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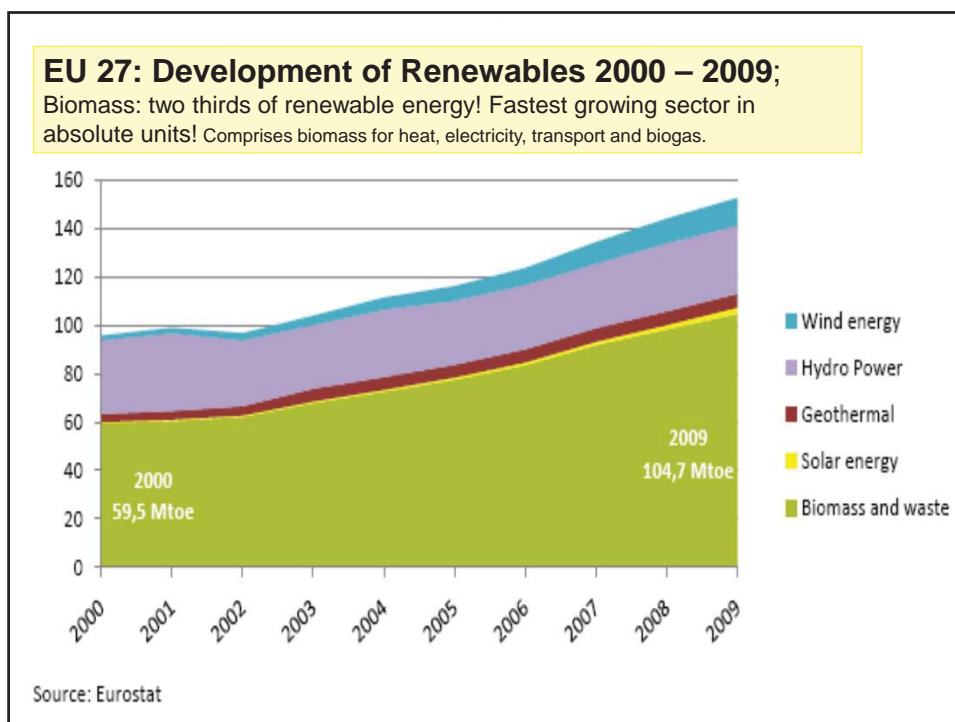
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The contribution of bioenergy to the future energy system – European examples

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 OSCE ECONOMIC AND ENVIRONMENTAL FORUM
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Global Problems and Solutions

Present global energy system:

80% fossil, 6% nuclear, 14% renewables (hydro, wind, PV, solar thermal, geothermal and bioenergy: 10% of all RES)

The problems:

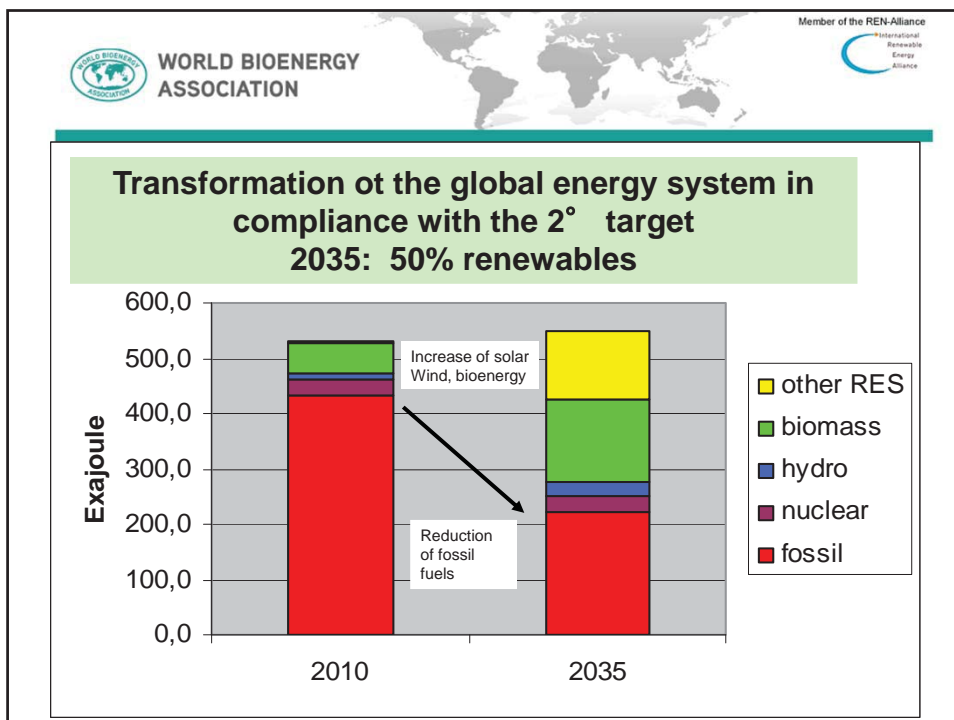
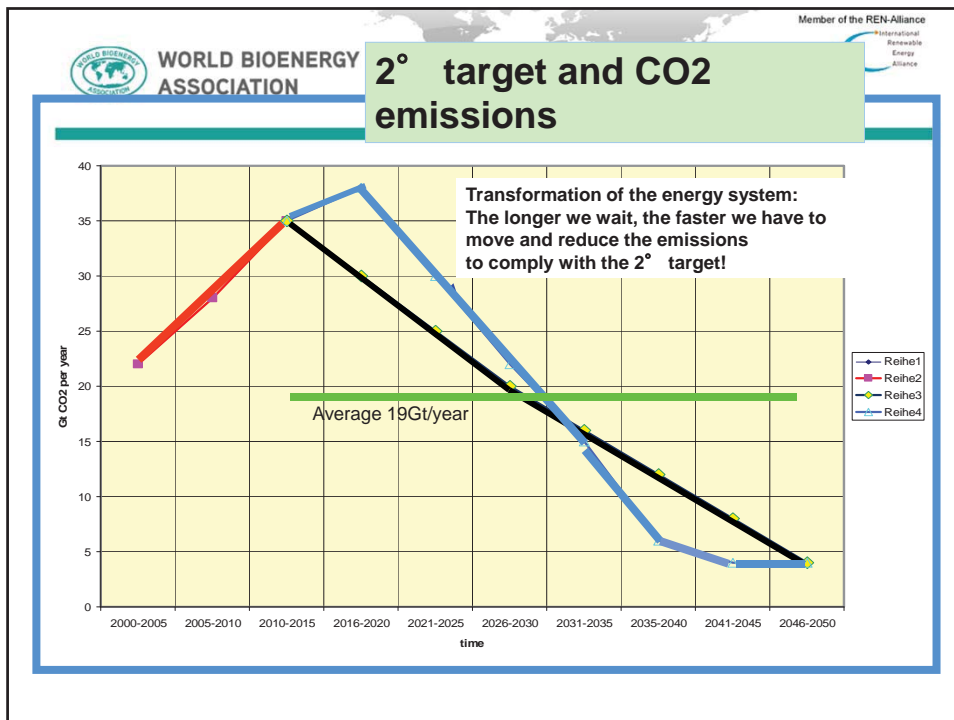
- global warming, almost 90% of CO₂ emissions from fossil fuels
- limited fossil resources, upcoming scarcity in coming decades and high prices

The answer: transformation to renewable energy sources (RES)



Why a climate compatible energy system ?

- 2012 World Bank Report: Turn down the heat. Why a 4° C Warmer World must be avoided?
- Heat waves, fires, loss of ice: glaciers, Greenland, the Antarctic, oceans, sea level rise, coastal inundation and loss of mega cities, increased tropical cyclone intensity, droughts, food crises, acidification of the ocean – breakdown of maritime ecosystems, in parts of the world adaption no longer possible, dislocation is forced!
- To avoid this disaster: agreement among 200 nations (Kopenhagen Cancun, Doha) no more than 2° C temperature rise!
- Are we moving in the right direction?

