Forests and Forestry in Hesse

Multipurpose Sustainable Forest Management - Commitment for Generations
FORESTS AND FORESTRY IN HESSE

Multipurpose Sustainable Forest Management – Responsibility for Generations
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<td>6  International Cooperation</td>
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<td>Edition Notice</td>
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The State of Hesse is located in the heart of Germany. 42 percent of the land is covered by forests. Far more than half of the forest landscape is formed by broadleaved tree species. Hesse is Germany’s predominant „beech country“. 31 percent of the forest area in Hesse is covered by endemic beech (Fagus sylvatica). The occurrence of this species in so large an area is unique in Europe. Therefore, it is a commitment and challenge for the State of Hesse to protect, utilize and further develop these forests.

The responsibility of Hesse for the ecosystem „beech forest“ resulted in establishing the National Park, Kellerwald-Edersee‘ in 2004. Together with four other German protected beech forest areas, the national park was selected in 2011 as World Heritage Site of UNESCO.

The establishment of these forests began more than 250 years ago, when the ideas of sustainability became the principle of forest management. These principles for action in forest management were formulated by the Hessian forester Georg Ludwig Hartig (1764 – 1837) who was most famous at his times. From then on, his ideas determined forest management and today, these principles are considered without constriction. Ecological, social and economic sustainability are equally important for us.

German national and local Hessian forest inventory and data of the Hessian forest inventory prove that the standing timber volume in the Hessian forests is continuously growing. The annual timber increment in Hessian forests is 9 million cbm while annual utilization amounts to 6 million cbm. Hence, increment exceeds clearly utilization.

Forests have an extraordinary significance for the carbon balance of the earth. More than 60 million tons of carbon are stored in the Hessian state forests alone. Annually these forests sequester more than 2 million tons of carbon from the atmosphere. This corresponds to 5 percent of the total annual emissions in our state.

Plant species and animals find valuable habitats in the diversely and rich structured forests which are established and managed following the „close to nature“ principles, rules and techniques. Measures for protection and development of the biological diversity are integrated into forest management.

What would our society be like if there were not the possibilities for recreation and leisure from the strain and requirements of every day work? Our forests are open to everyone and hence represent the bond between man and nature and offer recreation while walking or exercising other sports.

These forests - representing a commonly shared and economic value - are to be cared for, protected and developed sustainably in order to ensure that their multiple functions are fulfilled in parallel at the same time and on the entire area. For the benefit and welfare for present and future generations.

Mrs. Lucia Puttrich
Hessian State Minister for Environment, Energy, Agriculture and Consumer Protection
Wiesbaden, November 2012
1 Forests in Hesse

1.1 ‘Country of Forests’ Hesse

The State of Hesse is located in the heart of Germany and is one of the 16 states that form the Federal Republic of Germany. Hesse has an area of 21,100 km$^2$ and 6.0 million inhabitants. 42% of the State’s area is covered by forests. In comparison with the other German States, Hesse has the highest proportion of forests jointly with Rhineland-Palatine. More than 200 years ago, the idea of sustainable forest management was developed by the Hessian forester Georg Ludwig Hartig (1764 - 1837). Since then, the idea of sustainability determined forest management and the forests of today are the result of sustainable forest management, which spanned generations.

**Graphic I: Hesse**

- **Forest cover in Hesse**
  - green: State forests
  - yellow: Corporation forests of towns and cities
  - blue: Private forests

- **Land use in Hesse**
  - Forestry: 42%
  - Agriculture: 41%
  - Settlements: 7%
  - Traffic: 7%

- **Forests in Hesse**
  - Forest area: 894,806 ha

**Table I: Land use and forest cover in Hesse**
1.2 Forests in Hesse

Forests are home for a great variety of fauna and flora. At the same time, they are sources for raw materials, including energy purposes, workplaces and recreational space.

![Diagram I: Tree species in the hessian forest](image)

More than half of the forests are formed by broad-leaved tree species and beech (*Fagus sylvatica*) has a dominating role.

