



Bioenergy: by-product and game changer

Bioenergy
can be
No. 1

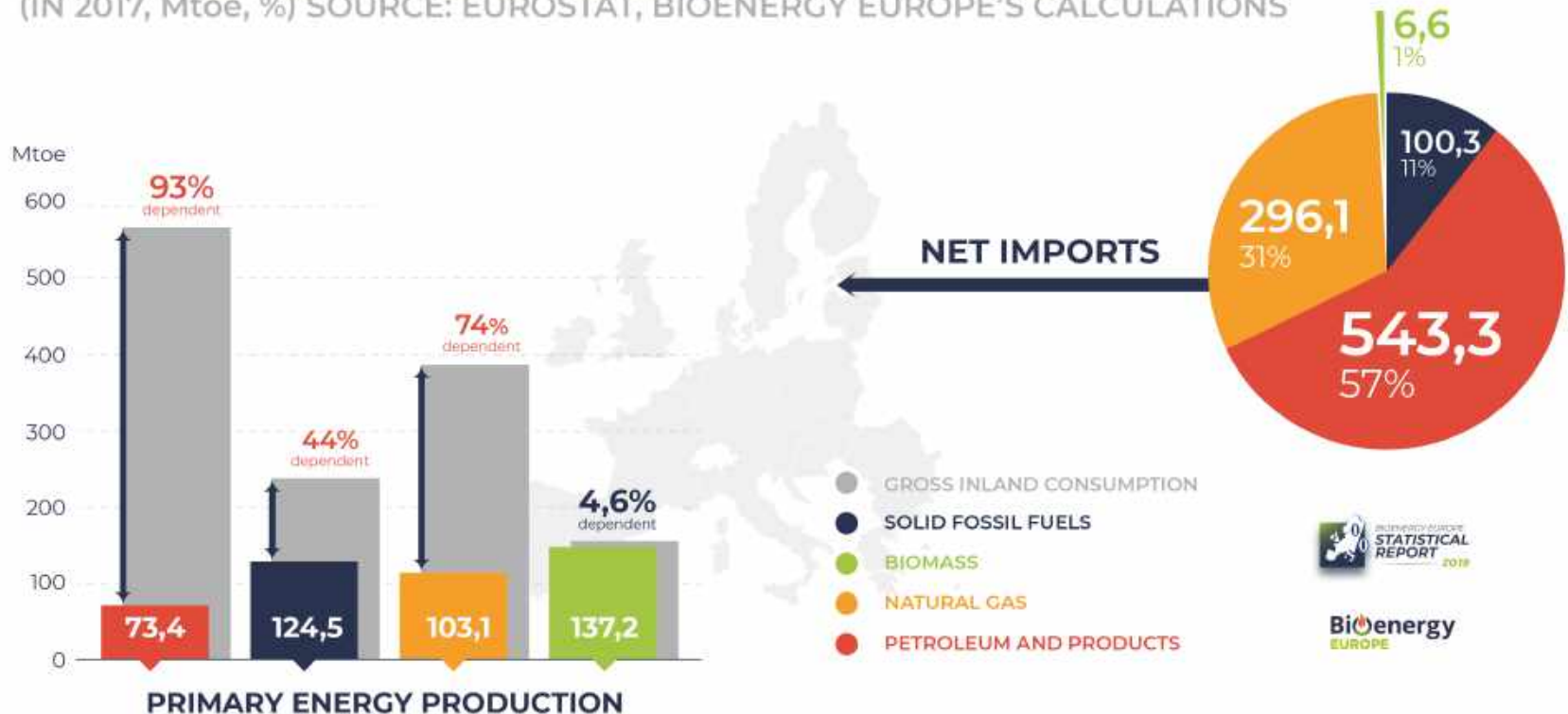
Bioenergy
is a
by-product

Bioenergy
creates
benefits



EU-28 ENERGY DEPENDENCY AND NET IMPORTS

(IN 2017, Mtoe, %) SOURCE: EUROSTAT, BIOENERGY EUROPE'S CALCULATIONS





Solution

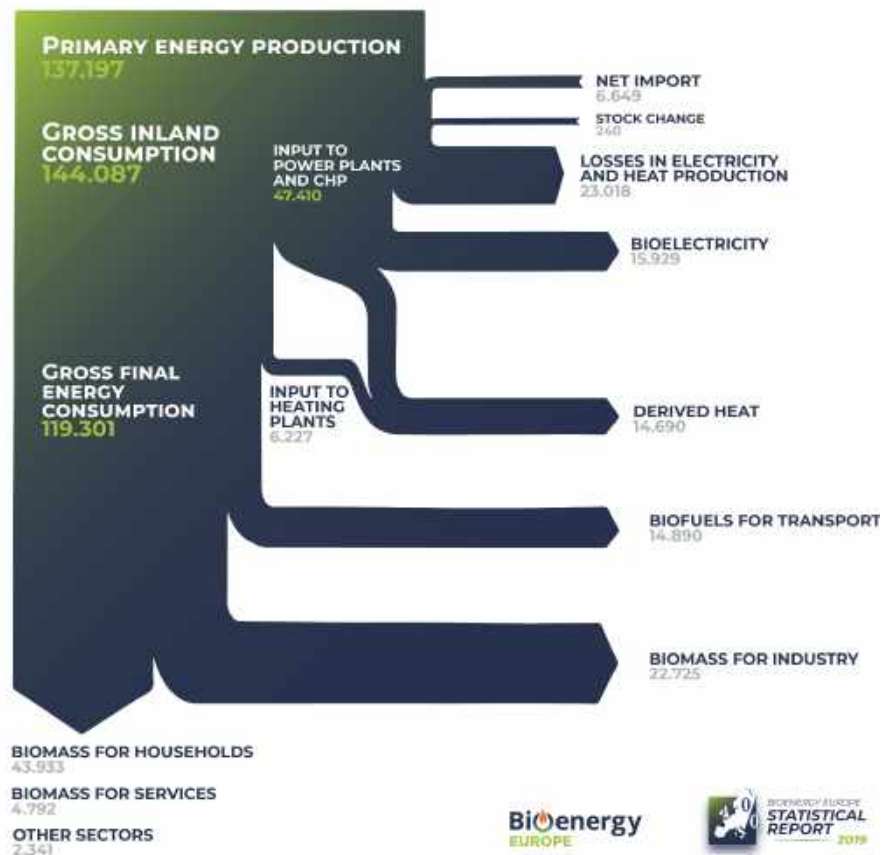


- 1 Kg of solid sun light (ATRO)
- 5 kWh for 0,225 €
- Home grown during 6 months on less then 1 m² sustainable managed forest
- >2 Kg CO₂, stored for two years
- replaces ½ liter of heating oil, ½ m³ of natural gas or 1 kg of coal
- replaces ¼ liter of diesel



BIOENERGY USE IN EU28 IN 2017

(ktoe) SOURCE: EUROSTAT, BIOENERGY EUROPE'S CALCULATIONS



GROSS INLAND ENERGY CONSUMPTION OF BIOMASS IN 2017 AND POTENTIAL IN 2050 FOR THE EU28 (Mtoe)

Source: BIOENERGY EUROPE, FAAIJ (2018)



