.



Ready for Hunting

### 10. Kompetenzzentrum für forstliche Nebenprodukte, Jatznick

- I took a tour through the Kompetenzzentrum für Forstliche Nebenprodukte, Jatznick with emphasis on the Forest Seed Kiln. I was taken through the entire process for getting the seeds ready to be supplied to the nurseries i.e., harvesting the seeds from the trees, drying and extraction, cleaning, string, packaging, storing and transportation. Very interesting to take note of the law and procedure on what tree species and where the seeds can be collected from in order to assure quality seedlings from the seeds and how this compares to Ghana.



At the Seed Kiln at Jatznick

### 11. Forest District Schlemmin

- At the Forest District of Schlemmin I had the opportunity to try my hand on a Practical Forest Inventory Control i.e. how to check if the data collected by the field team during the inventory was correct or there is the need to make some corrections. Together the team we went to several sites to control the work done by the field team with respect to the forest inventory. I also had the opportunity to learn about the forest compensation and reforestation. In this regard construction, train, and other land users are to compensate for ecosystem use by paying for eco systems



points which are used for reforestation projects. Lastly, we paid a visit to two reforestation sites. Forest compensation and ecosystem payment is one thing that can help with community forest management and it was very insightful me to see how its done in Germany and to see how this could be implemented in the Ghanaian context.



Two reformation site under the forest compensation and eco system accounting project

### 12. Forest District Jasnitz

- At the Forest District of Jasnitz I had the opportunity to acquaint myself with the Structure and work areas of a forest district which included issues like administration, law enforcement, communication, reforestation, protection, etc. Later in the day we visited a reforestation site and a burnt area that is also being prepared for ammunition evacuation. Additional we joined the ecosystem accounting team to make initial assessments of some sites to ascertain their suitability for be adopted for compensation purposes. Also very insightful know how forest districts I Germany do their work and how its compares to Ghana and the lessons to be learnt.



Storage of hunted deer at the forest district of Janitsz





### 13. Forest Service and Energy GmbH

- At the Forest Service and Energy GmbH, I had the opportunity to be briefed and participate their activities particularly in Forest Management Planning, reforestation, recreation, and wood bioenergy. On forest planning we visited several forest sites to gather information that are needed to make the forest management plans for those sites i.e., species diversity, age and height of trees, shape and size of canopy, topography, present of bark beetle, deer browsing, storm damage, etc. We also had a visit to a planned reforestation area at a formal military site. Here we took aerial pictures of the entire site for mapping and planning purposes. We also took the opportunity to assess the vegetation and some marshy areas of the site for biodiversity. There was a visit to the old Oak Forest and the Baltic forest for recreational purposes.



Taking measurements for forest planning purposes



Taking aerial photos with drones for forest planning purposes

There was also a discussion about the use of thinning for wood biomass for bioenergy a process that provides extra income for forest owners. Forest for recreation is something that needs to improve in Ghana from the public. It was very interesting to see how the public in Germany are quite interested in the forest. With experience from programs like MELA, forest games and good awareness creation am sure something can be achieved.



#### 14. Forstbaumschule Gustrow GmbH

- The visit to Forstbaumschule Gustrow GmbH was covered forest trees seedlings production from seed collection to tree seedlings. Here we went through how seeds are collected, prepared, and stored for onward seeding. We visited sites that have been seeded with various tree species and those that are prepared yet to be seeded. Seeded seeds are catered for until they are ready to be transferred for planting in the field at the request for the forest owner. We also visited the water source for irrigating the entire facility. Also, very interesting to look at the difference in scale and techniques in seeds production in Germany and Ghana.



One of the numerous nursery sites visited

#### 4. Final comment

The program and met expectations, It has been very useful and successful.

I will recommend that, in the future all participants should be put together in the last one of two days, so they can share their experiences before they depart to their various home countries.

We can also consider a global and/or batch network of all participants of the program, for networking purposes. An annual online meeting will be a great idea.

|                     |              |
|---------------------|--------------|
|                     | Grant Holder |
| Date,<br>Signature, |              |



## Annex 8.

# 2022 Thanh Tung Nguyen



# Report

31. October 2022

## Personal Details

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| Family Name     | <b>Nguyen</b>                                            |
| First Name      | <b>Tung</b>                                              |
| Gender          | Male                                                     |
| Date of Birth   | April 15 <sup>th</sup> , 1978                            |
| Nationality     | Vietnamese                                               |
| Passport Number | C9992472                                                 |
| Email Address   | <a href="mailto:thanhtung@mcnv.vn">thanhtung@mcnv.vn</a> |

## 1. Short Summary

Four weeks traveling to different places in Germany under the Forest Expert Programme have been an interesting learning journey, enabling me to study new knowledge and experience new practices in sustainable forest management. To sum up, the first week was for knowledge sharing in forest management, not only with the German academic experts in the field, but also with other forest management practitioners from seven countries around the world. Silviculture practices in forest plantation and management by HessenForst's Forest Management Unit in Bad Hersfeld was an emphasis of the second week. And the last two weeks were for learning about how the topics on forest and environment are communicated and educated, as well as further discussions on forest replantation, the problems of bark beetles and fires, and the history and work of forest management academic institutes.

From one state to another, from urban communities to rural areas, and among different groups of forest owners in Germany, there is a strong consistency in the philosophy and way of sustainably managing the forests. The Programme has been a great opportunity for me to learn about forest management in Germany, compare it with the situation in Vietnam, and see the gaps which can be narrowed in our practical work. Some of the important learnings for me include: (1) the significance of shifting from monoculture forest plantation into mixed plantation, (2) the importance of having silvicultural techniques and practices in different steps of forest plantation and management, (3) the utilization of machinery and technology to maximize the effectiveness and efficiency of forest management, logging and trading, (4) the importance of public - private partnership in forest management, (5) youth education about the forest and environment, and (6) the significance of documenting and communicating about local forest history.



### 2. Introductory Chapter

I am a staff member of the Medisch Comité Nederland – Vietnam (MCNV), a Dutch INGO working in Vietnam and Laos for many decades. Traditionally, MCNV works in the field of health and community development. In recent years, MCNV has also had project interventions in the field of sustainable forest management and community livelihood development in adaptation with climate change. Since early 2020, MCNV has been implementing a project named “Promoting sustainable partnership between CSOs and enterprises for sustainable forest management in the context of climate change” (abbreviated as PROSPER project) co-funded by the European Union and the MCNV, and I am the project coordinator of this project. The objectives of the project are to (i) Strengthen the participation of farmer groups, forest cooperatives and the Association of Smallholder Forest Certification Group of Quang Tri Province in implementing and monitoring REDD+ and PFES (payment for forest environment services) at different levels, and (ii) Enable the participation of farmer groups and forest cooperatives into the enterprise-driven supply chains of FSC-certified acacia and non-timber forest products (NTFPs).

In the process of implementing the PROSPER project, MCNV collaborated with the Forest Science Centre for Northern Central Vietnam to build capacity for some local units related to planted forests (long-rotation acacia plantation) and community-managed natural forests (forest protection and NTFPs sustainable harvesting for livelihood improvement). The Forest Science Centre for Northern Central Vietnam was also the key partner of the Deutsche Forstservice GmbH (DFS) and HessenForst Consulting in the project “Promotion of Sustainable Management of Production Forests by State Forest Companies in Vietnam” (PSFM) co-funded by BMEL and Vietnam’s Ministry of Agriculture and Rural Development. So, MCNV and DFS were connected through the process of working with the Centre.

Dr. Carsten Schusser, the former Chief Technical Advisor of the PSFM project and now Chair of Tropical and International Forestry at the Technical University of Dresden, was the one who recommended me to participate in the Forest Expert Program since he believed the program fit with my expectations in learning about the following aspects which could then help MCNV make better contribution to the field of SFM and forest certification in Vietnam:

- Management models of smallholder forest owners;
- Long rotation timber plantation models of smallholder forest owners;
- FSC certification for ecosystem services of smallholder forests and international market opportunities for ecosystem services, including payment for carbon capture;
- Livelihood development opportunities for buffer-zone communities from non-timber forest products;
- Dealing with various interest groups on forest use
- International networks of sustainable forest management and biodiversity conservation.

To make a commitment to the Forest Expert Program, MCNV funded my return flight tickets, visa application and travel insurance for me to travel to Germany for the training.



### Time Schedule

| Date    | Institution                                                        | Programme                                                                                                                                                                                                                                                                                                                                                                      |
|---------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 Aug. | Arrive in Frankfurt & travel to Eberswalde                         | Accommodation at Pension Altes Forstamt, Alfred-Dengler-Straße 6, 16225 Eberswalde                                                                                                                                                                                                                                                                                             |
| 29 Aug. | Seminar at Eberswalde University of Sustainable Development (HNEE) | AM:<br>- Responsibility for the forest – Forest Research and higher education at Eberswalde since 1830 (Peter Spathelf)<br>- Introduction to German Forest Society (Malte Campsheide)<br><br>PM: Sustainable Forest Management in Germany (Peter Spathelf)                                                                                                                     |
| 30 Aug. | Seminar at HNEE                                                    | AM: Field visit to a forest forest (Peter Spathelf)<br><br>PM: Forest ecology and the effect of climate change, visit of the research area in Britz ( Tanja Sanders)                                                                                                                                                                                                           |
| 31 Aug. | Seminar at HNEE                                                    | AM: Presentations of trainees<br><br>PM: City tour Eberswalde                                                                                                                                                                                                                                                                                                                  |
| 01 Sep. | Seminar at Thunen Institute                                        | AM: German National Forest Inventory (Karsten Dunger)<br><br>PM: Single talk with the program coordinator to plan for individual program                                                                                                                                                                                                                                       |
| 02 Sep. | Seminar at DFWR in Berlin                                          | AM<br>- Introduction to German Forestry Council (Eva von Schonebeck)<br>- International Sustainable Forest Management Program of the German Federal Ministry of Food and Agriculture (Manfred Fischer)<br>- Research for internal sustainable forest management (Jessica Rebola Lichtenberg)<br><br>PM: Federation of German Forest Owner Associations (AGDW) (Kurt Hauschild) |
| 03 Sep. | Stay in Berlin                                                     | Accommodation at Hotel Allegra, Albrechtstraße 17, 10117 Berlin                                                                                                                                                                                                                                                                                                                |
| 04 Sep. | Travel from Berlin to Bad Hersfeld                                 | Accommodation at Hotel Haus am Park Am Hopfengarten 2 36251 Bad Hersfeld                                                                                                                                                                                                                                                                                                       |
| 05 Sep. | District Forest Office FMU Bad Hersfeld (Oliver Scholz)            | AM: An introduction to the Forest Management Unit, tasks and responsibilities, role and service provider for communal and private forest owners<br>- Visit a forest to see the lumberjacks tending the forests                                                                                                                                                                 |





## Forest Expert Program

|         |                                                                     |                                                                                                                                                                                                                                                                        |
|---------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                                                                     | PM: Visit a forest to learn about tree marking in preparation for harvesting & about skidding road setup                                                                                                                                                               |
| 06. Sep | FMU Bad Hersfeld                                                    | AM: Visit a stand recently harvested due to bark beetles; Fencing to protect deers from eating regenerating young trees.<br><br>PM<br>- Tools for forest planting, tending, thinning & pruning<br>- Deer hunting blinds                                                |
| 07 Sep. | FMU Bad Hersfeld                                                    | AM: Concept of cut-to-length logging, timber assortments, timber sales, timber data collection and processing, well-stocked warehouse of timbers, costs and revenues<br><br>PM: Harvester and forwarder logging                                                        |
| 08 Sep. | FMU Bad Hersfeld                                                    | AM: Visit a private sawmill (Hartmann)<br><br>PM:<br>- A meeting with communal forest owners<br>- Travel to Paderborn<br>- Accommodation at B&B Hotel in Paderborn                                                                                                     |
| 09 Sep. | DLG Walddtage                                                       | DLG forestry fair in Lichtenau, Paderborn (together with Juliana, Sidiq and Thien)                                                                                                                                                                                     |
| 10 Sep. |                                                                     | Travel from Paderborn to Hamburg<br>Accommodation at Hotel Amsterdam                                                                                                                                                                                                   |
| 11 Sep. |                                                                     | Travel from Hamburg to Hitzacker<br>Accommodation at Hotel Zur Linde                                                                                                                                                                                                   |
| 12 Sep. | Lower Saxony Elbe Valley Biosphere Reserve                          | AM: Work of the Biosphere Reserve (Franz Höchtl and Tobias Keienburg)<br><br>PM:<br>- Visit a farm in Hitzacker (Mr. Olaf Hobe): Local product marketing, PR<br>- Travel from Hitzacker to Hamburg-Altona<br>- Accommodation at the private apartment of Jens Luebbers |
| 13 Sep. | District forestry of the Chamber of Agriculture, Schleswig Holstein | AM: Forest and environmental education: outdoor activity with kindergarten kids (Jens Lübbers)<br><br>PM: The work of the forester (Jens Lübbers)                                                                                                                      |
| 14 Sep. | District forestry of the Chamber of Agriculture, Schleswig Holstein | AM: Forest and environmental education: outdoor activity with kindergarten kids (Jens Lübbers)<br><br>PM: Privat Accomodation Sabine Kühling, Braunsberg                                                                                                               |
| 15 Sep. | Forest District Schlemmin                                           | AM: Reforestation theory (Malte Mertens)<br><br>PM: Reforestation practice (Mathias Regenstein)                                                                                                                                                                        |

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 Präsident: Carsten Wilke • Geschäftsführerin: Alexandra Arnold





## Forest Expert Program

|         |                                                  |                                                                                                                                                                                                                                                              |
|---------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                                                  | Accommodation at hotel in Schwerin                                                                                                                                                                                                                           |
| 16 Sep. | Forest District Jasnitz                          | Structure and work areas of a forest district (Sophie Gennermann)<br><br>PM: Travel to Sanitz & accomodate at a friend's aptment in Sanitz                                                                                                                   |
| 17 Sep. |                                                  | Private accommodation of a friend in Sanitz                                                                                                                                                                                                                  |
| 18 Sep. |                                                  | Accommodation at Altes Wirtshaus Fördergersdorf<br>Tharandter Straße 9   01737 Fördergersdorf                                                                                                                                                                |
| 19 Sep. | Technical University of Dresden, Tharandt Campus | AM: Planning meeting with Dr. Carsten Schusser<br><br>PM: Visit Tharandt Botanic Garden and Arboretum                                                                                                                                                        |
| 20 Sep. | Technical University of Dresden                  | City Tour Dresden                                                                                                                                                                                                                                            |
| 21 Sep. | Technical University of Dresden, Tharandt Campus | Study opportunities at the TU of Dresden                                                                                                                                                                                                                     |
| 22 Sep. | Crescat Waldbau GmbH in Arzberg                  | AM: Traveling from Tharandt to Arzberg<br><br>PM:<br>- Introduction to the family business, Forest Owner Associations, Forest Fire Prevention (Reinhard Müller-Schönau)<br>- Accommodation at Hotel "Zum Poppschen Gut" Zum Poppschen Gut 5, 09526 Olbernhau |
| 23 Sep. | Waldakademie Pfaffroda                           | AM: Founding history of the Forest Academy Pfaffroda (Justus Eberl)<br><br>PM: Travel to Usingen and stay at Carsten Schusser's private aptment                                                                                                              |
| 24 Sep. |                                                  | Departure Frankfurt – Ho Chi Minh City                                                                                                                                                                                                                       |

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### 3. Report

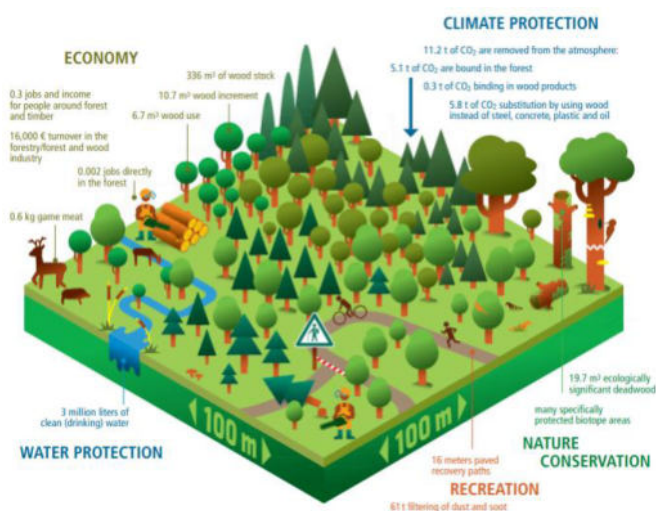
#### FOUR WEEKS – A LEARNING JOURNEY

##### **Week 1 (from Aug. 29<sup>th</sup> to Sep. 4<sup>th</sup>): Forest Experts Seminars at Eberswalde University of Sustainable Development and Thunen Institute (in Eberswalde) and Deutscher Forstwirtschaftsrat e.V. (in Berlin)**

The first week of the Forest Expert Program 2022 was mostly filled with different seminars where the trainees could get an overall picture of the German forest history, the Germany's current forestry system and the German philosophy in sustainable forest management.

To start with, at Eberswalde University of Sustainable Development (HNEE), Prof. Dr. Peter Spathelf, Faculty of Forestry and Environment, gave two presentations entitled "Responsibility for the forest – Forest research and higher education at Eberswalde since 1930" and "Sustainable Forest Management in Germany", bringing the trainees back to the 16th century, when the unsustainable use of wood started with wooden housing and iron industry, to the first half of the 19th century, the so-called Wooden Era when timber was the central material for burning, mining and other industries and when the sustainable forest management approaches really came on a large scale. An overview of basic concepts in forest management, such as high-forest systems, coppice-forest systems, clearcutting method, uniform shelterwood method, irregular shelterwood method, selection forests and silviculture practices, was also introduced and discussed with the trainees. Basic information about HNEE and the Faculty of Forestry and Environment was shared, as well.

In between these two presentations, Mr. Malte Campsheide from the German Forest Society (DFV) shared basic information about the Society, as well as how the forest owners and their networks were organised in Germany. It was interesting to know that in a country well-known for industrial production like Germany 115,000km<sup>2</sup> out of 360,000km<sup>2</sup>, i.e. one third of the country area, are forested. Of 2 million forest owners nationwide, nearly 50% are private owners, 32% state-owned and 20% owned by public corporations. 1.1 million people work in forestry and wood-related industries. Under the DFV as the umbrella organisation are state forest associations in the federal states.



**A multitude of services per hectare**  
Source: German Forestry Council



On the next day, the group of trainees took a walk into a forest next to the HNEE's Faculty of Forestry and Environment in the morning. Here Prof. Dr. Peter Spathelf explained more about the typical structure of a German forest and the common species one could find, such as beech, oak, and coniferous species (fir, spruce, pine, larch, etc.).

One of my concerns was about whether or not there has been a mechanism of insurance for forest owners in case of forest loss due to storms or fires. In Vietnam, though encouraged by the government, most people do not dare to apply long-rotation acacia plantation for fear that they might lose their forests in such events without any compensations.

According to Prof. Dr. Peter Spathelf, the insurance companies in Germany are still working hard to develop insurance schemes that are attractive enough to forest owners. But at the moment this is not a big issue. In the events of forest loss due to fires or storms, the forest owners can get different incentives, with funding from EU or the states, to do replanting or other measures. Also, a forest owner can also sell timber from the destroyed forest to get quite some money out of it.

In the afternoon of the second day, the group of trainees visited a forest monitoring site in Britz to learn about forest ecology and the effects of climate change. On an area of four hectares, mostly with pines, Dr. Tanja Sanders and her team were applying simple, cost-effective techniques to research ground water recharge, as well as the tolerance of the forest against the increasingly severe conditions – poorer soil, less rainfall and more risk of fire.

Another seminar was organised on the third day, when trainees from 7 countries (Brazil, Georgia, Ghana, Indonesia, Laos, Liberia and Vietnam) briefly presented about themselves, their organisations and the work they were doing. This was a chance for everyone to get to know more about each other and about the different local contexts. A city tour around Eberswalde was followed to help the trainees relax a little bit and learn about the history of this peaceful town.

On Sep 1st, another seminar took place at Thuenen Institute, a federal research institute for rural areas, agriculture, forests and fisheries under the Federal Ministry of Food and Agriculture (BMEL). At this seminar, Dr. Karsten Dunger, Head of Forest Resources and Climate Protection, gave an overview introduction to Thuenen Institute and then went deeply into the design, implementation and quality control of the German National Forest Inventory.

A question of mine relating to the field of forest ecosystems, one of the key research areas of Thuenen Institute, was that how the mechanisms to pay for forest ecosystem services on CO<sub>2</sub> capture was being applied in Germany. Thanks to Dr. Karsten Dunger, I was connected with Dr. Sven Guenter, Head of Working Area Forestry Worldwide at the Thuenen Institute concerning this issue. According to Dr. Sven Guenter, (1) Mandatory mechanisms do not exist at the federal level, but more information can be collected by investigating the BwaldG, which already contains the most important regulatory provision for the CO<sub>2</sub> balance, namely the prohibition of clear cut; (2) Remuneration systems are under development through the Action Programme on Natural Climate Protection; and (3) Voluntary market. Dr. Karsten and Dr. Sven also shared some very helpful links for more reference:

<https://www.ecosystemmarketplace.com/> and <https://www.waldklimafonds.de/> and <https://waldklimastandard.de/>

Leaving Eberswalde, we continued having another seminar at Deutscher Forstwirtschaftsrat e.V. (DFWR) in Berlin, where the representatives of relevant organisations gave four different



presentations about an introduction to the German Forestry Council (by Ms. Eva von Schoenebeck), International Sustainable Forest Management Programme of BMEL (by Mr. Manfred Fischer - GFA), Research for international sustainable forest management (by Ms. Jessica Rebola Lichtenberg) and the Federation of German Forest Owner Association – AGDW (Mr. Kurt Hauschild). These presentations, as well as Q&A sessions, helped the group of trainees understand more about the SFM management structure, systems and law in Germany, for example about EU Green Deal, German Climate Law, Forest Damage Compensation Act, Hunting Politics, and financial incentives for additional climate protection and biodiversity services in the forest.

### **Week 2 (from Sep. 5<sup>th</sup> to Sep. 11<sup>rd</sup>): Learning about the work of HessenForst's Forest Management Unit (in Bad Hersfeld) and DLG Waldtage 2022 (in Paderborn)**

Mr. Thien Van Ha (from the Forest Science Centre for Northern Central Vietnam) and I spent this week together, mostly to learn about the work of HessenForst's FMU in Bad Hersfeld. HessenForst was not an unfamiliar name to Thien and me. In the project "Promotion of Sustainable Management of Production Forests by State Forest Companies in Vietnam" (PSFM) co-funded by BMEL and Vietnam's Ministry of Agriculture and Rural Development, HessenForst was a project partner of the Forest Science Centre for Northern Central Vietnam. Mr. Oliver Scholz, Head of FMU, even visited Quang Tri province in Vietnam some years ago to provide training and technical assistance for the Centre. Within four days in Bad Hersfeld, Mr. Oliver Scholz enthusiastically took Thien and me to the field to share about the FMU's work in practice, including the following topics: the lumberjacks and tree felling, their safety and labour tools, forwarder and harvester logging, cut-to-length logging, timber sales, costs and revenues, the operation of a sawmill, the problem of bark beetles, animal hunting in the forest, and a meeting with a group of communal forest owners (in Kornberg).

As a service provider for forest owners and citizens, HessenForst operates as an enterprise specialized in sustainable management of State forests, revenue-oriented and at the same time committed to public benefit and sustainability. HessenForst has one head office and 41 FMUs, one national park, one forest inventory, one planning and data management unit, one engineering unit and a wide network of 443 forest ranger districts. The FMU in Bad Hersfeld has three sections specialized in production (in charge of biological & technical matters, timber sales and game management), services and government (law enforcement, nature protection and extension services) and office administration. The FMU currently manages an area of 15,866 ha of state forests and is a service provider for 2,500 ha of private forests (about 1,000 forest owners) and communal forests (9 forest owners). It is also involved in nature protection, with 1,200 ha of nature reserves, seven EU fauna-flora-habitat areas and two bird conservation areas.

In terms of wood harvesting and trading, the annual cut of the FMU is 100,000 – 120,000m<sup>3</sup>, worth of 8-9 million euros. The annual increment is 8m<sup>3</sup> per hectare and the average standing volume is around 300m<sup>3</sup> per hectare. The FMU's customers are sawmills, producers of paper, fibre and chip boards, pellets, furniture, coffins, pallets, railway ties and sleepers, and commercial and private users of fire wood. Beech (33%), Scots pine (26%) and Norway spruce (25%) are the main tree species that provide timber. Oak (6%) and larch (5%) and Douglas fir (3%) are also harvested annually. It is interesting to know that it takes some decades after plantation to harvest timber from these species, for example about 40 years for beech at the earliest, 30-35 years for spruce and 30-40 years for pine. To compare, long rotation acacia plantation in Vietnam only takes 7 - 10 years on average. This implies that





forestation in Germany takes from one generation to another and can be seen as an inheritance for the younger generation.

A good lesson from the field visits with Mr. Oliver Scholz is that silvicultural interventions are particularly important in all steps of forest plantation. At a land plot where there was a new replantation, nets were fenced around the young trees to protect them from deer. But that was not enough. High poles were installed so that owls and falcons could perch, observe and catch mice that often ate the roots of the trees. Dead trees were left for woodpeckers to find their food. And a 25m<sup>2</sup> monitoring site was strictly fenced, protected and cared so that people could compare the difference in growth of trees in different conditions. In another place, a lumberjack team were thinning the plot to create better nutritious space for the good trees to grow. Before that, a master craftsman had already checked and marked the trees with paints, so the lumberjack would know which ones should be cut down. The lumberjacks were always equipped with protection suits and supporting tools, ensuring their safety in tree felling.

Another interesting point is that wild animal hunting is allowed in Germany. Hunted animals mainly include red deer, roe deer and wild boar. Personally, I am never supportive to hunting. But this practice shows that wild animals have been so well preserved in Germany that they have now grown big in number and that their population should be controlled so that they do not put bad impacts on the forests, i.e. killing the young trees by eating buds, roots and barks. In Bad Hersfeld, there is a recording system to monitor the situation of wild animal hunting on a yearly basis, for example for red deer 149 were shot by private forest owners and 60 shot via lease service in 2021.

On September 9<sup>th</sup>, Thien and I, also together with Juliana Degenhardt from Brazil and Sidiq Mohammed from Indonesia, enjoyed the DLG Waldtage event in Lichtenau, Paderborn. This forestry fair, organised every two years, is a meeting place for forest practice and a platform for sustainable, future-oriented and use-oriented forest management. In the 2022 DLG event, more than exhibitors exhibited their forestry products, services and solutions. It was expected that about 12,000 - 15,000 visitors would enjoy the 3 days of the event, from October 9<sup>th</sup> to 11<sup>th</sup>. A learning point from the visit to the 2022 DLG Waldtage is that the maximized utilization of machinery really contributes to improving the effectiveness and efficiency in forest management, especially in forest tending, thinning, harvesting and logging. This is the strength of the German forestry sector, indeed.

### **Week 3 (from Sep. 12<sup>th</sup> to Sep. 18<sup>th</sup>): The work at a biosphere reserve, environmental and forest education, reforestation, and the problems of bark beetles and forest fire**

In Hitzacker, I learnt about the work at the Lower Saxony Elbe Valley Biosphere Reserve. This is part of the UNESCO's Biosphere Reserve "Elbe River Landscape" situated in Lower Saxony. Mr. Franz Höchtl, Vice Head of the Administration, and his staff Mr. Tobias Keienburg, clearly explained about the work of the Biosphere Reserve. As a unit belonging to the Ministry of Environment, Energy, Construction and Climate Protection of the State, the Biosphere Reserve Administration has basic activities as an environmental authority, networking and support, information granting of exceptional permissions, species and habitat management, land acquisition and management. With about 20 staff members, the Administration is divided into three departments – department of general administration, department of conservation planning and management, and department of education, documentation, research, and sustainable regional development. The Administration operates under the Biosphere Reserve Act, which regulates these responsibilities and functions by law.



Covering an area of 280,000 hectares, all the landscape of the Biosphere Reserve has been formed and shaped by humans for thousands of years. Up to 95% of the valuable habitats of the forests are available here. They are so rich in species of plants and animals (fish, otters, beavers, bats, bees, birds, frogs and insects). But protecting and preserving the landscape must also include people in that landscape. That is why biodiversity is not only a question of natural animals and plants, but also culture of the people living in it. For instance, biodiversity is also very important for the future of farming animals. So in this reserve area, and through many cooperation programs, the Biosphere Reserve Administration has different partners working together in floodplain management, nature conservation and culture.

I moved on to Hamburg to learn about how people did to educate children about forest and environment. Within nearly two days, I observed Jens Lübbers, a forester at Schleswig Holstein District forestry of the Chamber of Agriculture, having educational outdoor activities with two groups of small kids, each group per morning, at the Stiftungen der Sparkasse Holstein, a recreational forest area of 10 hectares. According to Jens, this place had about 8,000 – 10,000 visitors per year and most of the kindergartens committed to having at least one outdoor activity for kids per year at this place. The kids really enjoyed the learning games and Q&A sessions facilitated by Mr. Jens Lübbers. I was impressed at Jens's facilitation skills and at the fact that forest and environment education could be applied so well for the kids at the age of 3-5 years old. They played with fun and they learnt a lot at the same time. A couple months ago, MCNV also piloted an outdoor activity on forest nature and environment education for high school students. Now after two days in Schleswig Holstein I did think MCNV should apply this way of education for younger age groups in the coming time.

Leaving Hamburg, I moved to Mecklenburg-Vorpommern to visit the Forest District Schlemmin and Forest District Jasnitz. Accompanying me in these places was Earnest Obeng Adu from Ghana. The ones who guided us at the Forest District Schlemmin were Mr. Malte Mertens and his boss Mr. Mathias Regensten. Here we learnt more about an aspect of reforestation in Germany, which was the compensation for forest destruction. No matter who the forest owners are – private owners, community owners or institutions – they can pay money for the Forstamt to care for the forests, and if the forests owners destroy any forest stand for any reason they have to plant new forest on an area of at least the same size as the destroyed area. This is law enforcement for compensation for forest destruction. So how is the compensation calculated? The Forstamt has a system to value a destroyed forest based on the forest's production capacity and the forest's recreation services. Then there is a set of 5-point criteria to calculate the amount of currency to be compensated. One is the lowest, five is the most valuable. By doing this, the Forstamt manages the point selling system. If a forest owner expects to destroy part of the forest, he has to call the Forstamt for permission first, buy the points and pay the compensated money.

At Forest District Jasnitz, Ms. Sophie Gennermann explained more about other aspects of reforestation. One of them, besides the importance of land preparation for plantation, was the necessity of applying mixed plantation to increase the biodiversity of the forest and the resistance to harmful diseases that might cause huge forest loss. Bark beetles, for example, are now devastating Norway spruce forests around Germany, leading to clear cutting of these forests. It seems there have not currently been enough effective measures to fight against them – the insects that can fly 5 kilometres away from one forest stand to another – while pesticides should not be abused. This fact is a learning point for the current practice of monoculture plantation around the world. In Vietnam, for instance, more than 80% of forest plantation areas are of acacia monoculture. Without changing the practice from monoculture



into mixed plantation, it is likely that the acacia forest plantation in Vietnam might face risks of huge forest loss in future as it is happening to the Norway spruce in Germany at present.

With regards of forest fire, it is surprised to know that, besides human careless behaviours, forest fires can unexpectedly occur due to unexploded ordnances buried underground since the wartime. Overtime, some buried ammunitions have become more exposed to the surface of the ground, and given that weather has become increasingly dry and hot today explosions can happen and cause fires. Despite having a good warning system to have early detection and response to fires, there is always big loss to the forest. In a pine forest in Jasnitz, for instance, such a fire caused a loss of more than two hectares out of a 3,8 hectares of the whole stand. After the fire, people had to have clear cut of the stand, remove stems and detect leftover ammunitions before they could replant with broad-leave species.

### **Week 4 (from Sep. 19<sup>th</sup> to Sep. 24<sup>th</sup>): Visits to the Technical University of Dresden, Crescat Waldbau GmbH in Arzberg and Forest Academy Pfaffroda**

At the Tharandt Campus of the Technical University of Dresden, I met Dr. Carsten Schusser, Chair of Tropical and International Forestry. As mentioned earlier, Dr. Carsten was the former Chief Technical Advisor of the PSFM project in central Vietnam and he was also the one who recommended me to participate in the Forest Expert Program. The others I met again in Tharandt were Mr. Thien Van Ha (Vietnam) and Mr. Vilatsay Lattanavong (Laos).

In Tharandt, Dr. Carsten shared some information about forest related study opportunities at the TU of Dresden, mainly for Mr. Vilatsay to refer for his future study. Dr. Carsten also shared with me some ideas of urban forestry, which the TU of Dresden and MCNV intend to develop a project proposal to find funding for project interventions in central Vietnam next year. In addition, he took three of us to visit Tharandt Botanic Garden and Arboretum near the Campus. With an area of 35 hectares and 20 kilometres of walking trails, the Garden and Arboretum is really an ideal site for education (for students in forest sciences, landscape architecture, geography, biology, architecture and horticulture), research (in dendro-ecology, wood anatomy, tree physiology, urban tress, molecular biology and forest pathology), environmental education, conservation and preservation of biological diversity, recreation and tourism.

After three days in Tharandt, Dr. Carsten, Thien and I moved to Arzberg to visit Crescat Waldbau GmbH, a family business managing more than 1,000 hectares of forest. Here we met the owner, Mr. Reinhard Müller-Schönau, who was also Chairman of the Forest Owner Association in Saxony, a network of 85,000 forest owners in the state. At his place, Mr. Reinhard shared different information and his thinking about the programme of replanting 300,000 hectares of forests in Germany, difficulties caused by the fierce storm in 2017, forest fires and the increasingly dry weather condition in recent years, the lack of young trees from nurseries, how his family got back his father's land in the period of Germany reunion, and how decisions in management were made at the association level in parallel with the compliance with the German Forest Law.

Moving on to Pfaffroda, we met Dr. Justus Eberl, Managing Director of the Pfaffroda Forest Academy (Waldakademie Pfaffroda-Sachsen e.V.), which was founded in 2019 based on the model of forest academy in Bavaria where forest is actually called Forest Farmer School. The school is private, but the people working there are public officials. In Pfaffroda, the Academy cooperates and supports an association of 290 forest owners, mostly private, of a total area of 1,300 hectares. The association has annual general meetings and their 7 board members



meet on a monthly basis to share information and have necessary discussions. Each of the association members contributes 46 euros membership fee (entry fee) and this is one-time contribution. When in Pfaffroda, it was also a good experience to visit the castle of the von Schönberg family, to know that the castle and the forest in this area have been managed by this family since the 14<sup>th</sup> century. The von Schönberg family's knowledge in forest management to produce constant timber yields for the mines in many centuries has laid the base for the development of their own forestry business in Pfaffroda into a Saxon model and school business nowadays.

#### 4. Final comment

To sum up, the Forest Expert Programme has been a great opportunity for me to learn about how sustainable forest management is practiced in Germany, compare it with that in Vietnam and see the gaps which can be narrowed in our work. Some of the important learnings for me include: (1) the significance of shifting from monoculture forest plantation into mixed plantation, (2) the importance of having silvicultural techniques and practices in different steps of forest plantation and management, (3) the utilization of machinery and technology to maximize the effectiveness and efficiency of forest management, logging and trading, (4) the importance of public – private partnership in forest management, (5) youth education about the forest and environment, and (6) the significance of documenting and communicating about forest history.

In terms of logistics, I highly appreciate the careful arrangements of the programme coordinator. Travels, accommodation, meetings, seminars and even recreational activities – everything was very well organised. However, I would recommend that there should be someone else to support the programme coordinator, otherwise dealing with logistic arrangements for a group of nine persons from different countries to visit so many places, individuals and organisations in Germany could put too much pressure on her.

A question coming out is how to follow up with how the trainees probably apply what they have learnt into practice in their countries. I would recommend the Forest Expert Program to consider the possibility of having write-shops in the future, either online or offline, where people can share their own stories and theorize concepts. The Barefoot Guide Connection (<https://www.barefootguide.org/>) has a key group of learning-to-write and writing-to-learn facilitators and I used to work with them in the past. So if the Forest Expert Program is interested, I can make a connection.

Finally, MCNV is always open to having cooperative relationships in the field of sustainable forest management and forest certification, especially in Vietnam. So, we expect that the Forest Expert Program can also connect us with other organisations and events related to the network of development organisations and institutions working in the field.

#### Additional Documents

- A PowerPoint presentation
- Shared photos

|                     | Grant Holder |
|---------------------|--------------|
| Date,<br>Signature, |              |

## Annex 9.

### 2022 Vilatsay Lattanavong





## Report



2. August 2025

### Personal Details

|                 |                             |
|-----------------|-----------------------------|
| Family Name     | <b>Lattanavong</b>          |
| First Name      | <b>Vilatsay</b>             |
| Gender          | Male                        |
| Date of Birth   | 02.01.1995                  |
| Nationality     | Lao                         |
| Passport Number | P1754513                    |
| Email Address   | Vilatsay.lattanavong@giz.de |

### 1. Short Summary

#### **“An intensive month in Germany to increase my knowledge of sustainable forest management” by Vilatsay Lattanavong, Laos**

I am a Laotian trainee working as part of GIZ project called ‘Climate Protection through Avoided Deforestation Project (CliPAD)/Implementation of Governance, Forest Landscapes, and Livelihoods (I-GFLL)’ funded by Clean Climate fund (GCF) and German Federal Ministry of Economic Development and Cooperation (BMZ). The project supports the Lao Government to implement the Lao PDR Emission Reductions Programme through improved governance, sustainable forest management (SFM), deforestation-free agriculture and forest landscape restoration (FLR), its REDD+ readiness process at national and sub-national levels. REDD+ (Reducing Emissions from Deforestation and Forest Degradation) is a set of activities using financial and in-kind incentives to encourage people to stop cutting down forests and provides incentives to local communities to participate in forest management and conservation efforts by engaging sub-national jurisdictions to develop and support strategies for reducing deforestation.

With a forest area of approximately 62.05% (in 2019), Laos has one of the highest forestry rates in Southeast Asia and additionally a high proportion of endemic animal and plant species. Biodiversity and forests play a central role in safeguarding the livelihoods of the rural population in Laos. More than 70% of the Lao population live near the forest and receive about 20% of their livelihood from forest use. Many of these people belong to ethnic minorities, among whom the poverty rate is very high. This is particularly true of the population of the northern provinces of Laos.



In my country, the deforestation and degradation of the natural forests in Laos has led to a dramatic reduction in natural forests over the past decades. Increased greenhouse gas emissions, loss of biodiversity, increasing scarcity of wood and non-timber forest products and a loss of further ecosystem services are observed. Since the first official report to the United Nations Framework Convention on Climate Change, Laos has changed from a carbon sink to an emitter. The main reason for the high emissions is the conversion of forest into other land use forms. The forests in Laos are today largely fragmented and thus have largely lost their production potential.

The Driven of deforestation and forest degradation are transformation of forests into infrastructure, mainly for the development of hydropower, profitable plantations (for example rubber) or agricultural production areas (mainly maize and pastureland), shifting cultivation and unregulated timber harvesting.

With a view to addressing these issues, the forests play an important role in the government's vision and the government of Laos has set a goal of restoring forest cover to over 70 percent by 2025, up from 62 percent in the previous five-year plan (in 2020). to ensure long-term environmental protection and reduce the risk of natural disasters. Regarding to the Forestry Strategy is the fundamental policy concerning the management, protection, development and utilization of forest and forestland towards green and sustainable development in order to increase forest cover to seventy percent (70%) of the total land area.

Being a person who works closely to forests and community, I have a special interest in them. So I was interested in learning from experiences in other countries that had been similar to mine, and I found a chance with the 'Forest Expert Program' in Germany which was financed by the Federal Ministry of Food and Agriculture and coordinated by the German Forest Society (DFV). To aims at increasing the professional exchange of forest management related experience among forest Experts and thus at building Capacity and transferring knowledge in the field of sustainable forest management worldwide.

As a participant in the "forest expert program" from the 29th of August to 23rd September 2022, I had the privilege of learning a great deal. During the trainee programme I spent a month in institutions, forestry offices and visited some field areas. those field trips allowed me to understand the global landscape of forest management that is , forest Policy, biodiversity management and sustainable forest management. All trainees attended a forest Expert Seminar at Eberswalde University of Sustainable Development (HNEE) and the German Forestry Council in Berlin. The German Forest Society gave us an essential introduction for the first week. The majority of my two weeks at Wittlich Forest Office were spent practicing and learning how to manage multi-functional forests close to nature, legal aspects and regulations related to the management of forest and The following week, I visited universities of Dresden and Gottingen.

In addition to providing me with valuable experience from the German forest governance was greatly enhanced through the program, which covered a wide range of topics, including forest silviculture, forest planning, forest inventory, forest ecology, climate change and forest ecology, biodiversity protection, seed collection, timber harvesting, logging, and harvesting operations, wildlife management, ecotourism, workplace safety, and forest policy, among others.

All the experience gained helps me to better understand the current strategies for sustainable forest management and nature conservation management. to transfer the lessons learned to our home country could be arranged in cases of the training course and supporting the Lao government, capacity building for authorities related fields along with village level



conforming to establish better systems for forest management and governance as well as awareness creation at school.

I would like to thank the Forest Expert program, BMEL and organizers that provided me a great opportunities to visit Germany, much appreciated for your support to the host Institutes, forest office and facilities. I truly believe that the gained knowledges and learnt experience obtained during the mission and can apply to my home country.

### 2. Introductory Chapter

Dr. Jens Kallabinski. He is CliPAD/I-GFLL project Director who recommended me to apply this program due to GIZ perspective, fostering talent and developing the skill set particularly of National Personnel is of high importance and an integral part of GIZ's policy.

My position is Forest Cover Monitoring and Land Use Planning Advisor. The advisor is responsible for supporting of the CliPAD/I-GFLL Project. The main task: Advising the partner institution(s)

- is responsible for a regular forest cover monitoring in the project area, based on village land use and forest management plans in close cooperation with project staff, relevant government authorities and cooperating projects - Japan International Cooperation Agency (JICA)
- the implementation or the update of existing Land Use Plans (LUPs) as well as a harmonized implementation of new land use planning in the project area with involved organizations
- provides advice regarding enforcement of Land Use and Village Forest Management Plans; advises partner organizations about the use of unmanned aircraft systems (drones), incl. safety regulations; and deals with the design, preparation and implementation of workshops, seminars and other events on forest cover monitoring and land use planning

I expect this program to provide me with the opportunity to learn and understand the concepts of the topics related forestry and sustainable development. to improve my abilities and skill of forest management, to facilitate knowledge sharing and collaboration among forestry experts from different countries and also understanding of the challenges and opportunities in forestry management, as well as their capacity to address these issues through best practices and innovative approaches. in order to I can apply those knowledge to my career. Moreover an exchange and i had a network of foresters and to foster a global network of forestry professionals who can work together to promote sustainable forest management and conservation.

According to GIZ's policy that supports staff capacity building, I have received travel funds provided by the project since this will be an official duty trip. The flight was purchased by the GIZ office.

### Time Schedule

- Please update the information on your schedule

| Date       | Institution                                     | Programme                                                                                                                    |
|------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 29-08-2022 | Forest Experts Seminar at Eberswalde University | Introduction by German Forest Society (Sabine Kühling, Malte Campsheide); Welcome and Introduction to Seminar venue at HNEE, |



|               |                                                                                               |                                                                                                                                                                                                              |
|---------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | of Sustainable Development (HNEE)                                                             | Presentation Forestry in Germany (Peter Spathelf)                                                                                                                                                            |
| 30-08-2022    | Seminar at HNEE                                                                               | Field trip to local Forest                                                                                                                                                                                   |
| 31-08-2022    | Seminar at HNEE                                                                               | Presentations of trainees, City tour Eberswalde                                                                                                                                                              |
| 01-09-2022    | Seminar at Thünen Institute                                                                   | Introduction to the Work of the Insitute, Individual Program discussion and preparaiton for the next weeks                                                                                                   |
| 02-09-2022    | German Forestry Council, Berlin                                                               | Introduction to German Forestry Council, Federation of German Forest Owner Associations, International Sustainable Forest Management Programme of the German Federal Ministry of Food and Agriculture (BMEL) |
| 3&4-09-2022   |                                                                                               | Weekend                                                                                                                                                                                                      |
| 05-09-2022    | State Forest District Wittlich;<br>Beethovenstraße 3<br>54516 Wittlich; Thomas Okfen          | Introduction to the organization of the state forest department Rhineland-Palatinate and forestry Authority on local level in particular                                                                     |
| 06-09-2022    | State Forest District Wittlich                                                                | Introduction of the Different section with a forest office; Federal and state forest law as well as bylaws                                                                                                   |
| 07-9-2022     | State Forest District Wittlich                                                                | Logging, Harvest planning and Timber Harvesting – Process                                                                                                                                                    |
| 08-09-2022    | State Forest District Wittlich                                                                | Wildlife management in the state forests of Rhineland-Palatinate, Using the example of the state forest Haardt ,Hunting as silvicultural treatment, education of qualified staff.                            |
| 09-09-2022    | State Forest District Wittlich                                                                | Communal Forestry (Burckhardt Pickan, Tarlach Wohlers) and consequences of the cliamte change for the forests in the Mosel and Eifel region (mitigation and adaptation)                                      |
| 10&11-09-2022 |                                                                                               | Weekend                                                                                                                                                                                                      |
| 12-09-2022    | State Forest District Traben-Trarbach; An der Mosel 14<br>56841 Traben-Trarbach; Thomas Okfen | Overview of the Enterprise                                                                                                                                                                                   |
| 13-09-2022    | State Forest District Traben-Trarbach                                                         | Forest seeds and seedlings (importance, law and bylaws; observing seed colloecting of Abiesalba                                                                                                              |
| 14-09-2022    | State Forest District Traben-Trarbach                                                         | Forest planning and visiting the forest area Bernkastel-Novianad and afforestation sides with the new tree Species form the south of Europe and and north of Africa                                          |



|               |                                                                                                  |                                                                                       |
|---------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 15-09-2022    | State Forest District Traben-Trarbach                                                            | Forest planning                                                                       |
| 16-09-2022    | State Forest District Traben-Trarbach                                                            | Forest road development                                                               |
| 17&18-09-2022 |                                                                                                  | Weekend                                                                               |
| 19-09-2022    | Technical University of Dresden; Chair of tropical and international Forestry (Carsten Schusser) | Forest related study possibilities at the TU Dresden                                  |
| 20-09-2022    | TU Dresden                                                                                       | Field trip to local forest                                                            |
| 21-09-2022    | TU Dresden                                                                                       | Field trip                                                                            |
| 22-09-2022    | AWF/Faculty of Forestry; German Forest Society                                                   | Projects at the AWF / Study and Research at the Forest Faculty; Final Talk with Malte |
| 23-09-2022    | AWF                                                                                              | Projects at the AWF; Forest Inventories                                               |
| 24-09-2022    |                                                                                                  | Weekend                                                                               |
| 25-09-2022    |                                                                                                  | Departure                                                                             |

### 3. Report

- Please write a minimum of five A4 page report.
- Please ensure to cover the following items: what were your activities at every Host Institutions; what was the significance of your visit to the Host Institutions and benefits for the Home Institution
- has there been any future cooperation arrangements put in place or plans made
- please provide feedback regarding your stay and activities weaknesses and strength of the program
- room for improvement.
- the report should have a chronological order and include all the names and positions of people you met.
- Comparison of knowledge gained and the expectations.
- Benefit for future work

#### **Introduction of Forest Expert program**

Introduction to German forest society (Malte Campsheide):

Welcome to the expert program offered by the German Forest Society. This program is designed for professionals in the field of forestry, environmental sciences, and related disciplines who are seeking to enhance their knowledge and skills in forest management and sustainability.





The German Forest Society (Deutscher Forstverein) is a professional association of foresters, forest owners, and forest researchers in Germany. It was founded in 1882 and has its headquarters in Bonn, Germany. The society has around 10,000 members.

The German Forest Society is active in various fields related to forestry, including forest ecology, forest management, forest economics, and forest policy. It organizes scientific conferences, workshops, and seminars on forestry-related topics and publishes a journal.

The society aims to promote sustainable forestry practices, protect forests, and provide a platform for exchange of knowledge and experience among its members and is also involved in forest conservation and restoration projects, and advocates for the protection of forests against climate change, biodiversity loss, and other threats. It works closely with other forestry organizations and institutions in Germany and around the world to promote sustainable forest management and to raise public awareness of the importance of forests.

Generally, the German Forest Society plays a crucial role in shaping the future of forestry in Germany and beyond, and is an important voice in the global effort to conserve and sustainably manage the world's forests.

Germany has a long history of forest management dating back to the Middle Ages. In the past, forests were mainly used for timber and fuel, and were often overexploited. However, over time, the German government and society have recognized the importance of forests for their ecological, economic, and social values.

Today, Germany's forests are managed sustainably, with strict regulations in place to protect the environment and biodiversity. Forests cover around one-third of the country's land area and are home to a diverse range of plant and animal species. They also play an important role in mitigating climate change by storing carbon and producing oxygen.

In recent years, the country has faced challenges such as climate change, forest fires, and the spread of invasive species. These issues have led to increased focus on research and development of new forest management strategies.

Overall, Forest Germany is a complex and constantly evolving topic that involves ecological, economic, and social considerations. The country has made significant progress in sustainable forest management but faces ongoing challenges that require continued attention and action.

### **Eberswalde University for Sustainable Development Forest Academy of Eberswalde HNEE since 1830 (Peter Spathelf):**

The Forest Academy of Eberswalde HNEE, also known as the University of Applied Sciences Eberswalde, is a higher education institution located in the town of Eberswalde in the state of Brandenburg, Germany.

According to the history of HNEE in 1821 founded by the forestry scientist Wilhelm Pfeil. It was finally moved to Eberswalde with supporting from advisor to the Ministry of Finance, namely Alexander von Humboldt. Afterwards, 1866 Bernhard Danckelmann took over the management of the school and was given the name "Forestry Academy" and gained international recognition. His successor, Alfred Möller, also contributed to the development of the Academy by extending his studies or building a new library and an



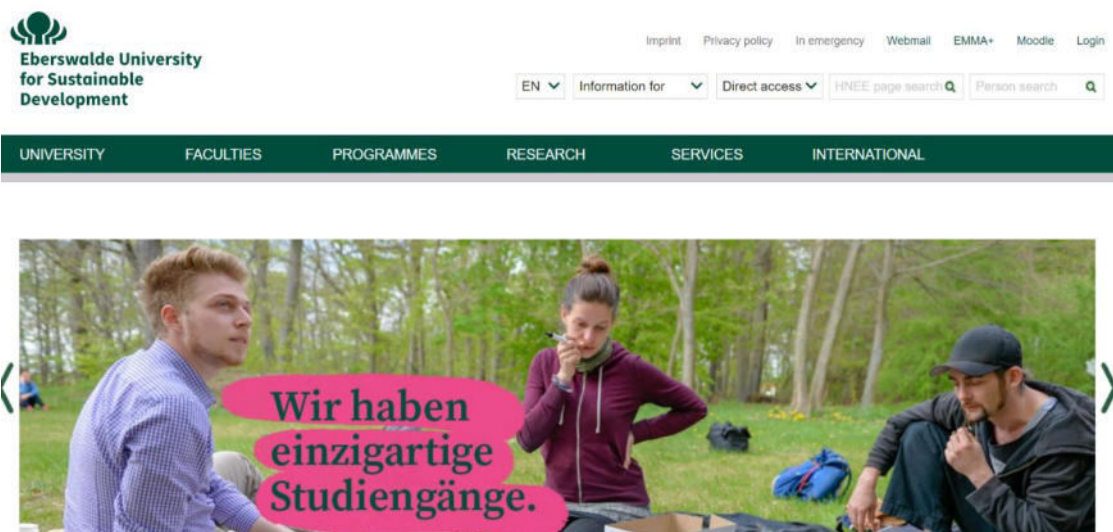
administration building. This institution at Eberswalde has a long history going back to the early 19th century when it was a Faculty of the Berlin University. During the Cold War the Faculty was closed due to political reasons.

Over the years, the academy expanded its curriculum to include courses in environmental management, landscape planning, nature conservation, and sustainable development. It also became a research institution, conducting studies on forestry, agriculture, and renewable energy.

After German reunification, among others a University of applied sciences was founded, with focus on practical application. On 1 April 1992, the institution was finally re-founded as Eberswalde University of Applied Sciences. The current situation of HNEE is described emphasizing the so-called 'Whole Institution Approach', i.e. sustainability is seen as an integrative concept for human life and economic development as well as Sustainable development for forestry and Environment. The Whole Institution Approach encompasses a sound environmental management program aiming at zero emissions.

