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Lecture to the slides at the Austrian Showcase in Nagano
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Importance of Bioenergy
for the Austrian Forestry

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Welcome and introduction

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Covering almost 50 percent of the national territory, forests are an important element of the Austrian landscape, economy as well as the local and regional culture. They provide the valuable raw material of wood and protect humans and infrastructures against natural hazards. They provide for clean air and clean water while at the same time they are capturing carbon and thus a major portion of the anthropogenic CO₂ emissions. Moreover, forests are among the most important areas of recreation for the whole population as well as tourists visiting our country. Together with the downstream sectors, Austria's forests offer secure jobs to over 300,000 persons and, according to most recent figures, generate a trade surplus of 3.41 billion euros.

Austria's 4 million hectares of forest land are managed by about 145,000 forest landowners who are following quite strictly the overall concept of sustainable forest management. Due to the prevailing conservative attitude of the landowners, the growing stock has increased by about one third since the very first Austrian Forest Inventory, performed in 1961/1970, thus amounting today to 1.100 million cubic metres.

Apart from the growing stock, the annual wood growth and the rate of tree fellings are also important factors in the assessment of the **sustainability of timber use** in Austria. Every year since the 1960s, the mean annual **growth in forests has exceeded the annual** consumption.

Furthermore, the share of **protected forests** is steadily rising in Austria. Almost 22% of the total forest area is now protected under nature conservation legislation.

In addition to the economic and environmental benefits that forests are providing in Austria, they also play an important role in the protection against natural hazards. This is especially true in areas with steep slopes, as forests act as a natural barrier against soil erosion by both wind and water, thereby also having the secondary effect of protecting settlements and infrastructure from hazards such as mudslides. Indeed, this is the main function of about 20% of the total national forest area.

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Austrian FOREST STRATEGY 2020

In line with the international policy dialog on forests, Austria is currently revising in a broad participatory process its forest strategy, thereby focusing particularly on the following issues:

- Contribution of Austrian forests to climate protection
- Ensuring health and vitality of the forests
- Enhancing the productivity of the forests
- Preserving the biodiversity in Austria's forests
- Strengthening of the protective functions of Austria's forests
- Raising further awareness for the social and economic aspects of forests
- Sharing responsibility for sustainable forest management at the internat. level

The Forest Strategy 2020 is intended to be an instrument which will help to meet present and future challenges in the best possible way and to ensure that the multi-functional services provided by forests will also be available for future generations.

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Since 1995 Austria is a member of the European Union. Consequently the policies and strategies elaborated by the European Union are providing the framework for the relevant national activities.

Three policy areas of the EU are in particular important for the renewable energy sector:

Energy Strategy 2030

EU countries have recently agreed on a new 2030 Framework for climate and energy, including EU-wide targets and policy objectives for the period between 2020 and 2030. These targets aim to help the EU achieving a more competitive, secure and sustainable energy system and to meet its long-term 2050 greenhouse gas reductions target.

The strategy sends a strong signal to the market, encouraging private investment in new pipelines, electricity networks, and low-carbon technology. The targets are based on a thorough economic analysis that measures how to achieve cost-effectively decarbonisation by 2050.

The cost of meeting the targets does not substantially differ from the price society will need to pay in any case to replace the ageing energy system. The main financial effect of decarbonisation will be to shift the spending away from fuel sources and towards low-carbon technologies.

The following **target(s) has/have** been agreed to be achieved by the year 2030

- a 40% cut in greenhouse gas emissions compared to 1990 levels
- at least a 27% share of renewable energy consumption
- at least 27% energy savings compared with the business-as-usual scenario.

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Rural development is a vitally important policy area in the **European Union**. It aims at improving aspects of the economic, environmental and social situation of the EU's rural areas. Rural regions cover 57% of the EU territory and 24% of the EU population. The Rural Development policy is targeting rural areas as a whole, with a focus on ensuring the competitiveness of farms and forestry, delivering sustainable management of natural resources and climate action as well as creating growth and jobs in rural areas.

EU Forest Strategy 2013

The **new Forest Strategy** is supporting the involved stakeholders in identifying the key principles needed to strengthen sustainable forest management and to improve competitiveness and job creation, in particular in rural areas, while ensuring forest protection and delivery of ecosystem services. The Strategy also specifies how the EU wishes to implement forest-related policies.

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- Bioenergy is energy that is extracted from biomass covering various energy forms such as heat, electrical energy, but also including fuels for internal combustion engines.
- Renewable raw materials are used as the main source of this form of energy.
- Wood is of greatest importance, but also agricultural products and organic residues from different sectors play an increasing role.

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- Renewable energies are energy carriers that are virtually inexhaustible or are relatively rapidly renewed in the context of human time horizons. Thus, they delimit themselves from fossil-based forms of energy.

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At a first glance, the Austrian performance in the energy sector looks quite promising: In the year 2015, about 33% of the final gross energy consumption was provided by renewable energy sources.

Among the EU member states only Latvia, Finland and Sweden had higher shares regarding the use of renewable energy.