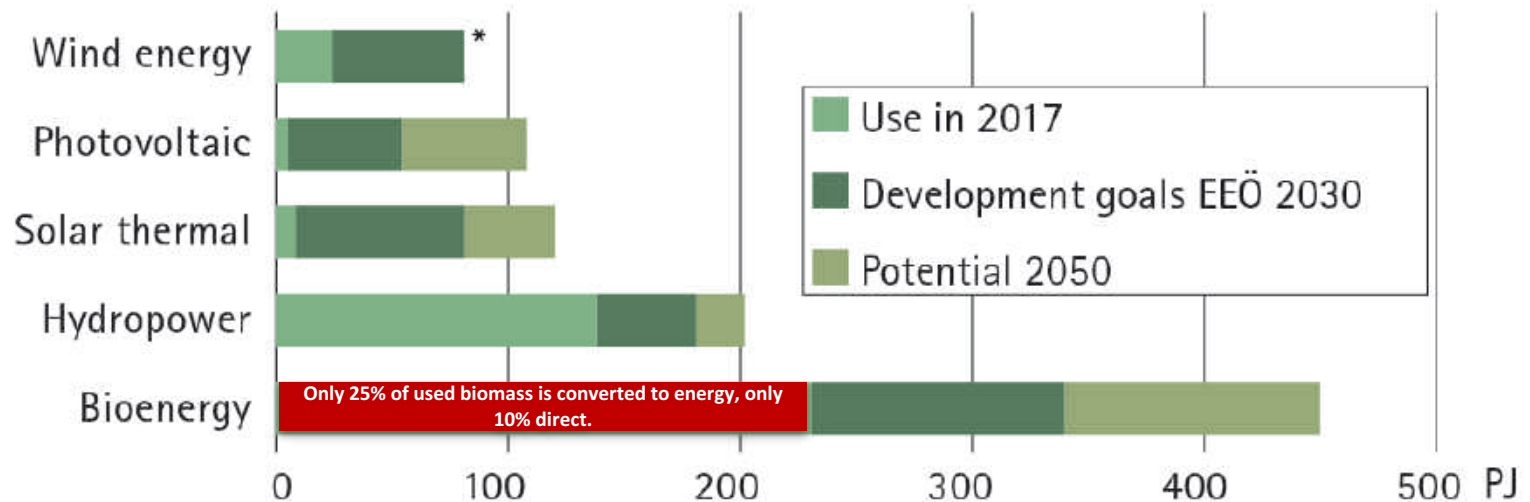
Primary Energy Use: 1,160 Mtoe



Bioenergy Potential: 400 Mtoe



Use of renewable energies and biogenic resources 2017, targets until 2030 und published potentials until 2050



Source: Energy production 2017: Statistics Austria, Energy balance 2017; Expansion goals according to renewable energy associations and EEÖ: Wind energy: IG Windkraft; PV: Technology roadmap for PV in Austria; Solar thermal: Roadmap solar heating 2020; Hydropower: energy self-sufficiency for Austria; Bioenergy: Sustainable energy supply for Austria and bioenergy 2030