In 2022 the Eberswalde University for Sustainable Development (HNEE) is one of Germany's greenest universities with 4 faculties, 22 studies programmes, 66 Professors, approx 2300 students and a unique profile. The mission statement provides a sustainable link between economy, society, and the environment.

You can find [HNEE](#)



### Forests in Germany:

The forests in Germany have a long and rich. The country is covered by approximately 11 million hectares of forests in Germany, 48 % are private forests. The Länder own 29 % of the forests, 19 % are communally owned and 4 % are owned by the Federal government, which accounts for around 32% of the total land area.



Germany is known for its beautiful and diverse forests, which cover about one-third of the country's total land area. The forests of Germany are an integral part of the country's natural landscape, culture, and history. They home to a wide range of wildlife, including deer, wild boar, and various bird species.

The most common tree species in the German forests are

1. Oak (*Quercus robur* and *Quercus petraea*): Oaks are common in Germany's deciduous forests, and are highly valued for their strong and durable wood.
2. Beech (*Fagus sylvatica*): Beech trees are another common species in German forests. They are known for their smooth, light-colored bark and their ability to form dense stands.
3. Spruce (*Picea abies*): Spruce trees are popular in Germany's coniferous forests, and are valued for their soft wood, which is used in construction and papermaking.
4. Pine (*Pinus sylvestris*): Pines are also common in German forests, and are known for their tall trunks and needle-like leaves.
5. Birch (*Betula pendula* and *Betula pubescens*): Birches are a smaller, deciduous tree that can be found in both coniferous and deciduous forests in Germany.
6. Alder (*Alnus glutinosa*): Alders are another deciduous tree that can be found in German forests, particularly in wetland areas.
7. Ash (*Fraxinus excelsior*): Ash trees are native to Germany and can be found in deciduous forests, but are facing threats from the Emerald Ash Borer beetle.
8. others

The country has many beautiful forests, including the Black Forest (Schwarzwald), the Bavarian Forest (Bayerischer Wald), and the Harz National Park (Harz Nationalpark).

Germany has been impacted by climate change in recent years, with rising temperatures and changing precipitation patterns affecting forest health. In particular, there has been an increase in the incidence of pests and diseases that can damage trees. The government and forest managers are working to develop strategies to adapt to these changes and reduce their impacts. These issues have led to increased focus on research and development of new forest management strategies.

### **Sustainable forest management:**

One of the main objectives of sustainable forest management is to maintain the long-term health and productivity of the forests. This is achieved through careful planning and monitoring of forest activities such as harvesting, reforestation, and pest management.

Germany has a long history of sustainable forest management practices. The country has one of the largest forested areas in Europe, covering over 11 million hectares or about one-third of the country's land area. Over the years, it has developed a comprehensive system of forest management, which involves the integration of ecological, economic, and social factors.



Sustainable forest management is based on the principles of multifunctionality, sustainability, and adaptability. Forestry is seen as a long-term investment that benefits the environment, economy, and society. The country's forests are managed in a way that ensures their ecological, economic, and social functions are maintained and enhanced.

The German forest management system is based on the principle of close-to-nature forestry. This approach involves managing forests in a way that mimics natural processes as closely as possible. It includes selective harvesting, natural regeneration, and the preservation of biodiversity. The aim is to maintain the natural balance of the forest ecosystem, while meeting the needs of society.

To ensure sustainable forest management, has established a set of laws and regulations that guide forestry activities. The Federal Forest Act, for example, sets out the legal framework for forest management, while the Forest Development Plan provides guidelines for the long-term management of forests.

In addition, has established a certification system for sustainable forest management. The country's forests are certified under the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). These certification schemes ensure that forests are managed in an environmentally, socially, and economically sustainable way.

Overall, Germany's approach to sustainable forest management has resulted in healthy and productive forests that provide a range of benefits to society. These benefits include clean air and water, biodiversity conservation, recreational opportunities, and a sustainable supply of wood and other forest products.

### **Introduction of Thünen Institute** ([Karsten Dunger](#))

The Thünen Institutes are a network of research institutes in Germany that specialize in agriculture, forestry, and fisheries. The institutes are named after Johann Heinrich von Thünen. Thünen Institute was established in 2008 and has been established as a scientifically independent research institution at the interface of science, politics and society. It is one out of four Federal research institutes under the auspices of the German Ministry of Food and Agriculture (BMEL).

The Institutes conduct extensive monitoring activities, develop options for action to better manage our livelihoods, and assess the likely consequences and cooperate with more than 500 university and non-university research institutions worldwide, participate in scientific competition and are committed to promoting young scientists. Furthermore, publish the research results in scientific journals, but also in a target-group-oriented manner vis-à-vis (the person who attends a social event with you or face-to-face) politics, business, civil society and the general public.

There are currently 15 Thünen Institutes located throughout Germany, each with its own area of specialization. A Thünen Topic is a thematic cross-sectional area in which several Thünen institutes cooperate and combine their socio-economic, ecological and technological competences. With interdisciplinary analyses, we pursue the goal of developing comprehensive and viable solution concepts. In total, the 19 topics cover the entire scope of expertise of the Thünen Institute.





### The German National Forest Inventory:

The National Forest Inventory (NFI) in Germany is conducted by the Federal Ministry of Food and Agriculture (BMEL) in collaboration with the German states. The BMEL is responsible for overseeing the NFI and providing funding for the inventory. The German states are responsible for carrying out the inventory within their respective territories, and for providing data on forest conditions and trends to the federal government. In addition to the BMEL and the German states, various research institutions and organizations are involved in the NFI. The [Thünen Institutes](#) is a research institute that is responsible for developing survey methods, analyzing data, and providing scientific advice to policymakers and forest managers based on the results of the NFI

#### How the data were collected

[The inventory](#) collected data on a variety of forest parameters such as tree species, age, height, diameter, volume, and forest structure. It also gathered information on the state of the forests, including the incidence of pests, diseases, and damage caused by natural disasters. In addition, the inventory included information on forest management practices, such as harvesting methods, reforestation, and silvicultural treatments.

The surveys were carried out by inventory teams of the federal states at randomly selected sample points. These are located in a systematic sampling network that covers all of Germany in a grid of 4 by 4 kilometers. At each grid point located in a forest area, the teams recorded, among other things, the tree species, diameter, and height of selected sample trees, as well as data on stand structure and deadwood. In total, more than 150 characteristics were recorded.



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for the third federal forest inventory, 60 inventory teams throughout Germany measured around 420,000 trees at 60,000 sample points. The sample trees are selected with a Bitterlich relascope.



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One of the most important parameters is the tree diameter at a height of 1.30 meters. It is measured with a special diameter tape measure.



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In the field computer, inventory staff record over 150 characteristics at a sample point.



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The squads measure the diameter of dead wood with a caliper.



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Height and distance meter to measure the height of the tree.





A working group at the Thünen Institute of Forest Ecosystems coordinated and evaluated the inventory. Together with other experts, the team further developed the inventory procedure and reorganized the entire data management

One third of Germany is forested. That is 11.4 million hectares. The third National Forest Inventory recorded how the forest changed between 2002 and 2012. For this purpose, inventory teams from the federal states measured more than 420,000 trees at 60,000 sample points. Scientists from the Thünen Institute coordinated the inventory and analyzed the data. Now a unique treasure trove of data is available on tree species diversity, forest structure, wood stocks and utilization, and carbon storage in forest trees.

The data are of national and international importance. They form the basis for political and economic decisions. For example, they address the challenges of climate change and the related question: Which forests are sustainable? How much wood can be used in terms of sustainable forest management? In addition, the data are an integral part of international reports such as the Kyoto Protocol and the Framework Convention on Climate Change.

### The results

- 32 percent or one third of Germany's total area is forested – that's 11.4 million hectares. There would be 1400 m<sup>2</sup> of forest for every inhabitant.
- 48 percent, almost half of the forest area, is private property.
- 90 billion trees grow in Germany's forests, of which around 7.6 billion have a diameter at breast height of more than seven centimeters.
- There is more older forest: On average, the forest is 77 years old today, four and a half years older than ten years ago. About a quarter of the forest (24 percent) is older than 100 years, and 14 percent is even older than 120 years.
- The timber stock is about 336 cubic meters per hectare. The total wood stock is 3.7 billion cubic meters.
- 121.6 million cubic meters of wood grows per year. This corresponds to 3.9 cubic meters per second. That is a cube of 1.57 meters edge length.
- The most common tree species are spruce (25 percent), pine (22 percent), beech (15 percent) and oak (10 percent).
- 20.6 cubic meters of dead wood per hectare of dead wood. That is 18 percent more than 10 years ago.
- There are more deciduous trees than 10 years ago. The area share of deciduous trees is about 43 percent.

It's time again: In 2021 and 2022 inventory teams of the German National Forest Inventory (NFI) are measuring trees in forests and record lots of further attributes. German NFI, the fourth: The National Forest Inventory is currently in its fourth inventory cycle with reference date in 2022 (NFI 2022). Past inventories were referred to the years 1987, 2002 and 2012. In addition, carbon stock data were collected in 2008 and 2017 in sub-sample inventories. Some trees are thus now being measured for the sixth time. For the NFI 2022, the largest sample size of all previous inventories is planned. The inventory methods have changed only marginally to maintain the comparability of previous data. For the first time, DNA samples were collected for the investigation of genetic diversity. With the integration of remote sensing data want to obtain a higher spatial resolution of the results.



### Forest Ecology and the effect from climate change: ICP, (Tanja Sanders)

The **International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests** ([ICP Forests](#)). A programme aiming at a comprehensive compilation of information on the condition of forests in Europe and beyond and is currently coordinated by the European Forest Institute (EFI).

ICP Forests involves the monitoring of forest health and the collection of data on air pollution and its effects on forests. The programme also aims to provide information to policymakers, scientists, and the public on the state of forests in Europe and the impact of air pollution on them.

ICP Forests monitors forest condition at two monitoring intensity levels:

The Level I monitoring is based on 5624 observation plots (as at 2021) on a systematic transnational grid of 16 x 16 km throughout Europe and beyond to gain insight into the geographic and temporal variations in forest condition.

The Level II intensive monitoring comprises 561 plots (as at 2020) in selected forest ecosystems with the aim to clarify cause-effect relationships.

At present 42 countries in Europe and beyond participate in ICP Forests. All data are available upon request.

Forest ecosystems are closely related to intensive forest monitoring, particularly in the context of the International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) and its Intensive Forest Monitoring Level 2 (IFM2).

IFM2 involves the collection of detailed data on the physical, chemical, and biological characteristics of forest ecosystems, including measurements of tree growth, forest structure, soil properties, and the composition of forest vegetation. This data is used to assess the health and condition of forest ecosystems and to identify the causes of forest decline. In addition, IFM2 monitors the impact of air pollution on forest ecosystems, including the deposition of pollutants such as nitrogen and sulfur.

The information gathered through IFM2 is crucial for understanding the state of forest ecosystems in Europe and for informing policies and management practices aimed at maintaining healthy forests. Forest ecosystems provide a wide range of ecosystem services, including carbon sequestration, air and water purification, and biodiversity conservation. They also provide important resources for human use, such as timber and non-timber forest products.

Intensive forest monitoring is also important for understanding the ecological processes that occur in forest ecosystems. This includes the interactions between different species, the role of forests in nutrient cycling, and the effects of disturbances such as insect outbreaks and wildfires.

Forest ecosystems are also important for climate regulation, as they absorb and store large amounts of carbon dioxide. However, this role can be compromised by the impacts of climate change on forest ecosystems, such as increased frequency and severity of wildfires and insect outbreaks.



Intensive forest monitoring is therefore important for understanding how climate change is affecting forest ecosystems and for identifying strategies to mitigate these impacts. For example, forest management practices can be adapted to promote greater resilience to climate change, such as by promoting species diversity and reducing the risk of wildfires.

By monitoring the health and condition of forest ecosystems and the impact of air pollution on them, IFM2 helps to ensure that these ecosystems continue to provide these important benefits and resources for future generations.

Overall, forest ecosystems are an important component of the natural environment and provide a wide range of benefits and resources for human use. Intensive forest monitoring is essential for understanding the health and condition of these ecosystems and for informing policies and management practices aimed at maintaining their ecological integrity and sustainability.

Forest ecology is the study of the interactions between living organisms and their environment within forest ecosystems. This field of study encompasses a wide range of topics, including the structure and dynamics of forest communities, the role of forests in nutrient cycling and carbon storage, and the effects of disturbances such as fires and human activities on forest ecosystem and for understanding the complex and dynamic interactions between living organisms and their environment within forest ecosystems. This knowledge is essential for developing effective management strategies to maintain the ecological integrity and sustainability of forest ecosystems.

Abbildung 1: Die 68 Flächen des intensiven forstlichen Umweltmonitorings (Level II) in Deutschland



Quelle: Thünen-Institut

The intensive forest environmental monitoring (Level II) examines the condition and changes within the forest on 68 selected areas for ecosystem forest in Germany. According to a uniform methodology, data on various subject areas such as tree growth, crown condition, material balance and climate recorded. The Measurements are collected by the federal states in accordance with a federal regulation (Fo-rUmV) and centrally managed and evaluated at the Thünen Institute for Forest Ecosystems





## Introduction of state forest office and forestry in Wittlich and Traben-Trarbach: [Thomas Okfen](#)

Rhineland-Palatinate is one of the 16 states (Bundesländer) of Germany. It is located in the southwestern part of the country. It is known for having a large forest area, particularly in the region of the Palatinate Forest (Pfälzerwald) which is the largest contiguous forest area in Germany and covers an area of approximately 1,770 square kilometers. As a whole has a forest area of over 1.2 million hectares, which is approximately 42% of the total land area of the state.

According to the latest data available from the Federal Statistical Office of Germany, as of 2020, the total forest area in Rhineland-Palatinate is approximately 702,000 hectares. The forest area is divided into several types of ownership, including state-owned forests, communal forests, private forests, and other types of forest ownership.

Here is a breakdown of the forest area by type of ownership:

- State-owned forests: Approximately 235,000 hectares or 33.4% of the total forest area.
- Communal forests: Approximately 179,000 hectares or 25.5% of the total forest area.
- Private forests: Approximately 261,000 hectares or 37.2% of the total forest area.
- Other types of forest ownership: Approximately 27,000 hectares or 3.9% of the total forest area.

Wittlich and Traben-Trarbach are both located in the Rhineland-Palatinate region of Germany, which is known for its extensive forests and woodlands. The land in these areas is characterized by rolling hills and valleys, with forests covering much of the landscape.



Wittlich is a town in the district of Bernkastel-Wittlich, about 35 km northeast of Trier, the oldest city in Germany.



Traben-Trarbach is a town in the district of Bernkastel-Wittlich as well, situated on the banks of the Moselle River, approximately 20 km southeast of Wittlich

A State Forest Office is a government agency responsible for managing and protecting state-owned forests. These offices are typically responsible for a variety of tasks related to forest management and conservation, including:

1. Developing and implementing forest management plans
2. Overseeing harvesting and planting activities





3. Monitoring forest health and managing pests and diseases
4. Managing wildlife populations and hunting activities
5. Providing education and outreach to the public about forest conservation
6. Conducting research and monitoring activities to inform forest management decisions
7. Collaborating with other organizations and stakeholders to promote forest conservation and management.

In Wittlich and Traben-Trarbach, the forest land is owned by a combination of state, private, and communal forest owners.

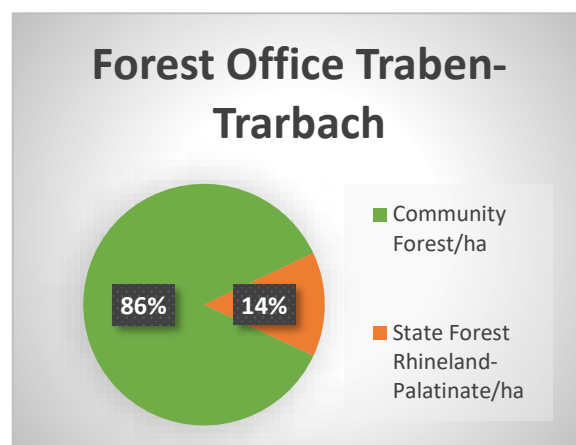
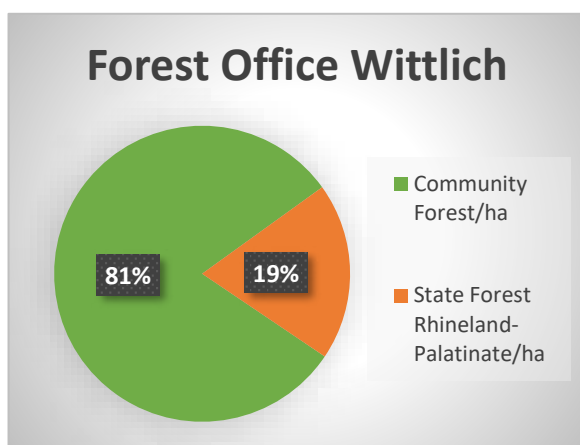
The state-owned forest land is managed by the State Forest Office Wittlich, which is responsible for ensuring the long-term sustainability of the forest ecosystem. The state forest land is primarily managed for multiple uses, including timber production, recreation, and conservation.

Private forest owners include individuals, families, corporations, and other entities who own forest land for various purposes, such as timber production, hunting, and recreation. Private forest owners are responsible for the management of their forest land, including sustainable harvesting practices and conservation efforts.

Communal forest land is owned and managed by the local communities or municipalities. The communal forest land is managed for the benefit of the local community and is often used for recreational purposes, such as hiking and camping. The management of communal forest land is typically overseen by a local forestry commission or council.

## the forest area by type of ownership and tree species by Thomas Okfen, 2022

| Forest Owners and size in ha         | Forest Office Wittlich | Forest Office Traben-Trarbach |
|--------------------------------------|------------------------|-------------------------------|
| Community Forest/ha                  | 11,078.52              | 16,395.19                     |
| State Forest Rhineland-Palatinate/ha | 2,663.44               | 2,661.92                      |
| Summary/ha                           | 13,741.96              | 19,057.11                     |



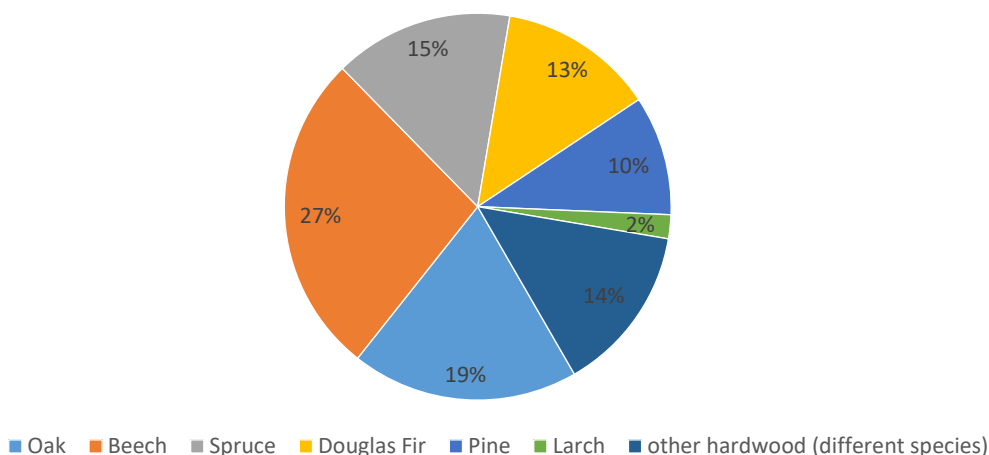
| Tree species in % (state & community forest) | Forest Office Wittlich | Forest Office Traben-Trarbach |
|----------------------------------------------|------------------------|-------------------------------|
| Oak                                          | 19                     | 23                            |
| Beech                                        | 27                     | 32                            |
| Spruce                                       | 15                     | 14                            |
| Douglas Fir                                  | 13                     | 13                            |



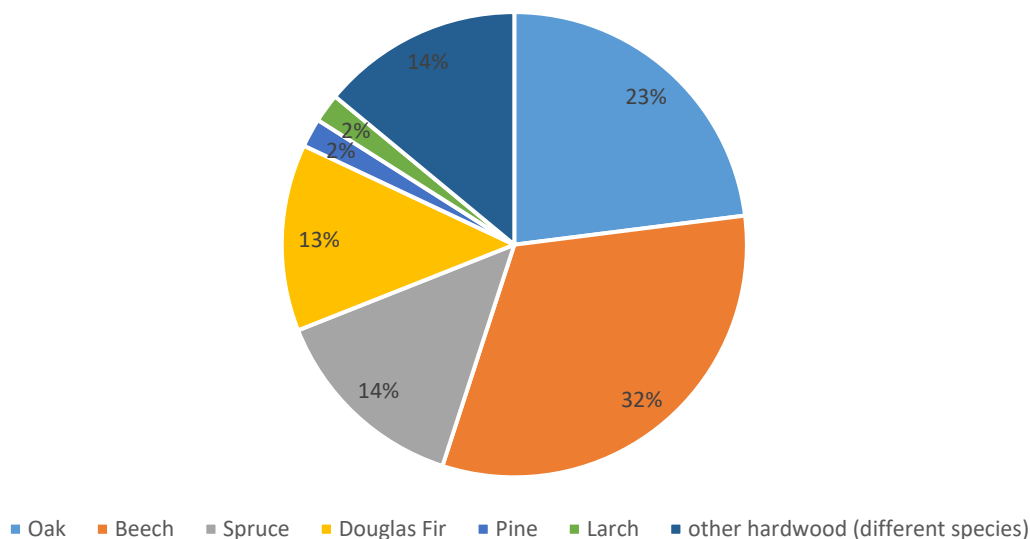


|                                           |    |    |
|-------------------------------------------|----|----|
| <b>Pine</b>                               | 10 | 2  |
| <b>Larch</b>                              | 2  | 2  |
| <b>other hardwood (different species)</b> | 14 | 14 |

Forest Office Wittlich



Forest Office Traben-Trarbach



### Close-to-nature forest management:

Close-to-nature forest management has been practiced in Germany for over 30 years and is considered a key component of sustainable forest management. In Germany, close-to-nature forest management is referred to as "forest ecosystem management" and is based on the principles of natural forest development, biodiversity conservation, and sustainable forest use.



Close-to-nature forest management is an approach to forest management that aims to maintain and enhance the ecological integrity, biological diversity, and productivity of forest ecosystems while providing sustainable economic and social benefits. This approach emphasizes the natural processes that shape forest ecosystems and seeks to work with, rather than against, these processes to achieve management objectives.

Close-to-nature forest management involves several key principles, including:

1. **Emphasizing ecological and social sustainability:** Close-to-nature forest management seeks to balance economic, ecological, and social objectives, recognizing the interdependence of these factors.

2. **Working with natural processes:** This approach seeks to mimic natural disturbances, such as fires and windstorms, to create diverse forest landscapes that support a range of ecological functions.

3. **Emphasizing the importance of biodiversity:** Close-to-nature forest management recognizes the critical role of biodiversity in maintaining forest health and resilience, and seeks to promote and maintain biodiversity across forest landscapes.

4. **Integrating traditional knowledge and practices:** This approach recognizes the importance of traditional ecological knowledge and seeks to integrate this knowledge into forest management practices.

5. **Continuous monitoring and adaptive management:** Close-to-nature forest management emphasizes the need for ongoing monitoring and evaluation of forest management practices to ensure that they are achieving their objectives and to make adjustments as needed.

### **Silviculture makes it possible:**

The task of German silviculture consists in shaping forests in such a way that timber is being efficiently produced, that the biological productive base of forests is being maintained and improved and that the services rendered by forests remain usable by humans in a sustainable manner. The multitude of objectives of silvicultural management – depending on the respective site – has resulted in a multitude of silvicultural operations, that is in differentiated treatment and regeneration methods.

The following principles are generally pursued today: conserving and establishing structurally diverse and close-to-nature mixed forests,

- planting of site-adapted and stable tree species and provenances,
- utilisation of natural regeneration where soil and previous stand allow it,
- largely dispensing with clear-cuttings,
- multi-storied forest structure, if possible, to make maximum use of soil and air space,
- adapting the intensity of silvicultural treatment to individual stands,
- stand-conserving wood harvesting,
- maintaining soil fertility and increasing it, if possible,
- using foreign tree species only after having examined the beneficial effect of their use in ecological and economic terms.

The aim is to implement close-to-nature forest management throughout Germany. This objective has in Germany already generated an increasing proportion of structurally diverse mixed stands, long regeneration periods and natural rejuvenation methods. Forest management largely dispenses with clear-cuttings.



### **Sustainable Forest management (SFM) in Wittlich and Traben-Trarbach:**

is the practice of managing forests in a way that meets needs of the present generation without compromising the ability of future generations to meet their own needs. It involves balancing the ecological, economic, and social values of forests to ensure their long-term sustainability

SFM has three main objectives:

- Ecological. SFM must maintain the ecological integrity of forests, including their biodiversity, productivity, and resilience to disturbance.
- Economic. SFM must ensure that forests provide a sustainable source of goods and services, such as timber, non-timber forest products, and ecosystem services.
- Social. SFM must be socially acceptable and contribute to the well-being of forest-dependent communities.

### **Forest seeds and seedlings - observing seed collecting of Abies alba in Traben-Trarbach, Germany:**

Observing seed collecting of *Abies alba* is a great way to learn about the life cycle of this beautiful tree and it is first time and great opportunity to learn about forest seed collecting for me.

Forest seeds and seedlings are essential components in sustainable forest management. They are used in reforestation and afforestation projects to restore degraded or deforested areas, to increase forest cover, and to create new forests where they did not previously exist.

Seeds are collected from mature trees in existing forests, and then carefully selected and tested for quality and viability before being sown in nurseries. Seedlings are grown in nurseries and then transplanted into the forest when they are large enough to survive on their own.

In many cases, seeds and seedlings are chosen based on their ability to adapt to local environmental conditions, such as soil type, climate, and elevation. However, in some cases, new tree species from different regions may be introduced to provide greater ecological diversity or to increase the resilience of forests to climate change.

It is important to ensure that seeds and seedlings used in reforestation and afforestation projects are of local origin, and that they are not invasive or harmful to local ecosystems. This helps to maintain the genetic diversity of the forest and minimize negative impacts on local biodiversity. Furthermore the selection of seeds and seedlings for sustainable forest management is a complex process that requires careful consideration of multiple factors. By selecting the right seeds and seedlings, forest managers can help to ensure the long-term health and productivity of forest ecosystems, and the sustainable use of forest resources for present and future generations.

*Abies alba*, or the silver fir is a species of fir tree that is native to the mountains of central and southern Europe. It is a coniferous tree that can grow up to 60 meters tall and is known for its silver-gray bark and dense, pyramid-shaped crown. The silver fir is an important species in European forestry, as it is used for timber, paper pulp, and Christmas trees. It also plays an important role in forest ecosystems, providing habitat for a variety of plant and species.

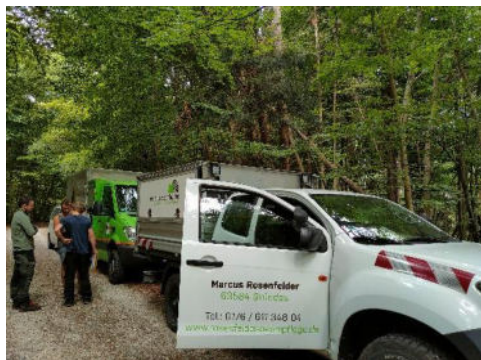
The best time to collect *Abies alba* seeds is usually between September and October, when the cones have matured and turned brown. The cones should be harvested from the tree before they open and release the seeds, but they should also not be collected too early, as immature cones may not have fully developed seeds. When collecting the cones, it is important to handle them carefully to avoid damaging the seeds. The cones can be stored in a cool, dry place until the seeds are ready to be removed.



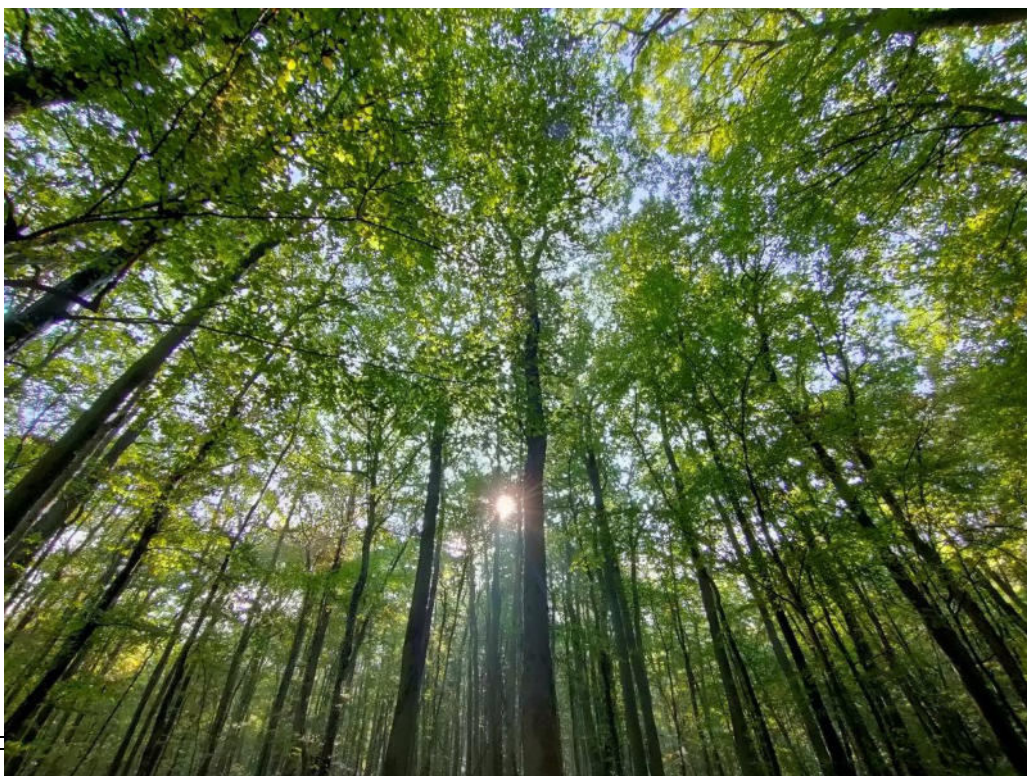


There are different methods of collecting and sourcing forest seeds and seedlings such as: direct collection and Nurseries.

**Traben-trarbach** has purchased from a nursery to collect seed and seedlings from their areas. Selecting seeds from healthy trees that have the best chance of producing strong and healthy seedlings. it is important to ensure the success and health of the resulting seedlings and we should consider about choose mature trees, look for healthy foliage, check for pests and disease, look for good seed production, and collect seeds at the right time.



Subsequently, Visiting the forest area Bernkastel-Novian and afforestation sides with new tree species from the south of Europe and north of Africa can be a great opportunity to learn about different types of trees and their adaptations to different environments. I have some things to keep in mind during your trip. Those are respect the environment, observe the trees with taking the time to observe the trees in the area and note their characteristics, such as leaf shape, bark texture, and growth patterns. This can help you identify different species and understand their adaptations to the local environment, learn about afforestation practices, and appreciate the biodiversity can be a great opportunity to appreciate the biodiversity of different tree species and the important role they play in the ecosystem.



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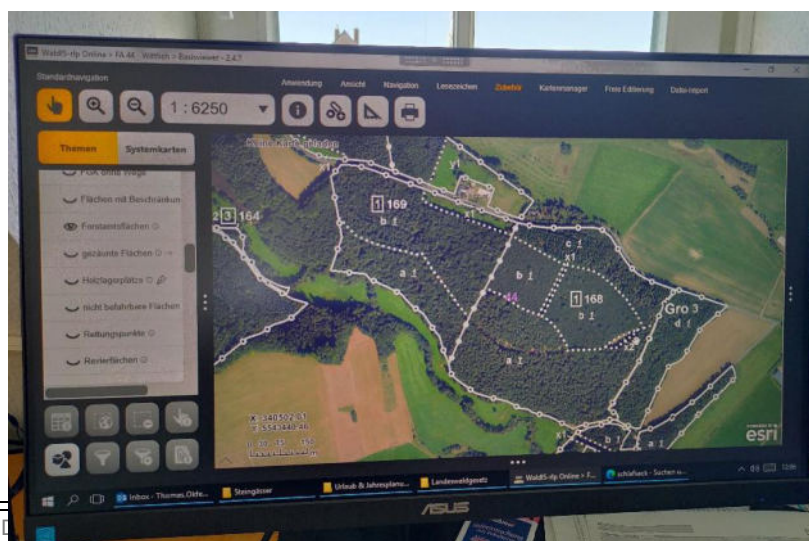
**Forest management software:** it is very interesting for me to see this software which help them a lot for manage forests. **SWALDLS-RLP** is a comprehensive forest management software that facilitates the management of large forest areas. It is a forestry software solution that is used to manage forests in the Rhineland-Palatinate region of Germany. The software is designed to help foresters with a variety of tasks, including:

- Forest inventory: Swaldls-RLP can be used to collect data on forest resources, such as the number of trees, the species of trees, and the size of trees.
- Forest planning: Swaldls-RLP can be used to develop forest management plans. These plans can include information on timber harvesting, forest regeneration, and forest protection.
- Forest monitoring: Swaldls-RLP can be used to monitor the health of forests. This information can be used to identify problems early on and take corrective action.
- Forest reporting: Swaldls-RLP can be used to generate reports on forest resources, forest management plans, and forest monitoring data.
- Forest certification: Swaldls-RLP can be used to collect data that is needed for forest certification. Forest certification is a process that ensures that forests are managed in a sustainable manner.
- Forest education: Swaldls-RLP can be used to create educational resources about forests. These resources can be used to teach people about the importance of forests and how to manage them sustainably

The software uses this data to generate detailed forest management plans that help optimize forest utilization while ensuring sustainability. It also helps in monitoring the implementation of these plans and provides a platform for collaboration between forestry stakeholders. Furthermore, the software can help in predicting the future growth and development of forest resources, which helps in making informed decisions about forest management practices.

Swaldls-RLP is a valuable tool for foresters who are looking to improve the management of their forests. The software is easy to use and it can be accessed from anywhere with an internet connection. This makes it a convenient tool for foresters who need to access their data from multiple locations.

Overall, it can help in improving the efficiency and effectiveness of forest management, which can lead to better conservation of forest resources and benefits for forest-dependent communities.







### logging and harvesting operations:

Logging is the process of harvesting trees for commercial purposes such as lumber, paper, or fuel. It involves cutting down trees, removing the branches and bark, and transporting the logs to a processing facility. Logging can be done using various methods, including clear-cutting, selective cutting, and shelterwood cutting. Clear-cutting involves removing all trees in an area, while selective cutting involves removing only certain trees based on their size, species, or quality. Shelterwood cutting involves removing trees in stages to encourage regeneration of new trees.

Logging is an important economic activity in Germany, with the country having a long tradition of forest management and timber production. The majority of forests are owned by the state or by private individuals and managed through sustainable forestry practices. It is regulated by strict environmental laws and regulations, which aim to ensure that forest management practices are sustainable and do not harm the environment.

The logging industry in Germany is diverse, with different regions and states specializing in different types of timber production. Softwoods such as spruce and pine are the most common types of trees harvested in Germany, with hardwoods such as oak and beech also being important. The majority of timber harvested in Germany is used for construction, furniture, and paper production.

In recent years, there has been a growing emphasis on sustainable forest management in Germany, with an increasing number of forests being certified by independent organizations such as the Forest Stewardship Council (FSC, founded in 1993) and the Programme for the Endorsement of Forest Certification (PEFC, founded in 1999). These certifications ensure that forest management practices meet strict environmental, social, and economic standards. Their certificates assure the consumer that the wood or paper product marked comes from raw materials from forests that are managed according to the rules of proper, responsible forestry. PEFC is the most widespread certification system in Germany and in the world.

Harvesting operations in Germany typically involve the use of modern machinery and equipment, such as harvesters and forwarders, to cut down and transport trees from the forest to processing facilities. The use of such machinery has been increasing in Germany in recent years, as it allows for more efficient and cost-effective harvesting operations.

Sustainable forest management is a key priority for logging and harvesting operations. The country has a long-standing tradition of sustainable forest management, which is reflected in the strict laws and regulations that govern forest management practices. To be carried out in a selective manner, where only specific trees are removed based on their size, species, or quality.

Furthermore, I will summarise logging and harvesting process in below:

1. Planning: Before logging and harvesting operations can begin, a plan must be developed that takes into account factors such as the type of trees to be harvested, the terrain of the forest, and the environmental impact of the operation.

2. Pre-harvest activities: Activities that take place before harvesting begins include marking trees for removal, constructing roads to access the harvesting site, and installing equipment such as skidders and feller-bunchers.

3. Harvesting: The harvesting process involves the actual removal of trees from the forest. This can be done using various techniques, including clear-cutting, selective cutting, and shelterwood cutting.



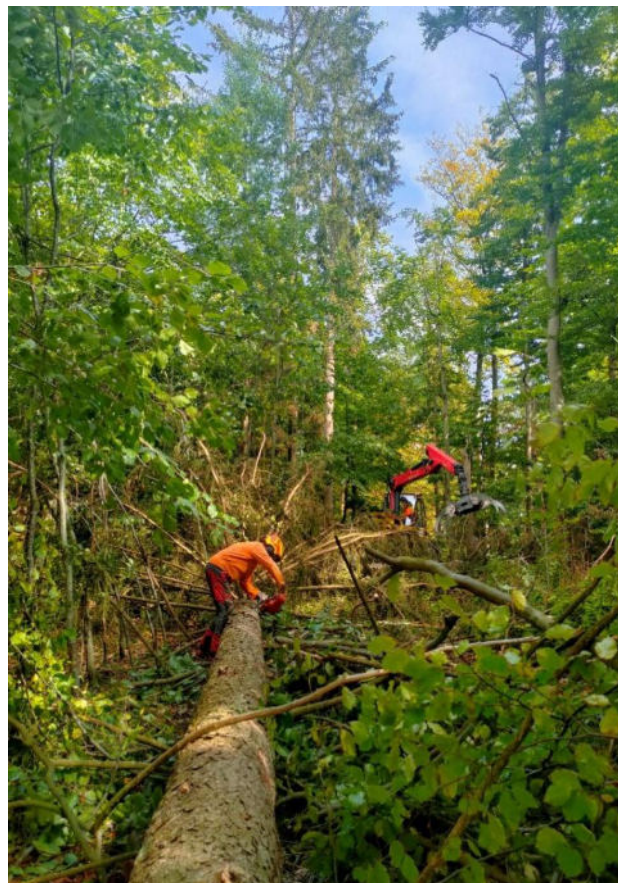
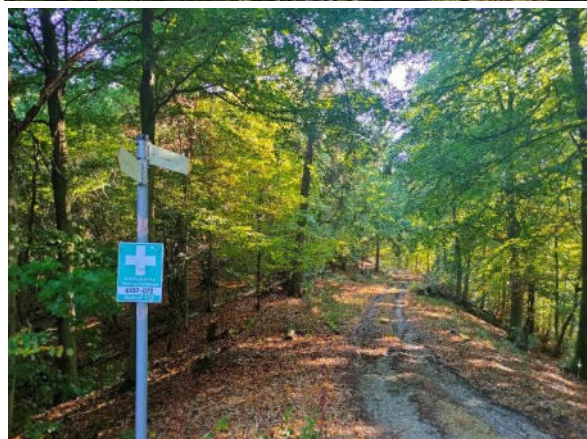
4. Transport: Once the trees have been harvested, they must be transported to a processing facility. This can be done using trucks, trains, or ships, depending on the location of the harvesting site and the processing facility.

5. Processing: At the processing facility, the harvested trees are turned into various products such as lumber, pulp, and paper. This involves a range of activities, including sawing, chipping, and pulping.

6. Post-harvest activities: After the trees have been harvested and processed, the site must be restored to its original state. This can involve activities such as reforestation, erosion control, and the removal of equipment and debris.

The logging and harvesting process can be complex and requires careful planning management to ensure that it is conducted in a sustainable and environmentally responsible manner.

**Remark** for logging and harvesting process that they should crucial to prioritize work safety which is the practice of ensuring the health and well-being of workers in any industry. In the logging and harvesting industry, work safety is crucial to prevent accidents and injuries. By prioritizing work safety through the use of proper Personal Protective Equipment (PPE) such as helmets, hard hats, gloves, and safety glasses, can help protect workers from hazard. Other are training, inspections, safe work practices, emergency preparedness, and environmental protection.



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German Bundestag

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Präsident: Carsten Wilke • Geschäftsführerin: Alexandra Arnold





### Forest and game - Wildlife management:

In Germany, the hunting right is a property right that is tied to land. It is either exercised by the landholders themselves or leased out. Over 80 % of the hunting area is privately owned. The hunting right does not only include the permission to hunt certain game species, but also commits the hunter to engage in wildlife management. The two support pillars of German hunting are the so-called hunting district system and the wildlife management duty imposed on hunters.

#### Hunting district system

The hunting district system establishes the local competence and personal responsibility of holders of hunting rights for their districts. The hunting district system allows year-round nationwide monitoring by well-trained hunters. They provide information on the population status of wild game, for instance. Systematic monitoring of forest districts also offers a basis for research.

To obtain a hunting license in Germany, individuals must complete a rigorous training program that includes both classroom instruction and practical training in the field. The training covers topics such as wildlife biology, hunting laws and regulations, hunting ethics, and firearms safety. After completing the training, individuals must pass a comprehensive exam to obtain their hunting license.

It is primarily conducted on private land, with landowners granting permission to hunters to access their property. In addition, there are designated hunting areas, such as national parks and nature reserves, where hunting is strictly controlled or prohibited.

The hunting season in Germany varies depending on the species being hunted and the location. For example, the hunting season for deer typically runs from mid-September to mid-January, while the hunting season for wild boar is year-round.

Overall, hunting in Germany is a regulated and well-managed activity that is an important part of the country's cultural heritage and recreational activities. It is conducted in a responsible and sustainable manner that balances the needs of hunters, conservationists, and wildlife populations.

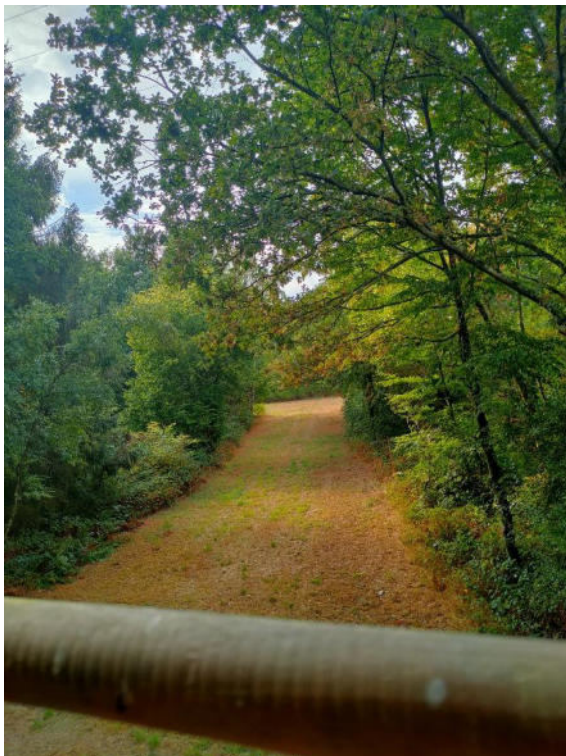
#### Wildlife management requirement

Hunters are called upon to preserve the habitats of game in our highly industrialized and densely populated country of Germany. Wildlife management means only to remove as much game as the population development allows, to maintain the basic living conditions of game as well as to avoid hazards (e.g., diseases and accidents caused by game). Wildlife management must be carried out in such a way as to prevent adverse effects on farming, forestry, and fisheries, notably through damage caused by game. Wildlife preservation is embedded in the protection of biotopes and species. Measures conducted by owners of forest districts to





improve habitats do not only serve the huntable game, but also benefit a large number of non-huntable animals subject to year-round protection.



### Impacts of climate change Effects of climate change in Rhineland-Palatinate

Climate change is having numerous effects on Rhineland-Palatinate, including changes in temperature, precipitation patterns, natural habitats, and water resources. These effects are impacting the region's ecosystems, agriculture, tourism, and public health in various ways. Addressing the challenges of climate change in Rhineland-Palatinate requires a comprehensive and coordinated approach that involves multiple stakeholders and sectors.

### Forest damage due to drought and heat

The main cause of forest damage due to drought and heat in Germany is climate change. The region has experienced a significant increase in temperature and decrease in

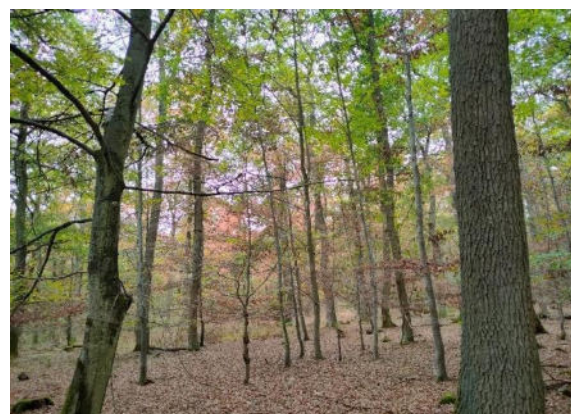
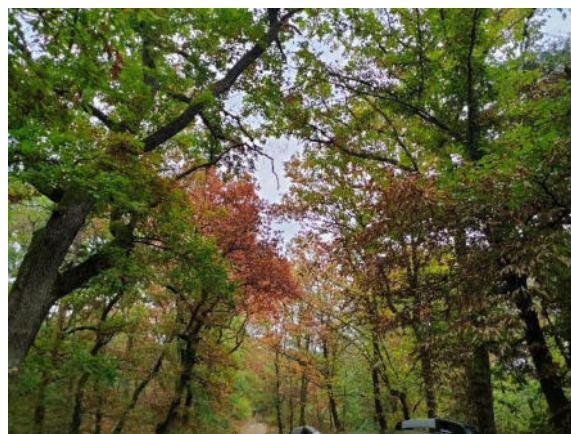
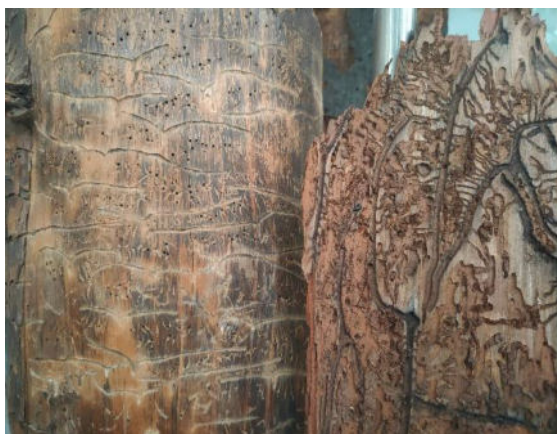




rainfall over the last few decades, leading to an increase in the frequency and severity of droughts. These dry conditions weaken trees, making them more vulnerable to pests and diseases such as the bark beetle. Additionally, the warmer temperatures allow bark beetle populations to proliferate, leading to significant damage to German forests.

The impacts of bark beetle infestations on forests and society can be far-reaching. For example, the loss of trees due to bark beetle outbreaks can lead to reduced carbon sequestration, increased greenhouse gas emissions, and decreased water quality. The loss of timber production and recreational opportunities can also have economic impacts on local communities. In addition, the increased risk of forest fires associated with dry and dead trees can pose a threat to human safety and property.

To address the challenges of bark beetle infestations and forest damage due to drought and heat, a range of strategies are being implemented in Germany and other affected countries. These strategies include the promotion of mixed-species forests, the use of pheromone traps and biological control, and the removal of dead and infested trees to prevent the spread of beetles. Forest management practices that enhance the resilience of forests to climate change, such as thinning, pruning, and reforestation, are also being explored.



### Exploring the damage trees With recent advances in Unmanned Aerial Vehicle (UAV) remote sensing technologies.

Wittlich and Traben-Trarbach used drone to to explore the damage trees. By using high-resolution cameras and sensors, drones can quickly and accurately assess the health and condition of trees in large forested areas. This technology can be particularly useful in detecting damage from natural disasters such as wildfires, storms, and insect infestations. Drones can fly over affected areas and capture images and data that can be analyzed to





determine which trees are damaged or dead. My Project, Laos also use the drone for exploring deforestation area in our target villages and collect those data together with verification on sites. This information can help forest managers make informed decisions about how to manage the forest and prioritize which areas need restoration or other interventions. Furthermore, the use of drones can significantly reduce the time and resources required for manual tree inspections, making it a cost-effective and efficient tool for forest management.



### As of now, I am in the final week of a program

I had the opportunity to visit the Technical University of Dresden and Gottingen's faculty of forest science and forest ecology, and I must say that I was very impressed. The faculty members and staff were very knowledgeable and welcoming, and the facilities were top-notch. I learned a lot about the latest advancements in forestry and forest ecology during my visit, and I feel that these universities are doing an excellent job of preparing students for careers in this field. Overall, I had a very positive impression of both universities and would highly recommend them to anyone interested in pursuing a career in forestry or related fields.

Last but not least, both universities have a long and distinguished history in forest sciences, and they offer a wide range of programs and courses that would be of interest to me.

I met Carsten Schusser and I had talk about forest related study possibilities. TU Dresden's Tropical and International Forestry program is particularly well-suited to my interests, as it focu-

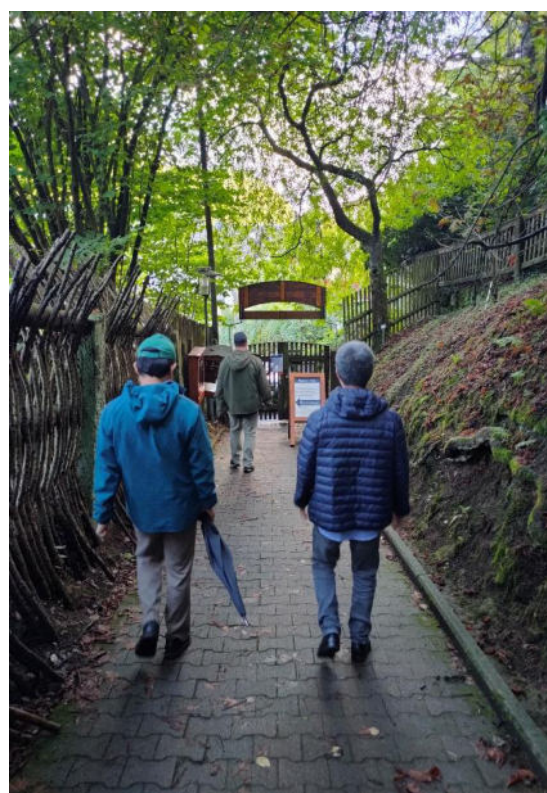




ses on sustainable management and conservation of forest ecosystems worldwide. The program also offers a strong emphasis on internationalization, which would allow me to gain experience working with people from different cultures.

UG's Faculty of Forest Sciences and Forest Ecology is another excellent option for me. The faculty offers a wide range of programs and courses, including forest ecology, forest management, and wood science. I am particularly interested in the faculty's research on climate change and its impact on forests.

I would be excited to visit both universities and learn more about their programs and research and believe that either university would be a great place to study forest sciences, and I would be proud to be a student at either one.





### 4. Final comment

I am writing to express my impressions of the Forest Expert Program. I had the opportunity to participate in the program last year, and it was an incredibly rewarding experience.

The program gave me a lot to gain real experience about sustainable forest management. I learned about the different aspects of forest management, from tree planting and harvesting to wildlife conservation and climate change adaptation. I also had the opportunity to visit several forests and learn from experienced foresters.

One of the most valuable aspects of the program was the opportunity to network with many experts. I met foresters from all over the world, and we exchanged knowledge and ideas about sustainable forest management. This networking has been invaluable to me in my career, and I have already been able to collaborate with some of the people I met on the program.

I am confident that the skills and knowledge I gained from the Forest Expert Program will be invaluable to me in my career. I am now better equipped to manage forests sustainably and to advocate for the conservation of forest ecosystems. I am also more connected to the global forest community, and I am excited to continue to collaborate with others to protect forests for future generations.

I would like to appreciate entire Forest Expert Team for their hard work and dedication. The program was well-organized and informative, and I learned a great deal from the experts who taught it. I am grateful for the opportunity to have participated in the program. Specifically, Sabine for her leadership and guidance throughout the program. She was always available to answer questions and provide support, and she made sure that we all had a positive experience. Thanks to GIZ-CliPAD/I-GFLL project.

I am truly grateful for the opportunity to have participated in the Forest Expert Program. It was a life-changing experience, and I will never forget it. Thank you again to Sabine and the entire Forest Expert Team for making it possible.