- bareland
- oak
- beech
- other broad-leaved species
- norway spruce
- douglas fir
- scots pine
- european larch

The proportion of forests in the Rhine-Main-Region is only 26%. However, this region accommodates 3 million people, half of the State's population. Proportions of more than 50% of forests are to be found in the Hessian uplands, i.e. Northern Hessian Slate Mountains, Weser Hills or in the southern rural areas of Spessart or Odenwald.

**Typical Beech forest (Fagus sylvatica)**

| Altitude: | 90 m - 950 m |
| Average Temperature: | 5 - 10 °C |
| Average temperature during vegetation period: | 12.5 - 17 °C |
| Precipitation: | 600 - 1.300 mm |
| Rock: | mostly sand stone, quartz rock, slate |
| Earth types: | mostly brown earth types |

**Table II: Ecological conditions for forests in Hesse**
2  Forest ownership

The State is the biggest forest owner with a proportion of 40%. Communal forests, i.e. forest in the ownership of towns and villages have a proportion of 35% (almost all of these territorial entities own forest), and 25% of the forests are privately owned.

<table>
<thead>
<tr>
<th>Forest type</th>
<th>Area (ha)</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State forest</td>
<td>342,526</td>
<td>40,0%</td>
</tr>
<tr>
<td>Other state owned forest</td>
<td>13,836</td>
<td></td>
</tr>
<tr>
<td>Total state owned forest</td>
<td>356,362</td>
<td></td>
</tr>
<tr>
<td>Forests of local authorities i.e. towns and cities</td>
<td>314,450</td>
<td>35,0%</td>
</tr>
<tr>
<td>Private forest</td>
<td>191,821</td>
<td>25,0%</td>
</tr>
<tr>
<td>Mutually owned private forest</td>
<td>32,173</td>
<td></td>
</tr>
<tr>
<td>Total private forest</td>
<td>223,994</td>
<td></td>
</tr>
<tr>
<td>Total forest area in Hesse</td>
<td>894,806</td>
<td>100,0%</td>
</tr>
<tr>
<td>Land area of Hesse</td>
<td>2,111,484</td>
<td>42,4%</td>
</tr>
<tr>
<td>Percentage of forests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In comparison</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total land area of Germany</td>
<td>35,694,700</td>
<td></td>
</tr>
<tr>
<td>Total forest area of Germany</td>
<td>11,075,799</td>
<td>31,0%</td>
</tr>
</tbody>
</table>

Table III: Forest ownership and percentage in hectares (2008)

The private forest ownership is multifaceted: 50% of the privately owned forests (some 100,000 ha) are owned by more than 60,000 individuals. The other half of the forests is owned by medium and large scale private companies, mostly with own forest management structures and personnel.

Private and communal forests are supported by public promotion programs in order to facilitate orderly management and investments for safeguarding the multiple functions of the forests for society and environment.

Diagram II: Private Forest Ownership in Hesse

(²: SFE = State Forest Enterprise HESSEN FORST, see chapter 4)
3 **Hessian State Forest Act**
**Basis for Sustainable Forest Management and Nature Conservation in Hesse**

Objectives and principles of forest policy and forest legislation are the basis for sustainability in forest management. So, the forest cover has to be maintained and extended, forest functions have to be strengthened and secured and orderly forest management needs to be promoted and controlled.

The legal basis is formed by:
- Federal Forest Act
- Hessian Forest Act and its subsequent regulations
- Nature Conservation Act
- State Planning Law
- Administrative Procedures Act
- Regulation on forest management promotion

Some important regulations from the Hessian State Forest Act (HForstG) are:
- **basic commitment for forest ownership** (§ 6):
  Forest owners have to manage their forests according to the principles of forestry and landscape management in a **sustainable, professional** way and according to plan for both the benefit of the society and maintaining functions of protection, production and recreation.