Primary Energy Use: 1,400 PJ

Renewable Potential: 900 to 950 PJ

Left: 450 to 400 PJ



1/3 Energy efficiency

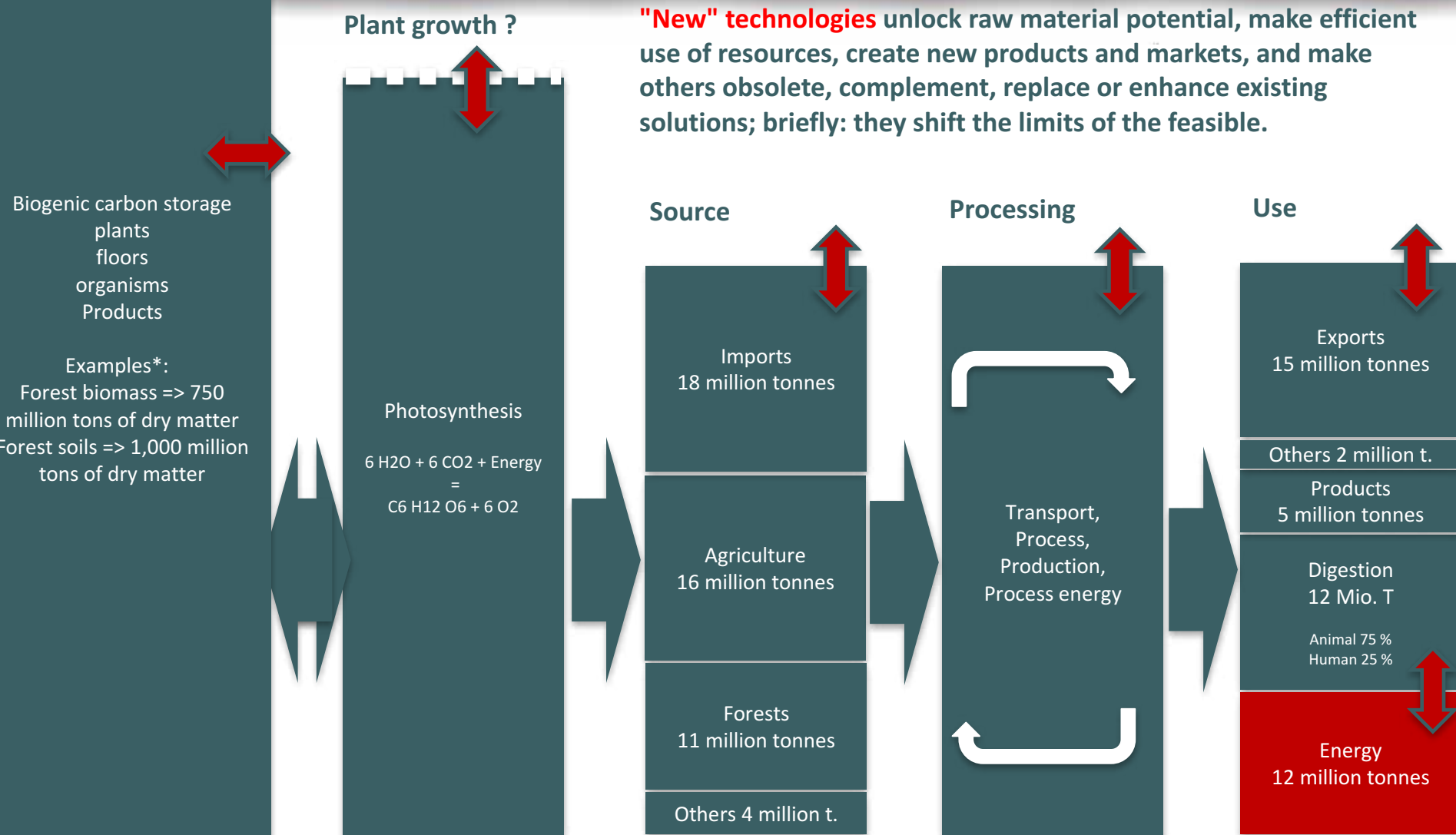
1/3 Renewables volatile

1/3 Renewables based on biomass

Biogenic carbon economy (bioeconomy) Austria

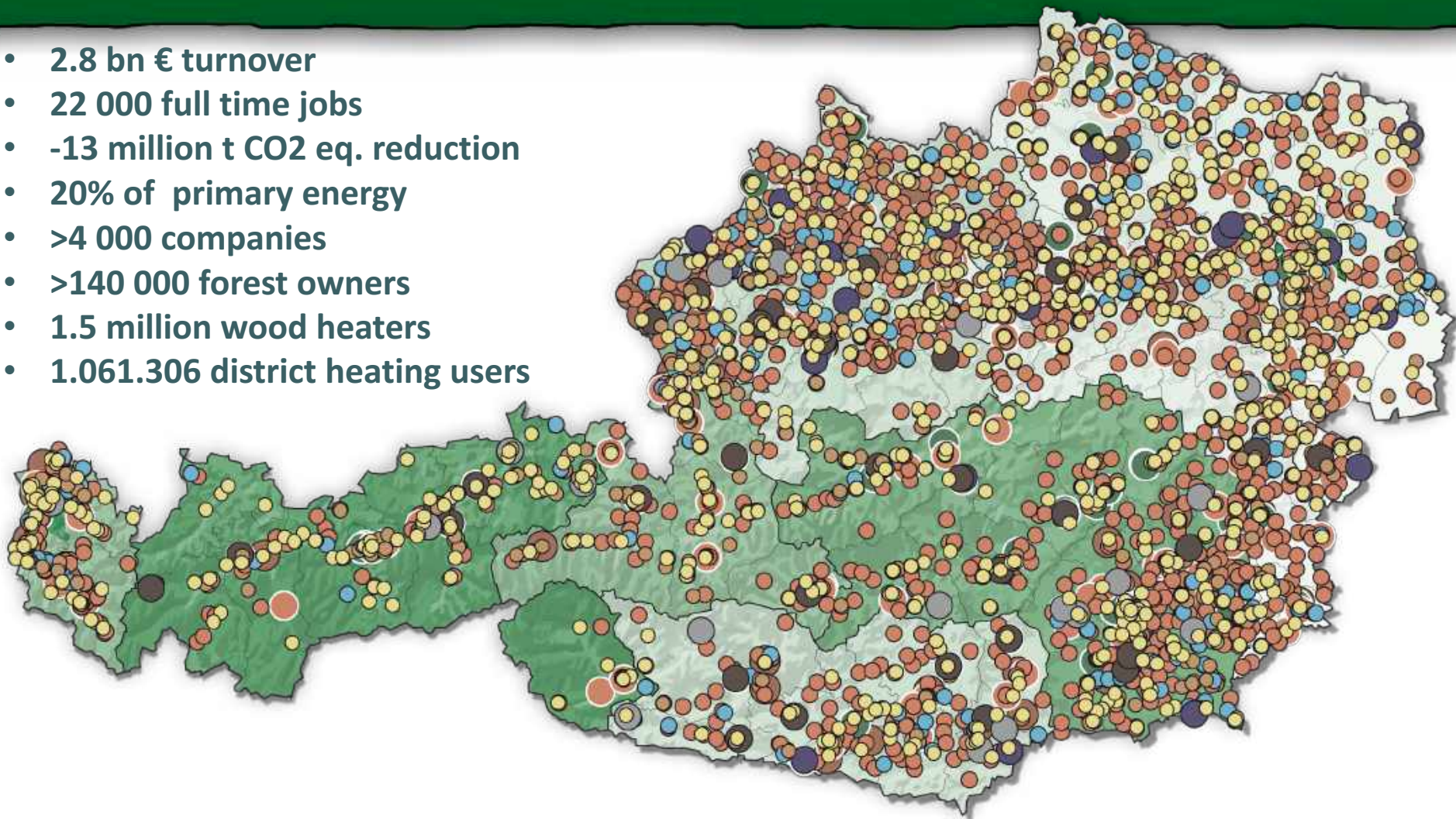
47 million tonnes of biomass

1 million t. dm = ca. 18.4 PJ or 5 TWh