### Additional Documents

- documentation on your activities to share your activities
- this might be a Power Point presentation, a report in Blog style etc.
- Abstract / Article: Summary of your report for the Forest Experts Webpage and the Pro Wald Magazine
- We are happy about every picture we receive!

|                                                        |              |
|--------------------------------------------------------|--------------|
|                                                        | Grant Holder |
| Date, 30.11.2022<br>Signature,<br>Vilatsay Lattanavong |              |



## Annex 10. 2022 Richard Nuse Sam



# Report

1. November 2022

## Personal Details

|                 |                            |
|-----------------|----------------------------|
| Family Name     | <b>Sam</b>                 |
| First Name (s)  | <b>Richard Nuse</b>        |
| Gender          | Male                       |
| Date of Birth   | 16/05/1984                 |
| Nationality     | Liberian                   |
| Passport Number | PP0091766                  |
| Email Address   | Richardsam842017@gmail.com |

## 1. Short Summary

Forested landscapes, ecosystems, and people are constantly facing challenges such as deforestation, unsustainable logging practices, human rights violation, drought, sea level rise, etc. in a rapidly changing climate and environment. This calls for urgent attention to adaptively manage natural resources. Specifically, Sustainable Forest Management is urgent and requires the right training, skills, and research knowledge. The Forest Expert Program fits well in providing the right knowledge and skills. It was conducted from August 28 to September 24, 2022, and funded by the German Federal Ministry of Food and Agriculture. The program offered me the opportunity to be trained at the Eberswalde University for Sustainable Development in sustainable forest management. It also provided tailored made training, skills, and knowledge on biodiversity conservation, reduced impact logging, good forest governance, research, international development, private forest management, community forest management, and forest policy. Importantly, I gathered practical experiences, especially from projects of German private forest owners, forest cooperatives (producer companies), and research institutes. The knowledge and skills are significant to help improve forest management and governance in Liberia through an adaptive management approach.

I believe that my participation in the **Forest Expert Program** helped me to acquire hands-on experience and has created partnerships with German Cooperations, professional foresters, and has expanded my network of like-minded development practitioners. I consider this as a major step forward in my professional career since it is closely linked to my current job which is to sustainably and inclusively governed and manage tropical forests, mitigate and adapt to climate change, fulfill human rights and safeguard local livelihoods.

As the Regional Program Officer for Africa at the Sustainable Development Institute (SDI), who works with more than 13 national and international civil society organizations (CSOs), about 35 Local Communities (LCs) and social movements, private sector, relevant government ministries/agencies,



knowledge transfers from the Forest Expert Program through national and regional level workshops, meetings, conferences, dialogues, is paramount to help build the capacity of other professionals for sustainable forest management.

My acknowledgment goes to the German Federal Ministry of Food and Agriculture for providing the funding and continuously supporting capacity building in different areas of sustainable development. Special thanks go to the German Forest Society specifically the Forest Expert Program for planning, coordinating, and implementing such a unique program.

### 2. Introductory Chapter

#### Who recommended you and why, which institutions were involved:

I was recommended by **Paul Jacovelli, a Senior Forestry Expert at Unique**. Paul serves as the **Team Leader** of an ongoing Unique project that is carrying out a **Feasibility Study in Liberia for the development of a commercially focused, community-based forestry business** under the **climate-related (REDD+) and sustainable forest management (SFM) projects, mostly for The World Bank**.

I work with Unique in Liberia officially as the **Community Forestry Expert** on the project. I have good knowledge of community forestry in Liberia which is important for carrying out the project. Based on this background, Unique recommended me to gain more knowledge and skills in sustainable forest management to contribute to the improvement of sustainable forest management and governance in Liberia.

However, initially, I got to know about this program through **Dr. Simone Pfeiffer, Georg-August-University Göttingen, Centre of Biodiversity and Sustainable Land Use**, Büsgenweg 1 Room 0.105 D-37077 Göttingen.

**Unique Forestry and Land Use** was founded in 1998 and is headquartered in **Schnewlinstr. 10 DE-79098 Freiburg, Germany**, Tel. +49 - 761 - 20 85 34 0 [unique@unique-landuse.de](mailto:unique@unique-landuse.de) [www.unique-landuse.de](http://www.unique-landuse.de). Unique also has subsidiaries in Paraguay, Vietnam, Ethiopia, and Kyrgyzstan as well as team members in Argentina, Colombia, Uganda, Great Britain, and Serbia to strengthen its regional presence.

Unique has excellent knowledge and experience in forestry and agriculture, climate protection, economics, environmental policy, and organizational development. With more than 60 employees, it offers an extensive pool of expertise.

#### What is your position / tasks in your home country?

As mentioned earlier, I work as the **Community Forestry Expert, Liberia Community Forestry Cooperative Feasibility Study, UNIQUE forestry and land use GmbH** from January 7, 2021, to present.

As the **Community Forestry Expert** in Liberia I work closely with the project's Team Leader (TL) at **UNIQUE forestry and land use GmbH** and the donor **Forestry Development Authority (FDA)** on **planning and conducting meetings, and implementing field activities and stakeholder engagement**. I organized up-country trips to the project's focus areas (**Marbon, Normon, and Tonglay Community forests in the Northwest. And Potupo, Gbeapo, and Sarbo Cluster community forests and Karlway Community forests**) in the Southeast of Liberia in close collaboration with FDA and the Team Leader (TL) at **UNIQUE forestry and land use GmbH. Also, I organize meetings and conduct rapid**



**forest resource assessments with the Community Forest Management Body (CFMB)** and other stakeholders in these community forests through Key Informant Interviews, Focus Group discussions (FGD), and Observation. In addition, I work with the Team Leader (TL) and to **conduct national and local level stakeholder consultations and interviews**. Advise on the opportunities and challenges of working with the selected community forests and work with **UNIQUE Team** to Identify potential service providers (individuals or organizations) within Liberia, to support this project. **Importantly**, provide written reports to the Team Leader following completion of the rapid assessment in these different community forests.

I am also employed as the **Regional Program Officer Africa, Green Livelihoods Alliance 2, Forest for a Just Future Program, under the Community Rights & Corporate Governance Program at the Sustainable Development Institute (SDI) located in Duarzon, Robert Field Highway, Margibi, Liberia since January 4, 2021.**

At SDI, I provide programmatic support to regional Friends of the Earth groups in Ghana, Nigeria, and Cameroun, and coordinate the Liberian program under GLA 2 “Forest for a Just Future Program; conduct bi-annual and annual PMEL for regional FOE groups in Ghana, Nigeria, Cameroun, and Liberia partners on forest and land governance. The Liberian program aims at addressing the drivers of deforestation, bad land, and forest governance, human rights violations through quality data and evidence-based research by assessing the potential environmental and social impacts and risks of (oil palm development, logging, mining, and infrastructure) since these projects pose huge risks to local communities. I also participate in all GLA 2.0 regional and international campaigns and webinars; support the country's annual narrative and financial reports delivery on the program implementation according to Donor's requirements in compliance with EU laws, regulations, and standards. In addition, organize and support campaign initiatives on land, energy, water, and forest at ECOWAS and ACPHR based on data collected and results of ESIA; and organize and facilitate national and regional level stakeholder dialogues on forest and land governance and management specifically the Land Rights Law.

### **What were your expectations and objectives?**

Based on Germany's long-term experience in sustainable forest management, I expected to gain hands-on experience and improved technical and management training on multifunctional forest management in different areas such as forest resource assessment, forest policy, forest governance, community forest management, forest cooperatives, research, and climate change. Moreover, learning from the experiences through the exchange of knowledge with other forest experts and broadening my professional network in the field of forestry.

Indeed, my expectations were met by the smart program management and coordination. My activities were tailored made to my need (background in forestry, areas of expertise, interests in gaining new knowledge and skills). I gained hands-on training, knowledge, and skills ranging from best practices in sustainable silvicultural systems, biodiversity conservation, community rights and need, German forest policy, development coordination and collaboration, research for development, private forest owners, and as well as community forestry.

Since I work with more than 13 national civil society organizations (CSOs) and 5 international and about 35 Local Communities (LCs) and social movements, the private sector, and relevant government ministries/agencies, I will transfers the knowledge gained from the Forest Expert Program through national, regional, and international workshops, meetings, conferences, dialogues.

### **How transport to Germany worked / was funded**





Overall, the transport to Germany was good. **Sabine Kühling, Coordinator of the Forest Expert Program** provided all the required documents for my visa acquisition. Though at some point the **German Embassy in Accra, Ghana** was critical for fulfillment of requirements such as all the hotel reservations for my stay in Germany. This became hectic when I never had the **Hotel reservation for September 24 and 25** for my stay in **Berlin** for my departure to **Liberia**. The **Embassy** refused to issue the visa and instead requested I submit the hotel reservation for those two days. Fortunately, Sabine made a way to quickly get the reservation for the two days that enable the issuance of my visa. Unfortunately, there is no **German Embassy/Consulate in Liberia** to issue a visa so I had to fly to **Accra, Ghana** for my visa which incurred additional cost, planning and preparation time. My trip to Germany was self-sponsored but internal travels in Germany, accommodation, and feeding were covered by the program which was good and perfect. Instances where I bought my tickets, I was reimbursed by Sabine.

### Time Schedule

- Please update the information on your schedule

| Date       | Institution                                                                       | Programme                                                                                                                                                                       |
|------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 29/08/2022 | Forest Experts Seminar at Eberswalde University of Sustainable Development (HNEE) | Introduction by German Forest Society (Sabine Kühling, Malte Campsheide); Welcome and Introduction to Seminar venue at HNEE, Presentation Forestry in Germany (Peter Spathelf), |
| 30/08/2022 | Forest Experts Seminar at Eberswalde University of Sustainable Development (HNEE) | Field trip to local Forest                                                                                                                                                      |
| 31/08/2022 | Forest Experts Seminar at Eberswalde University of Sustainable Development (HNEE) | Presentations of trainees, City tour Eberswalde                                                                                                                                 |
| 01/09/2022 | Seminar at Thünen Institute                                                       | Introduction to the Work of the Institute, Individual Program discussion and preparation for the next weeks                                                                     |
| 02/09/2022 | German Forestry Council, Berlin                                                   | Introduction to German Forestry Council, Federation of German Forest Owner Associations, International Sustainable                                                              |
| 05/09/2022 | Private Forest Enterprise Leon Mangasarian & Gutsverwaltung von Römer (Sachsen)   | Insight in the structure and management of the private Forest Enterprise (Lorenz Klein von Wisenberg)                                                                           |
| 06/09/2022 | Private Forest Enterprise Franz Prinz Salm Nikolaus Sprinzl Private Forest        | Insight in the structure and management of the private Forest Enterprise (Lorenz Klein von Wisenberg)                                                                           |
| 07/09/2022 | RuheForst Steigerwald (cemetery in forest) &                                      | Insight in the structure and management of the private Forest Enterprise (Lorenz Klein von Wisenberg)                                                                           |



|            |                                                                                                  |                                                                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | Producer Organization (FBG Isar-Lech).                                                           |                                                                                                                                                              |
| 08/09/2022 | Forest Enterprise Rüdiger Stracke                                                                | Insight in the structure and management of the private Forest Enterprise (Lorenz Klein von Wisenberg)                                                        |
| 09/09/2022 | DLG Walddtage - forest life                                                                      | Guided tour through the fair area                                                                                                                            |
| 12/09/2022 | Technical University of Dresden; Chair of tropical and international Forestry                    | Forest related study possibilities at the TU Dresden                                                                                                         |
| 13/09/2022 | Technical University of Dresden; Chair of tropical and international Forestry (Carsten Schusser) | Forest related study possibilities at the TU Dresden                                                                                                         |
| 14/09/2022 | State Forest Enterprise Saxonia (Frank Jacob)                                                    | Forest Soil Monitoring                                                                                                                                       |
| 15/09/2022 | Forstbezirk Plauen;                                                                              | Forest Management, private forest consulting, work of a forest district officer                                                                              |
| 16/09/2022 | Forstbezirk Plauen (Bert Schmieder)                                                              | Forest District Plauen overview, Field trip with private forest owners                                                                                       |
| 19/09/2022 | Forest Research Institute Baden Württemberg (FVA) (Ulrich Schraml); Local forest district office | Tasks and projects of the FVA                                                                                                                                |
| 20/09/2022 | Forest Research Institute                                                                        | Practical Data collection of the German National Forest Inventory (BWI); Forest Owner Management App „WaldExpert“                                            |
| 21/09/2022 | Communal Forest of Emmendingen                                                                   | Forest Tour to the Communal Forest of Emmendingen and introduction to their sustainable management system ( 8 am to approx 2 pm); Meeting with Unique in the |
| 22/09/2022 | Unique forstry and landus GmbH, Schnewlinstraße 10, 79098 Freiburg im Breisgau (Paul Jacovelli)  | Projects and work of UNIQUE                                                                                                                                  |
| 23/09/2022 | Unique forstry and landus GmbH, Schnewlinstraße 10, 79098 Freiburg im Breisgau (Paul Jacovelli)  | Strategic work on Joint Project                                                                                                                              |



### WEEK ONE (1)

**On August 29, 2022**, I began the “Forest Expert Program”, by receiving training and practical insights on sustainable forest management at the Eberswalde University for Sustainable Development by **Prof. Dr. Peter Spathelf** of silviculture. The university was founded in 1830 as a higher institute (Höhere Forstlehranstalt) of forestry.

The purpose of attending the Eberswalde University for Sustainable Development was to gain a detailed understanding and technical skills in sustainable forest management and the silvicultural system of Germany. Prof. Dr. Peter Spathelf firstly lectured on the responsibility for sustainable forest management and forest research. He said German unsustainably managed forest resources in the past by using timber resources for construction, mining, and heating. This resulted in the scarcity of forest resources and prompted the thinking of sustainability. In the 18<sup>th</sup>-19<sup>th</sup> century, George Ludwig Hartig led the development of a sustainable forest management program by introducing the Shelterwood Cutting Silviculture System. He further said Cotta in Tharandt, Dresden also played an important role in Sustainable Forest Management. In 1811 Heinrich Cotta thought and started sustainable forest management education at Tharandt. This was a private establishment to educate people on sustainability in forest resources management and it was taken over by the state as the Royal Forest Academy of Saxony in 1816. Now the Institute of International Forestry and Forest Products hosts the Master Course “Tropical Forestry and Management.” These different times also mark the period of close to natural forests from 1860-1922, Alfred Moller brought about continuous forest cover but his dream of continuous forest cover did not continue in 1930. From 1970-1980 marked the period of forest decline. According to Prof. Dr. Peter Spathelf, the situation changed after 1990. Three forest institutions were reestablished namely (1) Federal Research Institution, (2) The State Forest Institute, (3) and the University of Applied Sciences.

In addition, the Eberswalde University for Sustainable Development operates on three main pillars which are economic, social, and environmental aiming at sustainability in natural resource management.

Furthermore, Sustainable forest management in Germany is based on legal framework and policies seeking a balance between conservation, economy, and society. For conservation purposes, dead woods are left for biodiversity conservation and protection and there is a policy for increasing deadwood. Meanwhile, clear-cutting is no longer used in Germany and the Shelterwood system is no more practice on a large scale since the time for regenerating takes 20-30 years.

Importantly, Current forest management practices in Germany are based on the “Retention Principles” by implementing selective logging and operations and no application of pesticide in German forests. German forestry aims to achieve close to natural forests based on continuous forest cover consisting of mixed species such as coniferous spruce, pine, beech, and deciduous tree species such as birches, maples, oaks, silver fir for a more resilient forest in Germany in challenging and harsh climatic conditions.

On the same day, **Sabine Kühling and Malte Campsheide** gave an Introduction of the German Forest Society. In their introduction, they said The German Forest Society (Deutscher Forstverein, DFV) was founded in 1899 and is the oldest professional organization representing the different interests of German foresters and forest owners. The organization currently has more than 6,000 members. The society aims to achieve close-to-nature and sustainable multifunctional forestry by prompting mixed forest stands of both coniferous and deciduous tree species. Moreover, the Society operates on reviewing and implementing German forest policy and capacity building of its members on the implications of forest policy. They further said, the German Forest Society has another arm which is the Network for International Sustainable Forest Management (Netzwerk für Internationale nachhaltige Waldbewirtschaftung, which was founded in 1973 as a meeting platform for international forestry cooperation. This network aims to



build a network of like-minded and interested foresters in finding solutions for the many challenges currently being faced with international forestry issues in Germany, Africa, Asia, the Americas, and Europe.

They explained that “The Forest Expert Program” is funded by the Federal Ministry of Food and Agriculture (BMEL). It is an international forestry exchange program that aims to increase the knowledge and skills of young professionals in international forest management. The trainees are to gather practical experience in private or public forest companies and other forest institutions in Germany, especially from projects of German international cooperation. This program is supported technically by the Network for International Sustainable Forest Management since this network has members that are interested in global issues of forestry and can provide training and skills in sustainable forest management.

**On September 30, 2022, Prof. Dr. Peter Spathelf** at the **Eberswalde University of Sustainable Development (HNEE)** and **Sabine Kühling and Malte Campsheide of the German Forest Society and Forest Expert Program** took us on a field trip to the local forests. The field trip aimed to blend what was thought in the classroom with practicality to gain hands-on experience in sustainable forest management. I acquired advanced knowledge on sustainable forest management practices such as (maintenance, conservation, and enhancement of ecosystem services and biodiversity conservation) through the explanation and exchange of experiences of other trainees. I learned how to protect ecologically important forest resources through the collective professional network, partnership, and collaboration. We delved deeper into how to ensure the recognition of free, prior, and informed consent of community members and sustainable community forest management and ecosystem restoration in tropical landscapes through different silvicultural systems such as selective cutting, retention of dead wood, and continuous forest cover. Importantly, we explored deeper into the different silvicultural systems relating to the processes of tending, harvesting, and regenerating a forest primarily considering the different objectives in forest management (e.g. conservation, social, economic, environmental, climate, sustainable development)

**On September 30, 2022**, in the afternoon, the Johann Heinrich von Thünen Institute research site in Britz to learn about forest ecology and the effect of climate change. Dr. Tanja Sanders was our guide who explained the different research areas and methods used to collect data. The purpose of the research station is to investigate through different methods how single trees and entire tree stands respond to changing climate, different nutrient supplies, species mixture, and atmospheric deposition by using methods such as remote sensing and drones. At the experimental site “Britz” “Nine large-scale lysimeter and two climate stations provide data on groundwater production in forests under different tree species compositions. At the experimental station Britz, the water and matter balance of forests were determined.

**Dr. Tanja Sanders** explained to us that Sap flux measurements supply high-resolution data on water usage by the trees and how water transport causes shrinking and swelling of the stem. Importantly, the different equipment is used to collect important information on the reaction of trees to changing climate conditions. The intensive forest monitoring is focused on providing data in close cooperation with the research institutes of the Federal states as well as the international co-operative Programme ICP Forests to inform decision-making on climate-related strategies, actions, etc.

**On September 31, 2022**, at the Eberswalde University of Sustainable Development (HNEE) we had presentations from the different trainees on individual projects. The presentations aimed to give more understanding of the different projects under the German development cooperation projects, to learn





from others' trainee projects' best practices, strategies, methods, and sustainable outcomes that could be transferred through adaptability and replicated in other countries.

**Vilatsay Lattanavong** from Laos officially the Lao People's Democratic Republic, a landlocked country in Southeast Asia presented the project Climate protection through avoided deforestation and forest Degradation (**GIZ-ClIPAD/I-GFLL**). Implementation of Governance, Forest Landscapes, and Livelihoods (I-GFLL). The aim is to provide incentives to local communities to participate in forest management and conservation efforts by engaging sub-national jurisdictions to develop and support strategies for reducing deforestation. The primary objectives are to reduce greenhouse gas emissions by promoting sustainable forest management and forested landscapes at scale in six provinces of Lao PDR through the implementation of the Lao ERP.

**Juliana Degenhardt** is from **Brazil**, South America with a population of 212,6 million and an area: of 8.516.000 km<sup>2</sup>, their spoken language is Portuguese with its most popular cities: Rio de Janeiro and São Paulo and the capital called Brasília. **Juliana** works for Embrapa (Brazilian Company for Agricultural Research) as Researcher on Plant Propagation (Tissue culture). She presented on the Brazilian Planted Tree Industry in 2019. Her presentation pointed out that the industry is economically very significant, accounting for 1.2% of Brazilian GDP and gross revenues of R\$ 97.4 billion and 3.75 million Jobs for Brazilians across the entire country. Major tree species are Eucalyptus and Pinus yielding 35,3 m<sup>3</sup>/ha/year with 22 years rotation system. She said pesticides are used for the first two years and other methods are biological control and no fertilization needed. Important to the production of timber is Climate change mitigation, which is removing carbon from the atmosphere, storing this carbon in planted and preserved forests, avoiding emissions during industrial production, and storing carbon in final products. Carbon dioxide is removed from the atmosphere during the process of photosynthesis and transformed into biomass (also known as carbon storage or sequestration). It is estimated that the 9 million hectares of planted trees in Brazil store 1.88 billion tons of CO<sub>2</sub>eq. Furthermore, the nearly 6 million hectares of conservation areas (such as LR and PPA) have the potential to store an additional 2.6 billion tons.

In addition to removing and storing carbon in forests, the sector also contributes by avoiding emissions through the use of forest-based products instead of non-renewable resources, for example, to generate clean energy. The amount of carbon in each kind of product varies according to type. Paper products such as aseptic shelf-stable liquid packaging and books store approximately 45% of carbon, laminate flooring and wooden tables store 47%, and wood charcoal made from planted forests 85%.

Furthermore, she presented on Genetic Breeding for exotic and native forest species through Vegetative propagation (Micropropagation and Tissue culture techniques).

**Lasha Dzadzamia** is from Georgia with the capital city Tbilisi, an Area of 69 700 km<sup>2</sup>, a Population of 3.7 million and the spoken language is Georgian. He presented on Forest Management with a specific focus on the General Aspects. He noted that the Georgian Ecosystem and its Global Significance because Caucasus is included in 200 Eco regions designated by WWF and Georgia is included in 34 global biodiversity hotspots with 84 species of native fish, 12 amphibians, 52 reptile species, 300 bird species, 76 mammal species, 6500 vascular plants in the Caucasus, 4100 found in Georgia, Almost half endemic, and 153 native tree and 250 bush species in Georgia. Sustainable forest management practices include no clear cuts, individual tree selection, Natural regeneration, and site adaptive species, and only 20% is used for timber production.



**Mohammad Sidiq**, from Indonesia who works as the Strategic Area Manager for the Sustainable Forest Management in Forest and Climate Change Program (FORCLIME) at GIZ Indonesia presented his Role in GIZ FORCLIME. According to him, he supervises two provincial teams both in Papua and West Papua and gives technical advice on strategy development; support for forestry administration reform processes; support for sustainable livelihoods in rural areas; support for the marketing and sustainable use of NTFP; and Capacity building for sustainable forest management and nature conservation. He explained that Indonesia ratified Paris Agreement through UU No.16/2016. The agreement's goal is to substantially reduce global GHG emissions to limit the global temperature increase in this century to 2 degrees Celsius while pursuing efforts to limit the increase even further to 1.5 degrees. The project goal is to contribute to this target of reducing emissions and the Long Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050; Indonesia foresees reaching the peaking of GHGs emissions with a net sink in forestry and land uses (FOLU) in 2030, and to progress towards net-zero emission in 2070.

**Nguyen Thanh Tung** from VIETNAM who works with MCNV presented on the project MCNV. He began with an overview of Vietnam that the country's area is 331,210 km<sup>2</sup> with 63 provinces and a population of 99 million. The country has 54 ethnic groups (Kinh: 85%, others: 15%) and is politically governed by the Communist Party. Primarily, there are 3 geographical regions which are North, Central, and South which forests covering 14 million hectares divided as 10m ha natural and 4m ha planted forests 80% acacia and 20% others (pines, rubber trees, etc.). The ongoing project in QuangTri aims to promote sustainable partnerships between CSOs and enterprises for sustainable forest management in the context of climate change (PROSPER). Partners are the Quang Tri Association of Smallholder Forest Certification Groups (SFCG). The project has an Acacia Plantation Forest of 37 sub-associations; 488 smallholder members; and an area of 2,838 hectares of FSC-certified acacia plantation. And Natural Forest 02 sub-associations; 185 smallholder members; and an Area of 1,562 hectares of FSC certified, including NTFPs.

**Richard N. Sam** from Liberia presented "Ensuring Sustainable forest management and governance, environmental justice, and climate justice in Liberia and international" Liberia is officially the Republic of Liberia, and is a country on the West African coast. It is bordered by Sierra Leone to its north-west, Guinea to its north, Ivory Coast to its east, and the Atlantic Ocean to its south and southwest. It has a population of around 5 million and covers an area of 111,369 square kilometers (43,000 sq. mi). English is the official language, but over 20 indigenous languages are spoken, reflecting the country's ethnic and cultural diversity. The country's capital and largest city are Monrovia.

According to the U.N. FAO, 44.9% or about 4,329,000 ha of Liberia is forested, according to FAO. Of this 4.0% (175,000) is classified as primary forest, the most biodiverse and carbon-dense form of forest. Liberia had 8,000 ha of planted forest. Moreover, the forest landscapes of Liberia which are in North-western and Southeastern Liberia with the highest remaining portions of forests. He also presented on the project with Unique Forestry and unique land use GmbH. He noted that Unique land use GmbH has been active in Liberia for some years, working on various climate-related (REDD+) and sustainable forest management (SFM) projects, mostly for The World Bank. Currently, Unique is carrying out a Feasibility Study in Liberia for the development of a commercially focused, community-based forestry business. Moreover, Richard works with the Sustainable Development Institute (SDI) as Regional Program Officer. SDI seeks to transform the decision-making processes on natural Resource Management, to promote equity (Fair & Impartial) in the sharing of benefits derived from natural resource exploitation for the protection of forests and local communities in Liberia.

**On September 1, 2022**, I had a **Seminar at Thünen Institute**, on Greenhouse gas reporting and German National forestry inventory with an introduction to the Work of the Institute. I learned that The Thünen Institute is a research Institute within the scope of the German Ministry of Food and Agriculture (BMEL)



and it is an independent higher Federal Authority with Headquarters in Braunschweig (10 other locations). The field of activities to advise on forest and natural resource Policy and research based on the strategic concepts of integration and internationalization. The Institute is actively involved in National Soil Survey, International Forest Monitoring (ICP Forests) EU research/policy projects for Expert panel, IPCC-Task Force GHG Inventories International Networks extreme events, Forest adaptation (COST Stress, IUFRO) National Wild Life Monitoring, International Analyses.

I learned about the History of the German National Inventory. Development from 1987 to 2012 includes Increasing awareness and establishment as a source of information for politics, business, science, and media. Increasing willingness to invest; expanded efforts at the state level (higher sampling density), but time expenditure at plot level must not increase; more staff at the federal level; technical progress in data collection (field computers, electronic measuring devices, GPS navigation); technical progress in data management (centralization, task sharing, rights, management, online data access, GIS); low willingness for methodological innovation; Increasing networking in Europe (growing expectations for harmonization and data delivery at European level); and increasing complexity. Some of the most important results of NFI 2012 are forest area stable-competition for land remains unchanged; more deciduous trees- more variety, stability; less spruce-less risk, less wood production; more thick trees-more biodiversity, less wood quality; increment remains high- vitality, wood production secured; more logging-jobs, income; growing stock further increased- important for sustainability; and more deadwood-more biological diversity.

**On September 2, 2022, I met the German Forestry Council and Federation of German Forest Owner Associations in Berlin.** At the meeting in Berlin, **Eva Schonebeck**, introduced the German Forestry Council to the trainees. In her presentation, she said at the German forestry council, the work is about the different German forest policies that govern forestry and natural resources in Germany. The laws serve as an instrument to regulate the market in the event of calamity by banning logging. Some of the calamities include the bark beetle's infections, fire, drought, wind, etc. She also said the revision of the laws is necessary due to more frequent calamities especially the multiple effects of climate change. The government uses policies to adapt to dynamic changes in sustainably managing forests. Ex. In times of adverse climate impacts by drought leaving species stunted growth, and dying of species (spruce, pine, beeches), the government promotes the planting of mixed species more of broad leaves species which are climate resilient to drought and bark beetles.

**Impacts on forestry, timber, and other industries-** She further said though there is ambitious climate protection on the one hand there is outstanding interest in forest enterprises and the preservation of forest ecosystem services. E.g., the German government has banned the use of chemical/insecticide in managing forests and timbers from the infection of bark beetles. This is meant to protect the forest's ecosystems from soil and water pollution, and the regeneration of species. Importantly, she highlighted, that there are negative impacts on the downstream timber value chain since there are increased timber imports from third countries with lower sustainability standards (carbon leakage) because Germany cannot produce the number of timbers it consumes due to high ecological sustainability standards.

**Manfred Fischer** presented on the International Sustainable Forest Management Programme of the German Federal Ministry of Food and Agriculture. He narrated that in 2014 the international sustainable forest management (BCP Forestry) was established based on a decision of the German Federal Parliament (Bundestag). The objective is to support the international Forest Policy Objectives of the German Ministry for Nutrition and Agriculture (BMEL) with selected



pilot projects in the following five focal areas: Promoting a balancing forest policy; Promoting sustainable and multifunctional forest management; Supporting climate change resilience and adaptation; Supporting capacity building on sustainable forest management; Strengthening networks and research.

**The present Technical Topics include** Timber tracking (Morocco); Support for state forest management (China and Vietnam), National Forest Inventory (Ukraine); Smallholders Systems: Agroforestry to support reducing deforestation; (Zambia): the transformation of forest plantations to (longer rotation) mixed stands, incl. support to cooperative (Vietnam); Forest policy dialogue (China and Western Balkans); Specific aspects (promotion deforestation-free value chains; SOEF Reporting. Lastly, the **future of (BCP) has to do with** linking to ongoing or previous work/projects of German Development Cooperation; focusing on practical forestry aspects to further promote the approach of protecting through- sustainably utilizing forest resources – completed through components disseminating the approach on higher levels.

**Jessica Rebola Lichtenberg** presented on Research for International Sustainable Forest Management. She noted that the **purpose of the funding of research is an** adaptation of forests to climate; change; combating illegal logging and wood trafficking; ecological economics; management of natural forests; resource-efficient forest management. She also highlighted that the “Forest expert Program” is funded for the “exchange for knowledge, share experiences, skills, knowledge transfer, and sustainability.

Besides, she said funding targets bilateral forest research cooperation; transfer, and exchange of knowledge in the forest sector which I am a beneficiary of through the “Forest Expert Program.” Currently, **research collaboration includes** Agroforestry Kalimantan- Indonesia; Cultivation of mixed agroforestry systems; In Kalimantan, taking into account: Biodiversity, income generation, and climate adaption.

**Finally, Kurt Hauschild** of the **Federation of German Forest Owner Associations (AGDW)** made a presentation on the work of the German Forest owners Association (AGDW). The objective of the Association is to represent the interests of private and corporate forest owners and Sustainability as a guiding principle based on economy, society, and ecology. **He noted that there are** approximately 1.8 million people in Germany are private forest owners, with an average of 2.7 ha of forests. He also clarified that there are **two (2) subdivisions which are the** Network of commercial forestry operations with more than 100 private farms with around 500,000 hectares of forest and the Network of forestry associations currently 15 forestry associations with more than 100,000 forest owners on an area around 900,000 hectares. And 13 state forest owner’s associations which means each state has a forest association.

**According to Kurt**, the Association is based on strong principles which are forestry ownership and the freedom of forest owners’ management are the central concern; the Association actively advocates for the preservation of broad-based forest ownership, and the forest and its sustainable active management are the basis for the strong forestry and timber cluster in Germany.

Importantly, he mentioned the possibilities of influencing political processes through Informal meetings in ministries, Round tables, Advisory boards, Comments from draft bills, Parliamentary evenings, Statements in committees/ hearings/ expert hearings/ expert discussion, Meeting





with MPs, and Public relations. The Association **Campaign 8 of the AGDW and the family farm Land & Forest for climate protection instills** maintaining services of the forest to motivate forest owners, a Holistic view of ecology as a pillar of sustainability shaping Europe in dialogue, Rewarding climate protection services of the forest promoting use of wood, Strength small private forests- promoting forestry association, Valuation of ecosystem services matching demands of society, creating instruments of crisis management, and Strength forestry 4.0- Digitalization in the rural area.

## WEEK TWO (2)

From **September 05-08, 2022**, I got good insight in the structure and management of the private Forest Enterprise guided by **Lorenz Klein von Wisenberg**.

On **September 05, 2022** we visited a **Private Forest Enterprise Leon Mangasarian, Forest Kleinsee (Brandenburg)** located at Heimstrasse S 03172 Schenkendoborn, OT Barenklau, Germany. The forests cover an area of 360 ha of land. It consists of 86% pine, oak, European larch, beech, and black locus from North America. Also, there are fruit trees planted for nature and people. The soil type is predominantly sandy soil. And its **management goals of the forests in a changing climate and policy regime** are the long-term management goal is more economic to plant the right kind of trees on the right kind of soil. Hunting is also considered to protect the regeneration of economic tree species and for pleasure. Oftentimes, the owner Kills 5-6 deer and 25 wild boars/per year.

In the afternoon of **September 05, 2022**, we also visited **Gutsverwaltung von Römer (Sachsen)**. According to Benno, in 1994 farming started with 700 ha of land for food and 100 ha for sheep rearing. The farm is located Kirchplatz 5, 08496 Neumark Vogland. The forests cover an area of 1700 ha of land consisting of 80% spruce. Though Spruce is dominant, there are Douglas fir, larch, donuts, and some deciduous trees. Importantly, he has his logging machinery and it is helpful in quickly combating beetle attacks by rushing in and cutting the beetles infected trees then awaiting vendors. The **management goals of the forests in a changing climate and policy regime** is to identify a new source of income since there is no market anymore for sheep wool and meat. Therefore, landscape restoration by sheep has become the focus of activities. The financial compensation by the state for keeping trees for ecological purposes (biodiversity conservation) sustains his family's livelihood. Also, to adapt adequately, he is considering windmills and diversified sources of income.

**September 06, 2022**, we visited the **Private Forest Enterprise Franz Prinz Salm (Frhrl. von Niethammer'sche Forstverwaltung)** in Waldhaus 2, 84152 Mengkofen. The 330 ha forest is located in lower Bavaria in a very fertile growing region. The forest comprises 72 % coniferous species dominated by spruce and Douglas fir and of 28 % dominated by beech and maple. The annual average precipitation numbers to 720 mm/a but decreases in the last decades due to climate change. This leads to a lack of recharging the ground water table. The management goals of the forests in a changing climate and policy regime is to strive for mixed stands with a horizontal and vertical structure. Horizontal refers to 4-8 species in a stand and vertical to different ages in a stand. Since 30 years the manager rebuilds the former 98 % spruce dominated forests accordingly. The severe storm 1990 with very high damage was the driver to these goals. By selective logging and natural regeneration, the age class structure will be gradually changed.

On the same date, **September 06, 2022**, we visited **Nikolaus Sprinzl Private Forest** at Beethovenstrasse 50, 95032 Hof. The 80 ha forest consists with the typical tree composition of the region Oberfranken: spruce, pine, larch. The growing conditions are moderate due to low fertile soils and harsh



winter. **Management goals of the forests in a changing climate and policy regime is to** strive for planting or naturally regenerating mixed species composition in the ages and shorter rotation period. This contradicts the environmental goals of keeping more old trees for biodiversity conservation but the old trees do not sequester more carbon when old according to him. To find a balance between social, economic, and environmental. However, politicians focus more on the environment at the cost of private forest owners. As a land owner, sustainable livelihoods are very important for future generations and climate-resilient species so having a forest of mixed stands is important.

On September 7, 2022, we visited the **Producer Organization (FBG Isar-Lech)**. I learned that FBG Isar-Lech is a regional association of medium-sized and large forestry companies from Bavaria, established exclusively by medium-scale forest owners. The producer company was established in 1992 to support small-scale producers to overcome many challenges with their timber production, sale, and sustainable management practices. The Producer organization is located in Gundelsdorf 17 at 86554 Pöttmes. There are 18.000 ha combined with 52 members. The main target of FBG Isar-Lech is forest with a basic principle of economic activity. The main goals for the members are business orientation timber sale by pooling timber volume, provision of quality silvicultural management, bundle all the demands of seedlings to be purchase at lower prices than requested individually, combined purchase of marker spray and other goods, providing market information and offer qualified contact for all questions around forestry and environment issues.

Furthermore, field trips and new technical forest machinery show will be organized. All these goals shall benefit the member by increasing revenue. The cost coverage of the cooperation comprises by basic fees based on forest size, fees for selling timber and fees for services. The producer organization follows the PEFC principles and holds a PEFC certification.

Especially in times of calamity such as bark beetle infections, drought and storm events a long terms partnership with forest industries is most important in stressed market situations.

Importantly, on the same date **September 7, 2022**, we visited a cultural heritage site, the **RuheForst Steigerwald (cemetery in forest)** located in 97531 Theres/Steigerwald.

The cemetery is an alternative to the normal cemetery and fulfills the growing demand of society to be buried in nature under trees. The graves are indicated by a small plaque with a name on the tree. Only decayable urns are allowed and be places around the trees off the root system.

The fee structure bases on tree classification in small medium and large trees as well on the numbers of graves around a specific tree. The maximum number of graves is 12 as a so called family or partner trees. Also trees for single graves are available.

**Tombs in the forest cemetery**, you can choose your final resting place in the forests while you are still alive. You can identify vacant grave sites by colored ribbons tied around the trees. Marked with a number and entered in a register at the municipality. You can use the tree number to find your tree in the forests. The graves are offered for 25 years with the option to prolong. A contract secures all terms.

**Grave maintenance at a forest burial**, the management of this cemetery allows fewer interventions in managing graves since it is in nature. Other decorations used in normal cemeteries such as flower arrangements, candles, and gravestones do not fit into the natural environment. The best alternative is to decorate the grave sites with leaves, branches, and cones from the forests. Any other decorations of the grave are not permitted. There are live mosses, ferns, and wildflowers to use.

To conclude, this kind of cemetery meets the demand of society and offers the forest owner a new source of income.

**September 08, 2022**, a tour of the **Rüdiger Stracke Private Forest** was made located in a large wooded region called Sauerland. The forest contains 85 ha and has suffered severely under bark beetle attacks in



the last 4 years. The Sauerland is known of being hit hard by drought and beetle attacks. The forest landscape varies between steep slopes to undulated topography. All mature spruce which formerly dominated the forest has gone due to beetle infection. Almost all cleared areas have been actively replanted or show natural regeneration. **Management goals of the forests in a changing climate and policy regime** is timber production and nature conservation on suitable sites. The management strives to promote natural regeneration with less enrichment planting.

### Major challenges in a changing and dynamic environment:

All the private forest owners presented the same or similar challenges. They said the German Forests policy is driven toward planting deciduous trees because it's more climate-friendly and disease resilient but will not fulfill the demand of the timber industry for producing construction lumber. Deciduous trees are oftentimes good for floor and decorations not for roofing and construction work. On the other hand, Conifers trees are more in demand for the timber industry but the government's goal and thinking are more of biodiversity conservation and ecological ideology. Therefore, there Germany has to import from neighboring countries since timber production in Germany cannot meet the population need. The downside of importing timbers from neighboring countries is those timbers may come from unsustainable sources.

Further, due to bark beetle's infection, when there is more savage wood on the market, the sawmill pushes the price low and the land owners lose money and become financially unable to reforest.

Also, due to the increase in fuel prices due to the Russian invasion of Ukraine, harvesting prices have increased without increasing the timber prices, therefore, reducing the return on investment. In the previous years, there was a tremendous increase in timber prices unlike now.

The government is forbidden the primary use of wood (fresh timber) instead of secondary timber from old buildings due to environmental reasons such as climate change. On the contrary, the forest policy does not realize the need for alternative sources of heating and energy. Also the policy seems not to accept the scientific proven fact that a decaying tree releases the same amount of carbon dioxide than a burning tree for heat and energy.

From 2018 to 2019 and also this year, there was a high mortality rate of seeding due to less precipitation and harsh climate which resulted in huge losses.

Also, lack of sufficient money to reforest and manage forests; the state policy influences their decision making by subsidizing the planting with dominant or only deciduous seedlings.

According to the forest owners, finding good labor is a challenge in the forestry sector for thinning, pruning, and other operations because the Germans are not willing to do such work. Therefore, most laborers are imported from Poland, Bulgaria, etc.

Lack of labor to do pruning and thinning is a major issue to manage the forest sustainably. The bark beetles are a serious challenge causing huge losses to forest owners and there is no compensation from the government. The government may seem to protect the bark beetles with the concept of biodiversity conservation from an ecological ideological thinking.

In conclusion, the, major challenges are the bark beetle's infections, the impact of climate change (drought), and deer browsing. The deer browsing usually happens when changing the forest composition from conifers to deciduous trees because the deer prefer the deciduous trees as chocolates.

## WEEK THREE (3)



Week three (3) began on **September 13, 2022** with a one day visit to **Technical University of Dresden; Chair of Tropical and International Forestry Forest**. The purpose of the visit was to discuss related study possibilities at the TU Dresden. I was glad to meet my former professors (Prof. Dr. Jürgen Pretzsch retired and Dr. Eckhard Auch) of the course “Tropical Forestry and Management”.

We discussed about establishing an effective partnership and collaboration with universities in Liberia to enable more Liberians benefit from the numerous study opportunities, projects, and academic research in Germany. Discussions were linked to SDG 17-partnership for sustainable development, to help achieve SDG 4-Quality and affordable education, with focus on the long-term goals SDG 15-Life on Earth (sustainable forest management, restoration of degraded lands, biodiversity conservation, community rights and livelihoods, etc) and SDG-Climate Actions.

On **September 14, 2022**, I visited the **State Forest Enterprise Saxony** and was guided by **Frank Jacob** that shared his knowledge and experiences on **Forest Soil Monitoring**. He explained that the objectives of the Enterprise are the conservation and protection of oak trees as a habitat and economic tree species in a changing climate, and forest soil monitoring. He further said some of the soil monitoring include the area-related transfer of sample measurements, and the regionalization used to predict soil chemical attributes (base saturation, pH, CEC, carbon, and water content for the forested area of Saxony).

**Importantly, on September 15, 2022, I visited the Forstbezirk Plauen.** The aims of my visit was to acquire insight into the forest management, private forest consulting, work of a forest District Forest Officer. During my tour in Western Saxony, Mr. Schmidt, The District Forester guided me and provided practical insights on the District supports to small-scale private forestry. He said they provide capacity building, and sales of timber, especially sawlog wood. The District coordinates the different private owners in a collaborative manner through partnership. In addition, in times of calamities such as bark beetle infection or wind, the District provides logistics to support smallholders.

On **September 16, 2022**, Mr. Müller (a Trainee) explained how they manage the bark beetle infestation and showed me some operating harvesting machine. In his explanation, he emphasized that they help forest owners to identify bark beetles infested trees and later support them to harvest and transport them immediately to the sawmill. It was interesting to know that the longer the infected logs stay in the forest there is a high risk of spreading the bark beetles. These sawlog woods are bought at lower prices thereby infecting farmers' income levels.

## WEEK FOUR (4)

**Week four (4) began on September 19, 2022**, with a visit to the Forest Research Institute Baden Württemberg (FVA) (Ulrich Schraml); the Local forest district office. The purpose was to learn about the tasks and projects of the FVA. During my stay at the Institute, Dr. Julia Schmitt guided me throughout. Prof. Dr. Ulrich Schraml welcomed and introduced the Forest Research Institute (FVA). In his introduction, he said the Forest Research Institute of Baden-Wuerttemberg in Freiburg (FVA) conducts different forestry research within the framework of research and development projects. The purpose is to acquire target-oriented, practical, and concrete policies as well as information for forest owners, foresters, and the interested public. FVA is the





operating research institute of the National Forest Administration and is assigned to the Ministry of Food and Rural Areas in Stuttgart.

After an introduction to the Institute, Andreas Schafer walked and explained the Freiburg Forest administrative structure and communication with citizens. In the afternoon of the same day, I had an excursion with Professor Huss, a former Professor of Silviculture at the University of Freiburg about forestry and Climate change in the Black Forests. Prof. Dr. Dr. h.c. Juergen Huss and Paul Jacovelli shared their long-term and well-experienced knowledge, skills, and best practices with me in the Black Forests about sustainable forest management, climate change mitigation and adaptation, community rights, benefits, participation, inclusiveness, and the long history of the black forests.

**On September 20, 2022**, at the Forest Research Institute, I had an insight into the Practical Data collection of the German National Forest Inventory (BWI); Forest Owner Management App „WaldExpert“

**On September 21, 2022**, I visited the Communal Forest of Emmendingen. The CF was different from many of the other CFs I previously visited. I mean, barely any bark beetle infection due to more broad leaves trees and 3% of Spruce trees. The CF is sustainably managed by a trained forester. In the afternoon, I had a meeting with Paul Jacovelli at Unique's office.

From **September 22-23, 2022**, I spent two (2) Unique forestry and Landuse GmbH, Schnewlinstraße 10, 79098 Freiburg with Paul Jacovelli reflecting and planning on the current project **Community Forestry Expert, Liberia Community Forestry Cooperative Feasibility Study**. We concluded by communicating with the client, the Forestry Development Authority (FDA), Liberia, and writing up the final report.

### 3. Final comment

**what was the significance of your visit to the Host Institutions and benefits for the Home Institution?**

My participation in the **Forest Expert Program** helped me to gain hands-on experience and improved technical training on multifunctional forest management in different areas such as forest assessment, forest policy, forest governance, and sustainable forest management. I see the Forest Expert Program as a major step forward in my professional career since it is closely linked to my current job, Future for a Just Future Program. All the training from silviculture, bilateral forestry program, private forest management, community, and cooperative are significant to improve forest management practices in Liberia. The knowledge gained will be adapted to fit the Liberian context where necessary.

As the Regional Program Officer in Africa who works with more than 10 national and international civil society organizations (CSOs), about 35 Local Communities (LCs) and social movements, the private sector, relevant government ministries/agencies, knowledge transfers from the Forest Expert Program through national and regional level workshops, meetings, conferences, dialogues, is paramount has integrated into my 2023 Annual Plan.



### **has there been any future cooperation arrangements put in place or plans made?**

No cooperation arrangements have been put in place but it is underway. The Forest Expert Program has created and reconnected me with German partners and the Institute of International Forestry and Forest Products, TU Dresden. Currently, there is regular communication between Dr. Auch and me. Going forward, grant opportunities will be shared with Unique Forestry for possible collaboration.

### **Please provide feedback regarding your stay and activities weaknesses and strength of the programme (room for improvement.)**

Overall, the program was well organized, planned, and coordinated. All the participants received tailored made training which was awesome and essential due to the different backgrounds of the trainees. Also, the training modules were relevant to contemporary forestry challenges. I would suggest that the duration of the program in the award letter be adjusted to 3-5 days before or after the program since the German Embassy issues visas per the exact duration of the program specified in the award letter. I think this is not good for the trainee in times of emergency, especially with the high uncertainties in the world today.

Based on the good data collected especially from the private forest owners, I will like to write a scientific article for publication early next year

|                        |                |
|------------------------|----------------|
|                        | Grant Holder   |
| Date: October 30, 2022 | Richard N. Sam |
| Signature:             |                |

# Annex 11.

## 2022 Galih Kartika Sari



# Report

6. November 2022

## Personal Details

|                 |                              |
|-----------------|------------------------------|
| Family Name     | <b>Sari</b>                  |
| First Name      | <b>Galih Kartika</b>         |
| Gender          | Female                       |
| Date of Birth   | October 6 <sup>th</sup> 1983 |
| Nationality     | Indonesia                    |
| Passport Number | C9309074                     |
| Email Address   | galihkartika@gmail.com       |

## 1. Short Summary

*Forest resources* are resources that are vulnerable to change. These changes are currently not only influenced by human activities but also by natural conditions. These conditions make the challenge of realizing sustainable forest management increasingly complex. The increasing challenges of managing natural resources, especially forests, require data support that can be used as a basis for decision-making. The National Forest Inventory is the basis for forest management in Germany, both for timber production and for the management of conservation areas. In addition to accurate and continuous data, parties' involvement and knowledgeable human resources are assets in achieving sustainable forest management.

Conditions resembling natural forests, namely mixed-forest, are the ideal conditions to face the challenges of climate change which have implications for increasing populations of certain forest pests and diseases in the future. One of the paradigm shifts in forest management is shown by changing the pattern of monoculture to polyculture in forests planted for wood production. Bark beetle attack on spruce stands is a lesson learned that shows the susceptibility of monoculture stands. The condition puts the research in a vital position in solving forest management challenges today and in the future. However, research occupies an important position not only technically in the field but also in influencing the parliament's policy-making.





Evidence-based policy becomes the substance in every policy formulation that is implementable in the field. In addition, the consistency of fulfilling commitments in sustainable forest management can be seen from the same narrative from decision-makers to technical officers in the field.

### 2. Introductory Chapter

My participation in the Forest Expert Program was recommended by Prof. Cristhoph Klein from Göttingen University, Toni Anwar, S.Hut, MT (Forest Program 3) and Dr. Ir. Kirsfianti L. Ginoga (Center for Standardization of Disaster Resilience Instruments and Climate Change (PUSTANDPI)). Forest Program III-Sulawesi "Collaborative Integrated Management of The Lore Lindu Landscape" is a collaborative program between Indonesia and the German government. The program aims to support Indonesia in developing strategies and implementing biodiversity and watershed conservation measures within the REDD+ framework. Capacity building of human resources through participation in the Forest Expert Program to support the achievement of the planned objectives.

I work as a government officer at the Ministry of Environment and Forestry of the Republic of Indonesia as a policy analyst. I am responsible for providing policy recommendations, formulation, and technical support for policy implementation in Indonesia's forestry and environmental sector. I would like to improve my knowledge of forest management in Germany, especially in implementing the FMU concept and forest resource inventory. I was financed by the project "Developing and Promoting Market-Based Agroforestry Options and Integrated



Landscape Management for Community Forests in Indonesia". The funding is related to capacity building, especially the inventory of non-timber forest products such as bamboo.

### Time Schedule

- Please update the information on your schedule

| Date              | Institution                                           | Programme                                                                                                                                                                                                    |
|-------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 September 2022  | Thunen Institute                                      | Introduction to the work of the institute, individual program discussion and preparation for the next program                                                                                                |
| 2 September 2022  | German Forestry Council, Berlin                       | Introduction to German Forestry Council, Federation of German Forest Owner Associations, International Sustainable Forest Management Programme of the German Federal Ministry of Food and Agriculture (BMEL) |
| 5 September 2022  | Thunen Institute (Sebastian Schnell)                  | Discussion about BWI Data Evaluation                                                                                                                                                                         |
| 6 September 2022  | National Park Hainich (Manfred Grossmann)             | Forest Monitoring, Organisation and Work in the National Park                                                                                                                                                |
| 7 September 2022  | National Park Hainich                                 | Forest Monitoring, Organisation and Work in the National Park                                                                                                                                                |
| 8 September 2022  | National Park Hainich                                 | Forest Monitoring, Organisation and Work in the National Park                                                                                                                                                |
| 9 September 2022  | National Park Hainich and Private Forest              | Managed Beech Forest Excursion                                                                                                                                                                               |
| 12 September 2022 | Bavarian State Forest                                 | Structure and Organisation of the Bavarian State Forest                                                                                                                                                      |
| 13 September 2022 | Fosrtamt Neureichenau (Daniel Kraus)                  | Practical Work in the Forest District Neureichenau                                                                                                                                                           |
| 14 September 2022 | Fosrtamt Neureichenau (Daniel Kraus)                  | Practical Work in the Forest District Neureichenau                                                                                                                                                           |
| 15 September 2022 | Fosrtamt Neureichenau (Daniel Kraus)                  | Work of a Forest Officer                                                                                                                                                                                     |
| 16 September 2022 | Fosrtamt Neureichenau (Daniel Kraus)                  | Oak Forest Excursion                                                                                                                                                                                         |
| 19 September 2022 | Forestry Research Station Göttingen (Maximilian Axer) | Introduction to the reserach station                                                                                                                                                                         |
| 20 September 2022 | Forest District of Seesen (Henning Geske)             | Introduction to the Forest District of Seesen, visit of Calamity areas in the Harz mountains                                                                                                                 |



|                   |                                                                                               |                                                             |
|-------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 21 September 2022 | Forest Inventory and Remote Sensing Chair<br>Forest Faculty<br>Göttingen (AWF); Lutz Fehrmann | Project at the AWF                                          |
| 22 September 2022 | AWF/Faculty of Forestry                                                                       | Project at the AWF/Study and Research at the Forest Faculty |
| 23 September 2022 | AWF                                                                                           | Project at the AWF; Forest Inventories                      |

### 3. Report

#### **A. German Forest Profile**

Germany has 11.4 million ha of forest, or 1/3 of its territory, divided into 52% state forest and 48% private forest. The lander owns 29% of the forest, 19% is communally owned, and the federal government owns 4%. In Germany, the forest supports 80 million people living at 35.7 million ha. Forest areas in Germany are dominated by spruce, pine, beech, and oak, with a total of 73% of timberland. Forest Mixture composition in the future is the goal of forest policy in Germany.

