

A just and democratic
transition to renewable energy

Transition till 2030 – 2050
in the EU – countries
- The INFORSE Visions

Gunnar Boye Olesen, International Network for
Sustainable Energy (INFORSE-Europe)

Seminar, Barcelona,
13. September 2010

INFORSE-EUROPE

International Network for Sustainable Energy - Europe

- European network of 75 NGOs working for renewable energy and energy efficiency

Active on EU policies, sustainable energy, visions/scenarios, sustainable energy education, etc

Work on global climate and energy issues with INFORSE members in other continents, e.g. climate negotiations

Supported by EU – DG Environment, members and others

The INFORSE Vision

- Phase out fossil fuel and nuclear power
- Provide everybody with basic energy needs, also the 1 billion that lack basic clean energy for cooking and light today



INFORSE Sustainable Energy Visions

- Global Vision
- **Vision for EU-27**
 - Bulgaria
 - Denmark
 - Hungary
 - Latvia
 - Lithuania
 - Romania
 - Slovakia
- UK Zero Carbon Britain
 - Belarus
 - Russia
 - Ukraine

We need to limit global climate change to 2°C (or better 1.5°C)

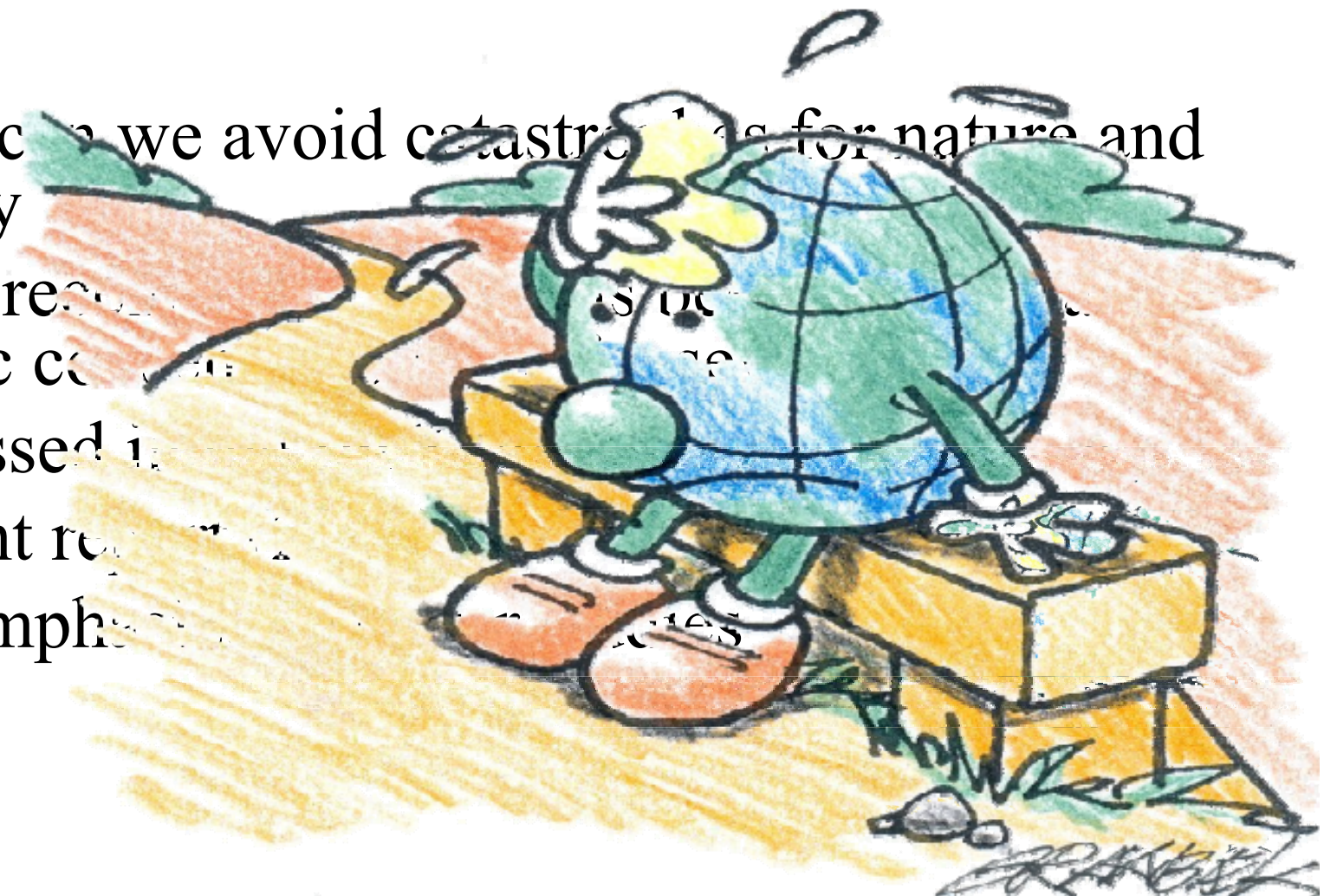
Only then can we avoid catastrophic risks for nature and humanity