Characteristics of orderly forest management are in particular:
- Longevity and sustainability of forest production,
- Conservation of forest ecosystems as habitat of the diversity of fauna and flora by maintaining healthy, stable and diversity forests,
- Avoidance of large clear cuts,
- Choice of site-adapted tree species and suitable forest reproductive material of high genetic variation,
- Site-adapted use of fertilizers for improvement of soil fertility,
- Abandonment of pesticides,
- Careful tending, utilization, regeneration and transport,
- Application of operational methods which protect stands and soil,
- Forest road infrastructure adapted to landscape, forest stands and soil,
- Measures against damage by game and development of a carrying capacity which is adapted to the sites and regeneration.

- **Forest management plans** (§ 9):
  State-, and communal owned forests have to be managed according to 10 years’ management plans.

- **Reforestation** (§ 10):
  destroyed forest stands and openings have to be reforested immediately.

- **Official permits** (§§ 12, 13):
  Forest conversion and afforestation require official permits.

- **Right to enter forests** (§ 24):
  Everybody has the right to enter the forest for leisure and recreation. There are only some special areas which might be exempted. Bicycles, wheelchairs, horse-drawn coaches and horseback riding are allowed on all forest roads. Entering forest with motor driven vehicles for leisure and recreation is not allowed.

4 **State Forest Administration**

4.1 **Organization**

As regards to the sovereign functions, the Hessian State Forest Administration is a three-tier organization. Related to the management (economic) functions, it has a two-tier structure.

Highest Forest Authority is the Ministry of Environment, Energy, Agriculture and Consumer Protection. Tasks of the Higher Forest Authority are assumed by the three Provincial Governments. Lower Forest Authorities are the Forest Management Units of the State Forest Enterprise Hessen-Forst.

The foundation of HESSEN-FORST as a state enterprise (SFE) was the outcome of a long and extensive participatory planning process with the objective of reforming state administration in the sectors agriculture, forestry, nature conservation, landscaping and regional development. The reforms were targeting at stronger customer orientation and improved efficiency of public administration. HESSEN-FORST was enacted by law through the Hessian Parliament and came into existence in 2001.
State Forest Enterprise HESSEN-FORST

Office of Directors

Board of Directors

State Forest Enterprise HESSEN-FORST

- Department of Forestry and Nature Conservation
- Agriculture and Consumer Protection
- Ministry of Environment, Energy,
  and Consumer Protection

Heads of 21 District Authorities and 7 Lord Mayors

3 Provincial Governments

Each with 1 Department for forest-related affairs

Relational Forestry Department

Provincial Government

Forest Management Units (FMU)

Forest Management Board of Directors

Personnel, Organization, IT, Legal Affairs

Financial and Budgeting

Silviculture, Inventory, Production

Marketing, Forest Planning and Inventory

Engineering, Planning and Inventory

Forest

National Park

Tree Seed Center

Wildlife Center

Building Capacity Training and Education

Center for Forestry

Nursery

Wildlife Parks, Forest Museum, Arboretum

Info-Centers

National Park (NPA)

Northeast German Forest Research Institute (NW-FVA) (Joint Institute for the States of Hesse, Lower Saxony, Saxony-Anhalt, and Schleswig-Holstein)

Tree Seed Center

Wildlife Parks, Forest Museum, Arboretum

Info-Centers

National Park (NPA)

Northeast German Forest Research Institute (NW-FVA) (Joint Institute for the States of Hesse, Lower Saxony, Saxony-Anhalt, and Schleswig-Holstein)
4.2 Tasks

The Hessian Ministry of Environment, Energy, Agriculture and Consumer Protection is responsible for development and supervision of the forest and nature conservation legislation and the respective regulations.

The Provincial Governments are responsible for the enforcement of these regulations, supervision of regional and local authorities and regional development projects.

The Districts Authorities are responsible for the implementation of approval procedures for conversion and afforestation.

