

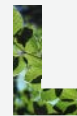


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IMPORTANCE OF BIOENERGY FOR THE AUSTRIAN FORESTRY

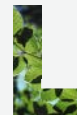
KEY FIGURES OF AUSTRIAN FORESTRY



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- ~ 50% of the national area is covered by forests (Europe: 37%)
- Wood stock: 1,135 million cubic meter, continuous increase
- ~ 75% of the annual increase is used
- Premises: sustainability and multifunctionality
- ~ 82% of the forest area is private property, 18% is owned by the state
- ~ 300,000 people receive an income from the use of wood, 10% of Austrian workforce is employed in the forest and forest industry sector
- ~ 172,000 enterprises - annual production value: ~ 12 billion €
- Foreign trade surplus (forest-wood paper) 2015: 3.85 billion €

AUSTRIAN FOREST STRATEGY 2020



Main Objectives:

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

RELEVANT EU POLICIES (1)

2030 Energy Strategy

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 following targets have been set for 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.

RELEVANT EU POLICIES (2)

EU Rural Development Policy

The rural development policy of the EU 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 create growth and jobs in rural areas.

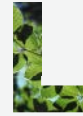
EU Forest Strategy 2013

The new Forest Strategy identifies 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.

DEFINITION BIOENERGY

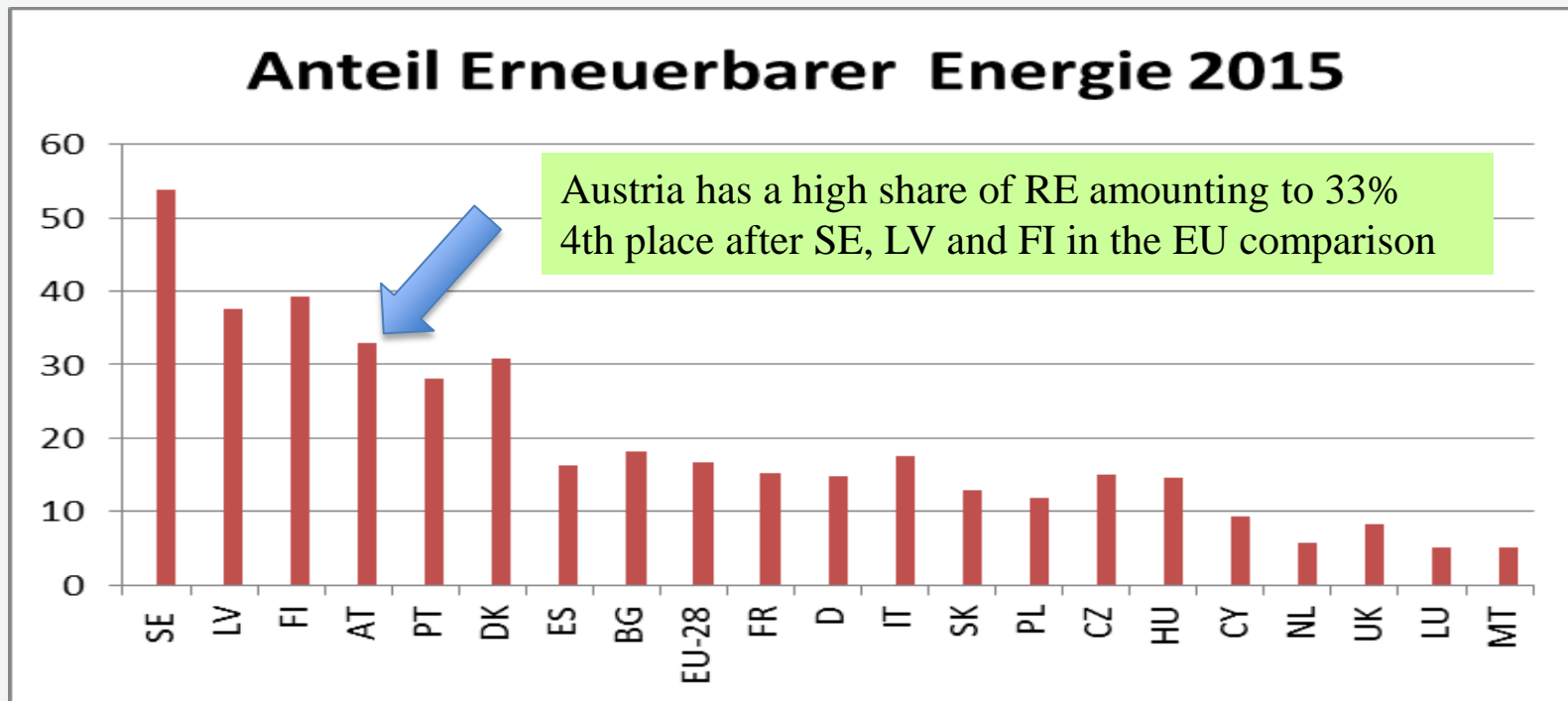
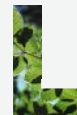
- Bioenergy is energy that is extracted from biomass covering various energy forms such as heat, electrical energy, but also including fuels for internal combustion engines
- Renewable raw materials are used as the main source of this form of energy
- Wood is of greatest importance, but also agricultural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