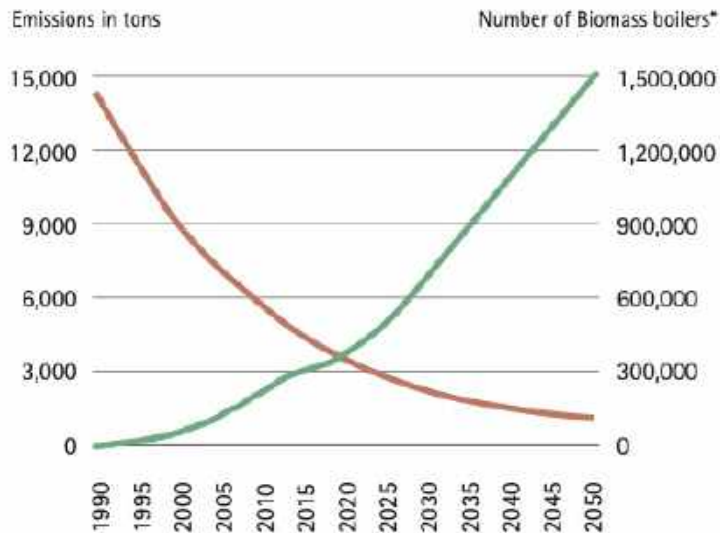
- 2.8 bn € turnover
- 22 000 full time jobs
- -13 million t CO₂ eq. reduction
- 20% of primary energy
- >4 000 companies
- >140 000 forest owners
- 1.5 million wood heaters
- 1.061.306 district heating users



- | | | | | |
|-----------------|------------|-----------------|--------------------|-------------------------|
| ● Plumbers | ● Biogas | ● Heating plant | ● Pellet producers | ● Research and teaching |