Forest management in Germany involves stakeholders that are interested parties in the forestry sector. German Forestry Council e.V. (DFWR) is a forum representing the parties concerned with forest and forestry in the Federal Republic of Germany. The organization stands for 11.4 million ha of forest with around 2 million voice-owner forests. DFWR plays a role in political decision-makers to promote sustainability and multifunctional forestry. Recently, DFWR has a program proposal for the environmental services policy.

However, in addition to stakeholder involvement, forest management in Germany is supported by accurate data and information about forest resources. The National Forest Inventory contains forest resources data in Germany which is managed in a 10-year cycle. The National Forest Inventory in Germany is conducted together and coordinated between responsible agencies and parties. The Thünen Institute is responsible for research and data analysis on NFI. However, thus, the inventory conveyed does not cover biodiversity yet, especially fauna. Wildlife was analyzed using existing damage or found on vegetation/trees within the NFI plot.

#### **B. How The Republic Federal of Germany Manage the Forest?**

##### **B.1. Timber Production**



Timber is the leading forest product in Germany, and its supplied by the state and private forests, especially for the wood-based industry. State companies manage state forests as timber producers and implement the Forest Management Unit (FMU) concept to govern the area.

### **B.1.1. State Forest**

Maximilian Kaamermeier, in his presentation, at the head office of Bayerische Staatforsten, Regensburg, mentioned that the area of Bayerische Staatforsten management area is not in one stretch. The forest, with over 800,000 ha, is fragmented, not in one compact location. State forests are managed by a forest management unit system so that even though the area is fragmented, it is integrated into its management. The allowable annual increment for harvest is about five million cubic meters of wood. According to Quirin Neuner, this has made Bayerische Staatsforsten a significant supplier and reliable partner to the forest-based industry.

These conditions are different from the Lower Saxony State Forest. The lower Saxony state forest is a management unit that manages a state forest covering an area of 330,000 ha with an annual growth of 2.2 million m<sup>3</sup> and an annual harvest of 1.7 million m<sup>3</sup> (70% mechanized and 30% manual). In particular, Henning Geske explained the Forest District of Seesen as one of the management units in the Lower Saxony State Forest. District of Seesen manages an area of 13,200 ha with annual growth of 100,000m<sup>3</sup> and an annual harvest of 90,000m<sup>3</sup>. The Seesen area is dominated by spruce, which is about 43%. The area, especially in the Harz mountain area, has been one of the worst areas hit by bark beetle attacks since 2018.

#### **B.1.1.1. Silviculture System**

In Bayerische Staatsforsten, it is mentioned by both Sabrina Wunderl and Daniel Krauss that the management of forest areas in the Bayerische Staatforsten area applies a similar silvicultural system to the natural forests (in Indonesia). Regeneration that is used in the harvested area is natural, primarily regeneration. Planting distances in forest areas are not determined. There are only a few blocks that apply light management. The thinning is implemented, among others, to reduce competitor trees for future trees. The future tree is a tree that will be cut at harvest time in the years to come. The future trees are selected based on specific criteria.





Meanwhile, the Lower Saxony State Forest applied a different system. In this area, man-made regeneration is mainly used in the management area. The types of plants planted in the area are eight species, with the dominant species including spruce, beech, and pine. On a visit to Harz Mountain with Henning Geske, we can see the regular spacing between plants. The conditions are different from the conditions in the forest District Neureichenau. Further, Daniel Krauss showed different densities of stands in each block management.

Currently, in both state forests, there are efforts to mix the species in each block management. It is hoped that in the next few years, there will be more than three species in one block management. Efforts to grow mixed forests in Germany, such as natural forests, its become a concern of stakeholders in the forestry sector. The efforts are applied in conservation areas and forests designated for timber production.

### **B.1.1.2. Forest Harvesting System**

During fieldwork in the forest District Neureichenau, Daniel Krauss explained that the forest harvesting mechanism used a third party as the harvester for the forest products. The third-party works under a contract with the terms determined by the company. The state company used a scoring mechanism as the control tool, with 100 scores given to the third party with an assessment list. The partner will not get the next contract if the assessment score in work is below 85. The assessment includes technology, work safety, and protection to prevent soil damage, for example, by installing carpets on haul roads for transporting wood and damage to stands caused by harvesting.

Harvesting systems use cables or other modern harvesting tools. In this system, both stand and soil damage can be minimized. Moreover, the harvesting plan is arranged one year in advance by conducting an inventory of the stands owned in these forest concession areas. However, in the harvesting system, a control mechanism is designed using a mobile application. The application allows all parties, both the company and third parties as harvesters, to monitor the work being carried out. Specific codes are applied in carrying out harvesting work using the application.

Harvesting in the Seesen district area and the forest District of Neureichenau is carried out by skilled workers trained to implement sustainable forest harvesting. These skilled workers took three years of education before getting permission to harvest the forests.



Schools as educational facilities for forest harvesters are owned by each state forest, such as the Lower Saxony State Forest.

### **B.1.1.3. Marketing**

Quirin Neuneur from Bayerische Staatsforsten explained that the wood harvested in the Bayerische Staatsforsten area is marketed domestically and abroad. Moreover, a broad spectrum of small, medium, and large client companies. The forest District Neureichenaum, Daniel Krauss explains the harvested wood used to supply chainsaw factories or wood industries around the Bavarian state forest area. The wood industry as the consumer is a large industry as well as a small industry. At the location of harvested wood storage, the resulting wood is based on consumer designation, which is categorized by the length of the wood. Industry in this region has used modern tools. Furthermore, these companies are integrated with energy supply companies. Therefore, the waste from wood processing is directly used as an energy source, which is then supplied to meet the region's energy needs.

### **B.1.1.4. Conservation**

Bayerische Staatsforsten not only produces wood for industry supply, but the area also has a role as the habitat for countless species and a popular area for recreation. Further, it provides the Bavarian society with a broad array of ecosystem services, e.g., soil, water, air, or avalanche protection. The efforts to support conservation in the Bavarian State Forest concession area are by allowing "dead wood" and selecting the habitat trees. The dead wood is left in the forest as the habitat for fungi, insects, and other microorganisms that aims to increase biodiversity in the forest area. In addition, dead wood is a source of organic matter that can participate in efforts to increase soil fertility. Increasing biodiversity is seen as essential for forest management in Germany. The mechanism is applied in conservation forests and forest areas where the timber is harvested. High public awareness of the importance of biodiversity has encouraged all entities to work in efforts to increase biodiversity.

### **B.1.2. Private Forest**

Learning about private forests, especially the Thuringia area, was conducted through joint excursions with forest owners, the Forest Administration in Thuringia, Hainich National Park, and the German Forest Society. During Excursion, it explained that the



community (forest owner) in Thuringia managed the area together, and recently, it is 200 forest owners join in the association. In the area visited, the private forest area is 900 ha, assuming each farmer has 3 ha of land to be managed jointly. The community uses the wood for firewood, cattle, and buildings, mainly fireworks.

According to the explanations, the conflict between the community and the forest administration is related to forest land management. The conflict is related to the existence of cattle; for example, forest owners want to be able to raise livestock on their forest land, but the forest administration does not allow this mechanism.

Further, the stand density affects the type of tree that grows. Currently, the condition of the stands owned by the private forest is a mix of a forest. The application of the silvicultural system was conducted, among others, to select and mark trees for the future. Harvesting is done every ten years. Therefore forest owners must allocate trees to be felled in the next harvest period.

The forest administration wants to develop a multi-story forest to ensure the continuity of production. A multi-story forest will ensure the implementation of sustainable management for harvesting. Even though the harvesting system will increase production costs due to the requirement that the harvester cannot use heavy equipment, Multi-strata in the forest requires owners to harvest them manually. The forest administration will treat or cut around the area every five years. Production costs 35 euros/ha/ year for management, and taxes 300-400/ha/per year.

The topic that is also a concern for the Excursion is the organic layer. The organic layer should be better than a typical forest because land clearing is not applied at harvesting time. Efforts that can be made to maintain the condition of the organic layer in order to remain in good condition are to maintain land cover so that there are no significant changes. In addition, the harvesting system used will also affect the condition of the organic layer in the private forest area.

### **B.2. Conservation**

Conservation areas in Europe can be classified into six categories based on the International Union for Conservation of Nature and Natural Resources. In each category, some requirements must be met by conserved areas (IUCN 2008:13-23). Conservation areas in Germany are divided into National Parks, Biosphere reserves,



Nature parks, Protected landscapes, Natural reserves, Natura 200, National nature heritage, and green belts.

Hainich National Park is one of the national parks established on December 31, 1997, and is the 13th national park designated. According to Manfred Grossman, Head of Hainich National Park, the Hainich National Park area was a former military training area for the Russian army during World War II. This national park, some parts of the area, is an area with a natural succession for more than 50 years from the vacant land of former war training camps to become forested areas today. The succession process in the management of Hainich National Park is a journey toward the primary forest. "Let's Nature be Nature" became a slogan implemented directly in the management of Hainich National Park.

Hainich National Park has a unique ecosystem related to the beech species. This uniqueness is essential to be maintained, especially for the benefit of future generations. In addition to beech, Manfred's presentation mentioned that Hainich National Park is inhabited by 800 vascular plants, 1,600 fungi, 500 beetles species, and 180 bird species. The strategy to increase public awareness about the importance of the beech ecosystem in Hainich National Park is to make the beech forest in the area one of the world heritages.

Hainich National Park has facilities and infrastructure to support the management of the national park. These facilities and infrastructure include the Canopy Walk at the Thiemsburg with a height of more than 40 m, the visitor center as a medium for discovering the secrets of the Hainich in a multifaceted exhibition, Primeval forest camp on the Harsberg, information Harsberg, wild cat village Hutcheroda, fairy tale nature trail, adventure trail, and Wika-Kiwa wildcat children's forest.

Hainich National Park became the center of education about nature for the community. National park managers establish facilities and infrastructure. Moreover, national park management provides talented human resources to support these functions. The information center and tracking routes that have been built provide information that supports learning about nature for the community. It has become an excellent media to





increase public awareness about the importance of nature and conservation for human life.

### C. Challenges

The biggest challenges for forestry companies in Germany, both state and private forests today, are the bark beetle attacks and climate change. Bark beetles began to spread and cause massive damage to spruce species since 2018. The worst forest damage from bark beetles was in the Lower Saxony State Forest area. The bark beetle attack caused considerable losses with the death of the spruce stands.

Rising temperatures and reduced precipitation have caused the groundwater level to fall. The decrease in groundwater in some parts has caused the death of several forest tree species, such as *Fagus Sylvatica*. *Fagus Sylvatica* is a species prone to drought and waterlogging. Therefore, reduced precipitation and rising temperatures have caused the death of this species.

In addition to management institutions, research institutions allocate their resources to overcome these forest management challenges. The research institute in Göttingen has several projects related to the selection of future species, climate modeling for forest management to irrigation of forests to overcome drought due to the length of drought and lack of precipitation which causes a decrease in groundwater reserves.

### D. Lesson Learned

Learning about forest inventory methods, especially environmental services, is one of the goals of participating in the Forest Expert Program. In addition, FMU-based forest management is also an exciting topic to learn in Germany. Even though I did not get many lessons about environmental service inventory, the knowledge and learning gained during the program exceeded my expectations. I learned much more knowledge regarding sustainable forest management in Germany.

According to Prof. Klein and Lutz Fehrman, Indonesia has a unique forest condition. This condition will affect the technology and other resources used in collecting data and information on forest resources. Therefore, related to NFI in Indonesia requires detail planning. Furthermore, adding component data to calculate environmental services is difficult to integrate into the NFI plot. This is because the plots used for environmental



services inventory differ from those used in the NFI. The difference in the shape of the plot will affect the method of data collection.

Public information disclosure on data analysis results for NFI in Germany can be a good lesson in data management, especially transparency. For example, the public cannot freely access NFI data in Indonesia, so it is difficult to obtain. Data disclosure in Germany was conveyed as a form of public accountability for the activities. However, the process must be passed before published data takes time, including stakeholders' consultation. The method used in the data transparency process can be input for the relevant parties, especially the data-supporting institutions.

Data and information related to forest resources in Germany are collected and analyzed using the latest technology. However, the use of technology in Germany requires adjustments to the conditions and conditions in a region if it is to be applied in tropical countries. Sebastian Schnell of the Thunen Institute explains and shows that the NFI plot in Germany is circular. The markers used in each plot are metal embedded in the center of the plot.

One of the paradigm shifts in forest management is shown by changing the pattern of monoculture to polyculture in forests cultivated for wood production. Bark beetle attack on spruce stands is a lesson learned that shows the susceptibility of monoculture stands. This change is different from what happened in Indonesia. In Indonesia, the community, the government, and forest entrepreneurs tend to change the species composition to monoculture or only to grow commercial species. The system makes the forest vulnerable to pests and diseases.

Human resource capacity is the principal capital in sustainable forest management. Germany has professionally educated foresters for every level of work in the forestry sector. The knowledge base of sustainable forestry development is a must-have knowledge in forest management.

However, research occupies an important position not only technically in the field but also in influencing the parliament's policy-making. Evidence-based policy becomes the substance in every policy formulation that is implementable in the field. In addition, the consistency of fulfilling commitments in sustainable forest management can be seen from the same narrative from decision-makers to technical officers in the field.



### E. Future Cooperation

At the Forestry Research Station of Göttingen, research on three species development scenarios was conducted to face future climate change challenges. The research activities are integrated between future species selection and forest inventories to climate models that can be used as part of future species selection. Indonesia, as a tropical country as well as an archipelagic country, has a high vulnerability to climate change. Climate change severely threatens ecosystems such as the peat ecosystem in Indonesia. In addition to climate change, the peat ecosystem faces threats from the activities of the surrounding community.

Research and development of species with high adaptability to climate change in the future are needed to support the conservation and rehabilitation of peat ecosystems. However, selecting future species for peat ecosystems should consider climate change and the socio-economic and market conditions of the species being developed. Communities in peat ecosystem areas have a high dependence on these ecosystems. The choice of future species will directly influence the community's social and economic conditions.



#### 4. Final comment

The Forest Expert Program is an event to exchange knowledge, information, and perspectives on forest resource management. The exchange of knowledge, information, and perspectives is not only about forest management in Germany but also between the countries of origin of the participants. The learning process in the forest expert program has provided additional knowledge about forest resource management. Therefore, it would be better if all participants were reunited at the end of the program and presented what they had obtained during the forest expert program. The opportunity will provide an overview and opportunity for other participants to study another program followed by other participants briefly.

|                                                               | Grant Holder |
|---------------------------------------------------------------|--------------|
| Date, 6 November 2022<br>Signature,<br><br>Galih Kartika Sari |              |



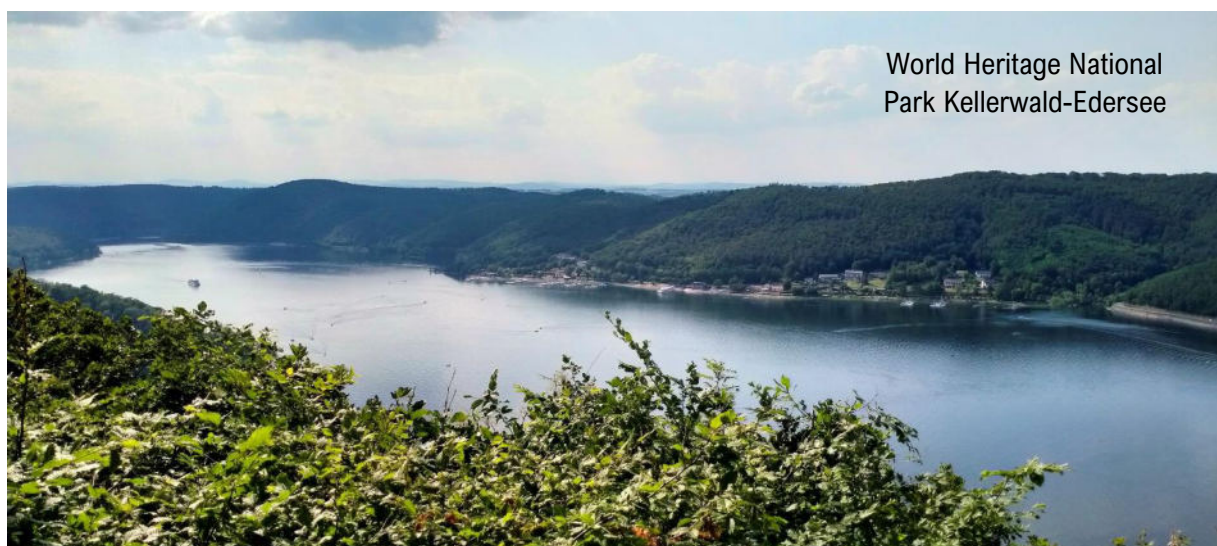
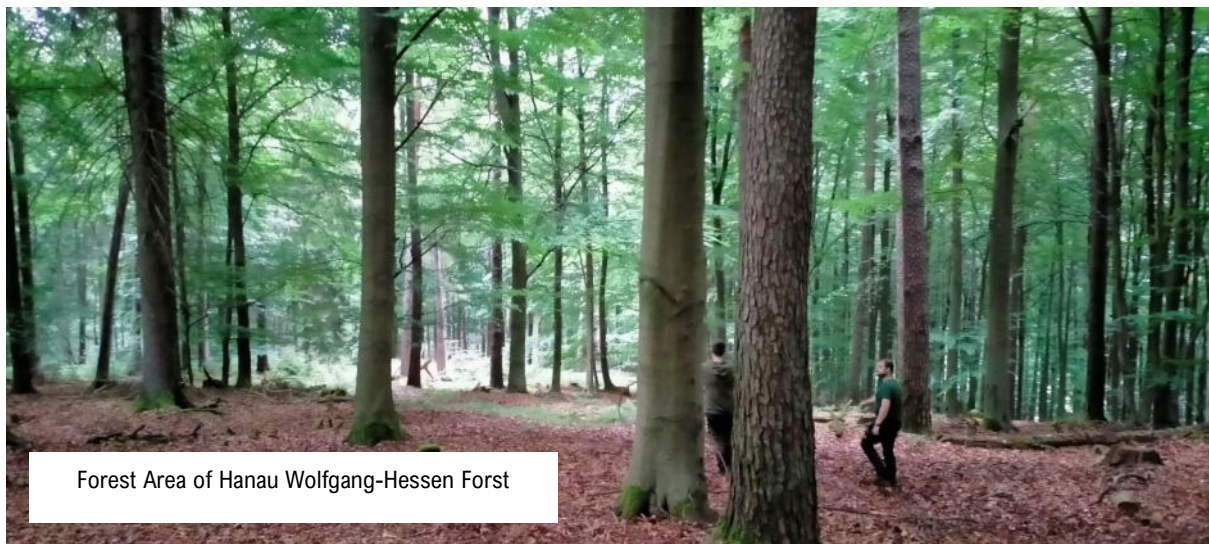
## Annex 12.

### 2023 Suprianto Suprianto

### ***A what excellent experience! Thank You Forest Experts Program***

Herewith, I am writing to express my excellent experiences as one of the participants in the Forest Expert Program created by Deutscher Forstverein, 9 June-11 July 2023. My name is Suprianto. Currently, I work for GIZ Peatland Management and Rehabilitation Project (PROPEAT). GIZ PROPEAT is a collaboration program between the German Federal Government and the Government of Indonesia, in order to support the Provincial Governments of North Kalimantan and East Kalimantan in encouraging land use (management) in peat and wetland ecosystems in East Kalimantan and North Kalimantan to be more ecologically sustainable through the supports to integrative planning, promoting the principles of sustainable management and protection, capacity building and disseminating lessons learned and good practices to all stakeholders.

For the project, one of the stakeholders, I worked closely with several FMUs to Provide technical advisory for the improvement of land use practice/management and rehabilitation of peatland/wetland, management and restoration of natural peat swamp forest, and rehabilitation of degraded peatlands. Also, Support the institutional and organizational development of the Forest Management Unit (Kesatuan Pengelolaan Hutan) including the promotion/strengthening of community-based management schemes in the project area, providing technical inputs on the development of forestry planning documents, as well as preparing and doing some study/action researched.



What is my expecting? What the lesson learnt and experiences I get? what inspiration and reflexion I get during the program?



Indonesia's forests are the second largest in the world after the forests of Brazil., representing 10% of the world's remaining tropical forests. Indonesian forests are the habitat of the world's most numerous and diverse plant and endemic wildlife species. A hundred and twenty million hectares of Indonesia, or 64 percent of the nation's entire land area, is designed as a forest area. Indonesia's tropical forests are of global importance and are famously called the "lungs of the world". So, sustainable forest management should be to be implemented, there is not only for sustainable production but balancing for environmental sustainability and people around get benefit from it.

The various features of forestry management are already being addressed by a number of countries, among them Germany. There are many different approaches to respond issues, however, and

the German examples represent just some of the many possible solutions. Indeed, the German models cannot serve as exact blueprints for other countries, due to vastly differing political, natural, and social framework conditions. Nevertheless, such examples from Germany can be a decent starting point and a basis for discussions. With this in mind, (1). I am interested to learn the development of a common understanding of the different administrative setups for forest administration in Germany, which add to the principles of Sustainable Forest Management stipulated in the country's forestry laws, (2). Learning from Germany related to some techniques such as community-based forest management, nursery and rehabilitation program, forest planning, forest inventory, etc.

(3). Specifically, I'm interested also to learn, with how German peatland situation? And how they manage it? That why I am going north part of Germany, Greifswald.

During the program, I had great opportunities to go to various levels of forest management such as federal forest, state forest, community forest, national park, and private forest, for example is Forest Office Hanau Wolfgang in Hessen, forest office Seesen in Low Saxony and many others. Also, in there and I get chances to see different types of forest ecosystems such as peatland areas, this was giving more insight what mean forest for our life.

I have a new perspective, on how to look into forest definition is, between forest-cover and forest area. Most forest area in Germany is open to the public for recreation for example, its one approach to make people to be close to the forest, get the experiences and feeling, and the end is awareness and involvement by the public.



I have the opportunity get learning from this program, how Germany's set up of the forestry system, institutional forestry system, also learning how Germany's developed the approach and control system, silviculture system, management plan and technology for forest protection from various disturbances such as pests, diseases, fire, grazing, and climate change.

As far as I understand, as well as why, more achievements on forestry sector in Germany because the process was already started early, in the past 200-500 years ago. and there is substantial support by the general public, also the awareness of local communities and individuals is high and facilitates close cooperation and networking of all stakeholders. The rules and regulations implemented very well at different level forest area and institutions, even communities in general.

I met many highly dedicated, experienced foresters during the trip, this gave me the motivation to be a better. Forest Sustainability in Germany is obviously on every forester's mind, and they are motivated to manage the forest accordingly. They are quite organised and professional when implementing all their different activities. German foresters manage the forest like their own property and are very much aware of the long-term effects of their actions. foresters are also known for detailed planning procedures and implemented.

When I visit the fields, I see, well-developed infrastructure such as road network, machinery and equipment etc., of course, also help a lot. And with regards to the general awareness, I think this might be a result of widespread and commonly implemented measures such as environmental education, cooperation with schools and public relations.



With Andre (from Cameroon) at Forest Office Seesen



Tharandt View



Seeing around Frankfrut



Below is My activities during the program:

**1<sup>st</sup> week**

| Date    | Institution                                                     | Program                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10 June |                                                                 | Arrival                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 11 June |                                                                 | Exploring Frankfurt city                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 12 June | Forest Experts Seminar at Technical University of Dresden (TUD) | <ul style="list-style-type: none"> <li>- Welcome and introduction to the seminar week (Sabine Kuhling)</li> <li>- Welcome and introduction to the department of forest science in Tharandt (Lukas Giessen)</li> <li>- Introduction to the forest management activities at the Federal institute for agriculture and food (BLE)</li> <li>- Trainee presentations, presentation on protected area management in Cameroon by Iris Kirsten</li> </ul> |
| 13 June | Seminar at TUD                                                  | <ul style="list-style-type: none"> <li>- Introduction by German Forest Society (Malte Campsheide)</li> <li>- Organisational issues for the Program (Sabine Kuhling)</li> <li>- Visit of the forest Botanical Garden (Carsten Schusser)</li> <li>- Get together with the international student from the forest faculty-TUD</li> </ul>                                                                                                              |
| 14 June | Seminar at TUD                                                  | <ul style="list-style-type: none"> <li>- visit the central administration of Sachsen Forst, Introduction by Renke Coordes</li> <li>- Guided tour through the forest genetics department generic husbandry, seed plantation (Ute Trober)</li> <li>- Visit forest climate station.</li> <li>- Visit nursery of Sachsen forst</li> </ul>                                                                                                             |
| 15 June | Seminar at TUD                                                  | <ul style="list-style-type: none"> <li>- Guided tour in Dresden</li> <li>- Visit at centre for International Postgraduate Studies of Environmental Management (CIPSEM) joining seminar "the power concept for management of common pool natural resources" (Carsten Schusser)</li> </ul>                                                                                                                                                          |
| 16 June | Seminar at TUD                                                  | <ul style="list-style-type: none"> <li>- Visit Pillnitz Palace and park in Dresden-Schlosserland Sanchen</li> </ul>                                                                                                                                                                                                                                                                                                                               |

**2<sup>nd</sup> week**

| Date    | Institution                           | Program                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19 June | Forest District office Hanau-Wolfgang | Join on the forest school with education and communication department of Forest District office Hanau-Wolfgang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 20 June | Forest District office Hanau-Wolfgang | Join on the exposure visit of the regional expert advisory working group on sustainable forest management "strengthening the capacities of the REAWG members and exchange of experience and knowledge in the forest praxis" in the Forest District Office Hanau Wolfgang <ul style="list-style-type: none"> <li>- Presentation of the kiln and the nursery, provided by Lutz Hofheinz (head of the forestry district)</li> <li>- Visit seed processing (seed bank)</li> <li>- Visit nursery.</li> <li>- Visit wildlife park "old pheasantry" for forest education and eco-tourism.</li> <li>- Visit the hessian forestry Museum</li> </ul> |
| 21 June | Forest District office Hanau-Wolfgang | <ul style="list-style-type: none"> <li>- Sustainable forest management (silviculture, forest certification, management plan)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 22 June | Forest District office Hanau-Wolfgang | <ul style="list-style-type: none"> <li>- Sustainable forest management (forest protection from various disturbances such as pests, diseases, grazing, and climate change; digitalization)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 23 June | Forest District office Hanau-Wolfgang | <ul style="list-style-type: none"> <li>- Sustainable forest management (nursery, move of annual planning)</li> <li>- Bee keeping</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 24 June | Visit Marburg                         | <ul style="list-style-type: none"> <li>- visiting local forest in the Marburg</li> <li>- visit the World Heritage National Park Kellerwald-Edersee</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 25 June | Visit marburg                         | Exploring Marburg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**3rd week**

| Date    | Institution                                     | Program                                                                                    |
|---------|-------------------------------------------------|--------------------------------------------------------------------------------------------|
| 26 June | Forest Planning office-Lowe Saxony State Forest | Site mapping (Susann Thätner)                                                              |
| 27 June | Forest Office Seesen                            | <ul style="list-style-type: none"> <li>- Reforestation after Kyrill storm event</li> </ul> |

|                |                                                                                   |                                                                                                |
|----------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|                |                                                                                   | - Harvesting                                                                                   |
| <b>28 June</b> | National Park Harz                                                                | National Park forest management (Sabine Bauling)                                               |
| <b>29 June</b> | Klosterforsten; Forest District Westerhof                                         | Forest Management practice; Reforestation, Work of District Forest Officer (Alexander Berlitz) |
| <b>30 June</b> | Private Forest Owner Association Lower Saxony (Waldbesitzerverband Niedersachsen) | Discussion and presentation                                                                    |
| <b>1 July</b>  | Berlin                                                                            | Walk through city of Berlin                                                                    |
| <b>2 July</b>  | Berlin                                                                            | Walk through city of Berlin                                                                    |

#### 4th week

| Date          | Institution                      | Program                                                                                                                                                            |
|---------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3 July</b> | Mire Center, Greifswald          | Visit peatland area Visit water level installation; visit pilot sites for paludiculture near Greifswald; a short field visit to Karrendorfer Wiesen (Tobias Dahms) |
| <b>4 July</b> | Mire Center, Greifswald          | Visit mire center office; visit Eddy towers (for greenhouse gas measurements) and forest in peat land area (Tobias Dahms)                                          |
| <b>5 July</b> |                                  | the private forest on the half-island of Wustrow                                                                                                                   |
| <b>6 July</b> |                                  | <ul style="list-style-type: none"> <li>- visit the THOR fire management project.</li> <li>- Visit to the Old Town of Schwerin</li> </ul>                           |
| <b>7 July</b> |                                  | <ul style="list-style-type: none"> <li>- Evaluation session</li> <li>- visit wild Park Güstrow</li> </ul>                                                          |
| <b>8 July</b> | Back to Frankfurt and Indonesian |                                                                                                                                                                    |



Forest cover in the Peatland area, Greifswald

In 3<sup>rd</sup> week of the program, I get opportunity to visit the peatland area in Greifswald and Greifswald Mire Centre in person. good to see and learn peatland characteristic in Germany, how peatland manage on this area? how implementing paludiculture models? Peatland mapping, water level monitoring and see eddy tower installed for greenhouse gas measurement.

Returning home, me and all participants of a program bring lots of inspiration and reflections. the exchange not only how forest in Germany set up but also the discussions among the participants

during the trip from different countries is happen, telling storis the forest-forestry situation each country and what the challenges among us, telling stories of the social-culture and our favourites food and I hope this exchange continues even afterwards.



With deepest in My heart, Thanks to the institutions and individuals that support me, shared knowledge and experiences to me and accepted me, in preparation and during the program.

Don't forget always being happy!

Terimakasih and with Warm Regards, Suprianto

## Annex 13.

### 2023 André Mveimané





**Forest Expert Program**

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH



## INTERNSHIP REPORT



|                 |                       |
|-----------------|-----------------------|
| Family Name     | <b>MVEIMANE</b>       |
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## **Summary**

As part of projects involving German International Cooperation, the Forest Expert Program organized a training course in forestry expertise with the aim of providing forestry experts from various continents with practical experience through seminars, excursions, guided tours, and practical work in federal state and/or private forest management institutions in Germany.

Three (03) forestry experts from different German Development Cooperation (GIZ) projects in Cameroon, Lao and Indonesia participated in this internship. The projects represented were respectively: Forest Environment Climate Project (ProFEC), Protection and Sustainable Use of Forest Ecosystems and Biodiversity (ProFEB) and Peatland Management and Rehabilitation Project (ProPEAT). The course took place in two phases: a group phase from June 12 to 17 and an individual phase from June 19th to July 7th, 2023.

Technical supervision of the experts was provided by the program's partner institutions. These include technical universities of tropical forest sciences, forestry institutions of federal states, forestry research intuitions of federal states and institutions for the sustainable management of community and private forests.

From a general point of view, the internship was very relevant, well organized, stimulating and motivating. The skills acquired during these four weeks of learning allowed forestry experts to acquire practical experience and transmit or disseminate it in their country and/or projects of origin and act as extension agents/dissemination agents.

## **1.Introductory Chapter**

In February 2022, I had the opportunity to be accompanied by Stefanie as part of my activity of installing community teak nurseries in the commune of Yoko during her visit to the Forest Environment Project (ProFE, ex ProFEC) of GiZ in Cameroon, who highly recommended me as part of the Forest Expert Program.

Stefanie Morich understood my strong motivation and determination in providing technical support to CFCs and local populations in the communes of Yoko and Moloundou in the development of the forest plantation value chain. Having measured the challenges I will face in terms of my skills, Stefanie was kind enough for me to strengthen my technical abilities through a training course, which is not possible in Cameroon or in neighboring countries.

In fact, I hold the position of Junior Technical Advisor in charge of Silviculture and monitoring of development inventory work at the Forest Environment-Climate Project (ProFEC) of GiZ in Cameroon. As part of the ProFEC team, I support the CFCs and local populations of the communes of Yoko and Moloundou in the development of value chains for village and municipal teak forest plantations.

Arriving at the Forest Expert Program by air transport, my expectations during this four-week internship were to acquire technical skills/knowledge on the stages of the technical itinerary of forest plantations which are the collection and processing of seeds, conservation and use of forest genetic resources, models of installation of forest plantations and their management systems, management of forest plantations and harvesting methods. Also, one of my expectations was to acquire knowledge of forest regeneration methods, monitoring of silvicultural prescriptions in forest management, community, and private forest management systems.



## **2. Objectives and expected results of the training**

In the case of the participant from GIZ-ProFEC/Cameroon, the training aimed to transfer to the participant skills and technical knowledge in silviculture and forest planning.

The expected result at the end of the internship was that:

The technical capacities of the participant are strengthened to support municipalities and local populations in the development of forest plantations and monitoring of forestry activities prescribed in a management plan.

### 3. Internship program

| Date        | Institution                                                                            | Program                                                                                                                                                                                                                                                                                                                              |
|-------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12-13/06/23 | Forest Expert Program                                                                  | <ul style="list-style-type: none"> <li>- Seminar on the organization and structuring of the forestry sector in Germany.</li> <li>- Department of Forestry Sciences in Tharandt</li> <li>- Excursion to the Tharandt botanical garden</li> <li>- Barbecue with students from Tharandt/Tropical Technical University</li> </ul>        |
| 14/06/23    | Sachsenforst                                                                           | <ul style="list-style-type: none"> <li>- Presentation of the management system, forest preservation in the Federal State of Sachsen</li> <li>- Visit to the forest genetic resources conservation department.</li> <li>- Visit to the Sachsen Forst nursery</li> </ul>                                                               |
| 15/06/23    | TUD Centre for international postgraduate studies of environmental management (CIPSEM) | Seminar: on the community forest management system in Germany                                                                                                                                                                                                                                                                        |
| 16/06/23    | Pillnitz palace and Park                                                               | Excursion to the Botanical Garden                                                                                                                                                                                                                                                                                                    |
| 19/06/23    | Northwest German-Forest research Institute                                             | <ul style="list-style-type: none"> <li>- Presentation of the objectives and missions of the institute</li> <li>- Demonstration of the grafting method of forest species</li> <li>- Genetic investigation and micro-propagation</li> <li>- Demonstration of provenance testing installations</li> <li>- Visit to nurseries</li> </ul> |
| 20/06/23    | Niedersächsische Landesforsten<br>Lower Saxony                                         | <ul style="list-style-type: none"> <li>- Presentation of objectives and mission</li> <li>- Visit to forest machinery departments.</li> <li>- Visit to reforestation sites</li> </ul>                                                                                                                                                 |
| 21/06/23    | Forstsaatgut Beratungsstelle (Fbs)                                                     | <ul style="list-style-type: none"> <li>- Presentation of objectives and missions</li> <li>- Planning and acquisition of seeds Collecting methods/technics and processing seeds technics/machines.</li> <li>- Seed selection and pretreatment</li> </ul>                                                                              |
| 21/06/23    | Bleume Baumschulen                                                                     | Visit to a private nursery supported by the FBS                                                                                                                                                                                                                                                                                      |

|            |                                                                                |                                                                                                                                                                                                                                                                                                                       |
|------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22/06/23   | Landwirtschaftskammer<br>Niedersachsen Bezirksforesterei<br>Isenbutten         | <ul style="list-style-type: none"> <li>- Presentation of the missions and objectives of the association of private foresters</li> <li>- Visit to field activities:</li> <li>- Natural regeneration</li> <li>- Oak seed collection station (Oaks)</li> <li>- Progress of harvesting/exploitation activities</li> </ul> |
| 23/06/23   | Landwirtschaftskammer<br>Niedersachsen/Chamber of<br>agriculture               | Seminar on support for community foresters                                                                                                                                                                                                                                                                            |
| 26/06/23   | Niedersächsische Landesforsten<br>(NLF)/ Bureau de planification<br>forestière | <ul style="list-style-type: none"> <li>- Presentation of the objectives and missions of the soil analysis department and monitoring of silvicultural activities</li> <li>- Field visit</li> <li>- Mapping of reforestation sites in Lower Sachsen State Forests</li> </ul>                                            |
| 27/06/23   | Niedersächsische Landesforsten<br>(NLF)/ Bureau des forêts de Seesen           | <ul style="list-style-type: none"> <li>- Presentation of the objectives and missions of the forestry development department</li> <li>- Presentations of forest planning and monitoring of silvicultural activities</li> <li>- Visit to reforestation sites after storm Kyrill</li> </ul>                              |
| 28/06/23   | National Park Harz                                                             | <ul style="list-style-type: none"> <li>- Field trip: Consultation on forest management in the National Park</li> </ul>                                                                                                                                                                                                |
| 29/06/23   | Klosterforsten/Eglise/ Klosterforsten;<br>District forestier Westerhof         | <ul style="list-style-type: none"> <li>- Presentation of objectives and missions</li> <li>- Field activity: identification and marking of trees infected by Bark beetle</li> <li>- Visit to sites where forest management practices are implemented; reforestation, work of the district forest officer</li> </ul>    |
| 30/06/23   | Walderbesitzervverband                                                         | Seminar: support system for private foresters Forest owner association                                                                                                                                                                                                                                                |
| 03/07/2023 | University of Wageningen                                                       | <ul style="list-style-type: none"> <li>- Introduction/exchange on the missions and objectives: silviculture and forest planning</li> <li>- Field trip to the National Park De Hoge Veluwe</li> <li>- Exchange/discussion on forestry research strategies at Wageningen University in Africa.</li> </ul>               |
| 05/07/2023 | Travel Netherlands to Germany                                                  |                                                                                                                                                                                                                                                                                                                       |

|            |                                     |                                                                                                                                                                        |
|------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 07/07/2023 | Landesforest Mecklenburg-Vorpommern | Seminar on fire prevention in forestry<br>Field activity: types of firebreaks: natural (fire broken) and by clearing.<br>Visit to fire damage caused by old ammunition |
| 08/07/23   | Wild park                           | Excursion                                                                                                                                                              |
| 09/07/2023 |                                     | Return to Cameroon                                                                                                                                                     |



## **4. Internship progress**

### **Week 1 : group seminar**

After a warm welcome from the participants and their installation in Dresden then in Tharandt, the internship started in the week of July 10 to 14, 2023. This first week of the internship was devoted to the seminar accompanied by field excursions. It was a question of establishing common bases on the organization and structuring of the forestry sector and cultural life in East Germany.

Morning sessions of the first day (06/12/2023): Welcome and introduction

After a round table during which the participants were invited to introduce themselves and express their expectations, Prof. Lukas Giessen opened the seminar program with a presentation which shows the missions, objectives, structuring/organigram of the UTD, the content of UTD's Master's courses and learning programs in tropical forestry. He highlighted the scholarship opportunities at the University of Tharandt and Göttingen for young graduates in forestry sciences around the world. At the end of his presentation, Prof Lukas Giessen made recommendations which condition eligibility for the University of Tharandt, having a diploma in forest science dating back less than 6 years, having a minimum experience of 02 years in an organization international, demonstrate bilingualism, etc.

### **Afternoon session**

After these presentations, the participants took turns giving a presentation explaining forest management in their country of origin. They addressed the following aspects: the presentation of the personal profile/background, the forest management system in their country of origin, the project for which they work, their objectives and missions/tasks. These presentations allowed the FEP team to have a general overview of the forest management contexts in each country represented and this facilitated the introduction/presentation of participants in the host institutions. The various presentations were submitted to FEP at the end of the day for archiving. At the end of this first day, Ms. Sabine presented the objectives of the forest expert program, in particular to provide forestry experts from various continents with practical experience. She continued with the presentation of the content of the internship program, the progress of the individual program, the expected results and the final evaluation approach that will be brought to the training.

The following day, Mr Malte Campsheide, Secretary General of the Deutscher Forstverein organization first presented the geographical, political, demographic, economic and socio-

cultural situation of Germany. Subsequently, Mr Malte's presentation clearly highlighted forest management in Germany; starting from forest resources (population, use of space, proportion of forest area, forest areas by species), types of forest ownership, different functions of forests, problems, and insufficiencies. He highlighted the main damage, the main problems of Germany's forests, namely the storms that occurred in 2007, the Bark Beetle Beetles which destroyed around 222 million ha in 2018 and 60.1 million ha in 2020. However, he notes several actions that are being considered to resolve these problems. Forest conversion to avoid monoculture, adoption of new policy funding programs, removal of infected trees. Remove infested trees early, test new tree species, also from abroad (exotic) - 3 species or more possible. He ended his presentation with a summary of the history of the German forestry company (The German Forestry Association (DFV)), its organization chart, its missions, the expected results, and the approach used to finance projects such as the FEP. The presentation can be found in the appendix

### Afternoon session

The rest of the afternoon was devoted to excursions in the Tharandt botanical garden. Dr.



*Figure 1: Plantain production in greenhouse*

Casten Schusser led the tour of the garden in several sections:

- A recreation forest.
- An arboretum
- A greenhouse for producing tropical forest species.

The day ended with a barbecue organized by master's students in tropical forestry with the aim of making contact with the participants.

Day 3 was the first group learning session at the Federal State Forestry Institute in Sachsen. It began with a presentation by Dr. Renke Coodes, who presented the facts and figures on forestry to the federal state of Saxony, mainly based on:

- The annual productivity of Sachsenforst: approximately 1.1 million m<sup>3</sup>/year.
- The composition of tree species in the Saxony state forest, historically dominated by spruce and pine.

- Currently, the Saxony forest is characterized by conifers.
- More than 2/3 of the trees in the forest are conifers, mainly spruces and pines.
- Oak has a share of 6%, beech 6.5%

He also presented the effects of climate change on the forests of the federal state of Saxony, mainly listing the violent storms that occurred in 2007, the dry beetle infestations that began in 2018, and which pose a real threat to the conifers of the mountain forests. Dr. Renke in the presentation also highlighted the ways and means envisaged by the federal state to get out of this situation. These include reforestation, reconversion of forests, revision of forest policy objectives. Since this artificial development has made Saxony's forest ecosystems unstable and vulnerable to Scollytes, Sachsenforst runs a long-term forest conversion program which includes the introduction of site-adapted tree species such as oaks, beeches and the white fir trees.



*Figure 2: Destruction of the forests of Lower Saxon District by the Bark beetle*

The following session focused on a guided tour of the forest genetic resources conservation departments, the conifer grafting trial site, the hardwood production nursery, and the seedling preparation center before planting. Two plant production techniques are mainly used depending on the species:

- The production of conifer plants, using a substrate composed of fine sand and sawdust,
- The production of hardwood plants in microclimates: greenhouses,



*Figure 3: Beech production nursery*



*Figure 4: Oak production nursery*

The day ended with the discovery of the machines used in all stages of preparing the plants before planting or before delivery to partner buyers (community and private forests). In view of the increasingly high demand due to the loss of forest cover destroyed by the exponential infection of (Bark beetle), the use of machines for the preparation of plants is of capital importance at this time in Germany.

The 4th day started with a guided tour of some heritage sites in Dresden. Including a museum, historical monuments, a historic garden, an archaeological site. Visiting these heritage sites was part of a perspective of learning and broadening knowledge of the cultural life of a cultural city of a city once destroyed by WWII.



*Figure 5: Ancestral Cathedral of the King's Mass, (18th century)*

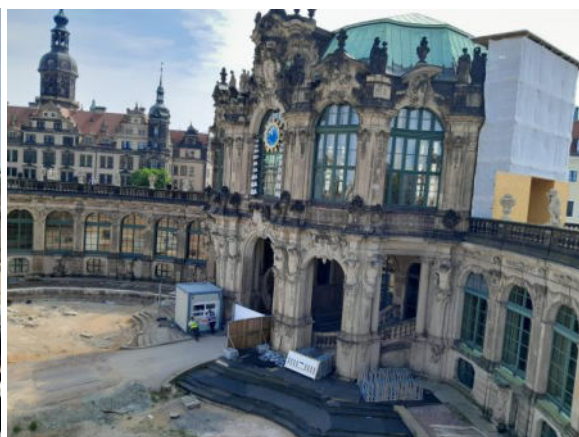


*Figure 6 : Former Royal Palace of Dresden, converted into a museum after the 2nd GM,*



The afternoon was dedicated to participating in the seminar on the community forest management system in Germany. The seminar was presented by Dr. Casten Schusser at the center for international postgraduate studies of environmental management at the University of Dresden. During this presentation, the points on the agenda which guided the debates were, the definition of community forestry, the Economic Outcomes of community forestry, the interests of community forestry.

The 5th day was mainly devoted to an excursion to the botanical garden of Schloss Pillnitz. The end of this day offered the whole team a return trip on a boat to Dresden and a boat excursion which. The end of this week marked the end of the group program and thus opened the way for the individual program over the next 3 weeks.



*Figure 7: Arboretum of the Botanical Garden*



*Figure 8 : Vulnerable species protection device in winter*

## **Week 2: Silviculture and management system of community and private forests**

The program for this first week of individual training was planned on two main themes: Silviculture and the support system for community forests.

### **- Forestry**

The forestry training program started with a presentation by Dr. Wilfried Steiner on Monday 19/06/23 at the North-West German Forest Research Institute (NW-FAA). This presentation made it clear that the NW-FAA is responsible for forestry research and practical advice for all types of forests in Lower Saxony, Hesse, and Saxony-Anhalt. The institute's areas of intervention include forest growth, forest protection, forest genetic resources and environmental control, which are organized into 5 departments:

- Department of Forest Protection
- Department of Environmental Control
- Department of Forest Genetic Resources
- Forest Growth Department.
- Department of Nature Conservation

The preparation and development of practical knowledge is based on an extensive network of experimental areas and natural forests.



*Figure 7: Education area for grafted hardwood plants*

Guided by Dr. Wilfried, the afternoon session consisted of visiting the practical activities of the forest genetic resources department, the main activities of which are among others:

- Selection, genetic characterization, and varietal trials of new energy poplars for Germany.
- Selection of fast-growing tree species of the genus *Populus*, *Robinia* and *Salix* to produce renewable resources in short rotation.
- Control of the origin of forest reproductive materials using stable isotopes.



*Figure 8: Grafted conifer seedling education area*

On 20/07/23, the program mainly focused on a visit to the Forestry Education Center Lower Saxony (NFBz). Guided by Ms. Stefanie Morich, the following sites were visited:

- The practical carpentry classroom
- The storage room for various types of chainsaws, brush cutters and spare parts
- The storage room for manual equipment used for the installation of forest plantations.
- The learning site for wood harvesting and logging operations



*Figure 9: Learning room/workshop*

In the afternoon, Stefanie gave the opportunity to better understand the organization, structuring and functioning of the Education Center through a powerpoint presentation. From this presentation by Stafanie, it emerges that:

- The Lower Saxony Forestry Education Center (NFBz) is located on the western edge of the Harz Mountains near the town of Seesen in Münchehof,
- The NFBz is a competence center for forestry work and forestry technology in Lower Saxony,



- As a service point for the state forests of Lower Saxony, it is responsible for training, further education as well as the development and testing of new equipment and work processes.
- The most important task and main goal of the NFBz is the continuous optimization of occupational health and safety for people working in the forestry sector and the expansion of their skills.

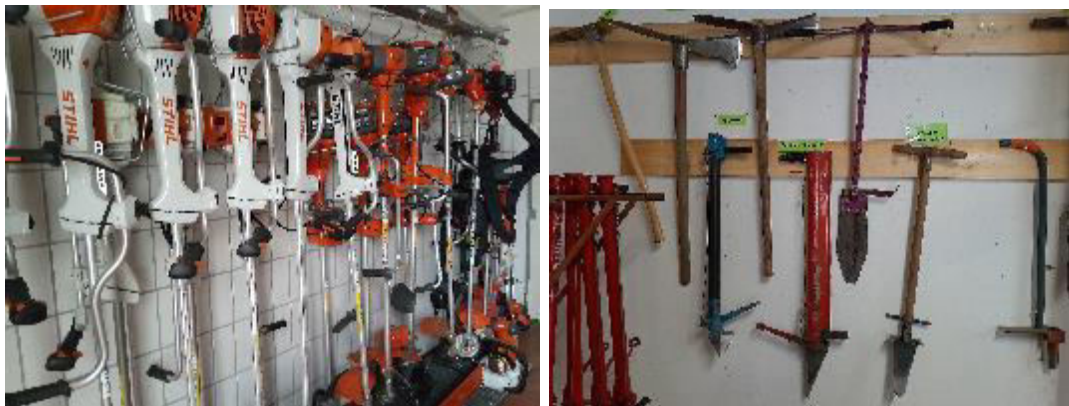


*Figure 10: Practical Teaching Materials center*

The day ended with a guided tour of federal reforestation sites. Several reforestation models were visited:

- Reforestation model with monospecific and multispecific composition
- Plantation model managed in regular and irregular high forests
- Model of natural regeneration under forest cover

The day of 07/21 began with a visit to the Forest Seed Advice Center Oerrel (FSB Oerrel), which is responsible for the harvesting and marketing of forest seeds in the state forests of Lower Saxony. The Center guarantees the supply of genetically adapted and high-quality reproductive material. Thanks to FSB storage, the state forests of Lower Saxony can supply seeds even in faulty harvest years, so that a continuous supply of plants of safe origin is guaranteed. After this presentation phase of the center, the rest of the day consisted of visiting the different workshops:

- Drying and selection of seeds using appropriate machines
- Breaking dormancy process using machines and depending on the species.
- Determining the moisture content of seeds

The afternoon was devoted to a visit to the private company Bleume Baumschulen, partner of the Forest Seed Advice Center. It was about visiting the company's private nurseries and the



techniques for preparing the plants before marketing and/or planting them. It should be noted that the scarcity of rain remains the main challenge for nursery growers.

- Support for the management of community forests

The day of 07/22 was dedicated to the guided tour in the Isetal community forest by Mr Alexander Berlitz. It was a question of understanding forest management practices (forest inventory, implementation, and monitoring of natural and artificial regeneration activities, cutting up harvest plots), reforestation and the responsibilities assigned to the forestry agent of the chamber of agriculture of the forest district in supporting community forests.

The menu for the day of 07/23/2023 provided a better understanding of how the Chamber of Agriculture works. The content of this presentation made it possible to understand that the Chamber of Agriculture of Lower Saxony is:

- A region-wide organization, which works in close collaboration with its members,
- Professionally competent, neutral, and independent,
- Puts the concept of self-government into practice daily thanks to the links between head offices and honorary offices.
- Responsible for supporting approximately 500,000 hectares of private forests.
- There are approximately 50,000 agricultural and forestry companies that make up the members and clientele of the Chamber.
- Responsible for more than 50,000 private forest owners

Broadly speaking, the Chamber acts as a self-regulatory organization providing consulting, training and development, testing, research, and analysis services and works collaboratively with a multitude of partners and reputable service providers in academic and commercial domains. We also work closely with the state of Lower Saxony,



*Figure 11: Natural regeneration technique of conifers under canopy*



*Figure 14: Planting model with multispecies composition*

### **Week 3: Forestry management in Lower Saxony,**

The week started on 07/26/2023 with a visit to the Lower Saxony Forest Planning Office (NFP), based in Wolfenbüttel. From discussions with Ms. Suzanne, it appears that the Lower Saxony Forest planning office is a service point at the scale of the Lower Saxony state forest company. He has strong expertise in soil science, forest inventory, forest consultation and planning, information, and communications technology, as well as geographic information systems (GIS) across the NLF. After this exchange and discussion phase, Ms. Suzanne led the team to the various NLF reforestation sites.

On 07/27/2023, Mr. Henning's technical staff educated the participants on forestry planning. After the presentation of the organization and functioning of the forestry sector in the federal state of Lower Saxony, Mr Hening focused on forest management planning which represents one of the main tools used to ensure that Germany's public and private forests remain healthy and sustainably managed. It also emerged from this presentation that the forest management plan, which usually covers 10 years, must respect the following criteria:

- Present the strategic vision and a commitment to the protection of multiple forest values in the developed area.
- Evaluate the current state of the forest in the area to which the plan applies.
- Present in detail the projected state of values associated with the forest in the targeted area
- Establish objectives related to development.
- Describe the harvest, regeneration, and other activities to be carried out to achieve the set objectives.

This day ended with a field visit led by Henning to the sites of forest management and natural regeneration practices.

The day of 07/28/2023 was dedicated to participation in an excursion organized between the technical staff of the NLF and that of the conservation service in the Harz National Park. Led by Ms. Sabine Bauling, it was about understanding the forest management of the National Park. This national park located in Saxony-Anhalt and Lower Saxony in the northernmost mid-mountains of Germany is one of the most popular regions in the north of the country for hiking. The Harz Park is well landscaped and attracts a considerable number of visitors. Unfortunately, the park is being wiped out by the invasion of Bark Beetles, which are forcing park services to systematically cut down infected stems. This excursion therefore aimed to carry out technical reflection on the new sustainable management approaches to the Park.

The program for 07/29/2023 focused on learning forest management practices, reforestation, identification and marking of trees infected by insects, and visiting multi-species forest plantation practices and other technical tasks. assigned to Mr Berlitz on a daily basis in the sustainable management of the forest in the Westerhof forest district

On 07/30/2023, it was a question of participating in the presentation of the Walderbesitzerverband institute on the forest support system Private\_Forest owner association. This seminar presented by Mr Berlitz made it possible to understand the support strategy of the forest district.