DEFINITION RENEWABLE ENERGY

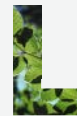


- Renewable energies are energy carriers that are virtually inexhaustible or are relatively rapidly renewed in the context of human time horizons. Thus, they delimit themselves from fossil-based forms of energy.

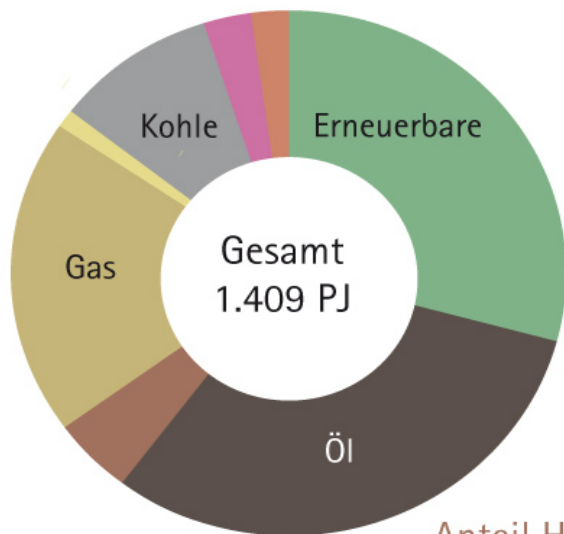
SHARE OF RENEWABLE ENERGIES 2015



TOTAL GROSS DOMESTIC CONSUMPTION OF ENERGY 2015



Bruttoinlandsverbrauch Energie 2015

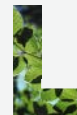


- 29,2 % Erneuerbare
- 31,3 % Öl
- 4,7 % Öl, nicht energetischer Verbrauch
- 19,5 % Gas
- 1,0 % Gas, nicht energetischer Verbrauch
- 9,6 % Kohle
- <0,1 % Kohle, nicht energetischer Verbrauch
- 2,6 % Elektrische Energie
- 2,2 % Abfälle nicht erneuerbar