| ● Stove fitters | ● Biofuels | ● Wood gas CHP | ● CHP Generation | ● Components, planning |



Development of number of newly installed fuelwood, wood chips and pellets boilers and fine dust emissions of space heating



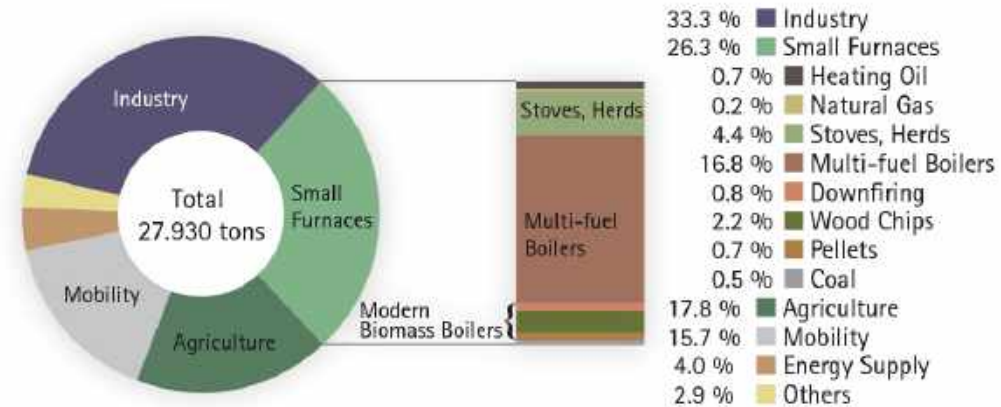
— Accumulated number of newly installed fuel wood, wood chips and pellet boilers