Hessen-Forst State Forest Enterprise (SFE) manages the Hessian state-owned forests, the National Park Kellerwald-Edersee and, on a contract basis also forest owned by towns, cities and private individuals. In close cooperation with the local governments of towns and villages, the enterprise assumes sovereign functions, for instance in regional development procedures related to deforestation and/or afforestation.

The SFE has a country-wide field structure and works close to the citizens according to the principle of “integrated sovereignty”. That means, apart from forest management and other services, the forest management units fulfil tasks deriving from legal regulations (encouragement, supervision and control). The 41 Forest Management Units (FMU) cover the entire State area. This guarantees persons competent in nature and forest management nearby citizens, local authorities and other customers. This “territorial principle” is an important requirement for nature-oriented silviculture. The average FMU manages 18,000-20,000 ha with 10-12 forest engineer districts.

Example of spatial organization of Hessen-Forst
The core tasks of Hessen-Forst are as follows: sustainable management of the state forest of Hesse as well as the management of corporate and private forests on behalf of their owners (management is done in accordance to the Agenda 21, the forest principles of UNCED in Rio 1992, the Ministerial Conference on Protection of Forests in Europe (Helsinki 1993, resolution H1), the Agenda 2000 of the European Commission, the National Forest Programme for Germany and the Forest Act of Hesse. Adherence to these principles is guaranteed by the highly qualified personnel of Hessen-Forst):

- Sustainable management of the state forest (342.000 ha) according to economic principles under special consideration of public benefit and interests,
- Advice, support and management of forests of towns and cities (286.000 ha) and (mostly small-scale) private forests (106.000 ha) according to legal and contractual basis.
- Management of the National Park Kellerwald-Edersee (5.700 ha).
- Inventory and mid-term planning for the state and forests of towns and cities.
- Research and studies on ecology, forest growth, site conditions, conservation of genetic resources, health control of forests, landscape conservation and environmental control.
- Real estate management.
- Training and capacity building for all personnel, environmental education and public relations work shall increase the awareness of citizens on the natural sources of livelihood and relatedness of people with nature.
- Fulfilment of tasks, assigned to the SFE by law and implementation of law to protect the forest for public benefit (sovereign tasks).
- Nature Data management.

All state-owned forest is transferred as economic property to the SFE and has to be managed according to economic principles under special consideration of the public benefit functions. Moreover, the Hessian Forest Act entrusts Hessen-Forst with the management of the forests of towns and cities and private forests, if requested by the owners and respective contracts are concluded. 90 % of the local authorities (> 400 municipalities) have entrusted Hessen-Forst with the management of their forests (total of 314.000 ha). Furthermore the SFE manages about 50 % (106.000 ha) of the private-owned forests. In Hesse, there are more than 60.000 small-scale private forest owners. In order to overcome structural disadvantages and to enable sustainable forest management, the formation of private forest owners associations are encouraged and supported. The support of the small scale forest owners (mainly forest farmers) aims at increasing income of the farmers and improvement of living conditions in rural areas. The support of such associations is part of the legal obligations of Hessen-Forst. Overall, Hessen-Forst is in charge of 85 % of the forest area of Hesse.

5 Forest Management - Commitment for Generations

5.1 Multipurpose, Sustainable Forest Management

By law, all forest owners are obliged to manage their forests according to the principles of sustainable forest management, professional and according to plan and to consider the requirements of the society as well (public benefits of forests). The guidelines for forest management in State forests (2012) substantiate the objectives of the State as forest owner and pinpoint the necessity for a multifunctional forest management. In Hesse, the criteria of sustainability as declared by the Ministerial Conference for the protection of the Forests of Europe (MCPF) are implemented without restrictions.

Multipurpose forest management means:

Forest are managed in such way that all forest functions, i.e. economic/productive, ecological/protective, social and climate related functions, are fulfilled at the same time and place/forest stand.

The results of the national forest inventory of 2002 underline the existence of responsible and sustainable forest management in Hesse. The balance is positive. Standing timber volumes increased steadily despite the considerable forced utilizations of storm thrown timber and collateral damages.