Anteil Holz: 12,9 %

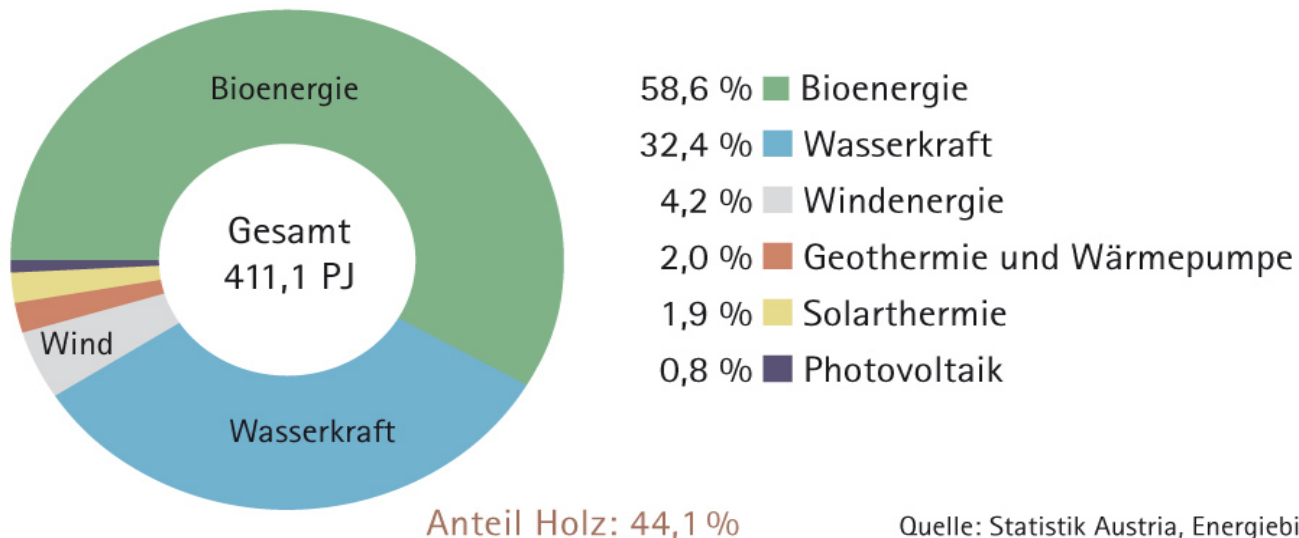
Quelle: Statistik Austria, Energiebilanzen 1970–2015

GROSS DOMESTIC CONSUMPTION RENEWABLE ENERGY 2015