Wageningen University opened its doors to us on Monday/03/10. Thanks to the interview held with Ms. Madelon, we had the opportunity to gain an overview of Wageningen University's forestry research in Africa. It emerges that exploring the potential of nature to improve the quality of life is the mission of Wageningen University & Research. The strength of Wageningen University & Research lies in the combination of specialized research institutes with the knowledge of Wageningen University and the cooperation of various disciplines such as forestry, forest management.

The menu for the day of 07/07/20203 included a visit to the forest protection project against fires (THOR), which aims to develop, optimize, and implement prevention strategies for the protection of forests against fires. forest. In doing so, the project works on the following areas:

- Prevention of forest fires
- Monitoring of forest fires,
- Situation of forest fires in areas polluted by munitions,

- Controlled burning for the purposes of nature conservation and protection against forest fires.
- Knowledge transfer.

THOR adapts its actions to changing framework conditions, management strategies, training objects, guidelines, and teaching materials to provide options for knowledge transfer and application.



*Figure 15: Experimental Firewall Cleared*



*Figure 16: Forest destroyed by bushfire*

After a relaxation part on 07/08/2023 in the MV zoo garden, the training ended on 07/09/2023 with an evaluation organized by the FEP. In fact, In the MV Wildlife Park, we were able to discover wolves, bears, lynxes, owls and many other animals native to Germany, almost like in the wild. In the area of fish, the layout of the ponds gives the impression of walking like in a river with dry feet. Adventurous trails lead over climbing paths and bridges, through caves, root tunnels and moors. The petting zoo, adventurous playgrounds and partly walkable enclosures offer special animal and play experiences. Close encounters are guaranteed at this Zoo.

## **5. Results obtained and follow-up**

- Overall, the participants appreciated the volume of the individual learning program at the state/public and private host institutes in Germany. However, it will be necessary to review the organization of participants' intercity travel with Deutsche Bahn so that it reflects this.
- In the case of Cameroon, the course proved to be a success and achieved its objectives, including the strengthening of technical capacities in the conservation and



use of forest genetic resources, and the qualitative production of genetic materials in nurseries.

- The course allowed the participant to become familiar with the different models of forest plantations with monospecific and multispecific composition, the management of plantations in regular and irregular high forests and the techniques/methods of bush fire prevention implemented in certain mountain forests. in Germany, with a view to making the improvement of strategies for promoting municipal and community forest plantations in the communes of Yoko and Moloundou in Cameroon more effective.
- Different factors have contributed to explaining the success of the forestry internship program in the countries where it has been delivered. In the case of Cameroon, the most important are the following:
  - The training takes place in an appropriate context, thanks to the demonstration of techniques for collecting, selecting, processing seeds, and grafting which has developed an excellent technical base for the conservation and multiplication of seeds to improve teak trees in the communes and ProFEC partner communities.
  - The time to hold the training was very well chosen, because the last 20 years of forest management in Cameroon have almost been devoted to the abusive exploitation of forests, and that it seems to be emerging today, a new interest in forest plantations at the central level (PNDFP), at the decentralized level (community (Cogesteck) or municipal (CFC)).
  - Learning about the installation and management of forest plantation models with monospecific and multispecific composition, management of forest plantations in regular and irregular high forests takes place in a context where research on forest plantations was carried out in Cameroon, following a process, leading to proposals and development actions that are generally scientifically reliable, but often operationally complex.
  - The program for learning fire prevention measures in silviculture fits perfectly into the context of unplanned transhumance and slash-and-burn agriculture and hunting practices in the commune of Yoko which will start at the end of October, and which constitutes a major challenge for the growth and development of forest plantations. The participant will therefore very quickly use the new knowledge and skills acquired during the internship.
- Furthermore, the internship offered an opportunity to acquire new skills on the development of the management strategy, the calculation of forest possibilities, the allocation of the volume of wood, the use of forestry equipment with a view to making more effective implementation of the management plan for municipal forests partners of ProFEC

- The internship made it possible to learn new models of community forest management, support private forest owners and discuss issues with community forest management with forestry experts. The knowledge acquired will make it possible to propose a management model for community teak plantations in the commune of Yoko
- The training was well organized for the following reasons:
- Considering the climate/weather, the June-July period was appropriate for all participants,
- In terms of quality, the institutes visited were well chosen,
- Concerning the management of unforeseen events, the FEP demonstrated good flexibility,
- To deal with language difficulties, the FEP provided interpreter guides
- However, the FEP will still need to review the following aspects:
- Prepare participants well for the practical arrangements for intercity travel with Deutsche Bahn
- Avoid overlapping programs
- Certain subjects have been repeated and treated in several institutes (duplicates?)
- Certain subjects discussed unfaithfully were once again dealt with in a group,

## 6. Future cooperations

As a result of the fluctuating exchanges maintained with certain institutes, possibilities for cooperation put in place arrangements have been listed in the table below.

| Institution                                                                                    | Future cooperations                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ministère Fédéral<br>Allemand de<br>l'Alimentation et de<br>l'Agriculture/BMEL                 | Provide funding for sustainable management projects of forest resources and biodiversity in the Municipalities of Yoko and Moloundou in Cameroon                                           |
| TUD                                                                                            | Msc end-of-study internship in tropical forestry at ProFEC<br>Scholarship for young Cameroonian foresters                                                                                  |
| Forest Expert Program                                                                          | Evaluation of the impact of the internship on the action carried out in the communes of Yoko and Moloundou                                                                                 |
| Northwest German-<br>Forest-Institute,<br>Straatsbetrieb<br>Sachsenforst, Forest<br>seeds Bank | Support the conservation and use of forest genetic resources                                                                                                                               |
| Landwirtschaftskammer<br>Niedersachsen                                                         | Support the development of a management model for community and private teak forest plantations in Cameroon: pilot case of Yoko and Moloundou<br>Collaboration with ProFEC, F4F and ProPFR |
| Niedersachensche<br>Landersforsten                                                             | Facilitates the purchase of forestry equipment/machines                                                                                                                                    |

|                                        |                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------|
| Landwirtschaftskammer<br>Niedersachsen | Community teak plantation management model: pilot case: Yoko                          |
| University of Wageningen               | Research collaboration in traditional agroforestry<br>Welcoming international interns |

## 8. Annexes

Internship photos

Participation in the Saxon Lower District Foresters' Festival



Natural regeneration technique under forest cover



Multi-specific forest plantation installation technique





## Destruction of mountain forests by Bark beetles



## Bark beetle lavas



Timber harvesting operation using KUMATZU.



Overexploitation of timber due to Bark beetle attacks



# Annex 14

## 2023 Isaac Kofi Ntori





## Report



10.October 2023

### Personal Details

|                 |                             |
|-----------------|-----------------------------|
| Family Name     | Ntori                       |
| First Name      | Isaac Kofi                  |
| Gender          | Male                        |
| Date of Birth   | 10 <sup>th</sup> June, 1988 |
| Nationality     | Ghana                       |
| Passport Number | G3166959                    |
| Email Address   | Isaac.ntori@arocha.org      |

### 1. Short Summary

Half page

For Webpage

Sum up the main/ most important / formative experience

As part of my month-long participation in the Forest Expert Program organized by the German Forest my expectations were to have in-depth understanding of international forestry management practice in the context of soil ecology and silvicultural processes, nature base solutions, participatory forest management and governance, integrated restoration approaches benefit sharing arrangements, payment for ecosystem services and forest fire prevention. During my stay, I had the opportunity to participate in several forest management and climate related activities at various institutions including The Thünen Institute Climate-Smart Agriculture, Forest District of Sellhorn, Müritznational Park and the Forest District of Ahlhorn. Within this period, I was involved in activities ranging from soil pedology (Soil nutrient sampling and CO<sub>2</sub> assessment), forest ecology and silvicultural systems, forest inventory and forest administration timber harvesting and marketing, forest pedagogy and hunting. I interacted and exchanged experiences with the resource persons at the various host institutions. The traineeship was very insightful as it provided me with extensive acquaintance and understanding of the concept of forest management in Germany and the interconnections between agriculture and climate change within the country. The forest management in Germany was very unique and it harmonizes economic, social and ecological factors as the surest way to sustainably manage forest





resources for human gains through production, near-to-nature conservation, tourism and recreation and research. Landscape restoration is a long-term program that requires effective planning and integrated approaches. It is worth noting that the adoption of various silviculture systems and pedological practices as well as the implementation of a multifunctional forest management system based on the 13 principles of the program for "Long-term Ecological Forest Development" (LÖWE program) by the forest districts in the Lower Saxony State are very critical to sustainable forest management. Greater efforts are put in place in Germany to mitigate climate change impact through peatland restoration. The establishment of forest pedagogy centres is commendable and worthy of emulation as it stimulates the interest of students and the public to understand the importance of forest. Wildfire management is very rigorous through the use of the automatic forest fire early detection system. The perception of "right-to-Nature", establishment of compensation and replacement systems, revenue generation and benefits sharing arrangements through designation of areas in forests for burial and funerals, fishing, beekeeping, etc. do not only boost income but enhance effective protection of the forest and also serve as incentives for the public. It was also noted that ability to hunt is a prerequisite to becoming a registered forester in Germany. My stay in German was very memorable and was characterized by lot of travelling.

### 2. Introductory Chapter

- Who recommended you and why, Which institutions were involved

**Name:** Dr. Cisco Aust

**Designation:** Project Manager –Forest Landscape Restoration through a sustainable wood energy value chain

**Institution:** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

**Name:** Mr. Godwin Evenyo Dzekoto

**Designation:** Northern Sector Manager

**Institution:** A Rocha Ghana

I present an insightful expertise and experience in forest landscape restoration, species and ecosystem conservation and management, climate change mitigation and adaptation, collaborative natural resource governance, the development of nature-based enterprises and monitoring and evaluation. Having exhibited a good team-oriented working relationship and coordination skills with higher desire towards achieving my personal and organizational goals my referees saw the Forest Expert Program as a well tailored program that will offer me the knowledge, skills and understanding of internationally recognized best practices in sustainable forest management and governance

- What is your position / tasks in your home country

**Position:** Project Officer

- a) Educating, sensitizing and creating awareness on natural resource conservation, climate smart agriculture, ecological restoration and climate change issues.
- b) Taking lead in mobilizing and organizing all engagements in communities, school, religious bodies at local and regional levels as well as writing reports on all activities carried out.



- c) Liaise with communities and all other stakeholders towards high community and stakeholder involvement, support and participation in biodiversity conservation programs
  - d) Engage directly with communities in forest landscape restoration and biodiversity monitoring activities
  - e) Supporting in livelihood enhancement and green value chains development programs
- What were your expectations and objectives?
    - a. Gain a deeper insight into international forestry management practice
    - b. Understand soil ecology and silvicultural systems and processes adopted for forest management and climate change impact mitigation
    - c. Explore existing nature base solutions practices
    - d. Understand how communities are integrated into forest management and governance
    - e. Gain knowledge about integrated landscape restoration approaches and forest fire management

- How transport to Germany worked / was funded

The transport system was excellent and it was very delightful embarking on the many trips. I always had my tickets handy and was funded by Forest Expert Program. The tickets were flexible and convenient for me to travel with train, bus or tram at any point in time

-

### Time Schedule

- Please update the information on your schedule

| Date      | Institution                                      | Programme                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18. Sep   | Deutscher Forstverein<br>(German Forest Society) | Introduction Day                                                                                                                                                                                                                                                                                                                                                                            |
| 19. Sep   | University of Göttingen                          | Tour through the Forest Faculty, Visit of Forest Botanical Garden (Sabine Kühling)                                                                                                                                                                                                                                                                                                          |
| 20-9-2023 | Thünen Institute Climate-Smart Agriculture       | <ul style="list-style-type: none"> <li>- Welcome, introduction of the institute and visit program H. Flessa:</li> <li>- Greenhouse gas emission in Germany with special focus on agriculture and land use C. Vos</li> <li>- Own experience coming from Ghana to Germany and own research within ITMSJ. Akubia</li> <li>- office of John</li> <li>- Our lab facilities S. Burkart</li> </ul> |



|           |                                                      |                                                                                                                                                                                                                                              |
|-----------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                                                      | - Our research on organic soils in Germany<br>M. Minke                                                                                                                                                                                       |
| 21-9-2023 | Thünen Institute Climate-Smart Agriculture           | Field trip (whole day) to experimental sites at Gnarrenburg (Gnarrenburger Moor)                                                                                                                                                             |
| 22-9-2023 | Thünen Institute Climate-Smart Agriculture           | National inventory of agricultural soils inventory with soil monitoring laboratory                                                                                                                                                           |
| 25-9-2023 | Forest District Office of Sellhorn (Forstamt Selhom) | Welcome and presentation about forestry in Germany, Lower Saxony and the forest district of Sellhorn<br><br>Management of forest fire in Lower Saxony, visiting of the headquarter of forest fire monitoring in Lüneburg                     |
| 26-9-2023 | Forest District Office of Sellhorn (Forstamt Selhom) | Field visit of timber harvesting measures<br>History of land use in the central "Lüneburger Heide" and impact on soil quality and development                                                                                                |
| 27-9-2023 | Forest District Office of Sellhorn (Forstamt Selhom) | Nature Park Lüneburger Heide, Regional Products and connection of regional producers<br><br>Visiting of the shooting range in Rotenburg to practice hunting related shooting.<br><br>Meeting of superannuated Forestdirector Lutz Kühlenkamp |
| 28-9-2023 | Forest District Office of Sellhorn (Forstamt Selhom) | Compensation and replacement measures/areas to compensate interventions in nature<br>Visiting of the Forest education and pedagogy center WPZ Haus Erhorn                                                                                    |
| 29-9-2023 | Forest District Office of Sellhorn (Forstamt Selhom) | Visiting of natural forest areas without exploitation as a laboratory for forest management praxis                                                                                                                                           |
| 2-10-2023 | Muritz National Park                                 | Introduction to Müritz- Nationalpark                                                                                                                                                                                                         |
| 3-10-2023 | Muritz National Park                                 | Area check with the ranger and from 5 p.m. guided tour "Deer concert on the eastern shore of the Müritz"                                                                                                                                     |
| 4-10-2023 | Muritz National Park                                 | Forest Adventure Trail Serrahn                                                                                                                                                                                                               |
| 5-10-2023 | Muritz National Park                                 | Forest Monitoring in Müritz- Nationalpark in Serrahn area                                                                                                                                                                                    |
| 6-10-2023 | Muritz National Park                                 | Peatland restoration and NATURA 2000                                                                                                                                                                                                         |
| 9-10-2023 | Forest Alhorn                                        | <ul style="list-style-type: none"> <li>Forest education programme with Oldenburg High School on the topic of forest ecosystem, soil, soil organisms in the Barne guide wood</li> </ul>                                                       |



|            |               |                                                                                                                                                                                                                                               |
|------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |               | <ul style="list-style-type: none"> <li>Silvicultural topics such as near-natural silviculture, pine management in the Barne Guide Wood</li> </ul>                                                                                             |
| 10-10-2023 | Forest Alhorn | <ul style="list-style-type: none"> <li>Excursion to the natural pond Ahlhorn pond management</li> <li>Insights into the work of the Forest Education Centre Weser-Ems</li> <li>Youth forest home outreach in the log cabin Ahlhorn</li> </ul> |
| 11-10-2023 | Forest Alhorn | <ul style="list-style-type: none"> <li>Site knowledge and tree species selection</li> <li>Forest management and silvicultural decisions</li> <li>If applicable, Thülsfeld dam and drinking water abstraction</li> </ul>                       |
| 12-10-2023 | Forest Alhorn | Moor renaturation (Peatland Restoration)                                                                                                                                                                                                      |
| 13-10-2023 | Forest Alhorn | Moor renaturation                                                                                                                                                                                                                             |

### 3. Report

- Please write a minimum of five A4 page report.
- Please ensure to cover the following items: what were your activities at every Host Institutions; what was the significance of your visit to the Host Institutions and benefits for the Home Institution
- has there been any future cooperation arrangements put in place or plans made
- please provide feedback regarding your stay and activities weaknesses and strength of the programm
- room for improvement.
- the report should have a chronological order and include all the names and positions of people you met.
- Comparison of knowledge gained and the expectations
- Benefit for future work

#### **Introduction**

Sustainable forest management is a dynamic and evolving concept that seeks to connect the economic, social, and environmental values of all types of forests, for the benefit of present and future generations (<https://fsc.org/en/forest-management>). As a developing conservationist I have developed a greater passion to contribute to the effective management of global biodiversity. The Forest Expert Program organized by the German Forest Society serves to me an opportunity to learn and understand global forest management and also preview me to a vast range of different topics to enrich my skills, knowledge and understanding of internationally recognized best practice in nature conservation. In view of this I applied for the international program with the expectation to have an in-depth understanding international forestry management practice in the context of soil ecology and silvicultural processes, nature base solutions, participatory forest management and governance, integrated restoration approaches benefit sharing arrangements, payment for ecosystem services and forest fire prevention inter alia. During my stay in I had the opportunity to participate in several forest management and climate related activities at various institutions including The Thünen Institute Climate-Smart Agriculture, Forest District of Sellhorn, Müritznational Park and the Forest District of Ahlhorn. Within the one-month period I studied topics and involved in activities ranging from soil pedology (Soil





nutrient sampling and CO<sub>2</sub> assessment) forest ecology and silvicultural systems, forest inventory and forest administration. The program enabled me to meet, learn, share and network with interesting people. This report highlights the activities undertaken at the respective host institutions, key lessons and take home and recommendations

### **Day 1, 18 – 09- 2023**

#### **Introduction to Forest Expert Program at Gottingen**

At the early hours of the day, I had a tour of the city of Gottingen with the coordinator of the Forest Expert Program, Ms. Sabine Kühling. We visited the Nature reserve "Göttingen city forest and Kerstlingeröder field. The city forest is a pristine close-to-nature forest constituting an integrated forest management set up for education and research, recreation, nature conservation and provision of microclimatic condition and selective production of wood for domestic and industrial use. The forest is made up of mainly beech trees with oak, maples and some conifers. The forest landscape is hilly with limestone soil supporting lot of regeneration of beech trees. Some fauna species found at the zoological garden include the Male fallow deer, Roe deer, Red deer and Wild Boer. Later in the afternoon, the team met at the Head Office of the German Forest Society at Gottingen for orientation into the Forest Expert Program. This was led by Mr. Malte Campsheide, Executive Director for the German Forest Society. During the orientation the Mr. Campsheide made a presentation on the overview of forest in German. He indicated that Germany has a forest area of approximately 115000km<sup>2</sup> which is about 32% of the land cover of the country. In his presentation he made it known that ownership of forest in Germany constitutes 48% Private, 29% state, 19 private companies and 4% constitute military areas. Forest management in Germany is integrated and multifunctional with various systems on a piece of land (Production, Near to Nature, etc.). After the introduction we visited the Forest Botanical Garden at Gottingen. The garden has several species of trees and shrubs that are clustered into families. These species included woody plants/trees that are native and non-native to Germany. Also available are fruit trees and ornamental plants that are imported from the Western Asian and Mediterranean Europe. Examples include the Sweet Chestnut (*Castanea sativa*), *Malus floribunda*, etc.

#### **Thünen Institute Climate-Smart Agriculture (20-9-2023 to 23-9-2023)**

I had the pleasure of embarking on about a two-hour memorable road trip from Gottingen through magnificent towns to Braunschweig. I did not have any clue about the road conditions but I enjoyed the trip on the mountains. We made stopovers at the border of the eastern and western Germany, the Oder Dam on the Harz mountains, National Park Harz and the beautiful city of Goslar, which is a UNESCO World Heritage Site. Driving through the Harz Mountain was a cherished moment as I felt connected to the beautiful landscape. However, my thought was ignited as I sighted the dying spruce on the mountains. Overall, the journey was delightful and finally arrived at Braunschweig.

### **Day 1**

At the Thünen Institute I was welcomed by Prof. Dr. Heinz Flessa who is the head of the institute. He made a presentation to give an overview of the institute. In his presentation Prof. Flessa indicated that as one of the fifteen institutes at Thünen, the Climate-Smart Agriculture Institute is responsible for researching and conducting national inventory of greenhouse gases and air pollutants from agriculture as well as determining the significance of agriculture for greenhouse gas emissions in Germany. The institute therefore identifies the contributions agriculture can make to climate change mitigation and also provides policy advise on the reduction of greenhouse gas emission. Basically, the institution's research focuses on measuring, analyzing and modelling the formation and turnover processes of organic matter in agricultural soils together with the reaction pathways of carbon and nitrogen. One key challenge to agriculture in Germany



that was mentioned was the reduced population of insects as a result of pesticide application for example glyphosate.

Another presentation was made on greenhouse gas emission in Germany with special focus on agriculture and land use. The presentation was made by Dr. Cora Vos who is responsible for the compilation and maintenance of the annual emission inventory on agricultural greenhouse gas and air pollutant emissions and also the construction of the annual emission reports on agricultural greenhouse gas and air pollutant emissions. In her presentation she indicated that the main energy source in Germany is coal but this has reduced with the emergence of new gas plants and the sharing of electricity generated from solar and wind systems. On the part of greenhouse gas emission, agriculture contributes to about 4% and this constitutes 53% from grassland. The main sources are emissions of methane from animal husbandry and nitrous oxide from agricultural soils. There has been significant decrease in emissions of  $\text{N}_2\text{O}$  from manure management and emission of  $\text{CH}_4$  from enteric fermentation and manure management over the years. Some factors that Dr. Vos mentioned to have contributed to the decline in GHG emissions are the reduction in the amount of synthetic fertiliser application, increasing importance of anaerobic fermentation of farm manure in biogas plants and the partially gas-tight storage of fermentation residues and decline in cattle and pig numbers. She also touched on the protection of permanent grassland in Germany.

A brief time was spent with Dr. John Akubia in the afternoon. Mr. Akubia is responsible for supporting the development of an Integrated Greenhouse Gas Monitoring System (ITMS) for Germany. Sharing his experience on the integrated GHG Monitoring System (ITMS), He indicated that the ITMS will enable Germany to operationally monitor the emissions of three key greenhouse gases namely: carbon dioxide, methane, and nitrous oxide. Soon after the interaction a tour of the laboratory facilities at the institute was conducted by Dr. Stefan Burkat. The laboratory facility constituted automated microcosm system for biogeochemical research and soil analysis, as well as  $\text{N}_2\text{O}$  isotope fractionation method. The first day's session was wrapped up with the overview of research on organic soils in Germany conducted by the institute. The session was facilitated by Dr. Merten Minke. Dr. Minke took me through how the institute is managing peatlands in Germany. He made it known that peatlands are good carbon sinks, thereby storing large amounts of soil organic carbon. This makes peatlands important for climate protection. He demonstrated the measurement of greenhouse gas from peatlands using the chamber method.

### Day 2

The second day was set apart for extensive field work to the experimental sites (Gnarrenburger Moor) at Gnarrenburg. The team comprising Jeremy Rüffer and Trammy Lang visited two experimental sites; Site 1- Ober Klenkendorf and Site 2- Forstort -Anfang. Each of these sites has micrometeorological measurement systems installed and uses the Eddy covariance technique to directly observe the atmosphere exchange of GHGs. These devices measure wind velocity and vertical flux densities of  $\text{CO}_2$ , water vapor and other greenhouse gases. Other device installed include the Gill anemometer sensor input unit instrument used for measuring the speed of the wind. At the two sites the team cleaned and monitored the GHG monitoring systems.

### Day 3

#### National Inventory of Agricultural Soils Inventory with Soil Monitoring Lab

Dr. Christopher Poeplau who is in charge of soil carbon monitoring made a brief presentation on the German agricultural soil inventory programme. He indicated that the Thünen Institute of Climate-Smart Agriculture was commissioned by the German Federal Ministry of Food and



Agriculture to conduct the first German agricultural soil inventory. This was to have a first representative and consistent baseline of soil organic carbon (SOC) stocks in agricultural soils across Germany. Between 2011 and 2018 a grid system of 8x8km was adopted to assess the site influence and management factors on SOC. In addition to this, 3104 farmers voluntarily participated. Currently the institute has been commissioned to resample the points to determine a possible change in SOC stocks. Dr. Poeplau mentioned that in addition to site-specific and climatic factors, the management data is collected through a questionnaire. The presentation was followed by a visit to the soil monitoring laboratory. The laboratory was established as a laboratory to breed and analyse fungi in 1995. In 2019 the laboratory was renamed as laboratory for soil monitoring with the aim of modifying, extension and development of chemical and physical methods for investigating soil. The main focuses of the laboratory include sample preparation for pH monitoring, carbon and nitrogen analysis, analysis of elements including dithionite extraction (iron, aluminium and manganese sesquioxide). The laboratory is also responsible for monitoring peat soils in open land and forest.

### Significance of Visit

My visit to Thünen Institute Climate-Smart Agriculture was very insightful and provided me with extensive acquaintance and understanding of the interconnections between agriculture and climate change. Although my stay was too short at the institute, I had the opportunity to familiarize myself with the various agronomic and pedological assessments including peatland restoration, monitoring and protection and the national forest soil inventory undertaken to improve agriculture and mitigate climate change in Germany.

The theoretical and practical knowledge gained will equip me to make meaningful contributions towards decision making in land use planning as well as providing technical backstopping in climate smart agriculture and landscape restoration programmes which are critical in community base natural resource management.

### Feedback

- Thünen institute offers a great opportunity to study and have practical knowledge in soil and forest management. The institute has varied thematic areas of study.
- Trainees should be offered a longer stay at the institute to enable them have comprehensive study and in-depth understanding of the study areas.
- The team at Thünen is great and very welcoming. I was privileged to have met a fellow Ghanaian who made my stay more lovely at Braunschweig.

### The Forest District of Sellhorn (25-09-2023 to 29-09-2023, 2023)

#### Day 1

#### Welcome and Presentation about Forestry in Germany, Lower Saxony and the Forest District of Sellhorn

At the forest district of Sellhorn My expectation at the Forest District of Sellhorn (Forstamt Sellhorn) in the Lower Saxony State was to enhance my knowledge on participatory forest management and governance, integrated landscape restoration approaches, benefit sharing arrangement, payment for ecosystem services, forest fire prevention. I was welcomed into the forest district by Mr. Victor Steinmann, who is the Head of Operations and Mr. Peter Wendt, the head of the forest district. Mr. Steinmann welcomed me with a brief PowerPoint presentation that highlighted the Lower Saxony State Forests in Germany, short outline of forestry history in Northern Germany, the development towards an integrated and sustainable Forest management system and glimpse of future prospects regarding sustainable forest management (SFM).



He indicated that Forstamt Sellhorn is one of the twenty-four forest districts in the Lower Saxony State. He enumerated the importance of forest in German to include source of energy, industrial and domestic use for timber and construction, pasture for livestock. However, with increasing demand people started clear cutting of the forest. The uncontrolled removal of the upper layer of heath and soil for use as livestock bedding coupled with the long period of careless management of forest resources led to an alarming wood shortage leading to desertification thereby causing ecological, economic and social impacts. With the introduction of the principle of "Sustainability" regarding forestry by Carlowitz 1713 and Langen, 1770 there was extensive re-afforestation 1800 with conifers and some few deciduous trees. After 100 years forest cover has doubled in northern Germany. He concluded his presentation by indicating that in 1991 the policy of "Long-Term ecological Forest Development" (LÖWE) was launched and the Government admonished all political parties to support the implementation of the programme through strong political will.

### **A walk in the forest**

Mr. Steinmann led me for a walk into the forest. During the walk he introduced to me the various approaches to forest management in the district. As we walked along, I noted the different tree species including the conifers basically spruce, pines, douglas fir and some deciduous species including oak, beech and maples. The area also has vast heathland and undisturbed near-to-nature forest. The forest provides several ecological, economic and social benefits to the people. This includes recreation, controlled harvesting of non-timber forest product example mushrooms and bee keeping. The forest makes revenue through wood harvesting and allocation of land for burial and funeral celebration which comes with a fee in turns to protect the trees.

### **Management of forest fire in Lower Saxony, visiting of the headquarter of forest fire monitoring in Lüneburg**

A visit was made to the wildfire monitoring centre at Lüneburg. A presentation was made on how forest fire is managed in the forest. The presentation was made by the head of forest fire management of Forstamt Sellhorn, Mr. Knut Sierk. His presentation covered aspects of causes and impact of wildfire and its management. He indicated that the dryness of the area and drought make the landscape susceptible to wildfire. On the management of wildfires, he pointed out that education and sensitization have been very critical in their work. They use local media and sign post to create awareness and sensitize the public. Fire education is carried out on local media and also on streets with role play. He also mentioned that the forest fire danger index is used to assess the risk of forest fires. On his part, the head of the wildfire monitoring centre at Lower Saxony; Lüneburg, Mr. Toni Jankowski clarified that there are radio masts installed with an automated camera for early Forest Fire Detection at selected areas. The automatic forest fire early detection system monitors and can detect oncoming fires within a radius of about 20 km to 100 km. Once the system detects oncoming fire the forest fire center is alarmed with a message from the live images. These images are analysed and if fire is confirmed the exact location is determined and information is sent to the fire control center. Some challenges enumerated with regards to the operations of the forest fire centre is lack of human resource and the inability of the system to rapidly detect understory fires.

### **Day 2**

#### **Timber Harvesting Measures, History of Land Use in The Central "Lüneburger Heide"**

In order to have an understanding of the wood harvesting process and land use systems of the forest, Mr. Steinmann led me into the field. The trip was made to some wood production and harvesting areas within the forest. He emphasized that as part of the production system there are several measures put in place to ensure ecological, social and economic sustainability. Several silvicultural processes are also undertaken to ensure tree growth, species composition,





health and quality of the forests. Some of these processes include assessment of soil nutrients, site preparation, planting, thinning/pruning and fire management. Before undertaking any form of restoration, the soil nutrient composition index informs them the species to plant. On the part of wood harvesting Mr. Steinmann mentioned that majority of the harvesting are made with target diameter depending on the customer's needs. The forest district operates under the programme for the endorsement of forest certification (PEFC) in order to avoid creating undesired results but develop a healthier forest to produce quality wood for harvest, and increased income from the timber harvest. The Forstamt Sellhorn trains and certifies personnel for wood harvesting. The day was wrapped up with a hunting exercise. I joined a group of foresters at Sellhorn to participate in a two-hour hunting exercise within the forest. It was so intriguing to engage in hunting activities for the first time but we did not get any wild animal to kill. As we go on the hunting Mr. Steinmann mentioned that ability to hunt is a requirement to becoming a registered forester in Germany.

### Day 3

#### **Nature Park Lüneburger Heide, Regional Products and Connection of Regional Producers**

On the third day of my stay at the forest district of Sellhorn I had some trips with Ms. Petra Reinken. Ms. Petra Reinken is a journalist and a member of the Nature Park partner network and "Protection through knowledge" Naturparkregion Lüneburger Heide e.V. Whiles we embark on our journey Ms. Reinken explained that they are a network of businesses established and financially supported by an EU-funded project. The network organizations and private individuals aim to support regional growth through value addition by promoting cooperation with local and regional stakeholders to protect the environment, cultural and other heritage. Our first visit was made to a farm at WeidenHof. The farm is an integrated organic farm that cultivates organic vegetables, rear livestock and poultry with a large a green space of about 60 Ha. The Executive Director of the farm, David der Gärtner, informed us that the farming was based on the principles of Community Supported Agriculture (CSA). They presently produce vegetables, eggs and meat that are delivered to the members through their depots at Schneverdingen and Soltau. Our next visit was Höpen sheep farm located at Schneverdingen. The farm is located on a heathland with over 100 flock. The services the farm provides include tourism and meat production. Our last visit was to Tante Minchen, a retail shop and a member of the network. Welcoming us Master Florian Bartels, owner of the shop, said Tante Minchen was named after his grandmother and the idea behind is to declare a war on packaging waste. Packaging at Tante Minchen, is done in a folding box or glass containers.

In the afternoon of the day, I was privileged to visited the shooting range in Rotenburg to practice hunting related shooting with Mr. Steinmann. This was actually my first time handling a gun for shooting. Even though I was frightened and not comfortable initially it became amazing whiles I tried hands and was hitting the target.

### **DAY 4 - Visited the Forest education and pedagogy center WPZ Haus Erhorn**

Forest pedagogy is one of tools adopted by the Lower Saxony State Forest District to educate students and groups in forestry. During my stay at Forstamt Sellhorn I visited the forest education and pedagogy center WPZ Haus Erhorn. The head of the centre Mr. Fabian Grätsch clarified that the centre provides opportunity for young students to learn about nature. The centre therefore hosts and engages students in practical forest management activities. The days activity continued with a walk into the natural forest areas without exploitation, set as a laboratory for forest management. This is an undisturbed area comprising dense deciduous trees including beeches, oaks and conifers. At this site no form of wood harvesting or hunting is allowed.



It was however noticed that there was a lot of ground biomass at this site with more signs of wild animals including the wild boar, Deer and wolves.

### Day 5

#### Visit and Study at the Compensation and Replacement Measures/Areas to Compensate Interventions in Nature,

The ecological compensation and replacement area seeks to address negative impacts of development projects or ensures that there is no loss in ecological services as a result of developmental activities. The compensation intervention area at Forstamt Sellhorn is a 130 ha "grass and closure" peatland set aside to offset carbon and generate corresponding biodiversity gains. At Sellhorn 1 point is sold at 7€ and this constitutes 1.8m<sup>2</sup> under a renewable 30-year contract based on Germany laws.

#### Lessons and Take Home

- a. The forest pedagogy centre presents an interactive space for forest and nature conservation education. This will be adopted in my home country to compliment our schools environmental conservation programme which is mainly on outreach basis.
- b. The multi-functional forestry management and governance at Forstamt Sellhorn through the LÖWE Programme provides a practical and sustainable approach to forest management. Within this scope the practical experience I gained have complimented my skills and knowledge in controlled harvesting of timber, integrated landscape restoration methodologies and silviculture processes and nature conservation.

#### Feedback

- Forstamt Sellhorn is a location to study extensively about nature conservation and forest management. The institution has a lot to offer for traineeship programme in integrated forest management
- The staff are very welcoming and professionally execute their take. I highly commend Mr. Victor Steinmenn who dedicated his whole week to be with me in the field. It was worth meeting him and his colleagues as I shared my experiences from Ghana and also harnessing their expertise in forest management.

### Müritz National Park (2-10-2023 to 6-10-2023)

#### Day 1

##### Introduction to Müritz- National Park

Located in the south of the state of Mecklenburg is the Müritz- National Park. At the Park's headquarters, Hohenzieritz, Room 113, I was welcomed by Mr. Sebastian Kinowski, the coordinator for wildlife management and peatland restoration and Dr. Sven Rannow, who is also the head of department for basic principles and planning. Mr. Kinowski made a brief PowerPoint presentation about the park. In his presentation he indicated that the Park which was founded in 1990 extends over a larger portion of the Müritz lake and constitutes 72% forest comprising 30% beech forest and no primary forest, 13% lake, 8% peatland, and 7% meadows, pasture and agricultural land. However, some areas are left unvegetated to serve as nesting grounds for wildlife. Some animal species that are peculiar in the park include the crane, osprey, red deer, etc. He stressed that even though Müritz is gazetted as a national park there are still private properties within. The park is designated for nature conservation, tourism, recreation and research. Also, they engage in schools' educational programme. After the presentation we



had a drive through the forest for a walk into the hill where the kaflingsberg tower is located. As we climbed the 55-metre-high tower meant for viewing, fire detection and telecommunication we had a full glimpse of the fascinating landscape with lush vegetation and amazing lakes.

### Day 2 - Area Check and Guided Tour

A forest hike was organized for tourists. Before the hike the team converged at Schwarzenhof, Ranger station for a briefing. The hike through the beautiful forest was coupled with bird watching. The tourists led by a ranger called Ms. Lars de Wilde finally got to a deer hunting platform. Amazingly the group saw a group of red deer on the opened large space.

### Day 3 - Forest Adventure Trail - Serrahn

A guided adventurous walk was led by Ms. Gundula Wernicke to the UNESCO World Heritage Site Serrahn. Ms. Gundular who is an officer for data collection, monitoring and evaluation, provided great insights about the ancient beech forest in the park. The beech forest is one of the five beech forest in Germany and is been protected by UNESCO as a World Natural Heritage Site since 2011. The 268ha beech forest has been protected from timber harvesting and other human interference for the last 150 years. The forest has well layout hiking trails. These trails into the beech forest are characterized with signposts that provide information about the unique vegetation. Whiles we walked along the beautiful trails observing the unique vegetation Ms. Gundular assisted to identify some rare flora species. Some species identified included the *Lycopodium annotinum*. We had a stopover at the observation tower to have a glimpse of the wide-opened wetland. It was very mesmerizing walking on the wooden footbridge on the peat to the range camp at Serrahn. At Serrahn we had a break and I visited the museum where information about the park/ beech forest were exhibited.

### Day 4

#### Forest Monitoring in Müritz- National Park in Serrahn Area

Mr. Matthias Schwabe, who is the head of the research and monitoring coordination department, together with Ms. Heidi Breu and I made a visit to a forest site at Serrahn area. The purpose of the visit was to monitor the landcover changes of the area that has been previously disturbed and lost the vegetation. As we embarked on the post-tsunami environmental monitoring process pictures were taken at four different locations/point within the monitoring plot. At each point ten pictures were taken at regular interval. These pictures were taken with reference to the geolocations of similar pictures that were taken a year ago. The team after a successful monitoring visited the forest botanical garden at Erbsland. The botanical garden has collection of several tree species including Oak, Beech, *Liriodendron tulipifera* (Tulip tree), Douglas fir, etc.

### Day 5

#### Peatland Restoration and NATURA 2000

Biodiversity conservation has been a global concern. Many strategies have been adopted to conserve global biodiversity. During my last day at Müritz- National Park I had the opportunity to visit some scenic areas within the park including the wolf trap and a peatland restoration site. The day's activity begun with a walk with the coordinator for wildlife management and peatland restoration, and wolf management and monitoring, Mr. Sebastian Kinowski. The first point of visit was the Wolf trapping pit in the park. During the walk Sebastian provided and insight into Wolf management by the park. He gave an account of the historic pit indicating that the figure is an imitation of how wolves were trapped in the past. We had a long walk through the hike path. The paths had information boards that have information about the life of wolves as well as wolf- human related stories. On the part of Wolves monitoring Mr. Kinowski mentioned that within the period of natural reintroduction of wolve they obtain periodic information through



camera trapping, footprints observation as well as baseline genetic profile. We proceeded to a peat restoration site.

At the peatland Mr. Kinowski explained the Zotzensee Project. He mentioned that the main goals of the EU-funded LIFE natural project are to rehabilitate the former Havelbach and peat areas in the Zotzensee lowlands, and manage a large amount of usable grassland through controlled rewetting and other techniques. He indicated that within the projects communities and stakeholders have been adequately engaged and their consent sought for the success of the project. The restoration of the peatland will support the rejuvenation of the native vegetation of the area.

### Lessons

- The integrated land use management approach adopted by the park which constitutes core areas where no form of human activity takes place and the multiple land use areas where activities like hunting, fishing and farming are done under controlled system prevents competing land use and makes it an ideal area for sustainable biodiversity conservation.
- Community benefit through boat cruises is one of the ways of incentivising communities into sustainable natural resource management.
- Nice trails with information signages developed for hiking and the provision of bus services that carry hikers' bike from no riding trail to the appropriate location promote effective recreation in the park
- No fee for tourism enhances human-nature interaction

### Forest District of Ahlhorn (9-10-2023 to 13-10-2023)

Like other forests in the Lower Saxony State the Ahlhorn forest district practices an integrated and multifunctional forest management system that harmonize economic, social and ecological factors as the surest way to protect nature sustainable for human gains. The management of the forest is based on the 13 principles of the program for "Long-term Ecological Forest Development" (LÖWE program). The forest district engages in production, near to nature conservation, forest education, fish farming inter alia to foster sustainable natural resource conservation, tourism and recreation, climate change impact mitigation. Other services provided by the forest district include designation of burial and funeral grounds in the forest. During my traineeship at Ahlhorn I engaged in activities including silvicultural processes and forest management, forest education programme, guided tour to aqua culture centre, forest pedagogy, peatland restoration among others. These presented a great insight into participatory natural resource management, benefit sharing arrangement, nature base solutions.

### Day 1

#### Forest Education Programme with Oldenburg High School

Led by Mr. Torsten Bensemann, Forest Education Officer, at Ahlhorn, the coordinator for Forest Expert Program, Ms. Sabine Kühling and I participated in the forest education programme with students of Oldenburg High School on forest ecosystem, soil and soil organisms in the Barne guide wood. During the education that was facilitated by Mr. Bensemann and Ms. Imke Reiners, the students were taught some silvicultural topics including basic patterns of forest soil structure, tree species identification and practical approaches to measurement of tree ages, height and volume of standing trees.





### Day 2

#### **Excursion to the Ahlhorn Pond Management Centre and Forest Education Centre Weser-Ems**

The day's activity included an excursion to the natural pond at Ahlhorn and insights into the work of the Forest Education Centre Weser-Ems as well as a visit to the youth forest outreach home. Prior to the excursion Mr. Bensemann led me to a heathland where no activity goes on there. We preceded to the fish farm. Over here I had to opportunity to learn briefly about pond management. The farm engages in trout smoking and marketing of fresh fish. The state owned 120 hectares Ahlhorn fish farm within the forest operates as an Flora-fauna habitats (FFH) protected area under the European law. From the fish farm we briefly interacted with the students at the Forest Education Centre Weser-Ems. At the centre students learn about forest management whiles involved in practical wood works for example construction of hunting platforms. We finally explored the Youth Forest home outreach. Mr. Bensemann mentioned that the youth forest home is a state-private partnership designated to host and educate students and the public on environmental stewardship.

### Day 3

#### **Forest Inventory and Excursion to Thülsfeld Dam and Drinking Water Abstraction**

The third day activities at the Ahlhorn forest district comprises visitation to forest areas to have idea about some silvicultural processes in forest management at Ahlhorn. These include site knowledge and tree species selection, forest inventory and silvicultural decisions and lastly a visit to the Thülsfeld dam and drinking water abstraction point. The day's session was facilitated by Ms. Carolin Kemper who is the head of operations at the Ahlhorn forestry office. Our first activity during the visit to the forest was to do forest inventory. Ms. Kamper assisted in identifying some tree species. Over here Ms. Kamper indicated that currently the forest district has embarked on natural regeneration of forest stands and this has been well-accepted to seedling planting. This triggered a deep discussion between us about the possibility of undertaking an assisted natural regeneration of the forest area we visited. Our discussion brought to light some important process to take into consideration which constitutes the existing saplings, availability of sunlight, remnant species and the soil conditions. We moved to another area in the forest where she explained how the forest district measures tree canopy closure and thinning out with time. During the visit we assessed the sites conditions and evaluated how healthy the tree stands are. On the part of private business partnership, Ms. Kamper led me to a site that has been designated for burial and funerals. Also, families can pay for trees to be conserved. We continued to the Thülsfeld dam and drinking water abstraction point. This is a beautiful waterscape. A quick look at the environment shows the existence of a stunning forest and heathland where most people go for hiking and recreational activities. While we enjoyed the scenic views Ms. Kamper hinted me about the serene forest surrounding the dam. Along the lines Ms. Kamper indicated high risk of fire in the forest. However, there are constant wildfire management training for the forest stuff.

### Day 4

#### **Peatland Restoration**

With support from



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Präsident: Prof. Dr. Ulrich Schraml • Geschäftsführer: Malte Campsheide





The day was exclusive to visit to Wildenloh forest area. As part of the visit, we had a brief session with researchers from Thünen institute who were conducting assessment of peat soil formation within the forest. The team led by Ms. Linea Kalinowski, Forester for forest ecology and nature conservation, at Ahlhorn forest district, together with other members including Mr. Jan Onno Mumme, Nature restoration expert, interacted with the researchers. The preceded to a pristine old forest dominated by beech trees. The site has been earmarked for conservation of rare bird species. As explained by Mr. Mumme, there are some birds that are rare and can only be found at that part of the forest hence the area has been left free from any activity, just to provide its natural services. It was observed that there were several nesting birds that have been installed as homes for the birds. The day was wrapped up with a walk into the Hasbruch Forest. Over here we identified different forest zones with unique and distinct tree species. We noticed growing stands of Douglas firs, and untouched Oak and beech stands. The forest as described by Ms. Kalinowski, hosts the largest Oak tree and the largest oak woodland in Northern Germany. In the forest we saw some historic tree stands for example the hornbeam (*Carpus betulus*). The Hasbruch forest is a very beautiful forest and forbidden for bicycles. It was really worth visiting untouched forest.

### Day 5

#### Visit to Nature Reserve-Everstenmoor

On the last day of my stay at Ahlhorn and also the last day of the Forest Expert Program, Ms. Linea Kalinowski and I headed to the Nature Reserve at the City of Oldenburg. Within the nature reserve is the Everstenmoor. Our initial plan was to meet the students of University of Oldenburg but due to a downpour in the morning the students did not turn up. We however met with Mr. Michael Engels from the community administration of the City of Oldenburg. During the trip Ms. Kalinowski disclosed that the bogland was previously harvested by farmers for fuel. Currently it is been restored by the Lower Saxony State Forest in partnership with the City of Oldenburg. It was evident that old peat trenches are been silted up at regular interval. This is been done to rewet the land for the peat to form. The Everstenmoor is dominated by heaths and dying birch trees. Other species sighted include the carnivorous round-leaved sundew (*Drosera rotundifolia*), common cranberry, fern, etc. Once engaged Mr. Engels expressed the readiness of the city to support the restoration of the peatland. Even though this was not easily achieved, it took consistent times and several engagements with the city to get their support towards the restoration of the peatland.

#### Lessons and Take Home

- The conscious effort to create nesting grounds for rare species at a non-disturbed forest is significant to protecting the remaining population of the species and helps to protect biodiversity in the forest.
- The Ahlhorn forest district has wider avenue for fund development taking into account the burial place established in the forest and the integrated aqua-culture management

### Summary

The concept of forest management in Germany was very discerning. I have gained a good understanding of the management extending from private forest ownership, production and harvesting technology, near-to-nature and tourism development. As part of my traineeship the following are general lessons learned.



1. The silviculture systems and pedological process practiced by Germany are very significant for climate change impact mitigation as well as provision sound forest management
2. Revenue generation and benefits sharing arrangements
  - a. Apart from production it is very important to note other sources of funds the Lower Saxony State Forest Districts have adopted including payments made by families to bury their relatives in the forest at a subsidized rate does not only boost income but protects the forest and also serves as benefit of the forest to the communities.
  - b. The establishment of a compensation site for investors or companies to pay to the forest district for protection of this sites in exchange of their operational damages.
  - c. Deployment of beehives in the forest is an incentive to farmers within the forest district
3. Right to Nature: The forests in Germany are opened to families for recreation and tourism at no cost. This has increased the citizens' appreciation of nature
4. Landscape restoration is a long-term program that requires effective planning and integrated approaches. Even though Germany lost all its forest after the second world war and resulted to planting monoculture forest, the implementation of the program for "Long-term Ecological Forest Development" (LÖWE program) by the Lower Saxony State Forest districts has led to approved multifunctional approach for sustainably forest management.
5. Hunting is seen as culture and a pre-requisite to forest management as it safeguards landscape restoration through natural regeneration
6. The adoption of forest pedagogy has promoted forestry education in Germany. This has stimulated the interest of students and the population to understand the importance of forest
7. Wildfire management is very rigorous as the forest districts have taken on integrated wildfire fire management regimes through the use of the automatic forest fire early detection system monitors and rapid-fire education at local media and on streets with role play

### Take Home Actions

1. Establishment of a forest education centre to compliment our schools environmental education program. This will help to provide practical forest education to the students and nature enthusiasts.
2. Advocate for the establishment of replacement measures and compensation areas for community resource management areas around protected areas in Ghana
3. Ensure effective assessment and evaluation of soil and remnants trees are carried to improve land restoration and management practices.
4. Ensure a sturdy, effective and integrated wildfire management approaches in the Mole Ecological Landscape

### Appreciation

I would like to express my profound gratitude to the German Forest Society for the sponsorship. I am very appreciative to the host institutions and resources persons; The Thünen Institute



Climate-Smart Agriculture, Forest District of Sellhorn, Müritznational Park and the Forest District of Ahlhorn. I am also very thankful to the coordinator of Forest Expert Program, Ms. Sabine Kühling and her family for the constant engagement and efforts to make my stay a memorable one. I am high indebted to my home organization, A Rocha Ghana, GIZ and all individuals who made this trip possible.

### Conclusion

The Forest Expert Program did not only offer me greater understanding of forest management in Germany but presented to me an opportunity to learn in a multi-cultural environment. This contributed to achieving my expectations for the program. The host institutions, resource persons and staff were very professional and cooperative.

### Recommendation

I wish to recommend that trainees should have a longer stay at the host institutions to enable them have in-depth understanding of the topics. Also, several forest related institutions should be engaged other than the forest districts who virtually have the same system of operation.

#### 4. Final comment

#### Additional Documents

- documentation on your activities to share your activities
- this might be a Power Point presentation, a report in Blog style etc.
- Abstract / Article: Summary of your report for the Forest Experts Webpage and the Pro Wald Magazine
- We are happy about every picture we receive!

|                                  |                  |
|----------------------------------|------------------|
|                                  | Grant Holder     |
| Date, 15- 11- 2023<br>Signature, | Isaac Kofi Ntori |



# Annex 15

## 2023 Jolanta Stankevičiūtė



# Report

8. November 2023

## Personal Details

|                 |                               |
|-----------------|-------------------------------|
| Family Name     | Stankevičiūtė                 |
| First Name      | Jolanta                       |
| Gender          | Female                        |
| Date of Birth   | 1972-04-23                    |
| Nationality     | Lithuanian                    |
| Passport Number | 24405843                      |
| Email Address   | jolanta.stankeviciute1@vdu.lt |

## 1. Short Summary

Since 2022, I have been teaching forest pedagogy as a subject at the Faculty of Forestry and Ecology at the Vytautas Magnus University Agricultural Academy, which has been included in the bachelor's degree programme in Forestry. In my work as a university lecturer, the experience from Germany, where forest pedagogy has a long tradition, was very favourable for me. The opportunity to take advantage of the Forest Expert programme was therefore very good.

### **My conclusion about the Forest Expert Programme:**

The Forest Expert Programme was very well organised in all aspects. I rate my internship as very successful and very well organised.

The Forest Expert Programme gave me the opportunity to get to know a professionally run forest education system in Germany. During my internship, I learnt about the many different aspects and experiences of forest education and was able to apply them to achieve my goals. Throughout my time in Germany, I was surrounded and accompanied by wonderful, professional, and very friendly people. I would like to many thank everyone for the wonderful energy and time that the people accompanying me gave me.

Special thanks go to my main host and my internship supervisor, Mrs Gabriela Hülse, Head of Waldforum Riddaghausen in Brunswick, who took the time to plan my stay and made sure that the internship would full all my professional goals befor I arrived and took care of every little detail in my internship time in Germany.

I am very grateful to my internship supervisor, Mrs G. Hülse, for suggesting my internship time in such a way that I was even able to hospitiation in the examination for the forest education



certificate for two times. I would also like to thank Mr Jens Wohlt, forest education officer in the management of the Lower Saxony State Forests, for his advice on the modules of the certificate, their content, and the procedure for obtaining certificates in forest education in Lower Saxony. I see the opportunity to sit in on the forest education certificate examinations as a great advantage of my internship. As an academic, it was very important for me to find out what level of preparation is required for this examination. And, how the exam itself is organised from start to finish.

My special thanks go to Dr. Sabine Ammer from the University of Göttingen for her detailed didactic and methodological advice, which was very important for me.

I was very hoping to meet Dr. Sabine Ammer, as she was my first academic working in the field of forest pedagogy, whom I found on the internet when I started giving forest pedagogy lectures to VMU university students. So, I wrote her an e-mail asking for advice on methodological literature and she kindly wrote back. When I had the opportunity to come to Germany for the Forest Expert program, I wanted to meet Dr. Sabine Ammer directly. I must express my satisfaction with the very warm meeting and the academic conversations. We agreed to keep in contact and share our teaching experience in the future.

I would like to thank Dr. Johannes Fischbach, Head of Haus des Waldes in Stuttgart and Daniel Dann, Pedagogical Director (Stuttgart, Baden-Württemberg), for sharing their experience and knowledge in the field of forest pedagogy, also for demonstrating methodological tools and advising on factual literature.

Finally, my observation time would not be complete without real activities in the forest with kindergardenchildren and schoolchildren. For the opportunity to experience forest education in practice with school groups of different ages, I would like to express my sincere thanks to Mrs Christiane Neugebauer and Mrs Sussane Schroth, certified forest educators with many years of experience from Brunswick, Lower Saxony.