Forest management aims at establishing close-to-nature forests with a high proportion of broad-leaved autochthonous species and evenly distributed age classes.
Sustainable forest management in Hesse

Development of the standing stock, average, increment and annual cut in the state forest of Hesse from 1960 - 2010

(342,986 ha = 40% forest area in Hesse)
The structure of the forest stands is an important factor for stability, health, diversity and capability for adaptation and development of the Hessian forests. Therefore, the selection of site-adapted tree species is an important element particularly with a view on climate change. Mixed species forests with a high proportion of broad-leaved tree species are characteristic for Hesse. Beech trees shape the Hessian forests.

During the last 20 years, the proportion of broad-leaved tree species increased by almost 10% to 56%.

![Bar chart showing the development of tree species distribution in Hesse between 1990 and 2008.](chart.png)

**Table V: Development of tree species distribution in Hesse between 1990 and 2008 in %**

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total broadleaved species</td>
<td>47</td>
<td>56</td>
</tr>
<tr>
<td>Oak</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Beech</td>
<td>35</td>
<td>43</td>
</tr>
<tr>
<td>Norway spruce</td>
<td>32</td>
<td>28</td>
</tr>
<tr>
<td>Scots Pine</td>
<td>21</td>
<td>16</td>
</tr>
</tbody>
</table>

![Bar chart showing area and age of conifers and broad-leaved species.](chart2.png)

**Table VI: Area and age of conifers and broad-leaved species**
5.2 Forests and Nature Conservation

Europe is the only place in the world where red beech (*Fagus silvatica*) groves grow, and Hesse is Buchonia, the land of the beeches.

Beech trees (German “Buche”) can be found in all parts of Hesse except the Hessian Reedy Marsh. The species characterizes most of the Hessian forest associations, hence the proportion of 31%, which is the highest in Germany. The term “Buchonia” which can be found in historic maps testifies the dominant role of the species since living memory.

In the European context, the occurrence of beech of this size attributes a special responsibility for its conservation to the State of Hesse. This responsibility is accommodated by

- In 2004, the first Hessian national park “Kellerwald - Edersee” was established covering an area of 5700 ha with a very high percentage of age-old beech trees. On 4700 ha, the largest coherent complex of Luzulo-Fagetum beech grove in Central Europe is evolving without human interference. 77 bird (of which 36 are endangered), 17 bat, 2800 insect (822 butterfly) species, more than 560 fern, and flowering plants, 604 fungi and 280 lichen species occur in the Park.

- Vast areas of beech forests are declared protected area according to the European Flora-Fauna-Habitat network directive (FFH) in the framework of the NATURA 2000 concept. In total, 10% of the State territory are declared sites of common interest (SCI) and are special protected areas (SPA) according the European bird directive (14,7% bird protection area). Because of overlappings, the total area within these programs covers 21% of the area of Hesse.

- 43% of the State forest is part of NATURA 2000 areas.

- Since more than 25 years, a program to protect “islands” of old trees as the habitat for numerous bird and insect species (more than 1000 objects) is established.

- A research program is established for 31 nature reserves with an area of over 1200 ha hosting rare and endangered species. The purpose of this program is to give evidence for the close-to-nature management of forests.

- Parts of the National Park, together with four protected other beech regions in Germany have been declared as World Nature Heritage Sites by UNESCO.

- 20.000 ha or 6% of the state forest, are set aside exclusively for reasons of nature protection, no operations take place there.
5.3 Forests as Source for Raw Material

The most important product from Hessian forests is timber. Timber is used in the construction sector, furniture industries, saw mills, wood-based material industries, paper and packaging material industries and in handcraft.

The annual increment in Hessian forests is about 9 million m³ whereas approximately 6 million m³ per year are cut. The average standing volume per ha is as high as 320 m³ (according to the national forest inventory of 2002).