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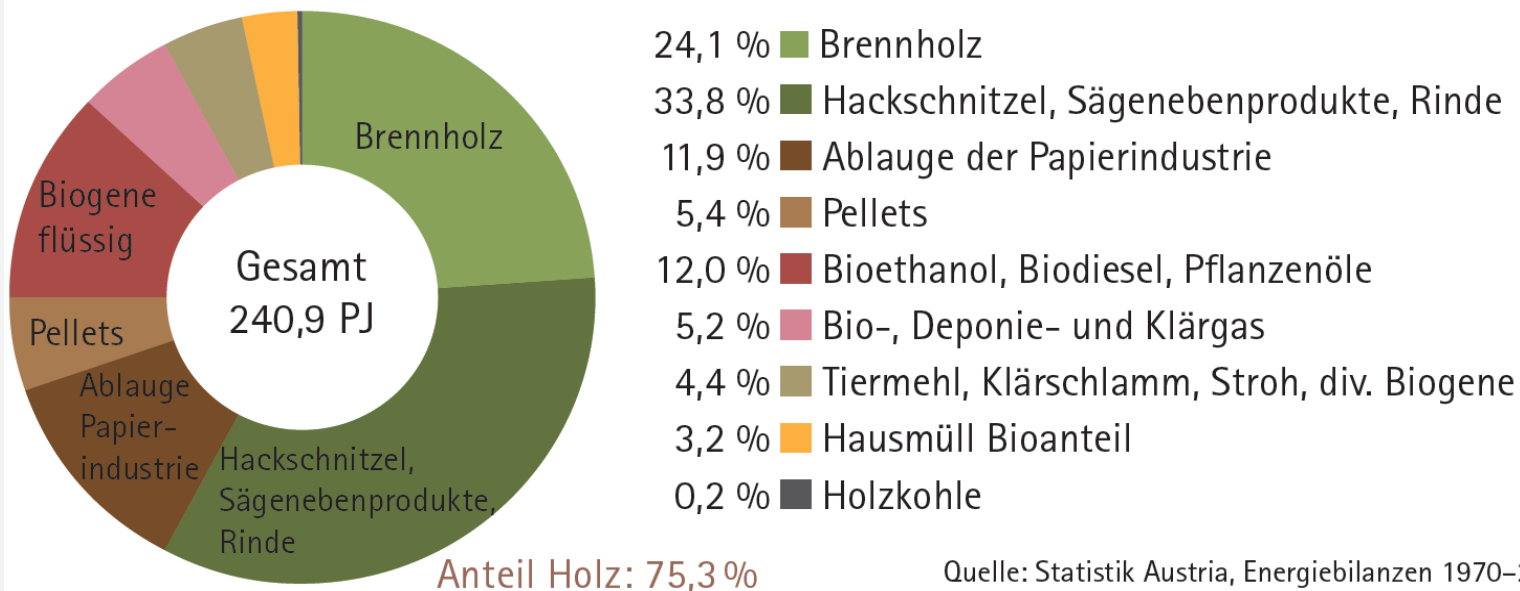
Bruttoinlandsverbrauch erneuerbare Energieträger 2015