My experiences during my internship have shown that all the forest educators I have met are very warm, communicative, and always ready to help. And another important point that my experience in Germany has taught me is that it is not only the technical content that is important for a forest educator, but also the psychological preparation, the ability to laugh, joke, joke, simply have fun and convey joy. They need to create a safe and cosy teaching atmosphere in order to also convey the very important ideas of sustainability and cooperation in the forest and in everything else, of responsibility - this is something I deeply believe in and wish for myself and every forest educator to have or find their own recipe or formula for success for working with the children and the other participants in the forest education activities.

## 2. Introductory Chapter

- Who recommended you and why, Which institutions were involved:  
I was recommended for this programme by Mrs Gabriela Hülse from Waldforum Riddaghausen, Lower Saxony State Forests.
- What is your position / tasks in your home country?

I am a Doctor of Science and Research Assistant at the Faculty of Forestry and Ecology at the Academy of Agriculture, Vytautas-Magnus-University (Kaunas/Lithuania). From 2022 I have been teaching a new Modul Forest Pedagogy at this faculty.

- What were your expectations and objectives:

Until 2022, Forest Pedagogy has never been teaching in Lithuanian universities. When I started teaching this new subject, I was confronted with methodological-didactic challenges,



and I really needed pedagogical literature. I was also very much looking for contacts who could advise me and share their personal experience of teaching practical forest pedagogy activities. Knowing that in Germany has been working very professionally in the field of Forest Pedagogy for many years, I was very interested to find an opportunity to do an internship here.

- How transport to Germany worked / was funded:  
I arrived in Brunswick (Germany) and travelled to Kaunas (Lithuania) with my own funds by Eurolines bus.

### Time Schedule

- Please update the information on your schedule

| Date                     | Institution                                                   | Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Saturday,<br>16-09-23    | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests  | Arrival to Brunswick bus station. Drive to Königsutter, relax in the garden and guest room at Gabriela Hülse, lunch and coffee.<br>Drive to Brunswick to look at "Fledermausstand" for forest education purposes. Meeting and exchange with forest educator Stefanie Bucher-Pekrun.<br>"Kultur im Zelt" <a href="https://www.kulturimzelt.de/">https://www.kulturimzelt.de/</a> , dinner and from 19.00 to enjoy music (Nigel Kennedy).                                                                                                                                             |
| Sunday,<br>17-09-23      | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests  | Action to Findlingsgarten near Königsutter. Assistance to the head of the Waldforum Riddagshausen Gabriela Hülse in building up the information and action stand for the "Felsenfest".<br><a href="https://www.koenigslutter.de/fileadmin/eigene_Dateien/03_Tourismus-Kultur/pdf/BUND_Felsenfest-Folder_2023.pdf">https://www.koenigslutter.de/fileadmin/eigene_Dateien/03_Tourismus-Kultur/pdf/BUND_Felsenfest-Folder_2023.pdf</a> -<br>Tour and action day, look and participate. Meeting and experience exchange with forest educator Stefanie Bucher-Pekrun and Manfred Hansel. |
| Monday,<br>18-09-23      | University of<br>Göttingen,<br>ForestExpert<br>Program        | Trip to Göttingen and a short visit to Harz National Park on the way. During the trip discussion with Gabriela Hülse the forest education certificate examination procedure, concepts of the examination groups and the examination criteria.<br>14.00 Göttingen, university campus, meeting with Sabine Kühling (ForestExpert Program). Overnight stay in Hotel Rennschuh.                                                                                                                                                                                                         |
| Tuesday,<br>19-09-23     | University of<br>Göttingen                                    | Hospitation by Forest Education Certificate Examination at the University of Göttingen. 6.45 am departure to Adelebsen. Forest pedagogy certificate exams for forestry students until 5:00 pm. Meeting with the examiner at 7:30 am. (Examiners Jens Wohlt, Gabriela Hülse, Christiane Neugebauer, Klaus Hosang).<br><br>5:00 – 6:30 p.m meeting with Dr. Sabine Ammer (University of Göttingen) about forest pedagogical teaching.                                                                                                                                                 |
| Wednesday,<br>20-09-2023 | 17th<br>European<br>Forest<br>Pedagogics<br>Congress,<br>Bonn | 17th European Forest Pedagogics Congress.<br>The motto „Learning to create together – How can forest related ESD build partnerships and empower people?“<br>Lectures and insight into practice forest pedagogy. Participation, new contact and partnerships.<br>Lecture Science & Climate teaching in the post-Truth era - The social acceptance of reality.                                                                                                                                                                                                                        |





## Forest Expert Program

|                             |                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                                                                  | Workshops Space 4: Forest ESD as a modern profession: What challenges does Forest ESD face today? How does Forest ESD become transformative education?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Thursday,<br>21-09-<br>2023 | 17th<br>European<br>Forest<br>Pedagogics<br>Congress,<br>Bonn    | 17th European Forest Pedagogics Congress.<br>Lectures, Practice and workshops.<br>Lectures Cooperation partners: The role of extracurricular places of education<br>Lecture Education Centre "Haus of Nature", Bonn<br>Workshop 3: Youth as decision-makers for tomorrow: cooperation between forest and school in school forests<br>Lecture Siebengebirge – History of the first nature protection area of Germany; problems and solutions with controversy interests<br>Lecture The role of great protected areas in the context of transformation and ESD.<br>Workshop Nr. 11: How to create partnership – let's learn from nature<br>Lecture Cooperation partner: Why does a forest administration engage in forest pedagogy?<br>Lecture Cooperation partners: Exchange with Universities and research institutes. |
| Friday,<br>22-09-<br>2023   | 17th<br>European<br>Forest<br>Pedagogics<br>Congress,<br>Bonn    | 17th European Forest Pedagogics Congress.<br>Lecture: Handprint – a motivated initiative for action (Stefan Rostock; Germanwatch);<br>Lecture: Communication and forest pedagogy (Prof. Dr. Stefanie Steinebach; University of Applied Forest Sciences, Rottenburg).<br>In the evening a trip with Prof. Stefanie Steinebach to Rottenburg am Neckar. Check-in at Hotel Württembergischer Hoff.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Saturday,<br>23-09-23       | University of<br>Applied Fo-<br>rest Sciences<br>Rottenburg      | Workshop about Leadership with Prof. Stefanie Steinebach.<br>Visiting „Zentrum für Heilpädagogisches Reiten am am Heimgartenhof“ (7213 Otterdingen); homepage: <a href="http://www.heilpaed-reiten.de">www.heilpaed-reiten.de</a> ;<br>In the evening trip to Tübingen and visiting an old book fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Sunday,<br>24-09-23         | Campus<br>Galli,<br>Meßkirch                                     | Visiting Campus Galli.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Monday,<br>25-09-23         | Familie Moll,<br>Leinfelden-<br>Echterdingen<br>, BW             | A day to visit friends and relax.<br>In the evening, preparation for a visit to the forest education centre „Haus des Waldes“ Stuttgart (ForstBW).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Tuesday,<br>26-09-23        | „Haus des<br>Waldes“<br>Stuttgart,<br>ForstBW                    | Visit to the "Haus des Waldes" forest education centre. Meeting with specialists and sharing experiences.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Wednesd<br>ay, 27-09-<br>23 | Waldforum<br>Riddagshaus<br>en, Lower<br>Saxony State<br>Forests | Trip from Stuttgart to Brunswick by train.<br>Reading pedagogical literature on the train.<br>In the evening arrival in Brunswick and check-in at Hotel Acuarus.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Thursday,<br>28-09-23       | Waldforum<br>Riddagshaus<br>en, Lower<br>Saxony State<br>Forests | Hospitation at the forest project day "Ecosystem Forest" for the 8 <sup>th</sup> classes grammar school with Susanne Schroth (certified forest educator) in Buchhorst.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Friday,<br>29-09-23         | Waldforum<br>Riddagshaus<br>en, Lower<br>Saxony State<br>Forests | Hospitation at the forest week "Waldführerschein"-final day of a primary school class with Christiane Neugebauer (certified forest educator),<br>In the afternoon presentation of the forest topics by the children for the parents.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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## Forest Expert Program

|                        |                                                                                     |                                                                                                                                                                                                                                                                                                           |
|------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Saturday,<br>30-09-23  | Brunswick.<br>Kral<br>Essehof, Lower Saxony<br>State Forests                        | Sightseeing and cultural visits to Brunswick.<br>In the evening visitation to the program „Dad and I“ with Uwe Klameth and Gabriela Hülse (certified forest educators) in Kral Essehof.                                                                                                                   |
| Sunday,<br>01-10-23    | Waldforum<br>Riddagshausen and Kral<br>Essehof,<br>Lower<br>Saxony State<br>Forests | Family Sunday at the Waldforum - storytelling theatre with Stefanie Bucher-Pekrun and guided mushroom tour with Manfred Hensel (certified forest educators).<br>In the evening visitation at Kral Essehof to the program "Mama and I". with Uwe Klameth and Gabriela Hülse (certified forest educators).  |
| Monday,<br>02-10-23    | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests                        | Forest education media library at the Waldorum Riddagshausen, compilation of educational materials for own practice/training, history and current structure of forest education in Lower Saxony.                                                                                                          |
| Tuesday,<br>03-10-23   | Lüneburg<br>Heath<br>(Nature<br>Reserve)                                            | German Unity Day, National Day of Germany.<br>A full-day trip with Gabriela Hülse to Wilsede on the Lüneburg Heath (Nature Reserve), with a short visit to Celle on the way.                                                                                                                              |
| Wednesday,<br>04-10-23 | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests                        | Preliminary discussion about the Forest Education Certificate Examination at Waldforum Riddagshausen for 09 October with Gabriela Hülse;<br><br>Presentation by Jolanta Stankevičiūtė about her work at the Vytautas Magnus University and tasting lithuanian specialities for the team of the WaldForum. |
| Tuesday,<br>05-10-23   | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests                        | Mushroom excursion with Harry Andersson in the Riddagshausen Nature Reserve, Haus Entenfang, Brunswick.<br><br>Forest education media library at the Waldorum Riddagshausen, compilation of educational materials for own practice/training.                                                              |
| Friday,<br>06-10-23    | FEC<br>Hahnhorst,<br>Lower<br>Saxony State<br>Forests                               | Seminar on safety management at the Hahnhorst Forest Education Centre with Jens Wohlt, forest education administrator in the management of the Lower Saxony State Forests.                                                                                                                                |
| Saturday,<br>07-10-23  | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests                        | Workshop „Fastination LandArt“ with certified forest educator Christiane Neugebauer.                                                                                                                                                                                                                      |
| Sunday,<br>08-10-23    |                                                                                     | A Day to Relax. Stay with the Family Hülse at Königslutter;                                                                                                                                                                                                                                               |
| Monday,<br>09-10-23    | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests                        | Hospitality by Forest education certificate examinations at the Waldforum Riddagshausen; Meeting with the examiner at 7:30 am. (Examiners Jens Wohlt, Christiane Neugebauer, Klaus Hosang, Bettina König, Ronald Badstübner).                                                                             |
| Tuesday,<br>10-10-23   | Waldforum<br>Riddagshausen, Lower<br>Saxony State<br>Forests                        | Hospitality at the forest experience tour for a 2th (C) primary school class with Susanne Schroth (certified forest educator) in Buchhorst;<br><br>Forest education media library at the Waldorum Riddagshausen, compilation of educational materials for own practice/training.                          |

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|                              |                                                                   |                                                                                                                                                                                                                                                            |
|------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wednes-<br>day, 11-10-<br>23 | Waldforum<br>Riddagshaus-<br>en, Lower<br>Saxony State<br>Forests | Check-out from the Hotel Aquarius;<br>Hospitation at the forest experience tour for a 2th (A) primary school class<br>with Susanne Schroth (certified forest educator) in Buchhorst;<br>In the evening, traveling home to Lithuania by Euroline night bus. |
|------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3. Report

- Please write a minimum of five A4 page report.
- Please ensure to cover the following items: what were your activities at every Host Institutions; what was the significance of your visit to the Host Institutions and benefits for the Home Institution
- has there been any future cooperation arrangements put in place or plans made
- please provide feedback regarding your stay and activities weaknesses and strength of the programm
- room for improvement.
- the report should have a chronological order and include all the names and positions of people you met.
- Comparison of knowledge gained and the expectations
- Benefit for future work

As part of the "Forest Expert Programme" funded by the Federal Ministry of Food and Agriculture and coordinated by the German Forestry Association, I was able to take part in an internship in Germany from 16.09.2023 to 11.10.2023.

As I wrote in my motivation letter, the purpose of my stay was to get to know the German forest pedagogical system, its teaching centres, methodology and certification process.

In Lithuania, foresters have been working with young people based on informal education for decades. The skills of foresters have great potential for long-term environmental education work and education for sustainable development (ESD). The future-oriented and sustainable thinking of foresters also has great educational value. However, Lithuania has not yet developed a very important factor in this type of education - the methodological and didactic competences of foresters, which are necessary for the preparation of forest education activities for participants of different age groups.

Since 2022, I have been teaching forest education as a subject at the Faculty of Forestry and Ecology at the Agricultural Academy of Vytautas Magnus University, which has been included in the bachelor's degree programme in Forestry. For my work as a university lecturer, it was very desirable for me to gain experience from Germany, where forest pedagogy has a long tradition. The opportunity that the Forest Expert programme offered me was therefore a very good one. During my internship in Germany, I learnt about the many different aspects and experiences of forest education and was able to put them into practice to achieve my goals.

I rate my internship as very successful and very well organised. First of all, I would like to thank my main host and my internship supervisor, Mrs Gabriela Hülse, the head of the Riddagshausen Forest Forum, the Lower Saxony State Forests, who took the time to plan my stay and made sure that the internship would fulfil all my professional goals when I arrived.

#### **My report about the Forest Expert Programme:**

The Forest Expert Programme gave me the opportunity to get to know a professionally run forest education system in Germany.

The Forest Expert Programme was very well organised at all levels.



Throughout my time in Germany I was surrounded and accompanied by wonderful, professional and very friendly people.

I thank everyone from the bottom of my heart for the wonderful energy and time that the accompanying people gave me. Special thanks go to my main supervisor, Ms Gabriela Hülse, head of the Forest Experience Centre (WEZ) Waldforum Riddagshausen, who took care of every little detail of my internship. During my internship at the Forest Experience and Education Centre (WPZ) Waldforum Riddagshausen (part of the Wolfenbüttel Forestry Office in Lower Saxony) and the work there, I learned how successful activities with groups of children from kindergartens and schools, but also with families, can be. It was also interesting to learn how to organise large events. During the internship, I had the opportunity to take part in two different events for families. I got to know certified forest educators who are foresters by profession (Mr Klaus-Dieter Hosang, Head of WPZ Waldforum Riddagshausen and Dr Bettina König, Head of WPZ Harz) who took the time to share their many years of experience with me. I was also impressed by the close cooperation with the certified forest educators, who also have other professions (e.g. Dr Stefanie Bucher-Pekrun (horticultural engineer), Ms Christiane Neugebauer (architect), Mr Manfred Hensel (photographer), Ms Beate Vitt (social pedagogue), Mr Wolfram Pehlke (graphic designer). This experience has shown me that these people can bring their special skills to the work of a forest educator and that they also have a very special commitment to working with children, which is often like a second vocation for them. I would particularly like to emphasise that I was able to look at and get to know a lot of methodological literature at the Forest Forum, which was very important for me in order to compile a list of books that I will apply to my university library for purchase on my return. My great thanks go to Mrs G. Hülse and Mrs Christiane Neugebauer, who saw my interest and my need for methodological literature and personally gave me several books with a dedication.

I got to know Mrs Christiane Neugebauer as a very warm person. I had the opportunity to participate in a LandArt workshop led by her, which was very useful for me to gain methodological experience with forest pedagogical activities that are possible not only with children, but also with adults and people with special needs. It was great fun to work creatively with materials found in the forest and to experience the benefits for human well-being.

I am very grateful to my internship supervisor, Mrs G. Hülse, for suggesting my internship time in such a way that I was even able to take part in the examinations for the forest education certificate for two days. I would also like to thank Mr Jens Wohlt, forest education officer in the management of the Lower Saxony State Forests, for his advice on the modules of the certificate, their content and the procedure for obtaining certificates in forest education in Lower Saxony. I see the opportunity to be an observer at the forest education certificate examinations as a great advantage of my internship. As an academic, it was very important for me to find out what level of preparation is required for this examination. And also, how the exam itself is organised from start to finish.

My special thanks go to Dr. Sabine Ammer from the University of Göttingen for her detailed didactic and methodological advice, which was of the utmost importance to me.

I very much hoped to meet Dr Sabine Ammer, as she was the first academic \_ working in the field of forest pedagogy whom I dared to approach when I started giving forest pedagogy lectures to forestry students. I wrote an email to Dr. Sabine Ammer asking for advice on methodological literature and she kindly wrote back. When I had the opportunity to come to Germany for the Forest Expert Programme, I was keen to meet Dr. Sabine Ammer directly. I must express my pleasure with the very cordial meeting and academic discussions! We agreed to stay in touch in the future and share our teaching experiences.

My experience shows that the development of the forest pedagogy programme, the updating of the theoretical lectures and their topics as well as the conception of the practical units is a very important first part of its design. Of course, even a well-developed plan is no guarantee of good teaching, especially in the practical seminars. It is very important to empower students

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each time to design forest education sessions on relevant topics through practical exercises that trigger questions and discussions among participants, encourage them to look for reliable facts in the regional and global news and become immune to fake news about climate and forests, even in general. It is also important to develop the ability to work together.

Neuroscience today provides a wealth of knowledge about learning. Educators from all disciplines should understand at least some of it and apply it in their lessons. Forest pedagogy is no exception. There is a lot of new information and advances in the science of pedagogy, and there is also subject-specific knowledge - keeping up with it all is not easy. And it is very important to have an academic exchange to share what educators have accumulated and what they know. Working alone is very difficult, sometimes hopeless.

During my internship I took part in the 17th European Forest Pedagogy Congress, which took place from 20-22 September in Bonn, Königswinter.

The 17th European Forest Education Congress brought together educators from 26 different countries. It was an honour and a responsibility to represent Lithuania and I tried to gain as much experience as possible for my work during the congress. It was a great opportunity to listen to interesting lectures on current topics, participate in workshops and, of course, meet colleagues and make new contacts.

During the European Forest Pedagogy Congress I met Dr Johannes Fischbach, Head of Haus des Waldes in Stuttgart and Daniel Dann, Pedagogical Director (Stuttgart, Baden-Württemberg) and participated in a workshop of their group. I also met Mrs Ann-Sofie Hunklinger (project collaborator) from the Schutzgemeinschaft Deutscher Wald Landesverband Bayern e.V., Mr Hermann Schmidt, a certified forest educator from Cologne, Mr Georg Sprung M.A., Dipl. Ing.(FH) from Landau/Pfalz and Prof. Yusaku Nagiwara from the Gifu Academy of Forest Science and Culture (Japan), colleagues from Slovakia, Latvia and other countries.

All the lectures and workshops I attended provided me with useful experiences. Only in one of the debates did I hear what I thought was a very questionable idea, which I reflected on for a long time afterwards. It was very surprising to me that in a debate on how to better motivate children to participate in forest education activities, the short answer from one participant was: "It's the fault of the educators". Is it really? It is very easy to label "good" and "bad". But there are inexperienced pedagogues, there are experienced pedagogues, there are more and less motivated pedagogues, there are pedagogues who only have one foot in the door, i.e. with other professional responsibilities. I think we all must do our best to use our personal strengths to pass on our knowledge and inspire our colleagues not to give up.

After the Forest Pedagogy Congress, my internship continued in Rottenburg am Neckar. I was invited to Rottenburg by Prof Dr Stefanie Steinebach, Professor of Forest Education and Communication at the Rottenburg University of Applied Forest Sciences, whom I had previously met at a scientific conference.

I visited Prof. Dr. Stefanie Steinebach at the same time as a group of colleagues from Japan, namely Prof. Yusaku Nagiwara and his group of students from the GIFU Academy of Forest Science and Culture. On the first day of the visit, Prof Dr Stefanie Steinebach invited us all together to the Reiterhoff, where we were introduced to horse therapy. At the same time, she gave us time for a workshop on leadership. The leadership of the horse was an example of what it means to be a leader, what qualities a leader needs and so on. It was interesting to discuss with the students from Japan as two different cultures with different ideas of leadership came together.

Prof. Dr. Stefanie Steinebach invited us to visit Campus Galli on Sunday (24 September 2023). Campus Galli is a project of the Carolingian monastic community in which the construction of a medieval monastery in the style of the early ninth century is planned. Plan of St. Gall with techniques from this period. The construction site has been open to visitors since June 2013. An advisory board of 18 experts, including from the fields of archaeology, history, theology and



veterinary medicine, is responsible for the scientific management and supervision of the construction work. On 20 April 2018, Campus Galli was officially named a "teaching and research site of the University of Tübingen". The visit to this place awakened my associations and comparisons with the Lithuanian Folklore Museum in Rumšiškės, Kaišiadorys district. The museum in my country preserves old Lithuanian farmhouses, mills and a church, which were carefully dismantled in various regions and brought to the museum grounds. At Campus Galli, I was interested in the revival of old crafts and the use of wood in traditional construction, which has always been of great importance in Lithuania. Whilst touring the open-air museum and observing the craftsmen working there, I came up with various ideas that can be used in forest education. Whether it was searching for the right wood in the forest to make a wooden spoon, discussing the properties of different types of wood or discussing the idea of wood as a building material and the durability of such constructions as well as the importance for human health and ecological sustainability.

I travelled from Rottenburg am Neckar to Stuttgart to visit the "Haus des Waldes", a centre for forest education in Baden-Württemberg. I am very grateful to Prof. Dr. Stefanie Steinebach for her supervision during my time in Rottenburg and also for her support during my visit to the Haus des Waldes, Stuttgart.

The Haus des Waldes has been the state-wide competence centre for forest education in Baden-Württemberg for more than 30 years. It is part of ForstBW, the largest forestry company in the state. Visiting the Haus des Waldes has been a dream and an important goal of mine ever since I was assigned to teach forestry education to forestry students at Vytautas Magnus University. I first found information about this institution on the Internet and then in the two-part book "Forest Pedagogy" by Eberhard Bolay/Berthold Reichle, which served as an important resource for me during the first years of my teaching career. It was important for me to visit the Haus des Waldes because I wanted to familiarise myself with the methodological material and the experiences of the forest educators there. There I met with Dr Johannes Fischbach, Director of the Haus des Waldes, and Daniel Dann, responsible for training and research in the field of education, to exchange experiences. During the visit, I had the opportunity to observe a forest educator working with a group of children with special needs.

I thank Dr Johannes Fischbach, Head of Haus des Waldes in Stuttgart and Daniel Dann, Pedagogical Director (Stuttgart, Baden-Württemberg), for sharing their experience and knowledge in the field of forest education, also for demonstrating methodological tools and advising on factual literature.

From Stuttgart I travelled to the Waldforum Riddagshausen in Braunschweig, where I spent the rest of my internship. There I completed an intensive programme, learned a lot from experienced forest educators and read the educational literature. One day of my internship was dedicated to presenting my work experiences to the Waldform team. I presented slides showing my work experience as a forest educator. Mrs Hülse invited colleagues, and to my delight as many as 12 forest educators came, with whom we spent a lovely afternoon exchanging experiences and tasting Lithuanian specialities.

Finally, my observation period would not be complete without real half-day or full-day activities in the forest with children and schoolchildren. I would like to thank Mrs Christiane Neugebauer and Mrs Susanne Schroth, certified forest educators with many years of experience from Braunschweig, Lower Saxony, for the opportunity to experience forest education in practice with school groups of different ages.

A special and very big thank you goes to my main host and internship supervisor, Mrs Gabriela Hülse, director of the Riddagshausen Forest Forum in Braunschweig, who took the time to communicate with me and plan my stay. She made sure that the internship would fulfil all my professional goals and took care of every little detail during my internship in Germany. Ms

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Gabriela Hülse gave me a great deal of methodological knowledge, both in terms of organising the forest education activities and in terms of the technical content, by passing on her many years of experience. She also took care of my free time and made it possible for me to get to know the Heide National Park in Lüneburg and the Harz National Park.

My experiences during my internship have shown that all the forest educators I have met are very warm, communicative, and always ready to help. And another important point that my experience in Germany has taught me is that it is not only the technical content that is important for a forest educator, but also the psychological preparation, the ability to laugh, joke, joke, simply have fun and convey joy. They need to create a safe and cosy teaching atmosphere in order to also convey the very important ideas of sustainability and cooperation in the forest and in everything else, of responsibility - this is something I deeply believe in and wish for myself and every forest educator to have or find their own recipe or formula for success for working with the children and the other participants in the forest education activities.

#### 4. Final comment

##### **My conclusion about the Forest Expert Programme:**

The Forest Expert Programme was very well organised in all aspects. I rate my internship as very successful and very well organised.

The Forest Expert Programme gave me the opportunity to get to know a professionally run forest education system in Germany. Participating in the 17th European Forest Educators' Congress in Bonn provided me with a lot of valuable knowledge and contacts that I will need in my future work in forest education. During my internship, I learnt about the many different aspects and experiences of forest education and was able to apply them to achieve my goals. Throughout my time in Germany, I was surrounded and accompanied by wonderful, professional and very friendly people. I would like to many thank everyone for the wonderful energy and time that the people accompanying me gave me.

I would like to thank Mr Jens Wolt very much, forest education administrator in the management of the Lower Saxony State Forests, for providing me the forest pedagogy certificate system in Lower Saxony and Dr. Sabine Ammer from the University of Göttingen, who shared with me her many valuable methodological and didactic academic experience in forest pedagogy.

I would also like to thank Dr. Johannes Fischbach, head of the Haus des Waldes in Stuttgart, as well as Daniel Dann, who is responsible for forest pedagogical education, for sharing their extensive methodological and didactic experience, also for demonstrating methodological tools created in Baden-Wuerttemberg and advising on factual literature.

I would also like to say many thanks to Christiane Neugebauer and Sussane Schroth from Waldforum Riddagshausen in Brunswick, certified forest educators, for the practical knowledge they provided me by hospitation and participation the forest education activities they taught.

Special and very big thanks go to my main host and my internship supervisor, Mrs Gabriela Hülse, Head of Waldforum Riddagshausen in Brunswick, who took the time to communicate with me and to plan my stay. She made sure that the internship would full all my professional goals and took care of every little detail in my internship time in Germany.

My experiences during my internship have shown that all the forest educators I have met are very warm, communicative, and always ready to help. And another important point that my experience in Germany has taught me is that it is not only the technical content that is important for a forest educator, but also the psychological preparation, the ability to laugh, joke, joke, simply have fun and convey joy. They need to create a safe and cosy teaching atmosphere in



order to also convey the very important ideas of sustainability and cooperation in the forest and in everything else, of responsibility - this is something I deeply believe in and wish for myself and every forest educator to have or find their own recipe or formula for success for working with the children and the other participants in the forest education activities.

### Additional Documents

- documentation on your activities to share your activities.
- this might be a Power Point presentation, a report in Blog style etc.
- Abstract / Article: Summary of your report for the Forest Experts Webpage and the Pro Wald Magazine
- We are happy about every picture we receive!

|                  |                       |
|------------------|-----------------------|
|                  | Grant Holder          |
| Date, 08 11 2023 | Jolanta Stankevičiūtė |
| Signature,       |                       |



# Annex 16

## 2024 Luis Gastón Martínez Alfaro



# Report

25.November 2024

## Personal Details

|                 |                                                                                                  |
|-----------------|--------------------------------------------------------------------------------------------------|
| Family Name     | <b>Martínez Alfaro</b>                                                                           |
| First Name      | <b>Luis Gastón</b>                                                                               |
| Gender          | male                                                                                             |
| Date of Birth   | 05/02/1978                                                                                       |
| Nationality     | Uruguayan                                                                                        |
| Passport Number | D334804                                                                                          |
| Email Address   | <a href="mailto:lgamrtinez@mgap.gub.uy">lgamrtinez@mgap.gub.uy</a> /gastonmartinez1978@gmail.com |

## 1. Short Summary

Half page

For Webpage

Sum up the main/ most important / formative experience

The Forest Experts Program, an initiative by the German Forestry Society and the German Ministry of Food and Agriculture, aims to foster knowledge exchange in sustainable forest management among forestry and policy professionals from Germany's partner countries. This program includes seminars, field activities, and practical courses tailored to the specific needs of the participants.

My experience began at the University of Munich, covering topics on forest ecology and management in Bavaria, including forest structures and climate change impacts. We visited the Bavarian State Institute of Forestry (LWF) to learn about its network of climate stations, essential for planning long-term sustainable management strategies. At the Freising Arboretum and the Bavarian State Forests, we observed practices that integrate biodiversity and productive use.

In Bavaria's Forest Genetics Office, near Austria, we explored climate adaptation projects like sensFOR and FraxGen, aimed at preserving genetic diversity. Additionally, in Munich, I learned about the Fem2Forest project, which promotes gender equity in forestry, and in various locations we observed agroforestry projects tackling drought and enhancing agricultural productivity.



The experience also included a seminar on the EU Deforestation Regulation in Göttingen, which aims to ensure sustainable supply chains. This program not only expanded my knowledge but also opened up possibilities for collaboration between German and Uruguayan institutions in bioeconomy and agroforestry. I am deeply grateful to the German government for this unique experience, which broadened my perspective and enriched my vision for the future of the forestry sector in my country.

## 2. Introductory Chapter

- Who recommended you and why, Which institutions were involved
- I was recommended for the Forest Experts Program by my institution, with support from colleagues who recognized my involvement in sustainable forestry projects. My recommendation came from both my workplace and a collaborative German-Uruguayan forestry initiative, which facilitated my application.
- What is your position / tasks in your home country  
In my home country, I work in sustainable forest management, focusing on policy support and field implementation within a public institution. My main tasks involve overseeing forestry projects, advising on sustainable practices, and coordinating with local communities to promote environmental conservation and resource management.
- What were your expectations and objectives  
I expected to gain hands-on knowledge about Germany's forestry management approaches, especially regarding biodiversity, climate resilience, and agroforestry. My objective was to explore new methods and technologies to apply back home, particularly regarding ecosystem monitoring and sustainable land use integration. I also hoped to establish professional connections that could foster future international cooperation.
- How transport to Germany worked / was funded  
The trip to Germany was fully funded by Uruguayan Ministry of Agriculture, and allowing me to focus solely on my learning and engagement with the program activities. This support was invaluable in making the experience seamless and accessible.



### Time Schedule

- Please update the information on your schedule

| Date     | Institution                                                                                                      | Programme                                                                                                                                                                                      |
|----------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08/07/24 | University of Munich                                                                                             | Introduction to the German forestry reality at the University of Munich                                                                                                                        |
| 09/07/24 | DFV                                                                                                              | Introduction to the German Forestry Society.                                                                                                                                                   |
| 10/07/24 | University of Munich                                                                                             | presentations by various representatives of the organizations from different countries.                                                                                                        |
| 11/07/24 | Forestry institution<br>Bavarian State Forests.                                                                  | Nuremberg Forestry Company, Johannes Wurm, responsible for the visit.                                                                                                                          |
| 12/07/24 | University of Munich                                                                                             | presentations by various representatives of the organizations from different countries.                                                                                                        |
| 15/07/24 | Bavarian Office for<br>Forest Genetics – AWG-<br>Teisendorf                                                      | Applied Forest Genetics Research                                                                                                                                                               |
| 16/07/24 | Bavarian Office for<br>Forest Genetics – AWG-<br>Teisendorf                                                      | Tour with Dr. Fussi, focusing on health aspects. The case of the Asian fungus ( <i>Hymenoscyphus fraxineus</i> ) and the loss of the European ash ( <i>Fraxinus excelsior</i> ) were analyzed. |
| 17/07/24 | Bavarian Office for<br>Forest Genetics – AWG-<br>Teisendorf                                                      | Bavarian State Forest Genetics Experiments/<br>Tour of the nursery                                                                                                                             |
| 18/07/24 | Bavarian Office for<br>Forest Genetics – AWG-<br>Teisendorf                                                      | AWG Genetics Laboratory                                                                                                                                                                        |
| 19/07/24 | Bavarian Office for Forest<br>Genetics – AWG-<br>Teisendorf                                                      | Andreas Müller is the legal representative, the meeting was based on the various documents cited below.                                                                                        |
| 22/07/24 | University of Munich                                                                                             | Uruguay-Germany project that will be developed soon.                                                                                                                                           |
| 23/07/24 | Bayerische<br>Landesanstalt für Wald<br>und Forstwirtschaft<br>(LWF)                                             | "Fem2Forest" project,                                                                                                                                                                          |
| 23/07/24 | Bayerisches<br>Staatsministerium für<br>Ernährung,<br>Landwirtschaft, Forsten<br>und Tourismus<br>Ludwigstraße 2 | Meeting at the Bavarian Ministry of Agriculture in Munich.                                                                                                                                     |





|          |                                                                  |                                                                                                                                                                                                      |
|----------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24/07/24 | Universidad de Hohenheim                                         | Meeting and tour with Dr. Julia Schneider from the University of Hohenheim, part of the agroforestry team.                                                                                           |
| 25/07/24 | Nursery for fruit and forest production Vogtei Region, Thuringia | Baumschulen Oberdorla private nursery for fruit and forest production                                                                                                                                |
| 26/07/24 | Forestry Office Leinefelde Region, Thuringia.                    | We were welcomed by Elger Kohlstedt, Director of the Leinefelde Forestry Office. The Forestry Office has several key objectives in its work for the management and conservation of forest resources. |
| 29/07/24 | Agroforestry Monitoring Project.                                 | Justus Liebig University of Giessen. Region Oberbrechen                                                                                                                                              |
| 30/07/24 | Agroforestry Monitoring Project.                                 | Justus Liebig University of Giessen. Region Oberbrechen                                                                                                                                              |
| 31/07/24 | Agroforestry Monitoring Project.                                 | Agroforestry at Werragut Farm                                                                                                                                                                        |
| 31/07/24 | University of Göttingen                                          | Seminar with Eva von Schönebeck on the EU Regulation on Deforestation. Göttingen Region                                                                                                              |
| 01/08/24 | Agroforestry Monitoring Project.                                 | Agroforestry at Werragut Farm                                                                                                                                                                        |
| 02/08/24 | Agroforestry Monitoring Project.                                 | Agroforestry at Werragut Farm                                                                                                                                                                        |
|          |                                                                  |                                                                                                                                                                                                      |
|          |                                                                  |                                                                                                                                                                                                      |
|          |                                                                  |                                                                                                                                                                                                      |
|          |                                                                  |                                                                                                                                                                                                      |

### 3. Report

- Please write a minimum of five A4 page report.
- Please ensure to cover the following items: what were your activities at every Host Institutions; what was the significance of your visit to the Host Institutions and benefits for the Home Institution
- has there been any future cooperation arrangements put in place or plans made
- please provide feedback regarding your stay and activities weaknesses and strength of the programm
- room for improvement.
- the report should have a chronological order and include all the names and positions of people you met.
- Comparison of knowledge gained and the expectations
- Benefit for future work

### Summary Report of the Forest Experts Program (FEP)

With support from



by decision of the German Bundestag

Deutscher Forstverein e.V. • Büsgenweg 1 • 37077 Göttingen • [info@forstverein.de](mailto:info@forstverein.de)  
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 Präsident: Prof. Dr. Ulrich Schraml • Geschäftsführer: Malte Campsheide





The Forest Experts Program, organized by the German Forestry Society and the German Ministry of Food and Agriculture, aims to strengthen the exchange of knowledge on sustainable forest management among forestry and policy professionals from Germany's partner countries. The program includes seminars, field activities, and practical courses tailored to the specific needs of the participants.

My experience began at the University of Munich, with a detailed introduction to German forest ecology and forest management in Bavaria. During this session, we covered essential topics on forest structures, ranging from monocultures to diversified systems, and discussed the effects of climate change on native species. This analysis also explored the potential of introducing non-native species to enhance forest resilience in the face of future climate challenges.

Complementing this theoretical foundation, we visited the Bavarian State Forest Institute (LWF), where we learned about the forest climate station network. These stations monitor environmental changes in forests and provide critical data for planning sustainable management strategies based on long-term studies, thus bolstering the response to climate-related challenges.

Another highlight was the Freising Arboretum, where we toured more than 3,500 woody species dedicated to botanical conservation. Additionally, in the Bavarian State Forests, we observed how sustainable forest management practices not only protect biodiversity but also effectively integrate productive use by employing locally adapted species to balance conservation and resource utilization.

At the Bavarian Forest Genetics Office, located in southern Germany near the Austrian border, I had an enriching experience exploring forest genetics and climate adaptation. Here, we examined innovative projects like the sensFOR program, which focuses on the climate adaptation of species, and the FraxGen project, aimed at improving the resistance of European ash to invasive fungi. These projects are essential to maintaining genetic diversity and protecting forest ecosystems from the impacts of climate change.

Back in Munich, I had the opportunity to learn about Fem2Forest, an initiative led by the Bayerische Landesanstalt für Wald und Forstwirtschaft. This project promotes the participation of women in the forestry sector through training and support, thereby advancing gender equity in leadership roles within an industry traditionally dominated by men. The inclusion of women in this area responds to the growing need to diversify and enrich perspectives in sustainable forest management.

My journey continued through various locations in Germany, where we observed agroforestry and agricultural resilience projects. At the University of Hohenheim, for instance, we discussed the role of agroforestry in climate adaptation, particularly in drought management. Temperate agroforestry systems, which protect the soil and help regulate the local climate, were presented as viable solutions to some of the environmental challenges facing Germany. In the region of Hesse, I explored agroforestry systems designed to optimize water use, improve productivity, and reduce erosion. Additionally, at the Werragut farm, I observed a system that combines trees, pastures, and poultry with mobile coops and diversified plantings. This agroecological model not only enhances soil fertility but also diversifies income and promotes biodiversity integration within agricultural production.

Finally, in Göttingen, we participated in a seminar on the European Union's Deforestation Regulation, which restricts the import of products linked to deforestation, such as soy and



palm oil. This regulation seeks to ensure that the EU's supply chains are sustainable, promoting transparency and environmental accountability in import and consumption processes.

In conclusion, the 2024 Forest Experts Program allowed me to gain in-depth insights into sustainable forest management practices in Germany, as well as to identify potential areas of cooperation between German and Uruguayan institutions, particularly in bioeconomy and agroforestry. These initiatives represent significant steps toward biodiversity conservation and long-term climate adaptation, establishing a shared path toward responsible and resilient forest management.

#### 4. Final comment

I want to express my deepest gratitude to the German government for providing my colleagues and me with this invaluable opportunity. This experience, truly unique and enriching, broadened my perspective and allowed me to envision new possibilities for the forestry sector in my country. The program coordinators (Sabine and Malte) accompanied us with remarkable dedication and professionalism, attending to every detail to make this an unforgettable experience... and they succeeded.  
Thank you very much!

#### Additional Documents

- documentation on your activities to share your activities
- this might be a Power Point presentation, a report in Blog style etc.
- Abstract / Article: Summary of your report for the Forest Experts Webpage and the Pro Wald Magazine
- We are happy about every picture we receive!

|                     | Grant Holder |
|---------------------|--------------|
| Date,<br>Signature, |              |

# Annex 17

## 2024 Clarence Gift Mulungushi





# Report

31.10.2024

## Personal Details

|                 |                                                                                        |
|-----------------|----------------------------------------------------------------------------------------|
| Family Name     | Mulungushi                                                                             |
| First Name      | Clarence Gift                                                                          |
| Gender          | Male                                                                                   |
| Date of Birth   | 07.07.1978                                                                             |
| Nationality     | Zambian                                                                                |
| Passport Number | ZN589102                                                                               |
| Email Address   | <a href="mailto:giftmulungushi@unique-landuse.de">giftmulungushi@unique-landuse.de</a> |

## 1. Short Summary

### Sum up the main/ most important / formative experience

Germany ranks among the most densely forested countries in Europe with approximately 11.4 million hectares of forest, corresponding to one third of the national territory area. In regional terms the proportion of woodlands cover varies widely, ranging from 11% in Schleswig-Holstein to over 42% in Rhineland-Palatinate and Hesse.

German forests are diversely populated, providing habitats for many tree species. The Federal Republic of Germany is responsible for setting up forest policy framework. The states (Länder) are responsible for the formulation and implementation of the concrete forest policy targets.

Private persons, cooperatives, cooperate entities (including municipalities), and the state own the woodlands in Germany. Common among the tree species found in Germany are the spruce

The most important lessons I learnt about Germany forests is that Germany ranks among the most densely forested countries in Europe with approximately 11.4 million hectares of forest, corresponding to one third of the national territory area. In regional terms the proportion of woodlands cover varies widely, ranging from 11% in Schleswig-Holstein to over 42% in



Rhineland-Palatinate and Hesse. I had the first and best experience ever of visiting large forest plantation in Germany. The other lesson was on how organized the management of forest is in Germany where the Federal Republic of Germany is responsible for setting up forest policy framework (28%), pine (23%), beech (15%), oak (10%), constituting about 70% of trees species. Other tree species found in Germany in smaller quantities (30%) includes ash, Douglas fir, sycamore, maple, birch, poplar. The other experience is on how they are currently managing the forests by planting more tree species in one forest plantation aimed at increasing the survival of forests because of climate change.

## 2. Introductory Chapter

### **Who recommended you and why**

I was recommended by my employers Unique Landuse. Unique Landuse is supporting the implementation of an agroforestry promotion project in Zambia with a strong emphasis on forest restoration. I was recommended to participate in the 2024 forest expert program in Germany so that I can learn some important lessons on how best to promote and manage forest restoration activities amidst climate change.

### **Which institutions were involved**

During the tour, we visited various facilities such as nursery sites, different forest plantations, solar and bio-energy production plants, wood processing plants and agroforestry farms. Guided city tours were also part of the program, in Munich, Nuremberg, Freiburg, and Frankfurt. During the same tours several cities were visited across the states of Baden-Württemberg, Bavaria and Hesse, including two prominent universities, namely the University of Freiburg and the Technical University of Munich (TU) located in Freising. During the university tours, we attended lectures and field tours on forest management.

### **What is your position / tasks in your home country**

Am the National Technical Advisor responsible for overseeing field operations such as farmer group formations, organising training for the camp extension officers under the ministry of agriculture and ministry of fish and livestock. I also oversee the procurement of seed for different tree species, procurement of plastic tubes (poly bags) used for planting seed,



supervising and monitoring nursery establishment and management, supervising transplanting and management of transplanted seedlings in the main fields and establishment of small forests (woodlots), supervising and monitoring of budding and grafting of fruit trees, planting and management of pasture fields and production of hay bales.

### **What were your expectations and objectives**

My expectations and objectives were to learn new methods on how best to establish and manage tree nurseries as well as how best to manage forest plantations in view of the increasing negative effects of climate change and environmental destruction. This was achieved as one major lesson learnt was the planting of three to four tree species in one forest plantation. Since different tree species respond differently to different effects such as floods, drought, high temperatures, low temperature, pest and animal attack when more species are planted in one plantation chances of a particular plantation to survive extinction is much higher than when only one tree species is planted.

### **How transport to Germany worked / was funded**

This was funded by both my employers unique as well as the forest expert program. It was well organised both to and from and within Germany inclusive of insurance cover. The transport system in Germany is well organised both by road and rail.

### **Time Schedule**

- Please update the information on your schedule

| Date       | Institution                                | Programme                                                                                                                                  |
|------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 01.07.2024 | Visited Unique offices in Freiburg-Germany | Familiarization tour of the Unique offices in Germany and explaining the purpose of my visit to colleagues at the unique office in Germany |
| 02.07.2024 | Visited the state forest in Freiburg       | To learn about forest management                                                                                                           |



|             |                                                                       |                                                                                                 |
|-------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 03.07.2024  | Visited Freiburg University and agroforestry site                     | To learn how the university is involved in forest management                                    |
| 04.07.2024  | Visited BGK KOMPOST                                                   | To learn about industrial compost production                                                    |
| 05.07.2024  | Visited SUDHOF agroforestry farm                                      | To learn about agroforestry management                                                          |
| 08.07.2024  | Germany forest society TU University                                  | Introduction to the seminar, German forestry history & introduction to local forest ecosystems  |
| 09.07.2024  | Germany forest society TU University                                  | Introduction to Germany forestry society, climate change and adaptation                         |
| 10.07.2024  | Weltwald Freising TU University                                       | Participants presentation of forest management in home countries                                |
| 11.07.2024  | Nurnberg forest office                                                | Tree species selection under changing climatic conditions and tree harvesting                   |
| 12.07.2024  | Germany forest society TU University                                  | Final presentation by participants (UKRAIN) organizational issues( individual program planning) |
| 15.07.2024  | State forest offices in Fürstenfeldbruck                              | Forest Management                                                                               |
| 16.07.2024  | State forest in Fürstenfeldbruck                                      | Forest management                                                                               |
| 17.07.2024  | Bio energy plant                                                      | Bio energy management and its benefits                                                          |
| 18.07.2024. | Visited Doppelernte Solar energy production plant in Fürstenfeldbruck | Solar energy initiatives and benefits                                                           |
| 19.07.2024  | State forest in Fürstenfeldbruck                                      | Nursery and forest management                                                                   |
| 22.07.2024  | Viessmann Biomas                                                      | Biomas energy production                                                                        |
| 23.07.2024  | Werragut farms                                                        | Agroforestry practices                                                                          |



|            |                                         |                    |
|------------|-----------------------------------------|--------------------|
| 25.07.2024 | Obderdorla in<br>Muhihausen             | Nursery management |
| 26.07.2024 | District forest office in<br>Leinefelde | Nursery managemnt  |

### 3. Report

During the Forest Expert program tour, I visited several institutions and sites where various lessons were learnt. The institutions visited are hereby grouped in familiar categories.

#### 1. INDUSTRIAL COMPOST MANURE PRODUCTION SITE

Visited the BGK KOMPOST SITE

##### **Responsible officer/s:**

Hansiog Bronner and the site is in Freiburg

**Activities** involved touring the compost production site to learn how compost is produced using heavy machinery through all the stages. This is a company run jointly by the community members and the local municipality.

**The significance** of this study tour was to see the practicality of compost production using machinery and the advantages over the use of hands and small hand tools.

##### **Benefits for the home institution and future work**

The project I am involved in back home in Zambia is also promoting compost production among small scale farmers and the lessons learnt will be shared not only with the farmers but also with a sister organisation AKTC in Zambia which has heavy machinery and may wish to also take the route of producing compost using machinery.

**Under future cooperation arrangements**, contacts were shared for possible cooperation

**Comparison of knowledge gained** was more than the expectations.

#### 2. NURSERY SITES

Visited one site in Muhihausen (Obderdorla), two sites in Freiburg and one in Fürstenfeldbruck

##### **Responsible officers:**

J.dawydow in Muhihausen, Julia Lindiger, and Ludwig Thoma in Freiburg, Meyer Franz Josef, and Maximillan Wein in Fürstenfeldbruck





**Activities** involved going round the facilities to learn how various sites conduct their operations. We were taken through all the stages from soils mixing, planting, watering and general management.

The significance of the study tour was that a lot of new things (best practices) were learnt such as planting methods and pest management.

**Benefits for the home institution and future work** includes the lessons learnt planting materials and utensils.

On planting materials back home in Zambia we use seed for all the tree species which we promote but one lesson learnt on the POPLAR is the propagation using cuttings which is cheaper and faster. In Zambia we will also try to propagate Gliricidia Sepium and Moringa using cuttings at a small level and if this works it will be rolled out as it will turn out to be cheaper and faster. Another lesson learnt is the use of plastic plates as planting vessels for seeds as this can be reused more than twice thereby reducing the cost of buying poly bags each year.

**Future cooperation arrangements** involved exchanging contacts for future consultation.

**Comparison of knowledge gained**, and the expectations was that I gained more knowledge than I expected making the whole tour of the sites very beneficial.

### 3. STATE AND PRIVATE FORESTS PLANTATIONS

Visited three sites in Freiburg and four sites in Fürstentfeldbruck

#### **Responsible officers:**

Julia Lindiger, and Ludwig Thoma in Freiburg, Meyer Franz Josef, Anita Ottmann, and Maximilian Wein in Fürstentfeldbruck

**Activities** involved walking around as well as driving around forest plantations and learning about how forests in Germany are managed. We also learnt about the challenges of forests because of climate change such as low temperatures, very high temperatures, snow, drought animal and pest attack.

**The significance of the tour** was that lessons on how to manage forests in Germany despite the many challenges were shared. For example, instead of planting one tree species in one forest plantation three or four tree species are planted. Since different tree species respond differently to different threats chances of trees surviving are higher.



**Benefits for the home institution and future work** is that the lesson learnt will be shared both with farmers and other stake holders and that some lessons will be tried as well in Zambia since climate change has also affected Zambia

**Future cooperation arrangements** were made in that consultation on all subjects which may be of interest to the Zambian scenario will be on going and contact details were shared.

**Comparison of knowledge gained**, and the expectations is that the knowledge gained was more than my expectation thereby making the trip very educative and memorable.

#### 4. DISTRICT FOREST OFFICES

Visited three district forest offices thus leinefelde, Furstenfeldbruk and Nurnberg

##### **Responsible officers:**

Elger Kolstedt, Dr Meyer Franz Josef and Johanees Wurm

**Activities.** We were taken round the forest plantations managed by the district offices and in here we learnt about different management styles of the forests. The challenges were like those faced by other forest plantations such as drought, snow, high temperatures, animal and pest attack.

Significance was that additional knowledge were gained in forest management, Harvesting, management of bark Beetles as well as management and protecting of small seedlings from animal attack.

##### **Benefits for the home institution and future work**

Some of the lessons especially those that ca be applied in the Zambian case will be shared and tried.

**Future cooperation arrangements.** Contact was shared and to this day am in touch with a few officers just to get more clarifications on a number of issues.

**Comparison of knowledge gained** and the expectations. The expectation was equal to the amount of knowledge gained.

#### 5. AGROFORESTRY FARMS

Two agroforestry farms were visited in Freiburg (SADHOF FARM) and Werragut farm near Bebra

##### **Responsible officers:**

Gero Pawlowski and Julius Nennewits



**Activities** were touring the farms to appreciate how livestock such as cattle and chickens were being managed alongside the production of crops and fruit trees.

The significance of this tour is that it gave me an insight on how effectively agroforestry can be managed.

### **Benefits for the home institution and future work**

The lessons learnt will be shared with the local institution in Zambia Katete Farmers training centre on better feeding and cleaning methods which reduces the spread of disease but also enhances egg production.

**Future cooperation arrangements** were made aimed at continued knowledge sharing.

**Comparison of knowledge gained** and the expectations. The knowledge gained was sufficient at all the tow farms.

## **6. BIOENERGY, WOOD PROCESSING AND SOLLAR ENERGY PLANTS**

Visited one Solar power plant and one Bioenergy power plant both in Furstenfeldbruk and one wood processing plant for energy production in Frankenberg.

### **Officers responsible:**

Meyer Franz Josef and Maximillan Wein in Furstenfeldbruk and a wood processing plant for energy production with Hans-Moritzron Harling.

**Activities** involved touring all the facilities to learn about the benefits of generating energy using wood chips, solar and bio which uses animal droppings and waste products. All these methods are very efficient, clean and reliable.

The significance of the tours were the lessons learned. For example, even amidst climate change productions of goods and services is not affected because power generation is continuing.

**Benefits for the home institution and future work** is that i will encourage both farmers and other stake holders to embrace the technologies as they are not only clean, reliable but also require minimal maintenance.

In Zambia we largely depend on hydro power but because of climate change which resulted in drought power generation was affected thereby affecting the running of businesses. So, I will be the proponent of encouraging people to embrace these technologies for the betterment of society.

### **Future cooperation arrangements**

We had discussions on possible cooperation especially in information sharing.



**Comparison of knowledge gained** and the expectations. I gained more knowledge than what I thought from the tour of these facilities.

### 7. UNIVERSITIES

Two universities were visited during the tour thus University of Freiburg and the Technical University of Munich

#### **Responsible officers:**

Dr Sylvanus Mensah and Professor Christophor Morhart (Freiburg University, Professor Peter Annighofer, Tobias Mette, Lothar Zimmermann.

**Activities** involved lectures given by professors and other academicians on the basic understanding of climate change adaptation of forests, forest soil profiling, forest condition monitoring forest management, tree species selection and tree harvesting.

Significance of the visit to the universities was that the lessons learnt added to the body of knowledge which I had already acquired from other areas I had visited earlier.

While at TU Munich Technical University we were also privileged to listen to a presentation by Malte Campheide the managing director of the Germany forest society on how they are organised and how they have contributed to the management of forests in Germany.

**Benefits for the home institution and future work.** I will share the lessons learnt with the home institution on how best to manage a forest plantation and how to protect tree species from the treats of climate change by planting more than one tree specie in one forest plantation.

**Future cooperation arrangements** were made to continue making consultations with the two universities on selected topical issues which are applicable to my home country.

**Comparison of knowledge gained** and the expectations. The knowledge gained was equal to what was expected making the tour and visits beneficial.