— Fine dust emissions PM 10 in space heating (Households, commerce, public buildings)

*accumulated growth of number of newly installed biomass boilers <100 kW

Source:
Biomass boilers: Biomass heating survey, LK NÖ, Future of heat 2050, TU Wien; Austria's annual air emission inventory 1990-2017, Environment Agency Austria, Fact sheet: fine dust emissions, BEST

Emissions of fine dust in Austria 2017



Source: Fact Sheet Fine Dust Emissions, current data and outlook for 2050, BEST

triple effect:

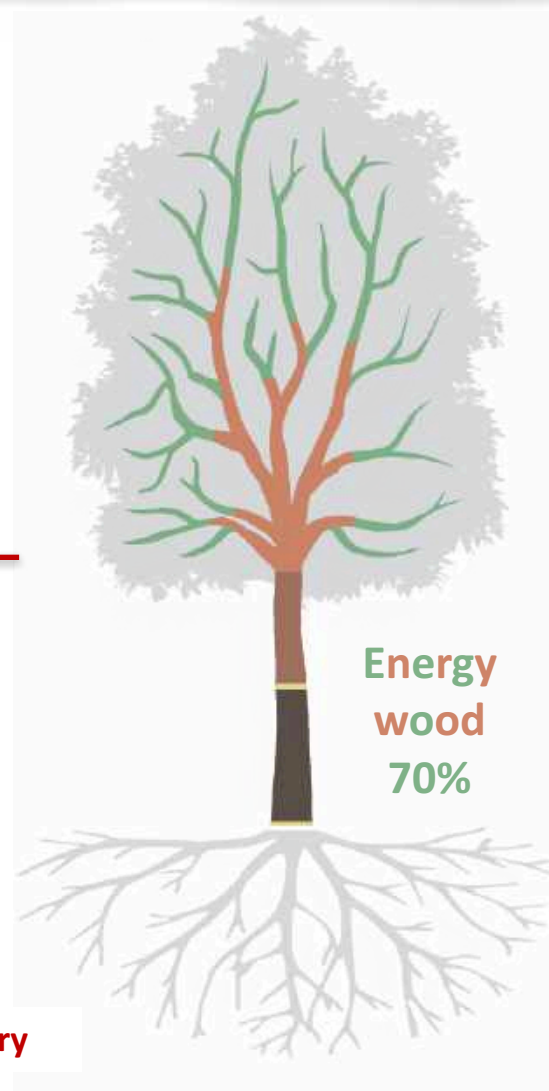
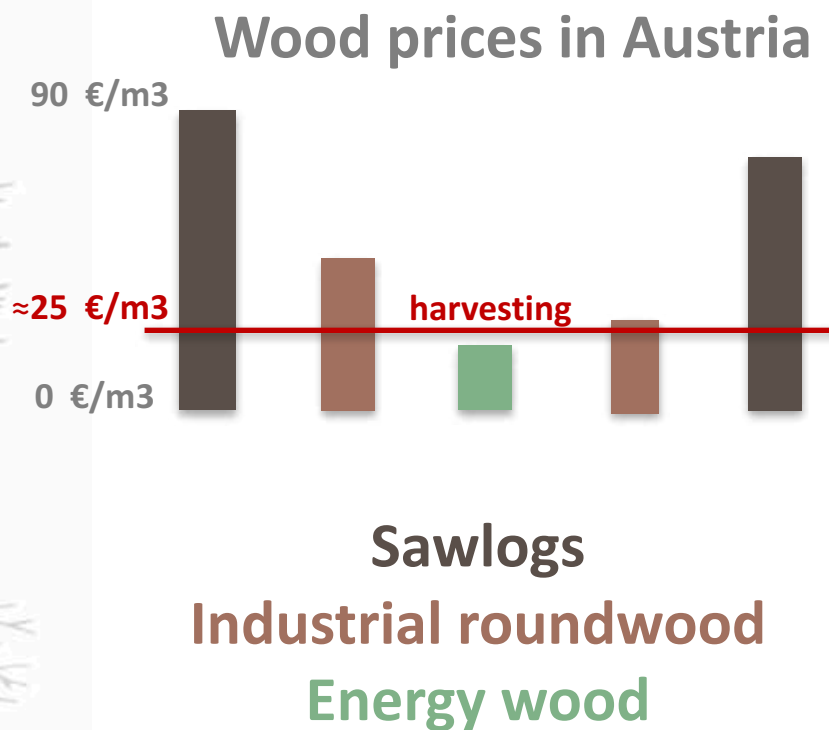
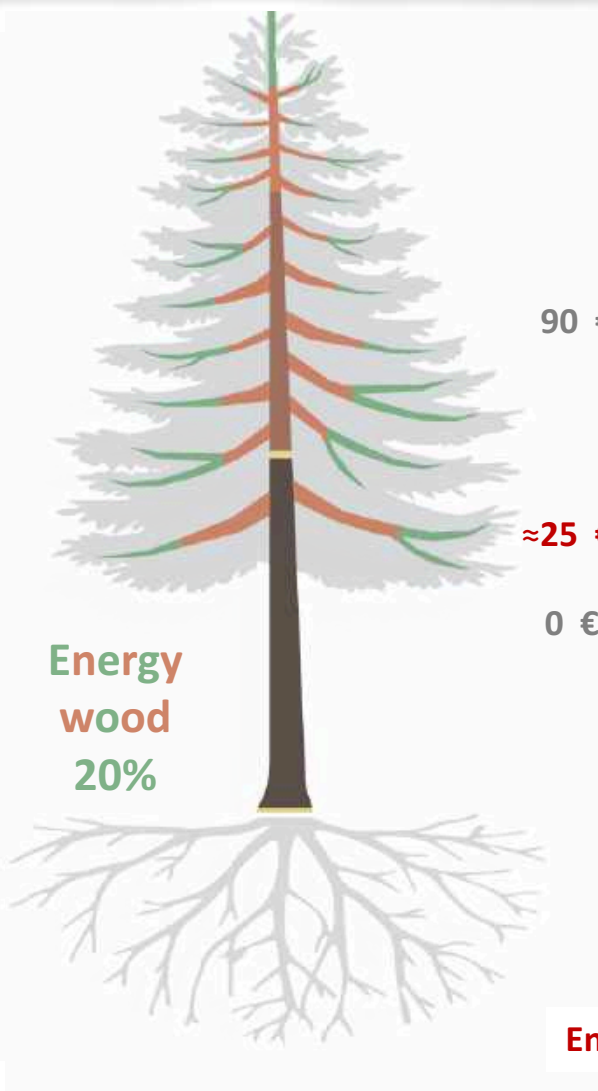
- > Decreasing emissions of boilers
- > Increasing efficiency of boilers
- > Decreasing heat consumption in buildings (more wood heated houses with less fuel)