Quelle: Statistik Austria, Energiebilanzen 1970–2015

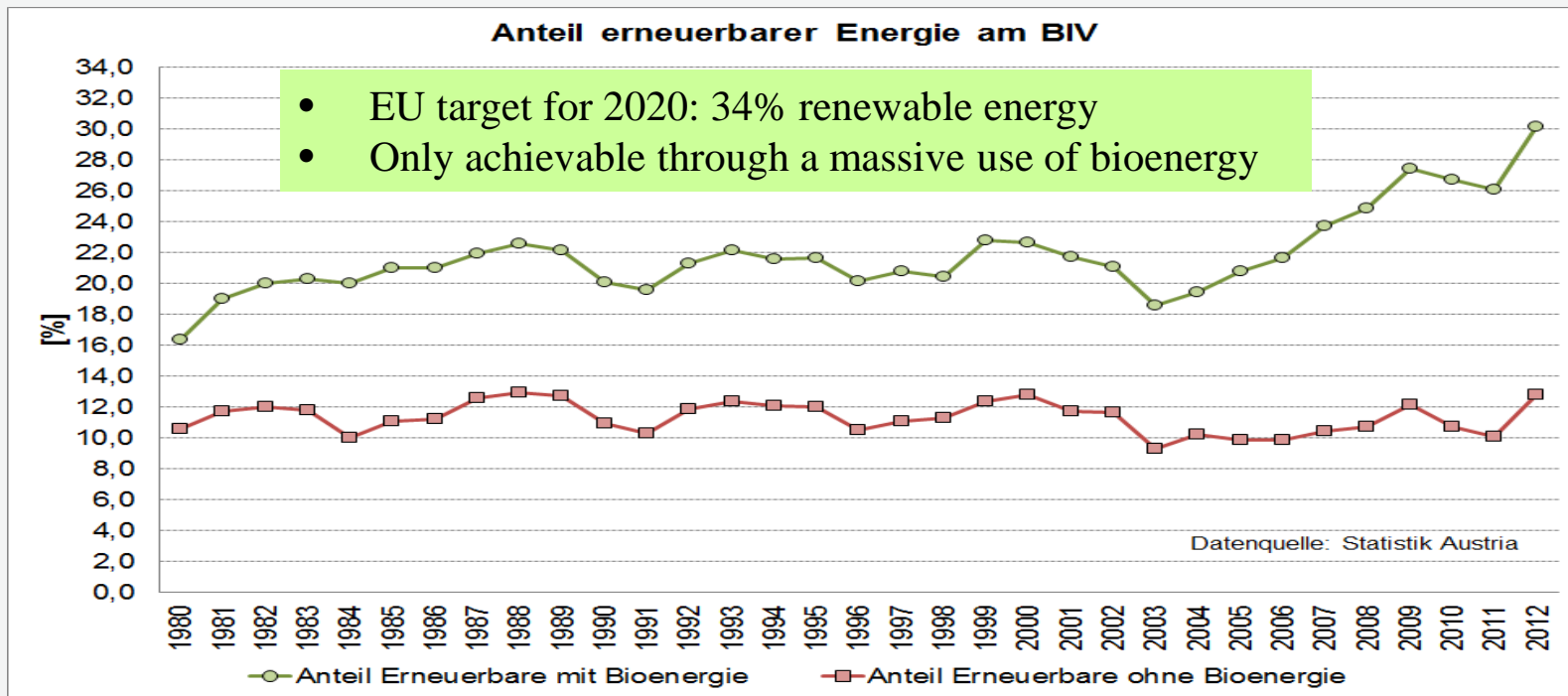
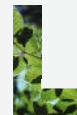
GROSS DOMESTIC CONSUMPTION BIOENERGY 2015