#### **Feedback (weakness and strength of the program.**

The program is well designed such that in addition to just learning about forest and forest management there is also an aspect of tourism which gives foreign participants an opportunity to tour several cities. The program is designed to give participants more knowledge as the places to be toured are many. Transport both train and bus are well organised with proper guidelines on the movement making it easier for participants to move without challenges.



The event organiser Sabine Kulling was equal to the task as she executed her assignment very well by ensuring that all participants fully benefited from the program.

However, the allowance provided for upkeep needs to be adjusted upwards a bit as food was very expensive in some cities especially where breakfast was not provided by the hotel. All in all, it was a very beneficial program, and I would like to encourage the event organisers the Germany forest society to continue organising such an insightful program each year.

#### 4. Final comment

I am recommending that once participants have submitted their reports, they should be issued with certificates as a recognition to have participated in the educational tour, especially considering that it also involved visiting universities, where lectures were provided.

|                                |                          |
|--------------------------------|--------------------------|
|                                | Grant Holder             |
| Date, 31.10.2024<br>Signature, | Clarence Gift Mulungushi |





# Annex 18

## 2024 Sergio Barreto



### Report



13.10.2024

#### Personal Details

|                 |                                                                                                                                             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Family Name     | <b>Barreto</b>                                                                                                                              |
| First Name      | <b>Sérgio</b>                                                                                                                               |
| Gender          | Male                                                                                                                                        |
| Date of Birth   | 10 August 1979                                                                                                                              |
| Nationality     | Timorensen (Timor-Leste)                                                                                                                    |
| Passport Number | 0104465C                                                                                                                                    |
| Email Address   | <a href="mailto:sergiob@oxfam.org.au">sergiob@oxfam.org.au</a> and <a href="mailto:sergioeb2002@yahoo.com.br">sergioeb2002@yahoo.com.br</a> |

#### 1. Short Summary

We need a forest to thrive, no forest no life! As forester, it was an honour to me, to be part of the forest expert program in 2024. Timor-Leste has significant forest cover, with forests covering about 67% of the land area. While much of the forest is naturally regenerating, there has been a decrease in forest cover since 1990. The majority of the population lives in forested uplands, relying on agriculture and forest products for their livelihoods. Deforestation rate is high, forest has been decrease according to data of forest conservation plan, it was loss 42,000 hectares between 1990-2000, this mainly during Indonesia occupation forest had destroyed by Indonesia military because of Timorese guerilla fight for independence.

After the independence government of Timor-Leste and development partners has prioritized forest because it is important not only for economic diversification but also employment opportunity in rural areas. Firewood collection is main threat to forest degradation in Timor-Leste, this because no forest management in place. Firewood in Timor-Leste valued annually 72 million dollar according study finance by European Union delegation in Timor-Leste.

In my application, I was choosing to focus on forest management and protected areas management. My participation in the forest expert program fulfils my expectation because, I had an opportunity to spend one week in each of the institution such as national park of Muritz where I learned and seen different activities under national park including environment education centre and museum. Spent a week in Dorbetin, focused more on forest monitoring and management including hunting is a part of the management, hunting in Germany is regulated by law and strictly implemented (hunting) only for those who have a licence, the purpose of the hunting to reduce the population of deer or any other animal in the forest.



### 2. Introductory Chapter

During Indonesia occupation, the young, selected Timorese had the opportunity to pursue forestry education at the forestry senior high schools in different provinces, in Indonesia. Once graduated it was automatically employee by the department of forestry. However, as I concluded my study in 1998 and because of economic crisis in Indonesia and political crisis in Timor-Leste at the time, we hadn't got the opportunity to be employed by the Indonesia government. After the referendum where majority of Timorese vote for an independence, Timor-Leste foresters who were studied forestry in Indonesia, founded "East Timor Forester's Groups/ETFOG" where I was part of the members and founder. In the beginning of independence, due to lack of job offer in the country, I worked as voluntary in ETFOG, established trees nursery, produced tree seedlings and planted in the hilly of surrounding of Dili. Therefore, the real working experiences build and started in 1999.

As forester who have been working in different project in different organization in various project related to forestry (seedling production at community level, community forestry, reforestation, afforestation, agroforestry and carbon farming) with small holder farmers and worked in a project related to biodiversity and ecosystem services, enhance knowledges, gain more insight and experience on forest management is being crucial, therefore, forest expert program is pivotal for my carrier development which helps me understood forest management in Germany.

I knew about the forest expert program when I was working with GIZ as technical advisor during the implementation of partnership for sustainable agroforestry project jointly funded by BMZ and EU. As forest management in Germany has been managing in sustainable way, one of longest forest management history. Considering the importance of forest expert program for the professional career and forest development in the country, I decided to endorse my application which has been authorized by Oxfam in Timor-Leste as current employer and the former GIZ colleagues who has facilitated to get an endorsement letter from GIZ in Indonesia.



In the beginning, the current employer was committed to support any expenses related to my departure to Germany, however, the budget was restricted to be allocated to purchase the ticket, thus the cost related to the flight to and back from Germany borne by myself.

### Time Schedule

- Please update the information on your schedule

| Date    | Institution                     | Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 July  | Technical University of Munich  | Presentation by Professor Peter J. Annighofer, overview of German forest history and forest management, and then continued field excursion, where the professor shown us different structures of forest in Bavarian regions.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 9 July  | Tehchnical University of Munich | <p>Presentation by Managing Director of German Forest Society, Malte Campsheide, "Forest in Germany" Presentation continues by Gaston Alvaro, the trainees from Uruguay.</p> <p>In the afternoon session, the participants had the opportunity to visit research stations in Bavarian Forest area which managed by Bavarian State Institute of Forestry, the research station was founded in 1986, the main task was to conduct research in all relevant topic of sustainable forest management, especially focusing more on challenges of climate change, the protection and improvement of forest functions and competitiveness of forest sector</p> |
| 10 July | Tehchnical University of Munich | Each participants presenting the profile of the forest condition in their country, once it con-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



|         |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                                | cluded, continued field excursion to the arboretum near the University of Munchen where the call “world forest arboretum” in Freising. The participants have a chance to see different plots of trees planted from various continents, the species originated from Nort America, Asia and Nort Europe including Mediterranean. The aim of the arboretum is not only to evaluate the adaptability of each species to the climate change, but also education and recreational purposes including demonstrations of different species from diffreents the regions which has same climate condition. |
| 11 July | Numberg Forest Estate          | Field trip to Numberg Forest Estate, sustainable forest management in Numberg. The Head of Forest Services in Nurberg guided the participants to the field. During the visit, the forest services guide us different forest condition in the region and also management of its.                                                                                                                                                                                                                                                                                                                  |
| 12 July | Technical Univeristy of Munich | Last presentation by the trainees/forest expert from Ukraine and continue with individual organization for the rest of 3 weeks in Germany                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 15 July | National Park of Muritz        | Met with Director of the National Park of Muritz, and presentation of national park by Sebastian Kinowski and barbeque in Environmental Education Centre                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 16 July | National Park of Muritz        | (i) Law enforcement - We have visited to the national park where one of the citizens broke the law through ex-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |





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|         |                         | <p>panded the land to the peatland areas, put more sand and reduced peatland areas. National Park team requested to the owner to be stayed at home once inspection conducted, however due uncertain reason he did appeared, the consequence of this, the law enforcement will be applied and mandatory to take sand out.</p> <p>(ii) Conducted a monitoring of natura 2000 in peatland areas</p>                                                                                                                                                            |
| 17 July | National Park of Muritz | <p>Trip to lake of Muritz in Waren – the main activity was to see bicycle tour in the National Park. The head of Department of the National Park guided me to the lake located in Waren, where he explained about the rules and procedures to access to the national park, the tourist access to the national park either with bicycle or foot. There are bicycles own by the people of Waren which can rented to the visitor/tourist. According to the national park law, the visitor/tourist did not allow access to the park with car or motorcycle.</p> |
| 18 July | National Park of Muritz | <p>Boat patrol in the lake with the park ranger</p> <p>Boat patrol is a regular activities of the forest ranger in the national park. Boat Patrol in the Lake with the Forest Ranger successfully conducted. The purposes of the boat patrol are following:</p> <ul style="list-style-type: none"> <li>- To observe the lake in general if there is any visitor/tourism who use deallow boat, or or mesin boat.</li> </ul>                                                                                                                                  |



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|         |                        | <ul style="list-style-type: none"> <li>- To see any illegal fishing in the lake, fishing allowed for those who has a permission and fished in authorized places.</li> <li>- A Boat Patrol conducted twice/week;</li> <li>- To see if there is any illegal hunting in the lake, as hunting in Germany only occurred from September – January, and each of the hunter has proper area to hunt.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 19 July | Nationa Park of Muritz | <ul style="list-style-type: none"> <li>- Visitor management in the park We went to different places spot for tourism, he shows me also tourism information centre where the tourist can find information about the national park.</li> <li>- The sign about the procedure and regulation for the protected areas, what are allow and what is not allow in the protect areas such as no car and motorcycle desallow to access to the national park, those vehicle need to parked in the parking areas. You can access to the national park either by foot or bicycle.</li> <li>- In each entrance gate we found information board about the national park. seen also two sign board in different place (one with board/written in timber, another with more concrete one. We have seen also UNESCO heritage of beech plantation, which is very old plantation, 200 years.</li> <li>- We've visited also environmental education centre, where the head of the centre show me infrastructure for the</li> </ul> |



|         |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|         |                                                                                    | kids learning, dormitory and any others equipment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 22 July |  | <p>Forest monitoring<br/>22 July – Forest monitoring</p> <p>I was guide by the forest district manager visited to the afforestation area, in total 30 ha, it has been planted in last winter, plots well fenced with wire and oak trees as dominant species in the plot. All species planted are well grow and plot well designed. There was presentation organized by one of the foresters who briefly explain about forest condition in the areas, emphasizes about the hunting regulation and reporting procedures. another forester In the regions Mecklenburg-Vorpommern, presented also about the hunting regulations and briefly explain about the documents need fill out when the hunter shoots any white boar or deer, identification of the dear and white boar which contain information who is hunted, where and when, for further identification.</p> <p>We visited to forest identification level one, where we have different layer of the structure of the forest.</p> <p>We passed by the production unit, the harvester cutting the trees and collecting in the temporary collection</p> <p>The forester's show me also natural regeneration in forest production sites</p> |
| 23 July |                                                                                    | <p>23 July – Forest monitoring level 2, ICP project</p> <ul style="list-style-type: none"> <li>- We have visited the research centre in the field, its was established in 1985</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



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|---------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |  | <ul style="list-style-type: none"> <li>- The kode SH is wood packaged, initial name of the trees</li> <li>- Concept of management plan is including forest where place for nesting important bird</li> <li>- Site visit natural regeneration forest, traditional way of forest in Germany is only pine and drugless, the soil condition is mainly sand and clay which difficult to plant another species, the traditional way is cleaning, planting and cutting, however now is changed with sustainable way.</li> <li>- Each district manager is responsible for managing the forest, both in production and natural regeneration, since to plant a new forest is too expensive, the fence and planted one single tree cost 8-9 Euro. Therefore, the manager requires a proper forest plant ahead for 10 years. Each German people need 1m<sup>3</sup> annually for toilet paper</li> <li>- Hunting management managed by the manager, according to the law, to have more population, the hunter</li> </ul> |
| 24 July |  | <p>24 July – With Florian, forest management planner (Measuring the plots, 5plot)</p> <ul style="list-style-type: none"> <li>- The main function of forest, protection, utilization and recreation</li> <li>- Florian, the forester, provide brief update on data sheets which use for collecting forest data in the field, measurement of the forest in the plot and in each</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



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|  |  | <p>measurement point conducted in 10 to 10 years, data recorded manually and recording in the data system.</p> <ul style="list-style-type: none"> <li>- The forest planner must consider nesting of bird in the management plan (300 m2 radius) nesting for bird eagle</li> <li>- Specific management plan for the location which had been use during the second world war. No big masin allowed, its part of protection areas</li> <li>- Special treatment like cave or seeds bank need to consider in the management plan.</li> <li>- Bruce plantation – if any insect or disease detected, cut it down and do some soil analysis, observe vegetation around in order to have a natural regeneration;</li> <li>- Field activities: first before the measurement we need to identify the road access in forest (German forest, road in 20m to 20m), measurement basal area, high and diameter, after all the measurement done, then data stoking density must prepare for the regeneration if require.</li> <li>- For specific case such as pine, if the diameter reached 40 cm, we could consider as final stage, the forester has to decided what is the next management plan for pine, the main activity will select pine trees, harvest in order to get more light for the natural generation,</li> </ul> |
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|         |  | <p>the main practices planted <i>Bitula pendula</i>, red oak and <i>quacus rubus</i>, <i>Fagus sabatica</i>, however as two species it has good palatability of deer, then fence is required in beginning of natural regeneration.</p> <ul style="list-style-type: none"> <li>- <i>Fagus sabatica</i> is 50 years in shade before it grows up.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 25 July |  | <ul style="list-style-type: none"> <li>- <i>Fagus sylvatica</i> plantation, measure a diameter, height and basal area of the trees, observed small trees around the plot;</li> <li>- Second plots were new reforestation activities 5,01 ha with mixed species pine, <i>Fagus</i> and oak and dugless for leaf like lemon, the observation was to see oak trees in the new plantation;</li> <li>- Plot 3 – <i>Fagus sylvatica</i>, shade tolerant, 83 year old plantation;</li> <li>- There is forest law which does not allow to build a house 30 m near the forest, for the reason in one hand the fire which is a danger for forest, in another hand is the branch fall which can destroy or kill the people.</li> <li>- 23% of forest in Mecklenburg-Vorpommern region, however the government insisted to have 27%, so the forester must plant more 3%.</li> <li>- The forester supervises a private forest, the owner should send 10 year management plan to the state, if the private</li> </ul> |



|            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|            |  | <p>forest more 100 ha, the foresters control the forest, if less than that, the owner can control by them self but not break the law, no clear cutting, no fence, clear cutting only allow 2 ha. Don't cut coniferas species before reached 60 year which written in the law.</p> <ul style="list-style-type: none"> <li>- Will write more..</li> </ul>                                                                                                                                                                                                                                                                                                                            |
| 26 July    |  | <p>Measurement of the log using Logstad prog.</p> <ul style="list-style-type: none"> <li>- Measuring the log with logstad prog. It was measures whole surface of every piece of log, give you several of the log, minimun and maximun diameter, the logstad pro is easy to use in the field.</li> <li>- The second place which we have visited has fertile soil, oak grow well, the wrong decision was beech trees early integrated with oak trees, because beech is fast growing, the best solution is plant it once oak reached 60 years. The solution wis the district manager has already contacted locla community who leave nearby to cut the beeech as firewood.</li> </ul> |
| 27&28 July |  | Week-end in Hamburg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 29 July    |  | <p>Trip from Hamburg to Luneburg, as there is no train connection to Hitzacker, Sabine, the Program Coordinator have to come to Luneburg to pick us up by car. Then, We visited to Biospfere natural reserve. The presentation was done by Dr.....reg</p>                                                                                                                                                                                                                                                                                                                                                                                                                          |



|          |  |                                                                                                                                                                                                                                                                                                                                                                            |
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|          |  | In the afternoon, we have visited to biosphere natural reserve where we had the opportunity to observe different zone in natural reserve which is core, buffer and utilization zone.                                                                                                                                                                                       |
| 30 July  |  | Visited to different social enterprise established in cooperation with biosphere reserve, it was really crucial visit as timorese which the management of national park and other protected areas being started, so, visiting the sites gain some insight on how to development in sustainable way of national park which combined community interested in social business |
| 31 July  |  | Trip to Gustrow through Stewering, another German state                                                                                                                                                                                                                                                                                                                    |
| 1 August |  | Presentation at FRN office, get a lunch and back to Frankfurt                                                                                                                                                                                                                                                                                                              |
| 2 August |  | Frankfurt – going around and trip to Freising                                                                                                                                                                                                                                                                                                                              |
| 3 August |  | Travel back to Dili by Munich International Airport                                                                                                                                                                                                                                                                                                                        |
| 5 August |  | Arrived at Home, Dili Timor-Leste                                                                                                                                                                                                                                                                                                                                          |
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### 3. Report

The “Forest Expert Program” aims at increasing the professional exchange of forest management related experience among forest experts and thus at building capacity and



transferring knowledge in the field of sustainable forest management worldwide. The German Forest Society as the responsible organization has a large network of forestry related members that are interested in global issues of forestry, called the NIWA (Netzwerk für nachhaltige internationale Waldwirtschaft). The “Forest Expert Program” is funded by the Federal Ministry of Food and Agriculture (BMEL).

Based on this network and funded by the Federal Ministry of Food and Agriculture, the program offers traineeships to train skills in sustainable forest management in Germany. State and private forest enterprises, ministries and associations of the German forestry sector are participating institutions. The focus is especially on applicants from the focus regions of the German development cooperation working in the field of forest management and forest politics.

The traineeship will be adapted to the individual needs, interests and fields of experience of the trainee. The one-month stay will be divided into seminars, field trips and practical trainings to convey the basic principles of sustainable forest management in Germany. Possible institutions for the fellowship are the ministries responsible for forestry, governmental and private forest administrations, as well as forestry related associations in Germany

The participants for 2024 were seven peoples from different continents, South America (Uruguay), Africa (Zambia and Senegal), Asia (Laos, Indonesia, Timor-Leste) and Europe (Ukraine). The first week was gathered in Freezing, Bavarian Forest Region, one week orientation in the University of Munich where all the participants had the opportunity to have a presentation on forest history in Germany, seen different forest structures and management in Bavarian region by conducted a field excursion in different forest sites meanwhile the participants also has a chance to interact, shared and discussed the forest condition from each country.

In the second week, each of the participants has placed in different location based on areas of interest. As in my application letter emphasized more on forest management and national park, therefore I was placed at the National Park of Murtitz in Neurulitz where I had the opportunity to learned, get an insight and discussed about the management of national park, different services/department at the park and how the work/services delivery functioned daily and type of an activities carried out in the national park.



At the national park of Müritz, I was guided by my colleagues, ex-Development Advisor for Agriculture technical vocational school at GIZ, Partnership for Sustainable Agroforestry project, he provided a presentation and overview of national park in first day provided a detail plan for the rest of 4 days in the park.

Müritz National Park was founded in 1990. The total area is 318 km<sup>2</sup>, the National Park is divided into two separated areas, Müritz and Serrah, the larger part extends from eastern shore of lake Müritz to the town of Neustrelitz, the smaller part is situated east of Neustrelitz. Because of unspoilt nature and testimony to the ecological history, the beech forest within the national park were inscribed on the UNESCO World Heritage list in 2011 as an extension of the Primeval Beech Forest of Europe site. Lake Müritz has an area of 118 km<sup>2</sup> and consists of 100 lakes.

Several activities conducted in Müritz are following:

### **Visitor management**

The national park only access with the bicycle or foot, neither motorbike nor vehicle allowed, barbeque, smoke and fire prohibited. If the visitors break the procedures, law enforcement will be applied, and she/he must pay the penalty accordingly.

### **Boat patrol**

Boat patrols as one of the regular activities of forest ranger in the national parks, it's conducted weekly. The forest rangers used the boat do the patrols in the lake to observe if there is any visitors break the law, such as fishing without licence, use a big boats/boats with machines which is prohibited in the lake. Those peoples who are fishing in the place where allowed, you need to show your licence card to the forest rangers, if you don't have that card, then, law enforcement will be applied, you need to pay the penalty in the bank according to how high your break the law.

### **Bicycles patrol**

Using electric and manual bicycles patrols in national park is being part of the forest rangers' duties. The patrols aimed to see if there is any visitor/tourist who break the law (procedures) to access into national parks such as using motorbike or any other transport prohibited including hunting, because hunting is allowed in September.





### **Tourism information**

The tourism information centre is posted in every important areas/places, it describes the key areas, direction and biodiversity information to the visitors/tourists. The information sometime on both languages Germany and English. Previously, wood used as information centre, however, now is changed with more concrete material.

### **Museum**

The museum of national park equipped with all the information about the park, where the visitor can see different flora and fauna in the park.

### **Environment education centre**

The environment education centre serves as places for the students (primary schools) to come and stayed for a week to learn about the forest and environment. The centre equipped with one dormitory for kids, all education materials for students, classroom and any other support equipment and material for the training.

After one week stayed in the national park and went to different places see different management of national parks gave me valuable insight about the future national parks in Timor-Leste. Although Timor-Leste national parks "Nino Koni Santana" it's in the process of endorsement to the UNESCO to become one of the biosphere reserves in country, by seeing the experiences in national park of Muritz, it gave me a knowledges and expencieces which I can share with the technical peoples within directorate general of forestry responsbile for national park in Timor-Leste.

### **Forest Management (Dorbertin, 22-26 July 2024)**

I was guided by Forester's and Forest Distric Manager to see the different forest structures and forest management in Dorbertin. In the first day, we have conducted forest monitoring level 1. The purpose of forest monitoring level 1, is besides to count the annual tree crown condition assessments, the Level I monitoring also includes assessments of soil condition, the foliar nutrient status of trees, the diversity of ground vegetation and general information on living trees and deadwood at irregular intervals.

I have seen afforestation (30 ha) where the distric manager explained differents species planted in the plots oak is prinpal species planted beside other species. The area was fenced



with fence wire to protect the young samplings from possible feeding by deer and other animal in the forest. I had the opportunity to see afforestation area, and hunting procedures and registration, how the hunting is regulate in Germany.

The last week, I was in biosphere reserve with colleague from Indonesia. We had the opportunity to see the presentation by Dr. Franz Hocht and Tobias Keienburg



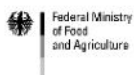
In the second day, we had an opportunity to visit different social business supported by biosphere reserve, hotel, cattle production and training centre







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The last day we were (with colleague from Indonesia) had an opportunity to visit the FNR office in Gostrow. FNR, is German funding for renewable resources, stands for Fachagentur Nachwachsende Rohstoffe, which translates to Agency for Renewable Resources. It's a German organization that coordinates and funds research, development, and demonstration projects focused on renewable resources like biomass and bioenergy.





### 4. Final comment

The Forest Expert Program is extremely important initiative run annually by German Forest Society, it's offered an opportunity for forest expert from around the world who are interested to come to Germany and stay one month. During the internship program, the participants had an opportunity to see, learn and exchange knowledges on forest management in general but also the participants had the chance to choose which areas he/she would like to focus on. My self from tropical country, half and island country, forest is playing important role, most of the peoples not only living in rural area rely on forest for survives but also most of the peoples who living in urban areas rely on firewood. The firewood is main energy for most of household in Timor-Leste. Forest degradation due to deforestation is high in Timor-Leste, the main driver is collection of firewood, shifting cultivation, and animal grazing. Despite the government and development partners has been supporting afforestation and reforestation activities in Timor-Leste, however there is no forest management in place, no proper forest planning in Timor-Leste. By participating in forest expert program, I had an opportunity to learn and seen directly forest management in Germany which will contributed to my personal and professional in particular and contribute to forest development in the country through directly involve in forest management development in Timor-Leste, I was invited by government in different workshop/meeting by government in forest investment in Timor-Leste and forest planning.

|                     | Grant Holder |
|---------------------|--------------|
| Date,<br>Signature, |              |



# Annex 19

## 2024 Mamadou Kora



# Forest Expert Program – 2024

## Mission report

Produced by:

**M. Mamadou Kora**

**Sept. 2024**



**giz**

## 1. INTRODUCTION

As part of the Forest Expert Program 2024, we travelled to Germany from 6 July to 3 August 2024. The 2024 edition saw the participation of seven (07) trainees from: Indonesia, Laos, Senegal, East Timor, Ukraine, Uruguay and Zambia.

This programme, which was part of an experience-sharing scheme, gave us the opportunity to visit the administrations and forestry research centres of the states of Bavaria, Hessen and Baden-Württemberg. This report summarises the various stages of the course.

## 2. PROCESS OF THE COURSE

### 2.1. Week of 8 to 12 July 2024

The first week of the course was spent in the state of Bavaria. From Freising, where the whole team of trainees was grouped together, this first week enabled us to experience presentations at the Technical University of Munich (TUM).

The first presentation focused on the discovery and history of forestry in Germany and in Bavaria in particular. Aspects relating to the development of forestry techniques were reviewed. The discussions also provided an in-depth look at the effects of climate change and insects on Germany's forests.



Figure 1: Presentation of the history of forestry in Germany



In the same vein, each trainer gave a presentation on his or her country's main working theme.

For our part, we gave a presentation on the national forest inventory (IFN). Aspects relating to history, plot grids and technical considerations were presented.

The remainder of the program was devoted to field visits, which took us to forests under the management of the Technical University of Munich and regional forestry services, including that of Nuremberg.

We also visited the Bavarian Forest Ecosystem Monitoring Station Freising Station and the Bavarian State Arboretum.



Figure 2: Entrance to the Bavarian Forest Ecosystem Monitoring Station Freising Station

## 2.2. Week of July 15 to 18, 2024

In this second week, we visited some of HESSEN's state forest districts, including the Hessen Forst Central office. The remainder of the program was devoted to field visits to discover the silvicultural practices and constraints facing the forests of the state of HESSEN.



Figure 3: Reforested plots following clear-cutting



Figure 4: Wood stocks

Our visit to the state of Baden-Württemberg gave us the opportunity to take part in tree canopy health assessment operations. This mission, carried out by the FVA team in Freiburg, enables us to monitor the dynamics of defoliation and mortality of tree and forest canopies in a context strongly marked by drought and climate change.

Our stay in Freiburg also enabled us to visit the FVA offices for a presentation on the German national forest inventory. The Geographic Information Systems team also gave us a detailed presentation on remote sensing applications for forest management.

## 2.3. Week of July 22 to 26, 2024

In the course of this, we worked with the Forest Management Planning Unit at Hessen Forst. To this end, presentations were given at the Witzen-Hausen Nord Faculty of Agronomy at the University of Kassel (Figure 5).

This was followed by visits to the permanent plots of the national forest inventory.





Figure 5: Presentation of NFI intervention planning operations.

After Witzen-Haussen, we continued our journey to Giessen, still in the state of Hessen. Here we worked with the Giessen-based Geospatial Division of Hessen Forest. Various tools and methods developed for forest management in the state of Hessen were demonstrated. These include a powerful intranet system through which a geographic information system, all forestry information, is centralized.

## 2.4. Week of July 27 to August 4, 2024

During this week, which coincided with the end of our study trip to Germany, we met with specialists from the Chair of Forestry at the University of Göttingen.

Under the guidance of Professor Christoph KLEIN, we again gave a presentation on the national forest inventory in Senegal. Our presentation was widely discussed and recommendations were made for its improvement.



Figure 6: The Göttingen University Forestry Chair team.

At the end of the Göttingen stage, we completed our visit to HESSEN FORST's Forstamt Melsungun.

After a comprehensive presentation on the organization of forestry administration in the Melsungun district, we again visited a number of important sites. Aspects of silviculture (planting, felling, volume measurement) again featured in the discussions.



Figure 7: Blocs attacked by insects in the Melsungun Forest District

In Melsungun, we also had the chance to experience hunting. The hunting process was explained to us in detail.



Figure 8: Storage unit for felled specimens.

### 3. CONCLUSION

This internship in Germany gave us an insight into another forest management culture. As a reminder, forests in Germany are categorized into four (04) groups: 1) Federal forests, 2) State forests<sup>1</sup>, 3) Communal forests and 4) Private forests.

This experience, which was offered to me by Forest Expert Program, with the support of GIZ, also enabled me to discover the constraints facing German forests. These include insect attacks (which particularly target conifers, spruces in particular), drought (direct effects of climate change) and storms.

In the face of the increasingly persistent threats posed by the effects of climate change, new policy guidelines are being implemented for silviculture that promotes a mix of species in plantations, with a view to their resilience to possible large-scale disturbances.

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<sup>1</sup> We visited 3 of the 16 states.

The mission also enabled us to learn some valuable lessons in terms of monitoring the dynamics of forest resources, and partnerships with the private sector for the development of forest resources.

German experience in computerized, geolocated forestry information management is also highly desirable for modernizing Senegal's forestry sector.





# Annex 20

## 2024 Ivonne Melissa





# Transformative Forest Management in Germany in improving forest resilience to climate change and increasing biodiversity

By:

**Ivonne Melissa, Indonesia**  
**Trainee Forest Expert Program 2024**



Bundesministerium  
für Ernährung  
und Landwirtschaft

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## SUMMARY

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I am Ivonne Melissa, forester with more than 10 years professional experience in forestry and natural resource management. I studied forest management in IPB University Indonesia for bachelor's degree and tropical forest management in TU Dresden Germany and forest ethics in Padova University Italy for master degree. Now, I work as Climate Change Advisor-Forest and Other Land Use Sector in GIZ Climate and Biodiversity Project Indonesia. With this role, I responsible to provide policy advice on climate change work area especially on development of updated NDC (Nationally Determined Contribution) and strengthen capacity building for local mitigation and adaptation measures. I also support implementation activities related to conservation of high biodiversity areas, improve capacity of clearing house mechanism, and develop biodiversity prospecting based on Nagoya Protocol.

I took part in the Forest Expert Program (FEP) from 6 July to 5 August 2024 with support from German Federal Ministry of Food and Agriculture (BMEL) through German Forest Society (DFV) and GIZ Climate and Biodiversity Hub Indonesia. The program started with general overview week for all seven (7) FEP participants on Forest History in Germany by TU Munich, introduction to the Freising local forest ecosystem, introduction of German Forest Society by DFV, basic understanding of climate change adaptation of forests, soil profile, forest condition monitoring, development of tree collection in Freising arboretum by LFW, Nürnberg Reichswald Forest management by BaySF, and organizational issues. On the following week, participants focus to learn their specific topic of interest by visiting related organizations and institutions. In my case, I spent the second week in Bonn, city of Beethoven, by discussing with European Forest Institute on forest resilience and sustainable trade projects; with Europe Forest Liaison Bonn on their activities; with GIZ Bonn on biotrade, biodiversity and climate change, climate change adaptation, NDC development; and with Biometrio Earth on biodiversity monitoring. I continued my third week in northern part of Germany starting with discussion with Thünen Institute of Forestry on climate change and payment of environment services related projects and then with Schleswig Holstein Landesforsten on state forest management and peatland restoration. I end my last week in Germany by learning from Elbe Biosphere Reserve on their management and sustainable regional development; from BMEL on EU regulation on deforestation free product (EUDR); from FNR e.v on their role in supporting research and public awareness on renewable energy; and from former professor in TU Dresden.

Even it is my second time to stay in Germany, during the weekend and in my leisure time I love to explore new places I never visited before. I visited many interesting places especially old towns, historical buildings, castles, parks, and other places where I got impression on German cultural values. I had chance to meet old friend who took me to Viking village, Schlei, Adventure Forest Trappenkamp and the youth forest homes in Süderlügum. Moving training mechanism also provide me big opportunity to enjoy most areas in Germany from east to west and south to north. Lastly, I also having nostalgic moment in Dresden and Tharandt after 15 years.

From discussions and learning, I know that forest in Germany covers 32% (11,419,124 ha) of the total land use (35,720,780 ha) with the biggest portion is in Rheinland-Pfalz (42.3%) (FNR, 2020). Different from Indonesia that all of forest is state owned, the forests in Germany are owned majorly by private owners (48%), followed by states (29%), cities and municipalities (19%), and federal government (4%) (BMEL.de, 2021). The private forest in Germany is predominantly small structured and fragmented, average size of 2.5 ha. About half of the private forest area with less than 20 hectares. Only 13% of private forest have a size of more than 1,000 hectares. Today's forests are no longer primary forests, but production forests shaped by humans. The forests are composed of 60% coniferous forests and around 40% deciduous forest consist of spruce (25.3%), pine (22.9%), other conifers (7.1%), other board leaves (18.1%), beech (16.1%), oak (10.5%). Tree species proportion vary and depend on the specific natural features and site condition as well as on different historic developments. Average age of trees is 77 years which some areas have more than 100 years old trees.

As in many other countries, the forests in Germany are managed to balance different demands society imposes on forests. On economic function, every year, forests provide around 76 mio cubic metres of precious resource of timber with timber stock 358 m<sup>3</sup> per ha (BMEL.de, 2021). Timber holds important role for construction and housing, furniture, packaging, paper, firewood, and other uses. Besides, forest also provide non timber forest products such as hunting animals, fishes, forest seeds, cuttings for ornamental use, Christmas trees, mushroom, berries, other forest fruits. They also provide jobs especially in rural areas that about 750,000 people work in forestry and timber sectors. On ecological function, forest provide carbon stock, soil conservation, nature conservation, genetic resources and biodiversity, habitat provision, water reservoir, oxygen rich fresh air. While on social function, forest provide health, tourism, clean water and food. All forests, whether a state, municipal or privately owned forest, are open to everyone for recreation.

After losing most of forest area during world war and with small number of main tree species planted in monoculture, many forests in Germany are prone to climate change. Periodic damage caused by storms and bark beetles has always been a problem for spruce forests that are not native to the site. Spruce is now becoming a high-risk tree species. Therefore, to increase forest resilience, close to nature mixed forest and multi structure forests are increasing. Spruce and pine pure stands have declined, many beeches, firs, maples, lime trees, oaks are already crowding in. The efforts to shape the composition of forest tree species in a more semi-natural way have been crowned with success. Approx 73% of German forests nowadays consist of mixed stands. In addition, some other silvicultural treatments are also conducted including 1) increase species by supporting existing climate tolerant species, supporting minor tree species in forest stands, keeping tree dimension diverse, including pioneer species, and having site adapted natural regeneration; 2) increase single tree resilience by conducting regular early thinning and avoid excessive densities; 3) change species by considering species specific soil requirement and species ability to adapt to precipitation during summer and winter; 4) reduce rotation period; 5) pest management by detecting and cutting infected trees; and 6) maintain and increase soil fertility.

While the forest areas internationally decline more and more (especially in the tropics including Indonesia), an increase in German forest can be observed in the last four decades, which is due to responsible and sustainable forest management. Since the 1990s, the forest area in Germany is growing by an average of 176 square kilometres per year. Sustainable forest management is predominated silvicultural system linked to conservation, protection and enhancement of biodiversity. This can be met through close to nature forestry (no clear cut, no fertilizer, natural rejuvenation, long regeneration period, integrated pest management, structurally diverse mixed stands), protection forests, tree species diversity, deadwood, micro habitat and species conservation measures. Moreover, forest certification is also highly encouraged in Germany. Overall, more than 70 percent of German total forest area is managed according to FSC and PEFC certificate standards. Recently, climate protection and the promotion of biodiversity in Germany have also become significantly more important. New forest formation, forest conversion, peatland protection, protection of old growth near to nature, and climate wilderness are paramount importance in biological climate protection.

However, there are still some challenges remained. Involving more private owner to implement these forest transformation strategies is not easy. With support from state forest local staff, awareness raising and guidance are provided to them. Some incentive/subsidy through payment of environmental services and conversion of low productive agricultural land to forest also introduced to encourage more involvement. Introduction of new adapted tree species should be followed by shifting market demand. Another challenge is ensuring effectivity of forest transformation and biodiversity increasing which is mostly high cost and small area coverage. Should it be done within the country or better to invest in another country for bigger impact?

Key take aways I could bring back to Indonesia that both Indonesia and Germany face effect of climate change. Each country has its own challenge and strategy to tackle this as ambitious as possible that is adjusted to country situation and capability. As country that still have a lot of forest cover and enormous number of biodiversity, Indonesia should manage the resource more sustainably and wisely especially at site level. Some good practices from Germany could be adopted. Pressure to forest for economic and development should be reduced and balanced with other sustainable practices. Do not wait until we lose everything then start doing something because nature and biodiversity are irreversible. Continue support and collaboration from Germany is needed in term of finance, capacity, and technology. Moreover, Germany also needs to ensure their climate and biodiversity policies do not cause leakages that increase pressure to developing countries especially the one with big forest area and high amount of biodiversity including Indonesia.

Participating in Forest Expert Program (FEP) is very beneficial for me especially to upgrade my knowledge, learn from other trainees, experts including on best practice implemented by Germany, and expand my networking. The FEP provide flexible tailored made training with effective and efficient learning method so we can get both general overview and specific topics understanding. This learning opportunity also open for all age range, not limited only for youth. Visiting of the host institutions helped me to identify the potential ways of possible future collaboration with them as well as obtain link to a lot of publication materials about

the specific topics which was very helpful for me afterwards. Moreover, I also had opportunities to enhance my practical work experience in Germany institutions. I do hope this program will continue and involve more trainees from different countries especially women. I also propose DFV provide room for continued communication and collaboration among alumnae and develop knowledge pool as collection of learning and publication materials for anyone needed.

Once again, I would like to express my gratitude to German Federal Ministry of Food and Agriculture (BMEL) for full sponsorship, Deutscher Forstverein especially Sabine Kühling and Malte Campseide for well organizing this amazing program, GIZ Climate and Biodiversity Hub Indonesia for partial sponsorship, host Institutions for their hospitality, the time they allocated for me, and for valuable knowledge they share, and the last to my family and colleagues who provide full support and back me up during my absence.



# DETAIL TRAINEESHIP ACTIVITIES

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## Day 1, 7 July 2024

Reporting person arrived in Munich International Airport at 7 a.m, rest in the afternoon, and had dinner together with other trainees.



Fig 1. Introduction dinner

## Day 2, 8 July 2024

1. [Forest History in Germany](#) by Peter Annighöfer from Technical University of Munich School of Life Science

During ice age, most of tree species move to southern part to survive, called tree migration. Therefore, many native species in tertiary period went extinct. Central Europe is tree species poor (50-100 species) compared to America (~800) and Asia (>1,000). First pioneer species in Central Europe are pine, willow, birch which can survive on 10-14<sup>0</sup> C. With the precipitation decrease (16<sup>0</sup> C), beech, fir, hornbeam can survive and with drought decrease (17-19<sup>0</sup> C), oak, elm, maple, lime, and spruce grow. Mostly forests in Germany are secondary forest so information on natural species or natural forest structure is very limited. Tree species dominated due to high demand are spruce, oak, beech, pine. In modern history (1492), species moved beyond geo border which there is introduction of non-native species. There was also introduction of invasive species such as douglas fir, hobinia, black cherry. Early humans give big impact to forest composition and forest structure match its use: poultry, fuel wood, hunting, construction, etc.

There are 11 mio ha forest in Germany which are managed with strict rule: no clear cut, no further forest degradation, 100 rotation cycle, forest open for everyone to use non timber forest product. Hans Carl von Carlowitz wrote first book on forestry with concept of sustainable use. To implement this concept and to make forest more resilience there are some strategies: create diversity of tree species, structure, system and diversification (native main tree species, native rare species, alternative origin of native species, non-native species). Future tree species are beech, oak, birch, silver fir, and European larch.

2. [Excursion – Introduction to the local forest ecosystem, Freising, Germany](#) by Peter Annighöfer from Technical University of Munich School of Life Science

- a. First Site

First site visited is old trial Spruce stand with low management because they are rarely thinned and distance between one tree to another is quite close. Under the stand

there is humus from Spruce leaves that are not well decomposed, the condition is wet and can absorb water but not at the top level of the humus. The soil is loamy, rich in nutrients and the precipitation in Freising is good for Spruce. *Fagus sylvatica* (beech) are planted between Spruce for enrichment with the Spruce cover open. This is part of a strategy with active measure and active planting considering Beech can suit conditions of the site. Moreover, by combining trees will increase stand stability. It is necessary to calculate investment for each silvicultural activities because it is related to labour costs.

Due to bark beetle attack, the infected and bordered trees should be clear cut. Because this open area, we can find moss and fern as sign that the area is previously covered by forest.

In the site we can also find hunting hut. No forest without hunting in Germany because there is no natural enemy. It is a way to protect the forest without fencing. Seedlings are signed with white marks, so it is not damaged during hunting. Around 3,000 – 4,000 EUR is needed to get hunting license and there is a seasonal for hunting. In some areas such as Alps and Africa, hunting has become business, and many plants are damaged by animals.



Fig 2a. Mix Spruce and Beech stand, 2b. Open area due to bark beetle attack with moss and fern, 2c. White mark on seedling to protect from hunting activity

#### b. Second site

The visited site is Spruce dominated, age 30-40 years, monoculture as classic typical Germany so not very adaptable to climate change. Planting distance is 1-2 m and not shade tolerant, so some trees do not grow as well other trees. There are 2 thinning that can be done, from above (from canopy cover) and from below (remove tree based on diameter). For increasing tree diameter, it is necessary to remove trees that compete the canopy. Good trees will be marked. First, remove 1-2 competing trees and in the next 5 years remove another 1-2 competing trees. The target distance of 1 tree to another is 10 m to grow as future tree. Another consideration is regeneration and forest structure for sustainability and preventing pest attack.

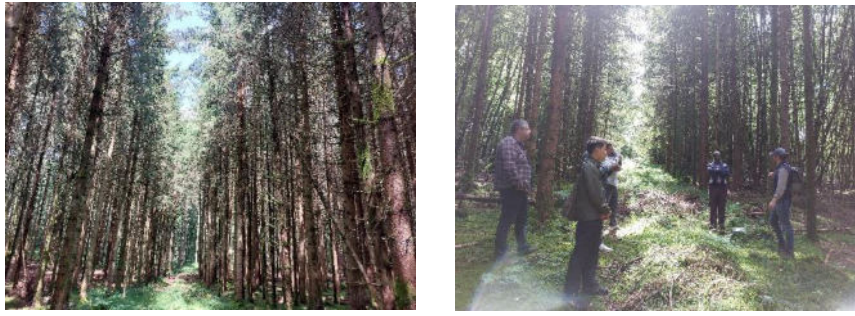


Fig 3. Monoculture spruce stand

c. Third site

The visited site is combination of spruce and douglas fir. To maintain multilayer, it is necessary to understand ecology. For better management, we must have vision how the trees planted in the future: multispecies, multi-structure, and stability. By making an artificial plot of 10 x 10 m with various species, we can see natural dynamic.

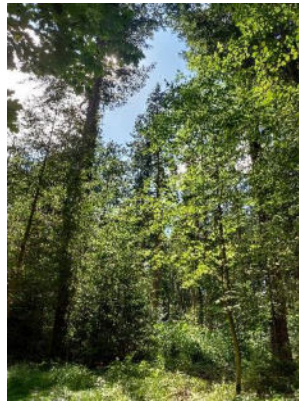


Fig 4. Multilayer spruce, douglas fir, and little other species

d. Fourth site

Visited site is agroforestry demo plot in wheat plantation for reducing slide erosion and increase biodiversity. Legumes are planted for nutrient fixation thus reducing fertilizer. In addition, there is also hazel as an understory shrub (resprout intensively, for biomass), *Sambucus nigra* as shrub, also Douglas fir and Cherry tree in between for timber production. Minimum distance between trees is 6 m. There is also space for flowers for insect and food. Potential risks are rodents and competing vegetation. Seedlings are obtained from nurseries.



Fig 5. Agroforestry demo plot



### **Day 3, 9 July 2024**

1. **Introduction of German Forest Society** by Malte Campsheide

Deutscher Forstverein e.V (The German Forest Society) is a non-profit and non-political organization based in Göttingen which aimed to improve general condition for forest and forestry in Germany through forest policy initiatives, public relations, also education, knowledge sharing, and training. It is an active member of some international networks including European Forestry Network (EFN), Forest Communicators' Network (FCN), and Network for International Sustainable Forestry (NIWA). With the experience and knowledge of its more than 7,000 members (foresters, forest scientists, forest owners, forest users), the DFV has been the first point of contact when it comes to the forest since 1899. Every two years, the DFV organize the largest forestry conference in Germany. Moreover, it also organizes some programs such as Young Forest Network, Forest Expert Program, foresters help foresters, Alternative silviculture concepts of the future (ALTERFOR) project, etc. Malte also explained briefly about forest and forest management in Germany.

2. **Trainee presentation** by Gaston Martinez from Uruguay

Gaston provided brief information about Uruguay and explained about land and its management in his country. He also explained his role as agricultural engineer in INAU SIRPA (the Institute for Children and Adolescents of Uruguay- Penal Responsibility System for Adolescents).

3. **LWF research on climate and forest future** by Tobias Mette from Bavarian State Institute for Forestry and Forest Economics (LWF)

Bavarian forest administration consists of two research institutes (Bavarian State Institute of Forestry/LWF and Bavarian Forest Genetic Institute/AWG), 33 regional forest offices, educational centres and institutions for private and community forest management and state forest enterprise (BaySF) for state forest management. LWF responsible for forest monitoring including forest health and ecophysiological, national forest soil inventory in Bavaria, Bavarian Forest Information System (BayWIS), tree suitability under climate change, forest owner consulting, pest monitoring and management, also research on Natura2000.

Forest cover in Bavaria is about 2,605,563 ha with the biggest portion of private forest (55,7%), followed by state forest (29,8%), community forest (12,4%), and national forest (2,1%). Forests are managed under clear strict regulation which no clear cutting, restricted forest land use change, natural regeneration should be bigger than planting, and few species restriction. The forests are dominated by needle leaf (spruce and pine) about 64,3% because they are native species with high value while broadleaf (oak and beech) is only about 35,7%. The rotation period is about 80 to more than 120 years (oak is up to 250 years). Windstorm was the first forest damage factor until 2015, during winter affects mainly evergreen coniferous forest while during summer affects mostly deciduous broadleaf forests. Since 2015, insect (bark beetle) attack become the first forest damage factor. Then since 2020 drought damage is increasing in addition to insect attack. This condition is caused by the increasing of temperature in Germany, about 3°C in century. To be more resilience to climate change, 1) diversity of species should be increased by

supporting existing climate tolerant species, supporting minor tree species in forest stands, keeping tree dimension diverse, including pioneer species, and having site adapted natural regeneration; 2) single tree resilience should be increased by conducting regular early thinning and avoid excessive densities; 3) species changing should be done by considering species specific soil requirement and species ability to adapt to precipitation during summer and winter; 4) rotation period should be reduced; and 5) infected trees should be detected and cut. Research showed that broadleaf species such as beech and oak are more resilience to temperature increase, therefore broadleaf forest portion is growing in period 1971 – 2002. LWF is also conducting research to find another coniferous species that could better adapt climate change with sample from northern America such a douglas fir.



Fig 6. Discussion with LWF on Climate and future forest

4. [Soil profile and forest ecosystem monitoring station Freising](#) by Lothar Zimmermann from Bavarian State Institute for Forestry and Forest Economics (LWF)

In 1989, the Bavarian Forest Ecosystem Monitoring Station started as intensive and continuous observation and documentation of complex chemical/ physical and biological processes in forest ecosystems under present and future environmental conditions and their impacts on the ecosystems. Today 19 intensive monitoring plots are operated by LWF with support from each local forestry agency. The monitoring station is also open for research projects of other institutes like universities and other research facilities. Each station consists of a pair of measurement plots: a forest stand plot (at least 4 ha; homogenous in species of tree, age, structure, and site; and used to record parameters which might have impact on forest growth, health status of stand, and stand growth) and a nearby open field subplot within the same forest area, at a distance of 300 to 700 m.

The excursion area contains open field measurements and stand plot measurement, soil monitoring and vegetation long-term observation sub-plots and further observations and research studies. The stand age of mixed oak and beech stand (140 – 170 years), which dominated by beech. It has marvellous site conditions, precipitation about 800mm/year, average annual air temperature nearly 8 °C, sandy loamy substrate with high storage capacity.





Fig 7a. Discussion on forest ecosystem monitoring, 7b. Monitoring activities conducted in the site, 7c. Explanation on soil moisture data collection

#### **Day 4, 10 July 2024**

1. **Trainee presentation** by Sysavath Keokhamphouy (Laos)

Sysavath provided brief information about Laos and explained about forest and its management in his country. He also explained about his role as advisor in GIZ Laos and his project in on forest landscape restoration which aim to enable environment for implementation of REDD+, improve livelihood, and implement mitigation actions.

2. **Trainee presentation** by Gift Mulungushi (Zambia)

Gift provided brief information about Zambia and explained about forest area in his country. Due to high rate of deforestation in his country, he works to promote reforestation including agroforestry. The project he works now has objectives to improve soil fertility, improve livelihood, manage pest, and improve food and nutrition through smart agriculture and livestock integration. The project also conduct training, publish materials, and regular monitoring using web-GIS.

3. **Trainee presentation** by Ivonne Melissa (Indonesia)

Reporting person provided brief information about Indonesia and explained about land area, forest area and its management. Reporting person also informed some policies and actions conducted by Indonesian government to reduce deforestation and degradation. In addition, reporting person explained about my little contribution to better forest management in Indonesia.

4. **Trainee presentation** by Sergio Barreto (Timor Leste)

Sergio provided information about East Timor and explained about land area, forest area and its native species. Unfortunately, there is no yet proper forest management plan, protected area management plan, and regular forest inventory. He also shared about carbon farming that he is doing now.

5. **Trainee presentation** by Mamadou Kora (Senegal)

Mamadou provided information about Senegal and its land which in the northern part is drier area with savannah and in the south part has more forest. Deforestation rate is quite high especially with Gambia located in the middle of the country and do a lot of illegal logging to be sold to China. He explained about national forest monitoring in Senegal as his main responsibility as government official including the detail method.

6. [Visit of arboretum in Freising \(Weltwald Freising\), development of tree collection](#) by Herbert Rudolf

The Bavarian State Arboretum is joint project of Bavarian State Forest and Bavarian Forestry Administration. It is an area of around one hundred ha, a collection of trees from all over the world in the Kranzberg Forest. It was originally designed for scientific purposes of the two universities in Freising but since 2011 it has been open to the public for recreation and education. Since the first planting in 1987, more than 400 tree and shrub species of temperate forest have already been represented and it is expected to be more and more in the future. The tree species are selected using WWF temperature ecoregion which have potential to grow in Central Europe. The Bavarian Office for Forest Genetics (AWG) plays key role in the procurement of tree species from all over the world. Some silviculture treatments are also conducted such as sapling care, thinning, planting and re-planting, single timber harvesting, routine inventory, and natural protecting.

There are 4 themed paths: East North America, West North America, Europe and west Asia, Mid and east Asia. The visitor can explore the area by following signs and paths, using flyer or other information material provided in several small pavilions, or use Weltwald-App for easier navigation and more information about the plants. Maps and display boards in the entrance pavilions provide valuable information. In the middle of the World Forest, is the central pavilion with exhibition "Climate Forest district Freising". The "Gardens of the Continents" also offer cultural insights into the home countries of the World Forest trees in a playful way. Special collection (Botanicum, Salicetum, Populetum, and Rosaceum) are organized according to botanical systematics as valued learning site for the Weihenstephan science and research campus. The attractive adventure playground is popular for kids. Expert guided tours, concerts, children's parties and meditative journeys of discovery round off the offer. There are also art pieces inside the forest.

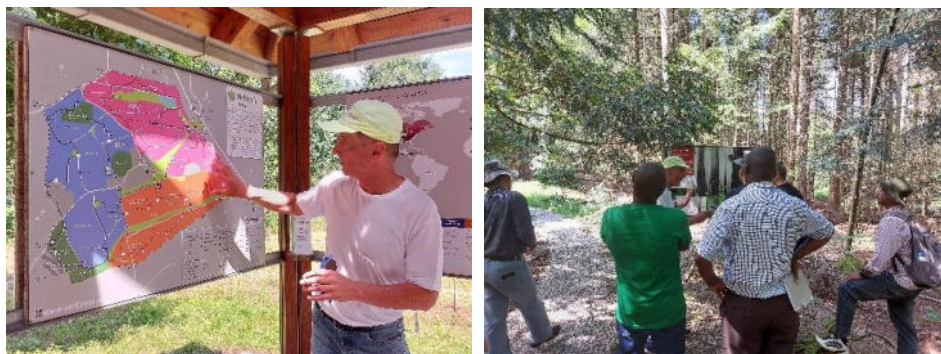


Fig 8. Explanation on 4 themed paths and species in every region

**Day 5, 11 July 2024**

[The Nürnberg Reichswald in a changing climate, tree species selection under changing climate conditions, tree harvesting](#) by Johannes Wurm and Sebastian from Forest Office of BAYSF

Bavarian state forest manages the entire Bavarian state of publicly owned forest, a total of 808,000 ha. Tree species are spruce (41%), pine (15%), fir (3%), beech (19%), oak (6%), other softwood (4%), and other hardwood (11%). The forests are managed by combining ecology, economy, and social functions which timber, ecosystem services, and recreation also

education are very important. Every year, about 5.2 mio cubic metres are used sustainably. In Nurnberg area itself, there are 24,000 ha of forest and map from 1563 is still being used as reference with same boundaries as the new map.



Fig 9. Brief explanation on BaySF and old reference map

The first visited site has forest border point build in 1840 with 120 years old Scott pine and Norway spruce tree combination. It is located in area which mostly sandy soil and poor site due to forest litter collection during 1950-1960. Low soil nutrient condition can be seen from some types of exist plants such as red berries. The stand is also prone to insect attack and acid rain. Some stands under BaySF are now set for artificial regeneration and multi species, multi structure by managing light. Pine needs to be planted in mineral soil and need a lot of lights therefore it needs to be conditioned, not naturally. No clear cut is allowed, only some thinning from below could be done. Blue jay birds help the naturally spread of oak. Deer interferes when browsing while wild boar eat oak seed, so it needs to be fenced.