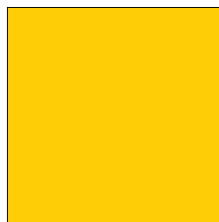




European examples

- Sweden 2012: already 50% renewable energy, hereof more than 30% bioenergy!
- Austria 2010: 31% renewable energies, hereof 17% bioenergy; following some details from Austria!

Abundance of solar energy



Austria: annual solar radiation 330 EJ – the target 100% RES = 1,4EJ.

- **Austria energy consumption 1,4EJ**
- **Austria contribution RES 0,4EJ = 31%**
- **Biomasse (0,21 EJ)**

How do we get there: examples



District heating plant



Harvest of short rotation forest



Wood chip boiler



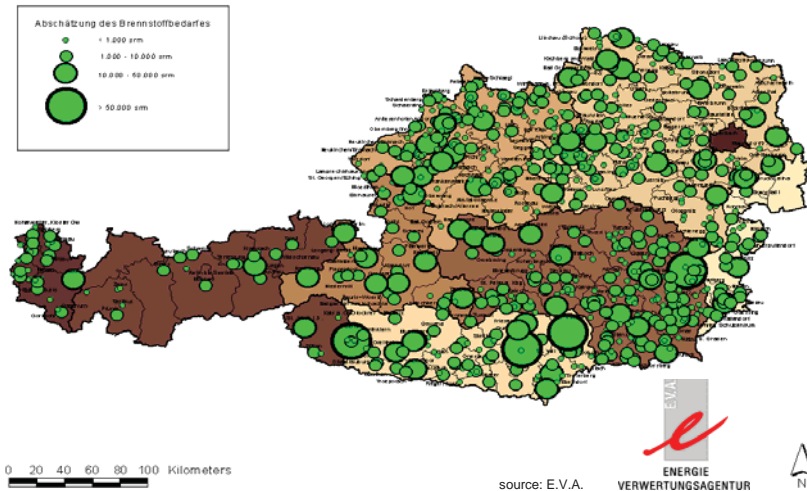
Pellet boiler

New biomass boilers in one year (2009)

type	units	MW installed
Fire wood boilers	8530	228
Chip boilers < 100 kW	4328	204
Pellet boilers	8446	112
Chip boilers > 100 kW	704	309
TOTAL	22.008	853

Austria:

more than 1000 biomass district heating grids



17.02.2005

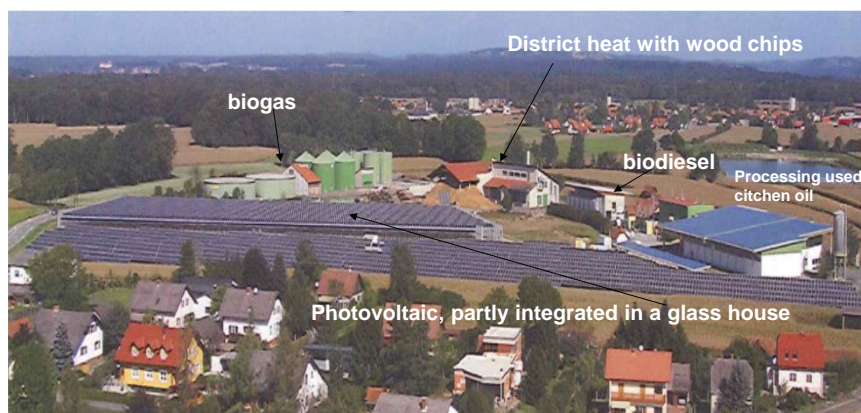
Landeskammer für Land- und
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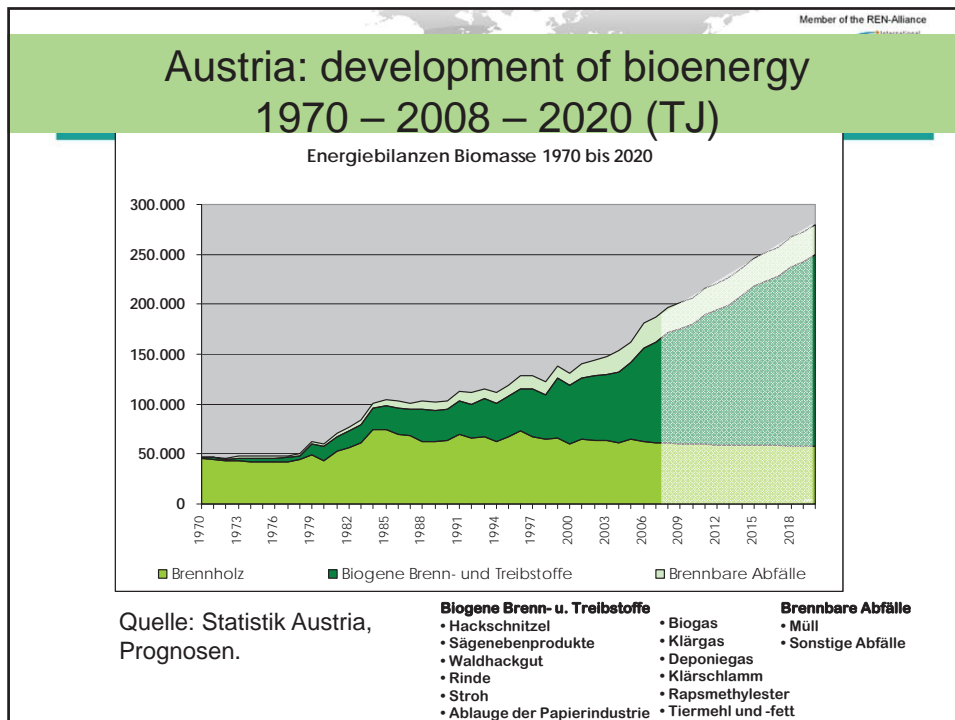
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Synergies by integration of different RES technologies, Mureck, Austria: 11GWh el, 9 GWh heat, 15 mio.l biodiesel





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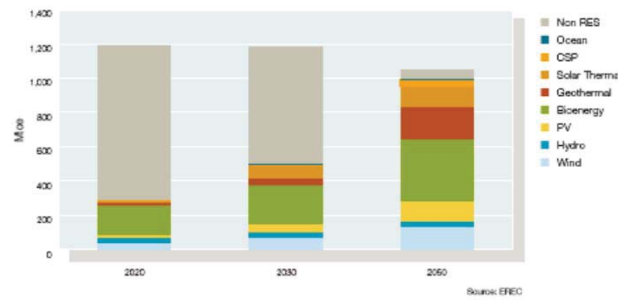
Conclusions of European experiences

1. Stop subsidizing fossil fuels – worldwide more than 500bn Dollar
2. Increase tax on fossil fuels and reduce taxation on labor
3. Set up stable, long lasting government programs (grants) to finance investments of private household and companies **in renewable heat**
4. Create feed in tariffs for **electricity** from wind, PV and efficient biomass/biogas units
5. introduce moderate blending rules for **biofuels for transport**
6. use the experience of 30 years bioenergy policy in leading European countries and avoid their mistakes



EREC Szenario: 100% renewables in 2050

Figure 1 Contribution of Renewable Energy Technologies to Final Energy Consumption



Strong growth: wind (blue), solar (yellow), geothermal- biomass will contribute almost 50%
Fossil fuel disappear (grow)



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Thanks for your Attention!

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