= rapidly growing installations and falling (!) fine dust emissions



Österreichischer Biomasse-Verband
AUSTRIAN BIOMASS ASSOCIATION

Part of sustainable forestry



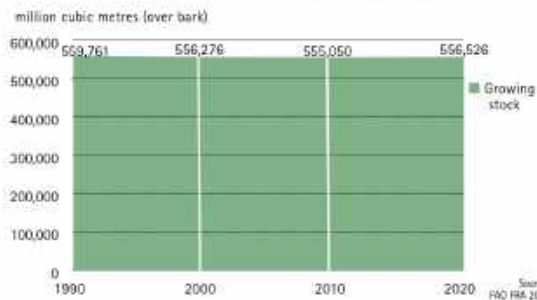
Energy wood is a by-product of sustainable forestry



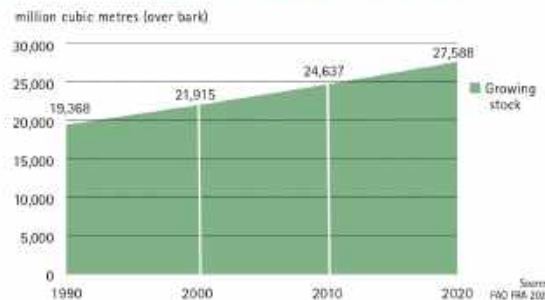
Closed CO₂-Cycle



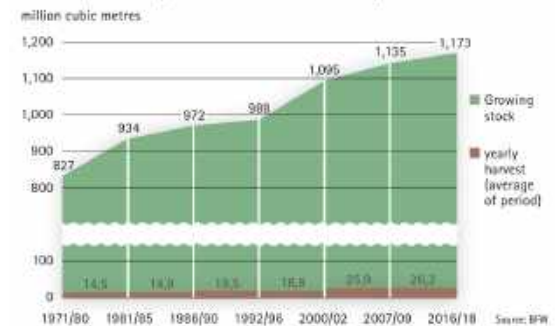
Worldwide Growing stock in Forests from 1990 till 2020



Growing stock in Forest of EU27 from 1990 till 2020



Forestry inventory in Austria – stock development since 1971



Potentials are based on an increase of growing stocks! But global heating with huge amounts of low quality wood causes damage to the forests... bioenergy is a big part of the solution to handle this problem

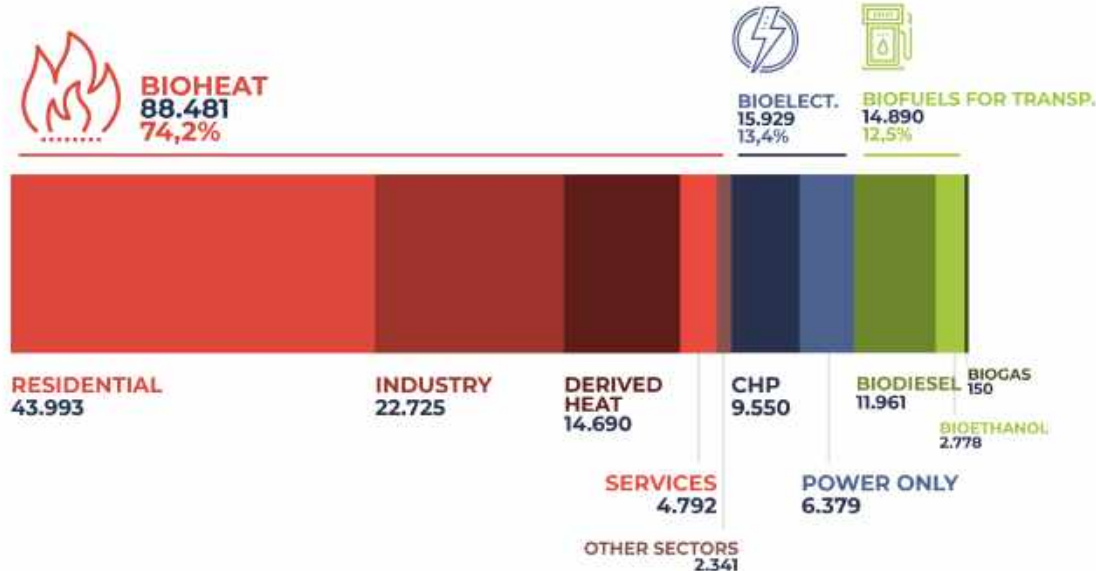


EU-28 GROSS FINAL ENERGY CONSUMPTION OF BIOENERGY PER MARKET SEGMENT

(IN 2017, KTOE, %) SOURCE: EUROSTAT, BIOENERGY EUROPE'S CALCULATIONS

Bioenergy
EUROPE

BIOENERGY EUROPE
STATISTICAL
REPORT
2019



„New“-Markets:

- Second Generation Biofuels for Ariculture, Aeronautic, etc.
- Green Gas for Industry, Peak load and Mobility
- Hydrogen from Biomass



- **Oil, coal and gas are damaging our forests**, biomass is the most important renewable energy source and therefore essential to save our forests, our industries and the climate.
- **“Wood kick concept”** => use all this material in order to kick fossil fuels out of the systems quickly and consequently, otherwise we will have the **rotten forests and the fossils in the atmosphere**.
- **Zero tolerance policy** for “Carbon Debt” and “Cascadic” and “Competition” (NGO)-attacks. Those are damaging our forests and industries. They are pursuing **HIGH RISK STRATEGIES** that are promoting the fossil fuel industry.
- **The agricultural sector should be the leader in banning fossil fuels, starting in our forest machinery, facilities, buildings etc.**



Österreichischer Biomasse-Verband
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Bioenergy



There is a lot to do, let's start!

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