Forest owners earn the biggest part of their forest related income from timber sales. After a long period of timber price increases until 1980, their further development until today has been influenced greatly by calamities, mainly storms (1984, 1990, 1999/2000, and 2007). Considering inflation, the trend has been negative. The volume of timber from Hessian forests which is available for the markets increased from 3 million cbm in the 1970s to 6 million cbm today.

Table VII: Timber sales revenues in the Hessian State forests until 2011

(includes forwarding money and VAT; does not include sales of standing stock)
Forest Inventory and Planning

The Institute for Forest Inventory and Planning of Hessen-Forst provides mid-term planning as an important steering element for sustainable management of state forests and those of other forest owners, which are under management contract with the enterprise. Moreover, inventory and planning is the basis for controlling.

The key tasks of the institute are:

- Development of mid-term plans for the forest management units according to the Hessian Guidelines for Inventory and Planning (HAFEA)
- Mapping of sites and safeguarding forest function
- Concepts for and implementation of random sample inventories
- Availing data for controlling
- Advising forest owners on forest management planning
- Compilation of forest valuation expertise and forest ecological proofing of evidence

5.5 Forests and Recreation

Forests in Hesse play an important role for the recreation of the citizens. Especially in the conurbation of the Rhine-Main-Region, forests offer recreational space. By forest law, everyone has the right to enter forests freely by foot, horse and bicycle. Moreover, forests have a regulatory function for big and polluted cities as regards to air circulation and regeneration.

In Hesse, forests are an important element for tourism. Most of the 250 million visitors per year and 24 million overnight stays are related to landscape tourism. The annual turnover of the tourism industry in Hessen is approximately 10 billion Euro.

The importance of recreation is complied with the declaration of 40% of the State area as “Nature Park” and the corresponding infrastructure for recreational purposes, e.g. hiking, biking and horse riding trails, shelters, playgrounds, information boards, etc.

<table>
<thead>
<tr>
<th>Nature Parks</th>
<th>Forest in Nature Parks</th>
<th>928.000 ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>National Park</td>
<td>5.700 ha</td>
</tr>
<tr>
<td>75</td>
<td>Recreational forests</td>
<td>23.000 ha</td>
</tr>
<tr>
<td></td>
<td>Forest with function of Recreation</td>
<td>332.000 ha</td>
</tr>
</tbody>
</table>

Table IX: Forests with recreational functions
5.6 Forest Pedagogic Activities

At present in an industrial country like Germany, many people alienated from nature won’t succeed approaching the forest as a place of education by themselves. Demanding forest and nature experience and interpretation of natural processes, they address themselves increasingly to foresters. The coherent answer of the foresters and their partners concerning this demand is “forest pedagogic”.

Forest pedagogic is forest-related environmental education. It covers all learning processes concerning forests as a habitat including all its components and functions. The classes, demonstrations and practical experiences enable the ‘students’ - both children, youth and adults to think and act long-term, holistically and committed to the public benefit - therefore also responsibly as well as future-oriented.

With its central messages “sustainability”, “forest-economics”, “biodiversity”, “health” and others, forest pedagogic supports the development of attentiveness towards nature, sympathy toward other people and sense of responsibility.

Therefore, forest pedagogic meets the requirements for an education for sustainable development at the example of forests.

5.7 Forests and Wildlife

Hessian forests are home to five species of “big game”: red deer, roe deer, fallow deer, wild boar and mufllon sheep. Red deer and wild boar are native to German forests and are natural part of the ecosystem. Minor game species are hare, rabbit, red fox, other small predators and some bird species. Hunting is strictly regulated in order to regulate the carrying capacity and to maintain the forests’ biodiversity and productivity. There are more than 20,000 licensed and registered hunters in Hesse. In state forests, hunting is managed under the responsibility of Hessen-Forst’s forest management units.

In some forest regions of Hesse, venison is also a considerable economic factor.