Fig 10. Forest border point and explanation on site 1

The second visited site consists of beech, red oak, Pedunculate oak (*Quercus robur*), Sessile oak (*Quercus petraea*). Stand development starts with opening canopy, seedling, planting. Beech as shade tolerant tree and mix stand have special impact on soil nutrition. In addition, there are other shade tolerant species which are Silver Fir and Taxus that can be planted. Oak is also very important for oak seeds.



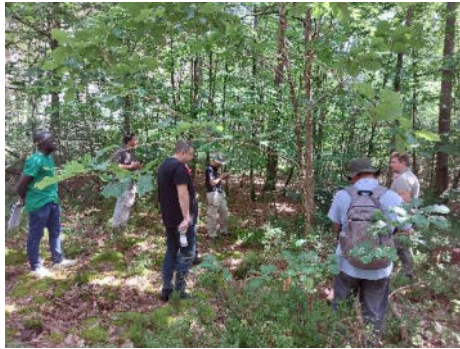


Fig 11. Explanation on multispecies forest

The third visited site is old oak mix forest stand with age around 200 years. BaySF would like to keep the stand for long term measurement but also done oak regeneration. Besides, there are very old oak trees around 500 years old that grow naturally and used for conservation. Oak needs light and can grow in loamy soil with high clay. If there is too much light then oak has many branches therefore it needs shade tolerant species to grow in between like Beech and Hornbeam (*Carpinus betulus*).

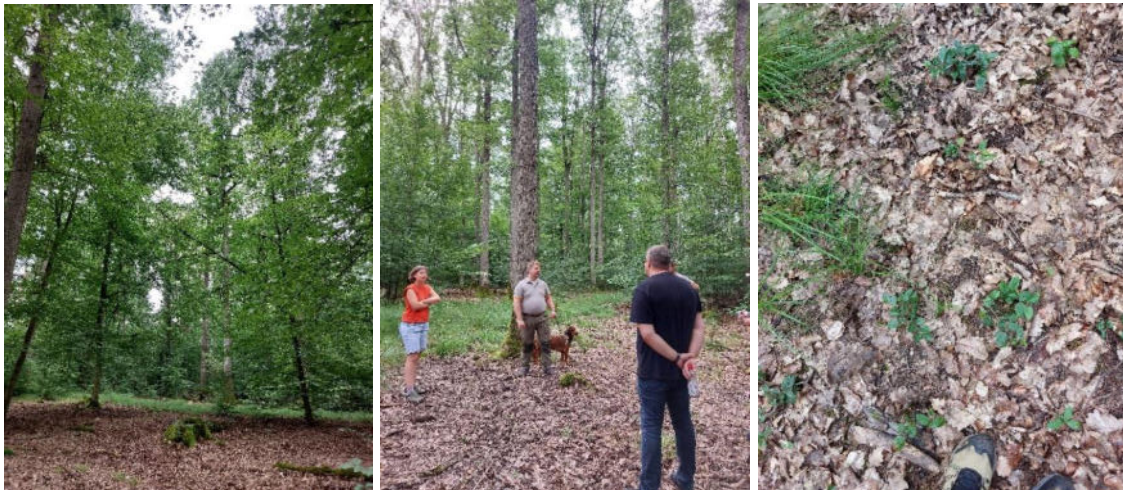


Fig 12 a. Old mix forest stand, 12b. Explanation on stand management, 12 c. Rejuvenation of beech and hornbeam in oak stand

In 2018-2020 there was a long drought which greatly disrupted plant growth. Spruce and Scott pine are affected by climate change and drought, also bark beetle and magnificent beetle attack. Tidy forest management is conducted to check infected trees, cut them down, take them out or put them in infected log ponds. Climate change also cause number of harvested timbers is decreased compared to annual cuts because there was oversupply. Forest management right now is using RCP 4.5 which at medium level of climate change. To increase forest resilient to climate change, some new tree species are introduced such as *Castanea sativa* which can grow well in warmer temperature, need light, good for timber, also come from Europe. This species is planted together with fir, spruce, beech.

Deer are very selective in choosing food and damage more than cattle. Oak seedling is one of most vulnerable for this deer browsing. Cost estimation for oak plantation is about 1 Eur per 1 seedling excluding planting costs. Therefore, hunting is very helpful to reduce fence costs.

The use of fences is very selective, only for high-cost seedlings. For Silver Fir, sheep fat is used as biopesticide because deer do not like it.



Fig 13a Explanation on climate change effect to forest, 13b. Introduction of *Castanea sativa*, 13c. Bark Beetle attack

The use of harvesting machine needs to be careful with forest regeneration including skidding trails. Harvester can lift timber at maximum 2.5 tons weight and diameter of 1 m. It can also be used on steep terrain with wet soil. Red stripes are marked for trees that will be felled. Direction of fallen wood is not necessary because by using harvester, the tree is lifted, placed on the skid trail, then debranched and cut according to buyer's request. The amount of timber cut is adjusted to silvicultural management plan. The harvester can do timber harvesting of 140 – 150 m<sup>3</sup> per day. BaySF usually do 130,000 m<sup>3</sup> timber harvesting per year which 20,000 m<sup>3</sup> out of it are done by contractor using harvester.

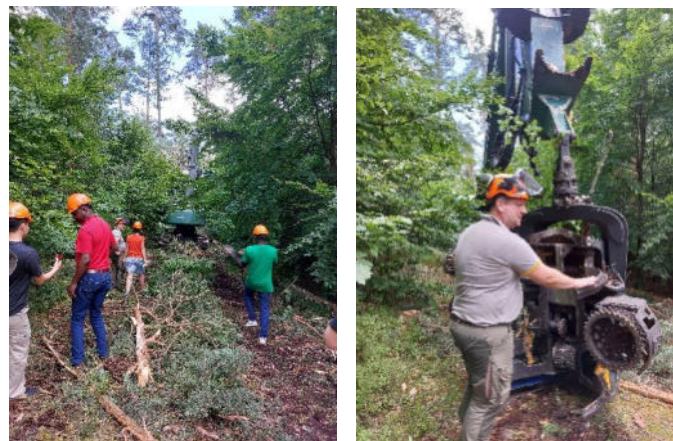


Fig 14. Introduction to timber harvesting and explanation on harvester

## **Day 6, 12 July 2024**

### **1. [Trainee presentation](#) by Andrii Shamrai (Ukraine)**

Andrii provided brief information about Ukraine and its land area. Forest in Ukraine can be found more in the northern part with tree species most likely like in Germany such as pine, oak, spruce. Russian invasion has big impact to forest and ecosystem condition with mine pollution and bombing. The war also causes some area cannot be inventoried as it used to be. With support from German Government, Ukraine can conduct forest inventory in war impacted area using satellite imagery.

### **2. [Individual program planning](#)**



Every trainee discussed his/ her next plan, signed traineeship agreement, and received daily subsistence allowance (DSA) for the rest of traineeship days.

#### **Day 7, 13 July 2024**

Reporting person and other trainees had free time in Munich.

#### **Day 8, 14 July 2024**

Reporting person travel to next destination, Bonn.

#### **Day 9, 15 July 2024**

1. [Introduction to European Forest Institute](#) by Alex Giurca, Hannah Ertelt, Lyla O'Brien, Hassina Uwiringiyimana, Dario Schulz, Sylvester Boonen

The European Forest Institute was established in 1993 in Joensuu, Finland with the aim of enhancing international forest research and providing decision makers with unbiased forest-related information at a pan European level. It has several locations with specific area of expertise: Finland with topic of bioeconomy, climate smart forestry, sustainable market and society, and life cycle analysis, Bonn with topic resilience and governance, Barcelona with topic of Mediterranean forest and forest genetics, Malaysia with topic of international collaboration, and Rome with topic of bio-cities. 70-80% of conducting research projects are EU funded and the rest are from national finance.

Resilience Program focuses on forest related resilience issues, including integration of biodiversity in sustainable forest management, climate change adaptation and mitigation, forest-related risks, payments for ecosystem services and the role of forests and trees in climate-smart cities. The programme emphasizes work on the science-policy-society interface at a European scale, thus strengthening EFI's policy support role. While the governance program addresses emerging forest governance challenges and opportunities based on the understanding of interests, expectations and perspectives (e.g. urban versus rural, local versus global) from different stakeholders and sectors on forest land uses and forest management goals. The team then share brief information on research projects conducted in EFI Bonn which related to climate and biodiversity topic such as Superb (Systematic solutions for upscaling of urgent ecosystem restoration for forest related biodiversity and ecosystem services), Clever (Creating leverage to enhance biodiversity outcomes of global biomass trade), Wild-E (Climate smart rewilding), and communication project.

2. [Discussion on Superb \(Systematic solutions for upscaling of urgent ecosystem restoration for forest related biodiversity and ecosystem services\) project](#) by Lyla O'Brien

Superb project is funded by Horizon 2020 Research and Innovation Programme under EU Green Deal to restore forest landscape across Europe. There are 12 large scale demonstration across Europe (Sweden, Scotland, Denmark, Netherlands, Germany, Czech, France, Italy, Croatia, Serbia, Romania, Spain) to show best practice of key forest restoration and adaptation challenges e.g drought, bark beetle outbreak, etc on some hundreds of ha per demo and with the potential of upscaling to over one mio ha in 10-15

years. The selection of sites was jointly done between EFI and partners from different partners. Some activities that are carried out at demo sites are tree species, reforestation, natural regeneration, wildlife management, tree species diversification, planting, enhance forest connectivity, underplanting, enhance structural diversity, soil vitalation, hydrology restoration, stakeholder engagement through workshop, engagement events, etc. The project will develop a tree species recommendation application by compiling and consolidating tree species distribution models for current climate and different climate change scenario, existing seed provenance delineation, and transfer model. For monitoring, a combination of satellite imagery, DNA metabarcoding, bioacoustics, and community occupancy models will be used. The demo sites are responsible for the monitoring.

3. [Discussion on Clever \(Creating leverage to enhance biodiversity outcomes of global biomass trade\) project](#) by Hassina Uwiringiyimana

Clever is research project with ten partners from Germany, Austria, UK, Spain, Sweden, Cameroon, and Brazil. The project aims to improve scientific basis for measuring, analysing and computer-assisted simulation of links between international trade in agricultural and forest products particularly animal feed, energy crops, tropical timber, and aquaculture and biodiversity, enhancing transformative change for biodiversity policy making, and addressing indirect drivers of biodiversity loss. EFI will focus on actor behaviour along international value chain, impact of value chain related public policies and private governance mechanisms on behavioural pattern of value chain actors, EU and national policies and governance mechanism regulating biomass supply chains in targeted countries, and timber trade between EU and Cameroon/ Democratic Republic of Congo. The project is just started so no preliminary result that can be shared.

**Day 10, 16 July 2024**

[Discussion with Europe Forest Liaison Bonn](#) by Thomas Haußmann, Silvia Abruscato, Verra Steinberg, Carol

Forest Europe (also Ministerial Conference on the Protection of Forests in Europe) is a Pan European voluntary high level policy process. It aims to develop common strategies for 46 signatories (45 European countries and the EU) on how to protect and sustainability manage forests. Every four to five years, Ministers responsible for forests meet to endorse new declarations, decisions, and resolutions. Structure of the Europe Forest consists of expert level meetings, expert groups webinar, high level policy, general coordinating committee, and liaison unit. Since 2020, under Germany chairmanship the secretariat is located in Bonn, Germany. The international secretariat liaises this process with neutral position, separate from BMEL (Ministry of Agriculture). It has also been supported by European Forest Institute (EFI) for science advice, administration, and communication matters.

It has three workstreams:

a. Sustainable forest management

SFM is stewardship and use of forests and forest land in a way that maintain biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic, and social functions at local, national, and global

event, and do not damage to another ecosystem. There are some criteria and indicator also guidelines developed with support from EFI as reference to be implemented in Pan European countries. Every five years there are forest resource assessment in form of State of Europe Forest in collaboration with FAO and UNECE.

b. Pan-European Forest Risk Facility (FoRISK)

It aims to support forests adaptation to changing climatic and site condition as well as to enhance the resilience and mitigation potential of forests at a pan European level. It will provide relevant evidence-based forest risk and adaptation-related information to political decision-makers based on trustful cooperation with scientists, practitioners, and society. The FoRISK pilot running from September 2022 to February 2024, tests policy tools for various disturbance factors like wildfires, biotic threats and storms. The pilot involves national focal points from signatory countries dealing with forestry issues to evaluate the feasibility, funding options, adjustments and improvements related to the FoRISK concept.

c. Green jobs and forest education

This workstream focus on campaign and communication (Instagram, podcast, webinar, comic, policy brief, consultation meeting, online lecture, newsletter). The webinars are usually organized in collaboration with IFSA, FAO, IUFRO, Sylva Network, etc. The topics cover is on wedges, gender gap, opportunities, and challenges. There is also youth involvement to provide position paper in forest conference.

Rapid response mechanism developed to interconnect Forest Europe workstreams by screening available information on different sources, identifying emerging issues on forest and forest related topics, and promptly reacting with science-based information and innovative communication products. Emerging issues, state priority, high level policy dialogue, communication, and public relation activities characterize it. The outputs are social media, online publication, webinar, podcast, high level policy dialogue. One example is supporting Ukraine Forest.

### **Day 11, 17 July 2024**

1. [Discussion with BioInvasion Project Africa – African -European partnerships for biodiversity conservation](#) by Danielle Bertille Fouth Obang

BioInnovation Africa supports African-European business partnerships for biodiversity-based value chains that are based on high ethical, social, and environmental standards, including equitable benefit-sharing and the sustainable use of African's genetic resources. Relevant sectors for this project are flavours and fragrances, food supplements, cosmetics and body care, biotechnology, and pharmaceuticals. The target provider groups are local producers, cooperatives, and small and medium sized enterprises (SMEs) in Cameroon, Madagascar, Namibia, and South Africa which supply raw or processed biological materials and ingredients to Europe-based companies and research institutions. Project activities are 1) strengthening capacities to create an enabling environment to reduce market barriers including capacity to negotiate contract, sustainable harvesting, management skill, ABS (access and benefit sharing) skill, IT-based online systems for ABS applications, permitting and monitoring, guideline for benefit sharing mechanism, technology transfer, and concept for financing instrument, 2) promoting biodiversity-

based value chains (including Access and Benefit Sharing/ABS, market access, certification, product innovations, local development, green jobs), 3) benefit sharing for conservation and IPLC engagement, 4) policy advocacy for biodiversity-based cooperation. For Indonesia that would like to develop bioprospecting, it will be better to learn from COMIFACT Project that focus on develop ABS strategy for cosmetic and pharmaceuticals. There is also JICA project on labour issue in ABS. Point to check in Nagoya Protocol on ABS are PIC (personnel in charge) and mutually agreed term (monetary, share profit, or nonprofit such as technology transfer and capacity building).

2. [Discussion with Bioclimate project](#) by Mathias Betram, Anja Andres, Verena Sommer, Carola Venegas

Bioclimate is IKI support project for implementation instruments of the global biodiversity framework and the Paris Agreement which is implementing from April 2024 to June 2027. The project focuses on synergies between UNFCCC and CBD in the negotiations but also implementation instrument at partner countries. Overarching themes are biodiversity, climate change, Nature based Solution (NbS), National Biodiversity Strategic Action Plan (NBSAP), Nationally Determined Contribution (NDC), Long Term Strategy (LTS). It has four (4) outputs: 1) advisory on GBF- Global Biodiversity Framework implementation instruments (planning, monitoring, reporting, review mechanism, capacity building, financing, knowledge management), 2) advisory on preparation of UNFCCC conference as well as Paris Agreement implementation, 3) better utilization of synergies between implementation instruments for biodiversity, climate change mitigation, and adaptation, and 4) strengthening international initiatives, partnerships, and knowledge networks for biodiversity, climate protection and EbA- ecosystem based adaptation. With similar topics of interest, there is possible collaboration with Climate and Biodiversity Project (CLARITY) especially for activities in Indonesia.

**Day 12, 18 July 2024**

1. [Discussion with Bioclimate project staff based in Berlin](#) by Kirstin Huecking

This discussion is an informal one to catch up each other since Kirstin could not join the day before. Reporting person shares update on process development of Indonesian Second Nationally Determined Contribution (SNDC) and Indonesia Biodiversity Strategic National Plan (IBSAP).

2. [Discussion with Project NDC Assist II](#) by John Kasiita SSemulema

The project NDC Assist II is commissioned by BMZ with co-funding from New Zealand Ministry of Foreign Affairs and Trade (MFAT), Australia Department of Foreign Affairs and Trade (DFAT), Green Climate Fund (GCF), and EU. It focuses on strengthening capacities of NDC Partnership (NDP) member states and actor global also private sector for financing and implementation of their NDCs with special consideration for gender-sensitive aspects. The project regions are Albania, Kenya, Nigeria, Pakistan, Peru, Rwanda, South Africa, and south Pacific. It is divided into four components:



- a. NDC implementation framework: provide technical assistance and strategic advice on NDC financing and implementation strategies and on integrating climate aspects into economic stimulus program
- b. Pacific NDC Hub: assist the 14 Pacific Island states in reviewing, improving and implementing their climate goals and contributes to advancing transformative climate actions and sustainable development.
- c. Private adaptation finance: mobilize private sector to finance and scale business models relevant to climate resilience and adaptation mostly on agricultural sector. Small Medium Enterprises (SMEs) in Kenya, Nigeria, Rwanda, and Pakistan that offer adaptation relevant technologies or services receive tailored support to scale up their business models (private adaptation investment bootcamp-PrivABoo). A holistic approach including ecosystem building and peer learning is applied (networking, dialogue, training and individual technical assistance), targeting practitioners (SMEs, investors, accelerators, entrepreneurs, start-ups). Further information on [www.adaptatiocommunity.net](http://www.adaptatiocommunity.net).
- d. Capacity building: strengthen strategic capabilities for leveraging international market mechanisms according to Article 6 of Paris Agreement (especially article 6.2) in Rwanda, South Africa, and Peru. The activities are ecosystem development around article 6 among relevant public and private sector actors, support article 6 policy strategy development, and knowledge exchange.

Another main focus of this project is dissemination of knowledge from collaboration within the NDC partnership and with the private sector.

### **Day 13, 19 July 2024**

1. **Discussion with Biometrio Earth** by Fabian Schmidt-Pramov, CBDO of Biometrio Earth  
 Biometrio Earth introduces transparent monitoring and evaluation of ecosystem conservation and restoration by using in situ sensors (audio, photo and video sensors, animal tracking, environmental DNA) and remote sensing (radar, optical data from aircraft or satellite terrestrial observation missions, geostatistic from Global Forest Watch or forest fire from NOAA and NASA). Through this method, the assessment can be done at low cost, large scale for detecting changes in ecosystem. Appliance of sensor at site level will be done by client while Biometrio team will process data from remote sensing and on-site sensors with cloud-based, self-learning artificial intelligence to reliably identify species present, change in biodiversity, and measure the health of an ecosystem. Bioacoustics allow us to collect data on animal presence, animal species, individuals of certain species, animal activity, anomalies in their activity, stress or reproductive behaviour, presence of pests or invasive species, domestic animal density, absence of animal species, meteorological phenomena including their duration and intensity such as rain, wind, fallen trees. Through holistic measurement and effective data processing, unprecedented transparency can be achieved and show the true impact of nature base projects. Steps in assessing are:
  - a. Analysing the project or area  
 Using available databases and science-based datasets, identify general geophysical and administrative characteristics (biome, climate zone, potential vegetation,

location, district) also land cover history to determine area's historical background, deforestation rate or land cover, prior reforestation activities

b. Determining correct parameters

Defining what to be measured and corresponding target values

c. Developing a customized strategy for data collection

Develop strategies tailored to the project area for determining type of sensors, positioning/ coordinate at which the sensors should be installed, and sampling intervals of the in-situ sensors. The sensors are placed in the area for the duration 90 days until McKinnon List curve is achieved (no additional species is found).

d. Data acquisition and data collection

With developed data acquisition strategy, large data are collected both from in-situ sensors (cameras and microphones) and remote sensing in autonomous and constant way. Therefore, there are comparability and reproducibility of measurements, realistic recording of indicator species without human interfere in the field, transparency data, data driven monitoring of the state of flora fauna, exact assessment of fluctuations and changes in animal presence and density, around-the clock monitoring of ecosystem and characterization of species activity and chronobiology.

e. Data processing and assessment with AI

With the help of AI, a reliable, data driven assessment of changes in biodiversity and ecosystem health.

f. Report generation and project dashboard

Detailed report, customized dashboards with targeted statistics, graphics, cartography, and audio files, as well as photographs and videos can be used for further planning and policy development.

Further information <https://www.biometrio.earth/>.

Biometrio is open for further discussion if government of Indonesia has interest to know more about this biodiversity monitoring or have demo plot.

2. [Discussion with SPA \(Support Project for the Implementation of the Paris Agreement\) Project](#) by Michelle Pena Nelz

SPA project aims to enable partner countries to effectively reduce greenhouse gas emissions, to enhance NDC ambition, and to monitor and communicate these transparently. It also synthesizes and disseminate knowledge, concepts, tools, good practices, and narratives for development and implementation of NDCs, Long Term Low Emission Development Strategies (LT-LEDS), and the Enhanced Transparency Framework (ETF). The project support in four main areas: 1) support for BMWK and AA to support implementation of NDC, LT-LEDS and ETF in partner countries, energy transition, private sector engagement, gender and youth, 2) support global climate initiative such as NDC Partnership, Partnership on Transparency in the Paris Agreement (PATPA), 3) knowledge management and dissemination, and 4) bilateral support for partner countries such as climate helpdesk, country package.

#### **Day 14, 20 July 2024**

Travelled to next destination, Bergedorf-Hamburg and explored Bergedorf city.

#### **Day 15, 21 July 2024**

Free time in Hamburg

#### **Day 16, 22 July 2024**

[Discussion with Thünen Institute of Forestry](#) by Prof. Dr. Peter Elsasser, Tomke Honkomp, Julia Tandetzki, Dr. Heiner von Lupke, Cornelius Regelmann

Thuenen Istitute was established in 2008 as scientifically independent research institution at the interface of science, politics, and society. There are 15 institutes that one of it is research section Forestry (wood research, forestry, forest ecosystem, and forest genetic). In Research section Forestry, there are 4 working groups: wood market (modelling, monitoring wood flow, supply chain), forestry worldwide (Asia, Latin America including carbon leakage), forest and society, and economic evaluation. There are some interesting project result from those working groups that could be accessed in [Thünen: Publications \(thuenen.de\)](https://thuenen.de)

Forest development is influenced by GDP, population, and education. Based on German forest act, forest cannot be converted to other land use so the pressure is bigger at agricultural land. There are about 60 ha agricultural land converted per day. There are contribution from forestry (LULUCF) and agriculture in achieving EU NDC but the target is inbound so it can be shared with other sectors in achieving total target.

EU green deal should be achieved in 2030 and Germany has developed follow up policies including national energy and climate policy, LULUCF plan every 10 years, coordination, climate protection act. Sanction will be given to country that cannot achieve the target.

Payment of environmental services (PES) organizes structure to make financial flow from user to provider to incentivize, the core is property right. This idea comes from developing country to obtain payment. In Germany, PES is subsidy from state to farmer for conducting climate and biodiversity protection. The subsidy is obtained from implementation of climate protection act. Acceptance of subsidy from forest owner can be seen through progress in program implementation and willingness to change behaviour.



Fig 15. Meeting with Thünen Institute of Forestry's Researchers

## **Day 17, 23 July 2024**

1. [Participate in PhD defense on Pre-adaptation as driver of plant invasions in agroecosystem](#) by Ginevra Bellini, Kiehl University

Plant invasions threaten biodiversity and human. It can be invasive from first introduction depend on ecosystem support that make them grow and develop. Pre-adaptation to disturbance is an important driver of biological invasions in human-altered ecosystems. Agropastoralism is one of oldest forms of landscape management. It started in western Asia then imported to Europe. Eurasian plants succeed at invading agroecosystem worldwide due to their adaptation to agropastoralism which derive from these species long co-evolution with such practice. Plant species from Western Asia are predicted to have the highest degree of adaptation to agropastoralism. While non-Eurasian species should be poorly adapted due to their short exposure. The research tests whether the early-life performance of invasive plants under disturbance depends on their geographical origin and the associated assumed exposure time to agropastoralism. There are 30 species selected and divided into three groups: exposure long, native to western Asia, exposure medium native to Central Europe, exposure short native to America. Three soil disturbance treatments (control/compaction/tilling) combined with two space occupancy levels (available/occupied) were applied to monospecific experimental units (n = 900), each containing 50 seeds. Analysis is conducted using generalised linear mixed model. It is predicted that Eurasian species would benefit more from disturbance in terms of germination and seedling performance than species with shorter assumed exposure to agropastoralism, and that this effect would be stronger when space is occupied. Contrary to these expectations, all species groups profited equally from disturbance, while non-Eurasian species were most hampered by space occupancy. For germination success and speed, exposure long species had higher values than exposure short species, regardless of the disturbance treatment. These results do not support that Eurasian species possess a higher adaptation to agropastoralism, but rather that non-Eurasian species can cope just as well with the associated disturbances.

2. [Introduction of Schleswig Holstein State Forest and Discussion on biodiversity monitoring in Schleswig Holstein State Forest](#) by Dr. Katharina Mousolf

Schleswig-Holstein State Forest (SHLF) manage 50,000 ha of Schleswig-Holstein's 173,412 ha of forest area. 89% of this forest are mixed forest. As FSC and PEFC certified company, it is committed to the preservation and increase of biodiversity as well as water, climate, and noise protection and the preservation of the recreational functions of Schleswig-Holstein's forests and their sustainable use following strict ecological and social standard. With headquarter in Neumünster, it coordinates 32 forest offices on business area of wood and services, hunting and game, public welfare service and biological and technical production. The forest also includes the Adventure Forest Trappenkamp and the youth forest homes in Süderlügum and Hartenholm. The company is divided into two business areas-commercial and forestry-each with eight departments: general department, finance, real estate-climate protection, timber market, education for sustainable development, nature conservation, organic production, technical production. The operational units, especially the districts, are controlled from these. The implementation



of operations is the responsibility of the forestry offices and forest education institutions, which are responsible for managing the operational activities.

On Natura 2000, The SHLF have developed management plans for these areas in order to achieve a continuous improvement of habitats and to maintain a good state of development. Species data is collected from different sources such as monitoring, research, project, etc. There is no dedicated SHLF staff to collect this data, but in collaboration from third party volunteers. Database of this species is updated every year. At the federal country level, the regular biodiversity monitoring is conducted only for selected species listed in Flora Fauna Habitat.

A biotope is an area of uniform environmental conditions providing a living place for a specific plants and animals. Biotope mapping in Germany was started in 1987 that aims to describe the composition of the landscape on the basis of biotope types. Biotope database is combination of different data such as remote sensing, auto photo, field survey, etc. The Biotope database consists not only map but also detail descriptions including history of the land, water quality, species, etc. This biotope database will be updated every 10 years. Biotope database is used not only for conservation tasks but also for urban and regional planning, environmental analysis, environmental impact assessments, mandatory reports and forest development planning. This database is also used for SHLF management.



Fig 16. Schleswig-Holstein State Forest Office in Neumünster

#### **Day, 18, 24 July 2024**

##### **1. [Discussion on timber harvesting and timber selling process in Schleswig Holstein](#) by Florian Schlomka**

The SHLF manages the forests entrusted to them and FSC and PEFC certificates. Wood growth per year is 409,000 m<sup>3</sup> while logging per year is 230,000 fm (SHLF, 2024). Cultivated species are spruce, pine, and some beech. Timber sales usually in form of round wood and sold to traders/ local buyers who will sell again to Denmark, China, Japan. SHLF also has cooperation with sawmill in Denmark. Timber with fungal attack also can be sold for wood pellets/ energy wood and pulp. Timbers which are not accepted by buyer are also sold as firewood.

Before harvesting, forest offices of SHLF prepare a management plan and provides information on the types and volumes of wood that can be harvested. It will be basis for the SHLF wood market department to find interested buyers. The contract is made based

on the specifications requested by the buyer including the volume according to their needs. These contract details are given to harvester, forwarder, and skidder operators to process and move the wood. Buyer can come and check the harvested timber in designated log pond to ensure it match the contract. If there is a deal, sales document will be prepared, buyer do the payment and arrange logistic to transport the timber.

Reporting person participate in buyer visit from a Sonae Arauco company produce OSB (oriented strand board) wood plate for houses. The company buy 250,000 m<sup>3</sup> per year and the product are sold within Europe, most goes to Ikea, and small part to China. The timber required should be good quality, straight so it will be easy for debarking, diameter min 45 cm, and all softwood species.

The SHLF also do auction, particularly valuable timber, every year on two valuable timber submission. Interested parties can examine the lots at timber storage yard in Trappenkamp Adventure Forest.



Fig 17. Buyer checking to ensure timber deal

2. [Visit peat rewetting project site in forest area of Hasselbusch](#) by Bartholomäus-Hagen Kufner and Dr. Khatarina

The visited site is location of peatland rewetting project in Schleswig Holstein covering 240 ha of low intensity grassland owned by state forest. This is mostly a bog that is very dependent on rainwater. At the beginning there is a lake like and over time it is dried due to peatland harvesting and peat drainage for agriculture and rising cattle. The canals were made by humans and there are 50 km of plastic pipes 1 m deep from 100 years ago found in this area. What was done on the 74 ha of the total area is making dam with material from the peatland (1.3 m deep), filling the hole area with water so there is largest water body in the middle, and assessing some measures such as soil, biodiversity, emission, etc. The bog condition makes rewetting is relatively easy because there is no need to stop water flow which cause flooding in other places. The water body is useful for forming necessary swamp. If there is too much water, there is a pipe used to channel the water to the ditch. Water should be maintained plus minus 10 cm from the water table. Bog should be an open area without trees and the target is to leave the rewetting area as open area for min 50 years. It is estimated that it will take 100 years for this rewetting area to be able store CO<sub>2</sub> again. After 1 year rewetting, there are more biodiversity seen in this area such as red deer, birds, owl, wild boar, eagle.



Fig 18a. Peat rewetting site, 18b. Material used to make dam, 18c. Water control tool

Not far from the site, there is a location with so many protected species continue to grow such as clockenheide (*Erica gracilis*) and moss. This area was peat without too much drying and no fertilizer use and there is still natural water table.

There will be another 90 ha of rewetting area but since there is no funding so it will be converted into carbon certificate and sold to carbon market. It will be done in collaboration with the National Protection Stiftung which has mandate to buy more land for open land and protection.



Fig 19. Clockenheide and Peat Moss

### **Day 19, 25 July 2024**

1. [Discussion on hunting as an instrument of silvicultural requirement](#) by Jan Meyer-Hamme  
Goal-oriented hunting geared to the needs of the forest helps to reconcile game populations and silvicultural requirements. It helps to minimize browsing and peeling damage caused by wildlife in the forest such as red deer, roe deer, sikka deer, muntjak, wild boar. It also prevents forest segregation, preserves mixed and stable forest, shorten rejuvenation, and increases economic value of forest. Without the influence on the level of wild populations, natural regeneration and the increase in the proportion of deciduous trees in the forests of the future will fail. The SHLF promote low-disturbance and efficient interval hunting in their 40,900 ha forests, including professionally carried out movement hunts. Hunting is organized based on monitoring and browsing report conducted by specialized expert. Based on this report, the SHLF will know risk level for the forest and develop treatment map.

If the forest area <75 ha it is not allowed to hunt by your own. If the forest area > 75 ha it is allowed to hunt by your own as long as having hunting licence. This hunting activity can

be done by foresters itself, invite other hunters in the area to join and pay, or rent hunting area for 9-12 months contract. To have hunting license, the hunter should pay for about 3,000 – 4,000 Euro and to get the printed licence there is additional cost about 150 Euro for 3 years valid licence. The hunter could conduct driven hunt, individual hunt, and combination in SHLF hunting area. They should follow hunting season for specific species and follow ethical rules as part of wildlife management.



Fig 20. Hunting trophies and hunting map in SHLF

## 2. Discussion on rejuvenation and tree species in Schleswig Holstein by Christoph

One of core goals of the state forests is the development of a structurally rich and stable, site-adapted and multifunctional forest that can meet the challenges of climate change. SHLF promote forestry that uses and allows natural processes – forestry without clear cutting, fertilizers, pesticides. SHLF also follow the principle of not removing more wood than grows back. Forest inventory and planning are carried out using modern forest management procedures every 10 years. The result of the inventory in 2022 shows that SHLF forest composition consists of 23% beech, 22% spruce, 17% oak, 13% larch, 7% pine, 4% douglas fir, and 14% broadleaves species. In the near future, there will be more and more broadleaves species planted, increase from 50% to 65% within next 30-40 years.

In cooperation with research institutions and universities, SHLF test new working methods and techniques for careful forest management. Site adapted and soil caring species are selected as tree species for artificial regeneration. Native tree species have priority. Based on FSC standard, only 20% exotic species that could be introduced. The change of dominated species should be started by checking soil quality. Beech usually vulnerable to sandy soil and high temperature. Eastern part of Schleswig Holstein has more beech naturally so introduction of broadleaves in this area is relatively easy compared to southern part that is dominated by spruce.

SHLF produces beech, oak, and maple seeds. These seeds have been collected from forest stand with vitality and good quality and stored for max 1 year. The produced seeds are usually used internally and sold to forest seedling companies. Usually 2 years old seedling costs 50-90 cent. There is also collaboration with Niedersachsen state forest for storing seed. Natural regeneration takes precedence over sowing or planting as a rejuvenation method. The SHLF will always develop rejuvenation plan every 10 years as basis for determining number of natural generation and seeding for whole area.



## **Day 20, 26 July 2024**

### **1. [Discussion on peat rewetting project site 2](#) by Dr. Katharina Mousolf**

The selected site is about 96 ha secondary peat forest with birch stand (protected biotope type). It was previously commercial grassland. It will be rewetted in autumn 2024 until 2025 in cooperation of Schleswig Holstein State Forest (SHLF), nature conservation foundation, compensation agency, Gemeinde Heidmoor. There are three potential output to achieve: a) short-term: water level  $\pm 0.1$  m from land surface, reduction of greenhouse gas emission 1,238 ton CO<sub>2</sub> eq, better buffer storage, b) midterm: sphagnum moss and peat growth, creation of new habitat for specialized species, c) long-term: restoration of living raised bog and carbon sink function.

### **2. [Excursion with Green Party](#) by Dr. Katharina Mousolf and Heide Anders-Schipkoweit**

It is part of regular activity conducted by Schleswig Holstein State Forest to provide awareness and better understanding on forest and peatland management to parliament officers. It will be good input for them in make supporting policies and regulations.



Fig 21. Excursion with Green Party

### **3. [Travel to Stexwig village](#)**

## **Day 21, 27 July 2024**

Explore Stexwig village, Schlei, Flensburg, Südarlügum forest

## **Day 22, 28 July 2024**

Explore Haithabu Viking Village, observation tower in Nature Park Hüttener Berge, Trappenkamp Adventure Forest, travel to Hamburg.

## **Day 23, 29 July 2024**

### **1. [Elbe River Landscape Biosphere Reserve](#) by Dr. Franz Höchtl**

UNESCO biosphere reserve Elbe River Landscape comprises a total of 343,000 ha along 400 km of river through five German federal states (Schleswig Holstein, Mecklenburg- Western Pomerania, Lower Saxony, Brandenburg, and Saxony-Anhalt). This historically formed cultural landscape as part of a global network of 759 biosphere reserves in 134 countries (18 out of these are in Germany) that share the UNESCO Mand and the Biosphere (MAB) program's objective to protect sustainability develop natural areas in harmony with human needs. The vision of the biosphere reserve is to preserve and shape region's shared natural

and cultural heritage together with many partners by balancing ecology, economy, and social justice.

The biosphere reserve has three functions: protective function to contribute to conservation of natural process and biological diversity, development function to support sustainable development, societal and economic development of the region, and logistic support as educational hubs. Therefore, it is managed using protection zoning system, called core zone, conservation zone, and development zone. The core zone covers 1,493 ha (3.24% of total area) which is used for long term development of nature without human influence (wilderness). The conservation zone covers 7,922 ha (17.19% of total area) which valuable ecosystems of cultural landscape are preserved through careful land use. Then the development zone covers 36,677 ha (79.57% of total area) which is a living, economic, and recreational space. The focus here is on balanced, environmentally friendly regional development.

The biosphere reserve is close intermeshing of wetlands (floodplains and smoke water area, bracks, oxbow lakes, fens) with dry biotopes (banks of the Elbe, inland dunes, heaths) and the remains of natural floodplain and swamp forests. Large area of biosphere reserve has been designated as part of the European protected area system known as Natura 2000. It is home to numerous animals and plants including many endangered species such as beavers, fire-bellied toad, white and black storks, middle spotted woodpecker, Nordic geese, and swans. The landscape also offers cultural history including world heritage garden-kingdom of Dessau- Wörlitz, floods and dike construction, maintaining and re-establishing natural flooding areas.

## 2. [Fieldtrip to some important ecosystems](#)

### a. Core zone

Natural forest development target in core zone is 3 % and so far it has reached 1%. The necessary planning and measures for providing this forest development are undertaken in collaboration with Niedersachsen state forest since they also have own target for developing 10% nature conservation without utilization in all state-owned forest area (5% in biosphere reserve and 5% from other areas). The forest is managed with a view to long term, sustainable and ecological sound development.

The visited site is one of this nature conservation location. It has been set aside to develop as natural forest without any management measures for about 9 years that aimed to encouraging near-natural condition. People can still enter this area for conducting research and hunting. Currently the situation in this site is natural hardwood forest with three (3) dominant species: spruce, oak, elm with age 1,000 years, long grass, regeneration grow after drought without human intervention. Now planting is also being done with fences to protect the seedling from deer browsing. Previously the site was used for agriculture behind forest area which needed water, therefore we can find man-made canal to regulate water here. The land is affected by flood. Wild animals living in the woods and their habitats are protected.

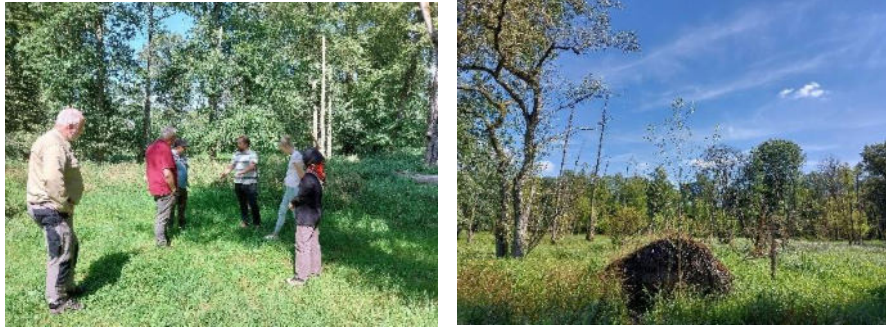


Fig 22. Discussion with Niedersachsen State Forest on Biosphere Reserve Core Zone

#### b. Sand dunes

Inland dunes in Elbe Valley is around 15,000 years old which transported from Scandinavia by ice during ice age and south-westerly wind. This material is a wall of 500 -2000 m of sand that melted. It is deposited mostly on eastern edge of the Elbe Valley. Some of them attain a height of 35 m. The area was afforested with Scott pine trees in the 19<sup>th</sup> century. These trees grow alternate with reindeer lichen, areas of grey-hair grass and open stretches of sand. Previously it was necessary to take clay from Elbe River and mix it with existing low nutrient soil to make it more water resistant. The pine is used for pine frames, outdoor furniture but so far there is not too much demand. This area is habitat of Woodlarks, ant lions, sand bees, and fox.



Fig 23a. Pine stand on sand dune, 23b. Reindeer lichen, 23c. Pine seedling

#### c. Observation tower

This observation tower offers panoramic view of Elbe water meadows.



Fig 24. Observation tower in Klötzie



## **Day 24, 30 July 2024**

### **1. [Social Instrument in Elbe River Landscape Biosphere Reserve](#) by Tobias Keienburg**

Regarding regional development, biosphere reserve's area must be maintained and developed as living, working, economic, cultural, and recreational space to the extent permitted by the conservation purpose which includes environmental, social, and cultural safeguards. The biosphere reserve administration implements visitor guidance measures; initiates and coordinates numerous maintenance, development, and species protection measures; also coordinates and accompanies research projects, environmental monitoring measures, and education for sustainable development. It provides technical support and advice in implementation of EU, the Federal Government, and the Land and other institutions funding programs for sustainable land use that protect nature such as European Regional Development Fund (ERDF), European Agricultural Fund for Rural Development (EAFRD), European Social Fund plus (ESF+).

In the Biosphere Reserve there is a network of partners across federal states which serve as model regions that demonstrate exemplary paths to sustainable development. The aim is to support, together with interested companies in the region, an important goal of biosphere reserve, the safeguarding and further development of permanently environmentally friendly ways of life and necessary infrastructure including the social and cultural foundations. In this sense, companies from various sectors that are committed to sustainable development in the region are welcome as partners of the biosphere reserve with regard to resource protection and promotion of regional value chains. Certified partners receive support from the respective biosphere reserve administration within the scope of their possibilities regarding advertising via various media, information and public relations work, networking, qualification and development of new marketing channels. The partners benefit from the growing public perception of biosphere reserve as outstanding model regions, some are also equipped with country specific funding instruments for regional development. Since 2011, there are more than 190 partners in Elbe River Landscape Biosphere Reserve with certification in 11 sectors including education, service, fishery, gastronomy, shops, handicraft, agriculture, food processing, tourism, accommodation, and certificated nature guides.



Fig 25. Publication material from partner and Presentation on partner network

### **2. [Fieldtrips to some network partners](#)**

#### **a. BIO hotel Kenners Landlust, Göhrde**



The Kenner Landlust is a purely ecological hotel located 8 km from Elbe River landscape. It is developed with energy efficient design using mostly sustainable materials such as local timber furniture and paper and wool recycle wall. It has 26 rooms with 50 beds. It offers not only accommodation but also wellness (floatorium, sauna, massage, tea bar and terrace); nature tours and hidden information in the room on topics such as forest, Elbe, beaver; evening hiking; guided tour and lecture on wolf; books on forest and nature; buffet of local and organic food; maxi bar which open to all guests; local products shopping; in house bicycle and rental; childcare, children's playrooms and playground. Moreover, it has no tv and wifi area also charging station for electric vehicle. The owner really value people do something more sustainably.

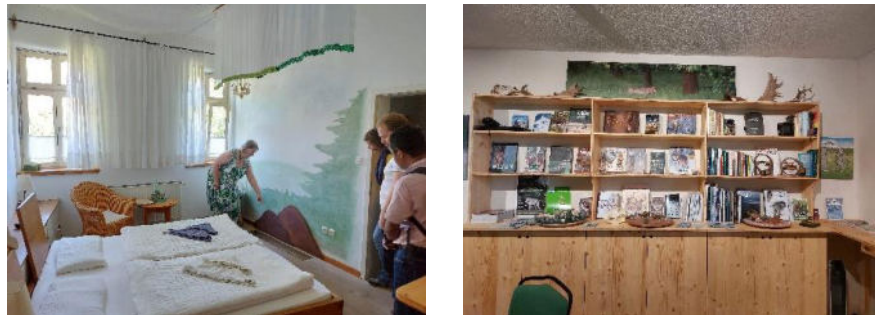


Fig 26. Room in Bio Hotel with environmental information and wolf information books

b. Ark Centre (Archezentrum) visitor centre, Konau

The Archezentrum provides an exhibition about Ark region with its old livestock breeds and plants, also wild animals and plants of the Elbe Valley and their interaction with human. The objective of this centre existence is to raise awareness of the value of genetic diversity in addition to preserve and promote it. Furthermore, the centre also provides insights into the special history of the municipality of Amt Neuhaus, settlement, and landscape development. The centre is not managed by biosphere reserve but privately with funding support from federal government. Products of the Ark farms such as wool, meat, cheese, yogurt are also available for purchase here.

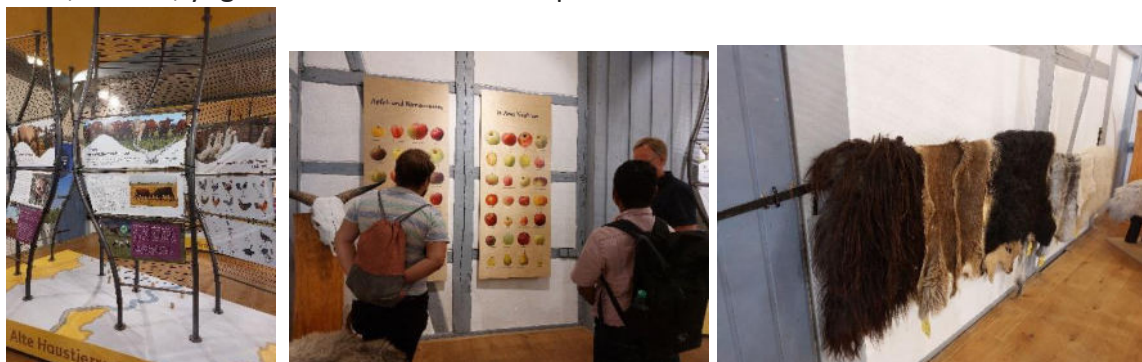


Fig 27. Exhibition on Ark Center

c. Niederhof Farm

Mr. Niederhof works as farmer for land authorization in Lüneberg. He maintains 200 old breed cattle and 25 könig horses for about 20 years using 500 ha aggregated land from Stork Foundation (100 ha of this area is forest from ungrazed meadow). The grazing area is managed environmentally sound with no chemical material used. Small part of the area

is used for winter hay while the rest are for cattle grazing. There is a dike around the area so if it is flooded there is a small pond where amphibians and cattle drink. There are some meadows as well used for birds. Out of 200 cattle, only 100 cattle will be maintained, and the rest are sold for meat. The meat quality is good because the cattle is not caught and slaughtered but being shoot by gun. Usually, there are 3-4 cattle are shoot per week. Before being shot, it is not marked but it is decided in the field. It is difficult to find female cattle to shoot because some are pregnant. König Horse breed are from Poland and there are also some wild breeds. Horses are not too important for landscape but important for the community- for recreation. Previously cannot sell horses but now there is more demand. All farms are managed independently with support from family and neighbour. For him it is important to connect with other biosphere reserve partners to promote his meat products and there are more buyers. He also now joins cooperative in Berlin and regional cooperative in northern Germany, Saxony Anhalt, also sell product online. Meat price is 22-40 EUR/kg.



Fig 28. Niederhof Farm and old breed cattle

d. Education centre at Michaelshof Sammatz

In the beginning, it was developed as education centre for special need children (peronnik) which one of the therapies is interacting with animal and experiencing farmer life. It raises and breeds old domestic and farm animal breeds such as pigs, horses, donkeys, sheep, chicken, rabbits, ect so it became one of Arche-Hof farm in biosphere reserve area. It has been committed to a concept of sustainability that combines nature conservation, community life and business, education and intercultural exchange. it has biodynamic farm (exclude the use of pesticides, other chemically substance, and modern genetic engineering), arche-hof husbandry, bakery, dairy, farm shop, café, children' home, as well as artistically designed gardens. It is colourful community with about 300 people -employee, children, volunteer from all over the world, children and young people with special needs, guests. With 50,000 visitors per year, it is a nationally appreciated excursion destination. Since 2016, 1500 volunteers have visited this place. Since 2018, school internships have been taking place with 500 students per year and since 2019, the "house of nature" has been offering seminars and events of all kinds on topics of biology, agriculture, art, and personal development.

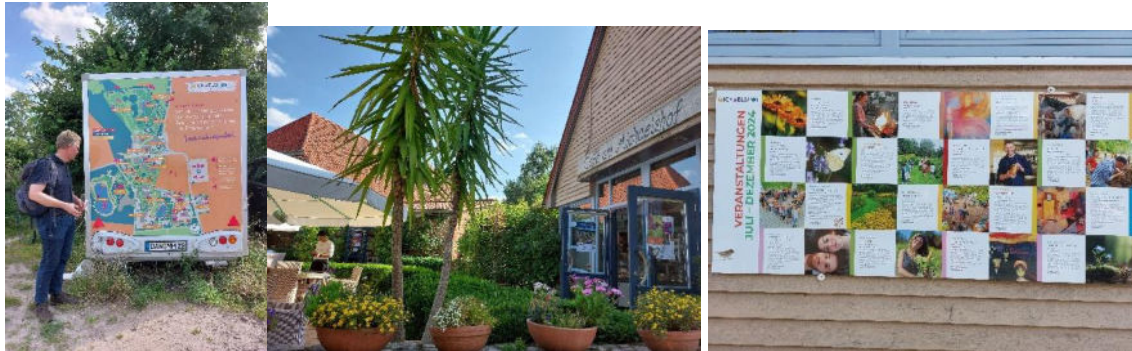


Fig 29a. Michaelsof Sammatz map, 29b. The Cafe, 29c. Activity calendar

e. Railroad bridge monument, Kaltenhof

Built in 1870-1873 for the Berlin-Hamburg railroad company and destroyed shortly before the end of the war in 1945. The railroad bridge has been listed as a cultural asset and memorial to the division of Germany since 1985. A Dutch millionaire bought the bridge ten years ago and plans to build a skywalk in the coming years. The viewing path will then provide a wide view of the Elbe foreland. Currently it is being renovated by various construction companies. The biosphere reserve is considering taking over this bridge future management as tourist destination.



Fig 30. Kaltenhof railroad bridge monument

**Day 25, 31 July 2024**

1. Explore Hitzacker and Schwerin City
2. [Discussion on EUDR](#) by Eva von Schoenebeck

90% of global deforestation is rooted in unsustainable agriculture especially oil palm, soy, cattle, cacao, coffee, natural rubber, wood, and some derived products such as leather, chocolate, tyres, or furniture. EU is major consumer of those commodities the associated with risk for deforestation and forest degradation. To minimise EU's contribution to deforestation and forest degradation worldwide, EU issued regulation on deforestation-free products which entered into force on 29 June 2023 and entry into application in December 2024 (20 June 2025 for small business. Through this regulation, there is mandatory due diligence rules for all operators placing relevant products on EU market or export them from EU. They come from land that wasn't deforested after 31 December 2020 and must also comply with the laws in the country where they were produced. For traceability, operator must collect information, documents, and data showing that the product is deforestation free and legal such as operator's name and address, HS code, country of production and geolocation coordinates, quantity, reference number of such as



due diligence statement. Operator must assess whether there is a risk the product does not comply with the rules (three risk categories), and if such a risk exists. EU will develop information system, benchmarking system, Q&A guideline, exchange platforms such as deforestation platform, Cap4Dev and Green Data Space while EU member states will develop national multistakeholder forum, national implementing law for the enforcement of the regulation, and national competent authority.

#### **Day 26, 1 August 2024**

Discussion with *Fachagentur Nachwach-sende Rohstoffe (FNR) e.v*, Agency for Renewable Resources by Dr. Birger Kerckow and Markus Kuhling

FNR e.v was established in 1993 as registered association with 82 members. It is located in Gulzow based on political decision that regional development is directed to east Germany after reunification. Its main services and competencies are:

1. coordination and management of projects on applied research and development in the fields of sustainable production and renewable resource use including CO<sub>2</sub> reduction, energy and substitution potential of forests and wood, forest sustainability, peatland protection, sustainable procurement, and adaptation of German forests to climate change. FNR funds and supervises about 400 projects per year on bioeconomy excluding general food production (bio-based economy) and on forest and climate fund such as MoniFun (harmonised European Forest Multifunctionality Monitoring System), EUFORE (European Forest Research and Innovation Ecosystem), INGUMA (reducing footprint of consumer products through public dialogue and innovative bio-based materials), etc.
2. stakeholder engagement/ public relation
3. communication and dissemination activities of renewable resources, bio-based products, and forest and wood to wide range of different target groups such as expert, industry, small and medium enterprise (SMEs), society, university, decision maker.
4. policy analysis and studies
5. international and EU activities in collaboration with German institution such as bioeconomic strategic working group, forest strategic working group, European Committee for Standardization (CEN), International Organization for Standardization (ISO), European Wood Policy Platform, and European Strategic Energy Technology Plan (SET Plan)

#### **Day 27, 2 August 2024**

Catch up with former professor in TU Dresden, Tharandt, Prof Jurgen Pretzsch, Dr. Eckhard Auch, and Dr. Carsten Schusser. The discussion was about MSc Program running under Chair of Tropical and International Forestry TU Dresden management now and topic of research related to climate, biodiversity, and value chain.

#### **Day 28, 3 August 2024**

Explore Dresden.

#### **Day 29, 4 August 2024**

Return to Indonesia from Berlin International Airport at 4.00 p.m.