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In the year 2015 the total gross domestic consumption of energy amounted to 1409 PJ, 31% of that energy is provided by oil, 29% by renewable energies, with a decreasing trend for the first source and a steadily increasing one for renewable energies.

With a share of 13%, energy produced from wood has already reached a significant level

In this context I would like to highlight that about 70% of the electricity consumed in Austria is already provided by renewable energy sources.

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As at present, more than 670 run-of-river power plants and some 1,800 small-scale hydropower stations are in operation in Austria, therefore hydro energy is ranking very high in public perception. However, hydro energy has already been outnumbered considerably by the energy from renewable sources reaching nearly twice the share of the aforementioned source.

In the meanwhile wood has become the most important individual source of renewable energy with a share of 41%.

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Regarding bioenergy, wood is, with a share of 75%, by far the most important source. The two most important forms are firewood with a share of 24% and wood by-products from industrial processes with a share of 34%.

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However, to achieve the challenging target of a share of 34% of renewable energies as set by the European Union for the year 2020, a further substantial promotion of bioenergy is required.

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This slide shows for the year 2014 the complex flow of wood

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In the year 2014 approx. 24 million m³ of wood were used for energy production

One half of this quantity (11.8 million m³ or 49.8%) stems directly from forests, the other half (12.2 million m³ or 50.8%) derives from wood processing

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Over the last two decades the demand for energy wood has increased considerably, in particular due to the rapidly growing use of the co-generation technology (simultaneous generation of electrical energy and heat) as well as increasing investments in decentralized heating stations as the course of the two lower section of the individual columns is indicating.

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Additional potential for Harvesting

In the year 2008 a study on "Wood and Biomass Supply in Austria" (HOBi) was finalized by the Federal Research and Training Center for Forests, Natural Hazards and Landscape (BFW) in close cooperation with the Viennese University of Natural Resources and Life Sciences (BOKU), the Austrian Agency for Health and Food Safety and BirdLife Austria

The objective of this study has been an assessment of the availability of biomass up to the year 2020 taking into consideration all aspects of sustainability as well as the following limitations:

Economical limitation: harvesting activities should be limited to areas where a positive coverage ratio can be expected

Ecological limitation: landowners are committed to a strict observance of all restrictions set by the legislation for forestry and nature conservation

Regarding the nutrient sustainability: an adequate level of nutrients has to be preserved over the whole rotation period

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Building on the calculations and results for the preceding periods the Austrian forestry will be able to provide the required quantities of wood for the production of energy, amounting to approx. 30 million m³, however major efforts have to be made to mobilize the existing reserves.

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A main objective of the Austrian forest policy is to ensure a sustainable use of the renewable resource wood in line with the market requirements

The financial means provided by the European Agricultural Fund for Rural Development (EAFRD) are an important incentive

The major part of the provided financial means is used for measures aiming at the "mobilization of wood" - about 20 million € per year

These measures are including, inter alia:

- Improving the logistics chain and the necessary infrastructure
- Purchasing of machines and equipment
- Preparation of forest-related operational plans
- Promoting the forming of associations of small-scale forest landowners providing guidance for improving forest management and marketing of timber

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Importance of bioenergy for forestry (1)

The use of wood for the production of bioenergy is contributing to the generation of additional revenues for forest landowners

- By creating of a market for previously unsaleable forest assortments (eg wood from tree crowns)
- Through the emerging of an additional clientele for specific assortments (eg industrial wood), where forest landowners previously faced a monopolistic situation
- By increasing the total amount of harvested wood (also wood for material purposes) as well as generation of additional revenues by creating new assortments, opening of new markets and broadening of existing ones
- Trough broadening the operational concept by opening up to new sources of revenues (forester as energy farmer)

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The use of wood for the production of bioenergy is also influencing positively the development of forests

- By strengthening the stability and vitality of forest stands, as due to better economic opportunities, costly thinning operations can be carried out at an earlier stage (current "thinning reserves" amount, according to the Austrian Forest Inventory (AFI), to about 80 million m³)
- Simultaneously, the reduction of the thinning reserves is contributing to an increase of the economic value of the remaining stands
- Reduction of areas of over-aged, unstable stands and rejuvenation of these areas (according to AFI, forest stands with a total stock of 77 million m³ are over 140 years old)
- Promotion of the planting of hardwood and mixed forests emulating more closely the original forest cover

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Limits regarding an additional harvesting of timber are given by

- A strict observance of the criteria for sustainable forest management, in particular:
- Minimizing the removal of nutrients - no new "use of litter"
- Protection of the soil – by limiting the axle load of heavy harvesting machines to a level suitable for the given site conditions
- Promotion of a cascading sequence regarding the use of timber:
- Optimizing the use of wood by aiming at achieving highest added value (while respecting free ownership decision regarding the sale of wood)
- Further enhancing the avoidance of wasting of wood – after a primary use a comprehensive recovery of wood for the production of energy should be envisaged
- Actively searching for new economic opportunities (forester as energy farmer)

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Thank you for your attention

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