However, most of the fauna is protected and part of the ecosystem management (see Forests and nature conservation).
5.8 Forests and Carbondioxid Sequestration

The Hessian State forest stored 62,3 million tons of carbon, of which 37,5 million tons (60 %) are to be found in the woody biomass. Every year these forests sequester more than 2 million tons of CO₂ from the atmosphere, of which

- 0,5 m tons by increment of the woody biomass,
- 1,5 m tons by ways of material substitution and
- 0,13 m tons by substitution of fossil energy resources.

That corresponds to 5 % of the annual total emissions in the State of Hesse and to a technical investment of at least 150 million € annually and avoids economic collateral damages of approximately 680 million €.

5.9 Biological Diversity and Research

Biological diversity is the base for all livelihood development. Forest ecosystems contain most of the terrestrial biodiversity. In view of the current damages in and the threats to the forest ecosystem, efforts and initiatives to preserve the genetic diversity and thus the gene resources of our forest are necessary. The forests' genetic diversity is vitality for adaptation to the rapidly changing environment.

Measures to securing forest - biodiversity are integrated in the regular forest management activities (see also: Forests and nature conservation). Moreover "Concept for the Conservation and Sustainable Utilization of Forest Genetic Resources in the Federal Republic of Germany" and a related research program is being implemented with pro-active participation of the State of Hesse (represented by the Northwest German Forest Research Institute).

The Northwest German Forest Research Station was founded in 2006 as a Joint State Department for Hesse, Lower Saxony and Saxony-Anhalt. In 2011 Schleswig-Holstein joined. It is directed by a Steering Committee with equal representation from the participating states, comprising one representative from each of the State Ministries and State Forest Management Services. The Northwest German Forest Research Station is responsible for practical forest research and advising the different types of forest owners in the participating states for the benefit of the forest estate and its owners. In 2011 Schleswig-Holstein became the fourth member.

The Northwest German Forest Research Station is divided into four departments:

- The role of the Forest Growth Department is to analyse ecological processes in forests and to investigate the development of natural and managed forests in the long-term. The research aims to develop principles for multiple-use forest management. Furthermore guidelines are developed for the establishment, tending and utilization of forests, as well as for forest conservation.

- The task of the Forest Protection Department is to prevent forest damage through the development and implementation of concepts for integrated
forest protection. Particular emphasis is given to the environmental tolerance of forest protection measures. The concepts, developed through practical research, are accessible to all forest owners. More intensive consultation is conducted on location as required.

The Forest Genetic Resources department is concerned with the investigation, conservation and sustainable utilisation of forest genetic resources. On the basis of numerous comparative tests provenances are recommended for forestry seed and planting stock. The influence of forest management practices and the effect of environment on the genetic structure of forest stands are investigated.

The Environmental Control Department records and assesses ecological conditions and risks confronting forest ecosystems as a result of changing site and climatic conditions. It develops strategies and measures for the sustainable management of forests under these conditions. Therefore an advanced forest environmental monitoring system, an effective laboratory, and efficient data management and information transfer systems are essential.

6 INTERNATIONAL COOPERATION

Since 1960, the Hessian State Forest Administration has engaged in international cooperation projects. Hessen-Forst carries this tradition and experiences onwards. In 2004, international consulting services have been established as a field of business. Hessen-Forst experts combine the day-to-day practical forest management, forest administration and extension experience with that gained in international cooperation projects. Experts of Hessen-Forst have been active in more than 40 countries of the world. The development of the “green wall” in China, the forest organization in Indonesia, Korea and Paraguay, forest education and training in Brazil, Chile, Kenya, Korea and Laos, and among others, are closely related to the advisory services of Hessian foresters. Currently, the focus of activities is laid on Eastern Europe and (Central, East, Southeast) Asia.

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Edition Notice

Publisher

Hessian Ministry for Environment, Energy, Agriculture and Consumer Protection (HMUELV)
Mainzer Straße 80
D-65189 Wiesbaden / Germany

Editing

Department for Forestry and Nature Conservation

Title Photo

Hans-Peter Maier, HMUELV

Photos and Graphics

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ISBN
978-3-89274-348-4

Wiesbaden, November 2012