Bruttoinlandsverbrauch Bioenergie 2015

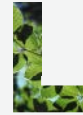


Quelle: Statistik Austria, Energiebilanzen 1970–2015

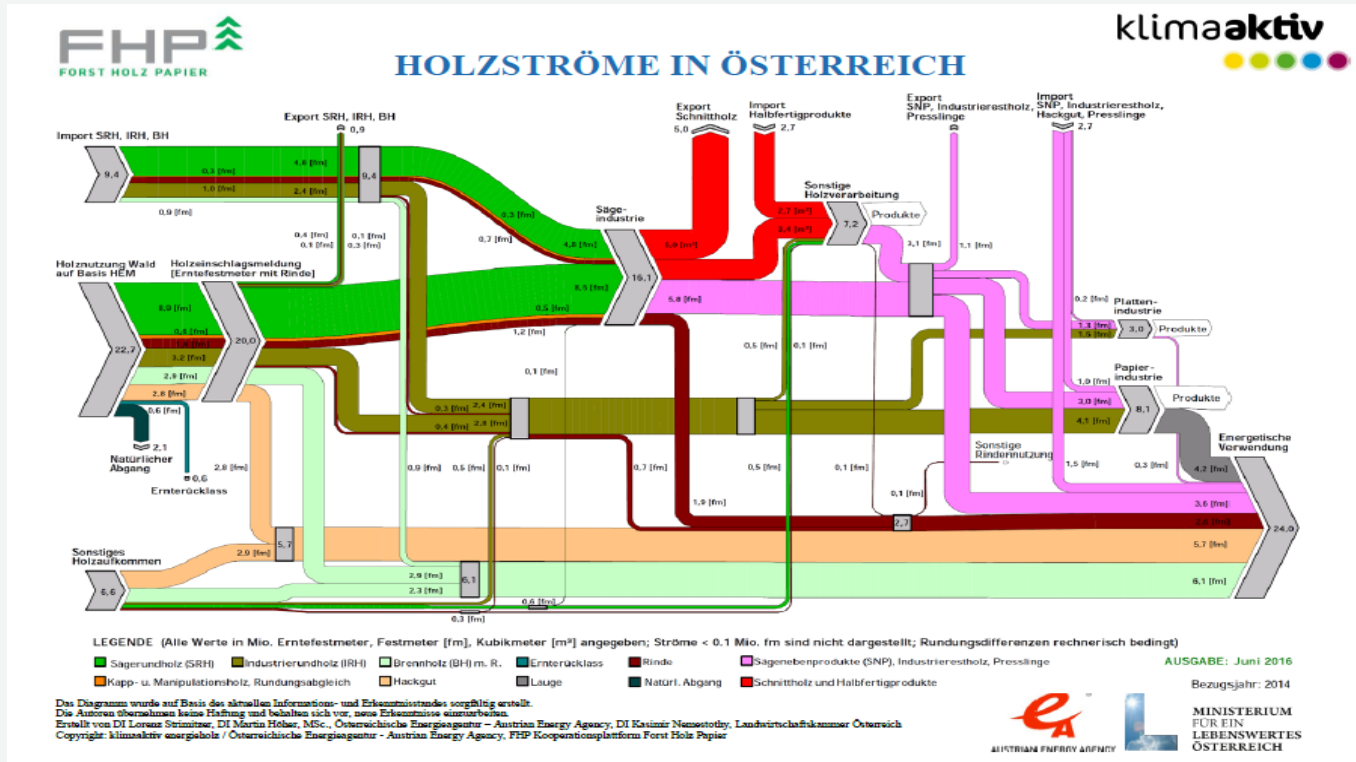
RENEWABLE ENERGY SHARE WITH / WITHOUT BIOENERGY



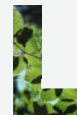
WOOD FLOW IN THE YEAR 2014



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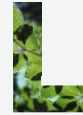


WOOD FLOW IN THE YEAR 2014

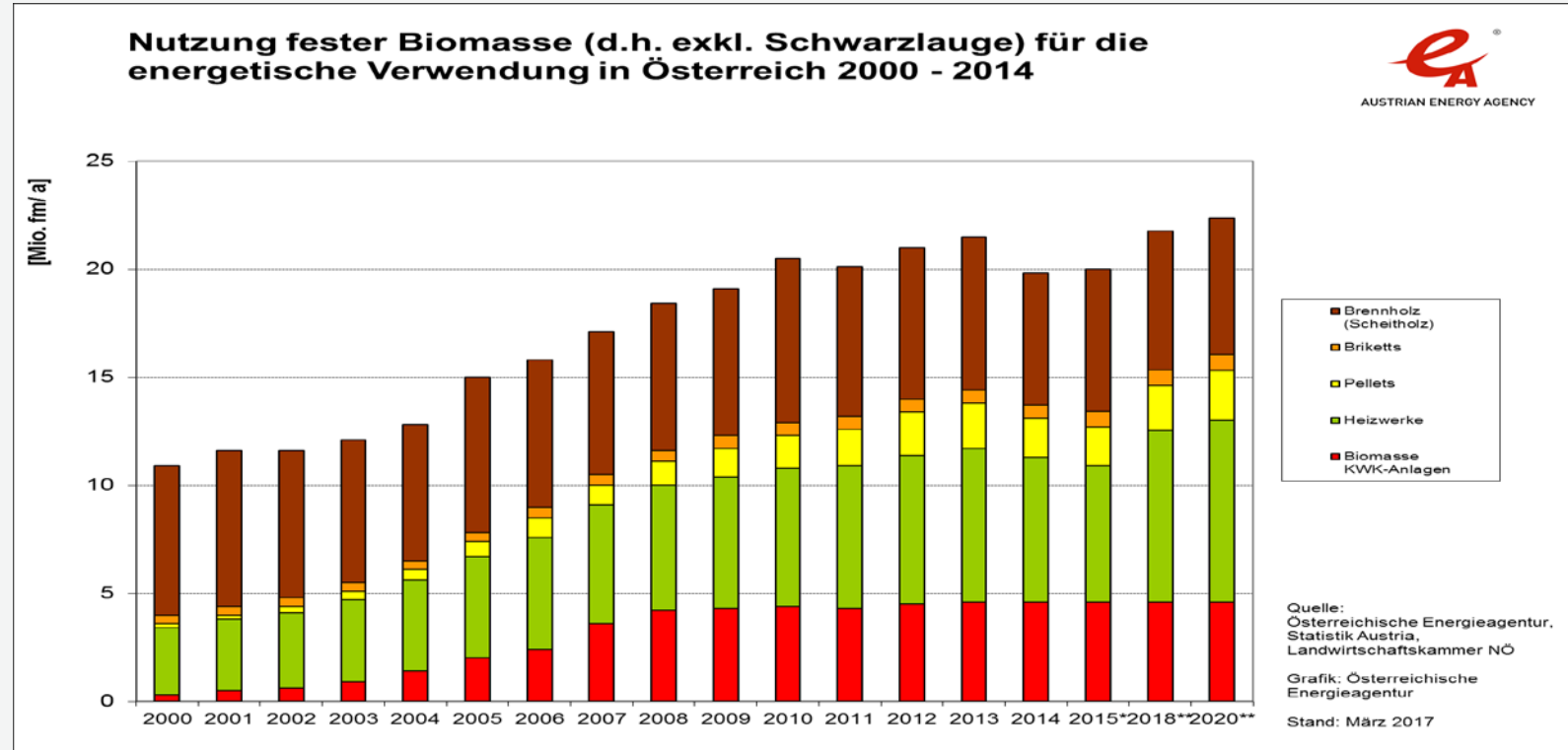


- In the year 2014 approx. 24 million m³ of wood were used for energy production (all sources of supply: wood from domestic forests, imports and other sources (such as woody plants, recovered wood, etc.))
- Stemming from the following sources:
 - 6.1 million m³ or 25.4% firewood
 - 5.7 million m³ or 23.8% wood chips
 - 5.4 million m³ or 22.5% sawmill by-products, industrial wood, pellets
 - 4.2 million m³ or 17.5% lye
 - 2.6 million m³ or 10.8% bark
- 11.8 million m³ or 49.8% of the wood used for energy production stem directly from forests, 12.2 million m³ or 50.8% derive from wood processing

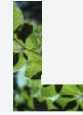
DEMAND FORECAST



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ADDITIONAL POTENTIAL FOR HARVESTING



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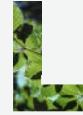
In the year 2008 a study on "Wood and Biomass Supply in Austria" (HOBİ) was finalized by the Federal Research and Training Center for Forests, Natural Hazards and Landscape (BFW) in close cooperation with the Viennese University of Natural Resources and Life Sciences (BOKU), the Austrian Agency for Health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

- Objectives:

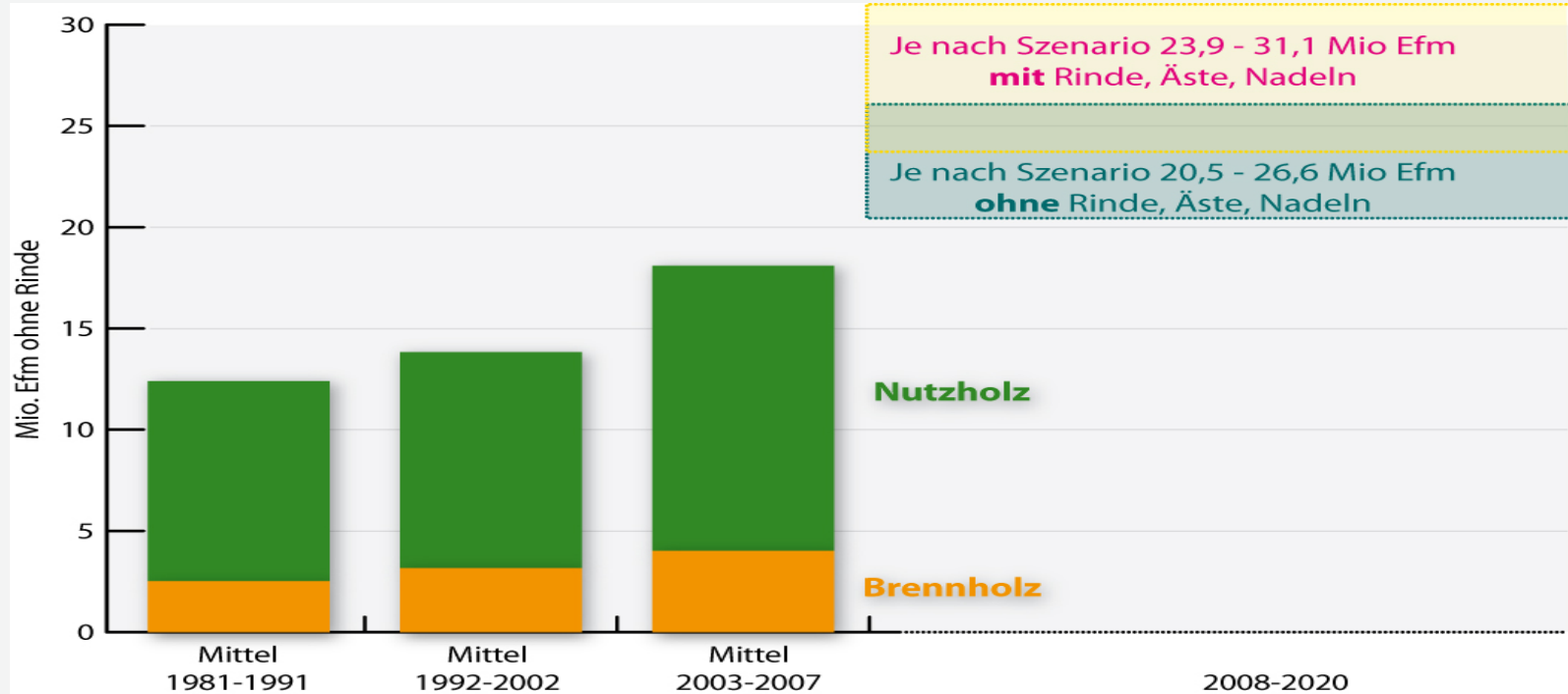
Assessment of the availability of biomass up to the year 2020 taking into consideration all aspects of sustainability

economically: harvesting should be limited to areas where a positive coverage ratio can be expected

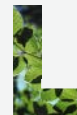
ecologically: strict observance of all restrictions set by the legislation for forestry and nature conservation, nutrient sustainability: preserving an adequate level of nutrients over the whole rotation period



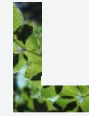
ADDITIONAL HARVESTING POTENTIAL FOR WOOD FROM FORESTS



MEASURES



- 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
 - Elaboration 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



IMPORTANCE OF BIOENERGY FOR FORESTRY (1)

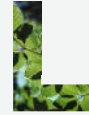
Generation of additional revenues for forest landowners

- ❖ Creating of a market for previously unsaleable forest assortments (eg wood from tree crowns)
- ❖ Emerging of an additional clientele for specific assortments (eg industrial wood), where forest landowners before faced only a monopolistic situation
- ❖ 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
- ❖ Broadening of the operational concept by opening up to new sources of revenues (forester as energy farmer)

IMPORTANCE OF BIOENERGY FOR FORESTRY (2)

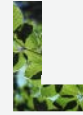
Positive effects on forests

- ❖ Strengthening of 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 (forest stands with a total stock of 77 million m³ are over 140 years old, acc. to AFI)
- ❖ Promotion of the planting of hardwood and mixed forests emulating more closely the original forest cover



LIMITS REGARDING THE ADDITIONAL HARVESTING OF TIMBER

- 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 the waste 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

DI MARTIN NÖBAUER

**FEDERAL MINISTRY OF AGRICULTURE, FORESTRY,
ENVIRONMENT AND WATERMANAGEMENT**

DIVISION III/2, FORESTRY EDUCATION, SUBSIDIES AND RESEARCH

MARXERGASSE 2,
1030 VIENNA, AUSTRIA

T +43 1 71100 607213, F +43 1 711007399
MARTIN.NOEBAUER@BMLFUW.GV.AT
BMLFUW.GV.AT