In spite of recent scientific consensus

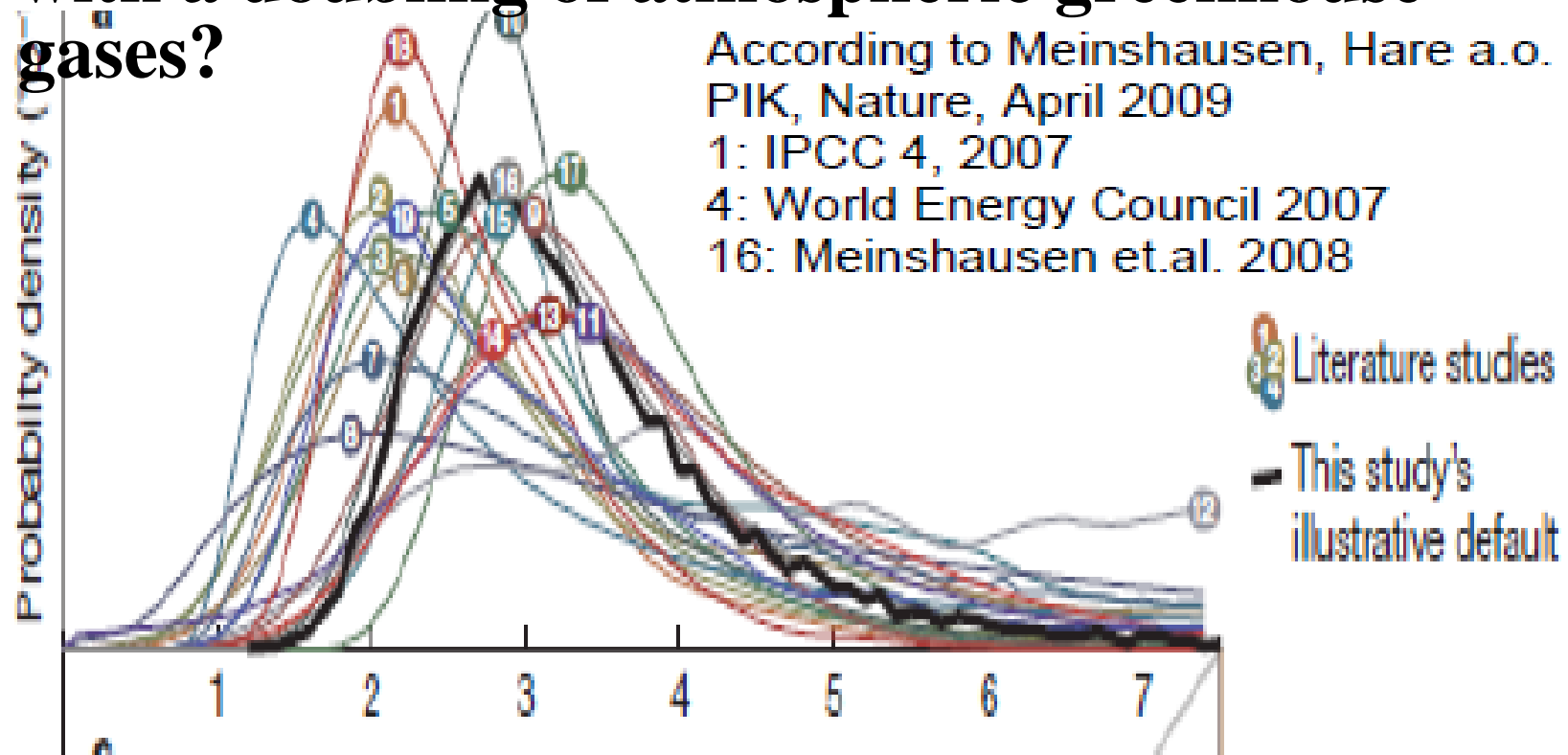
It is expressed in the Paris Agreement

Assessment reports

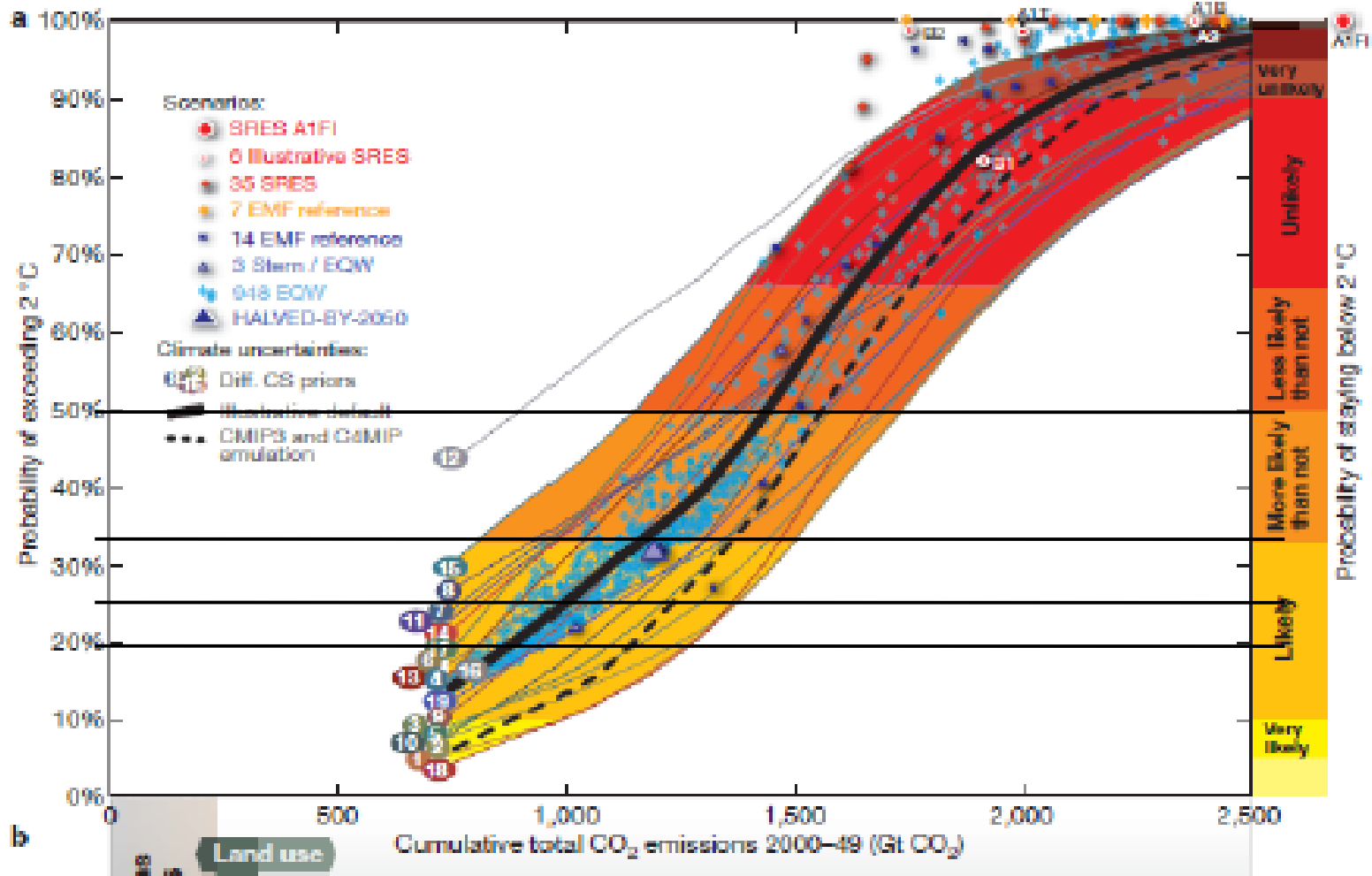
stronger emphasis



A quick look at climate science:
**Climate Sensitivity:
How much will global temperature increase
with a doubling of atmospheric greenhouse
gases?**

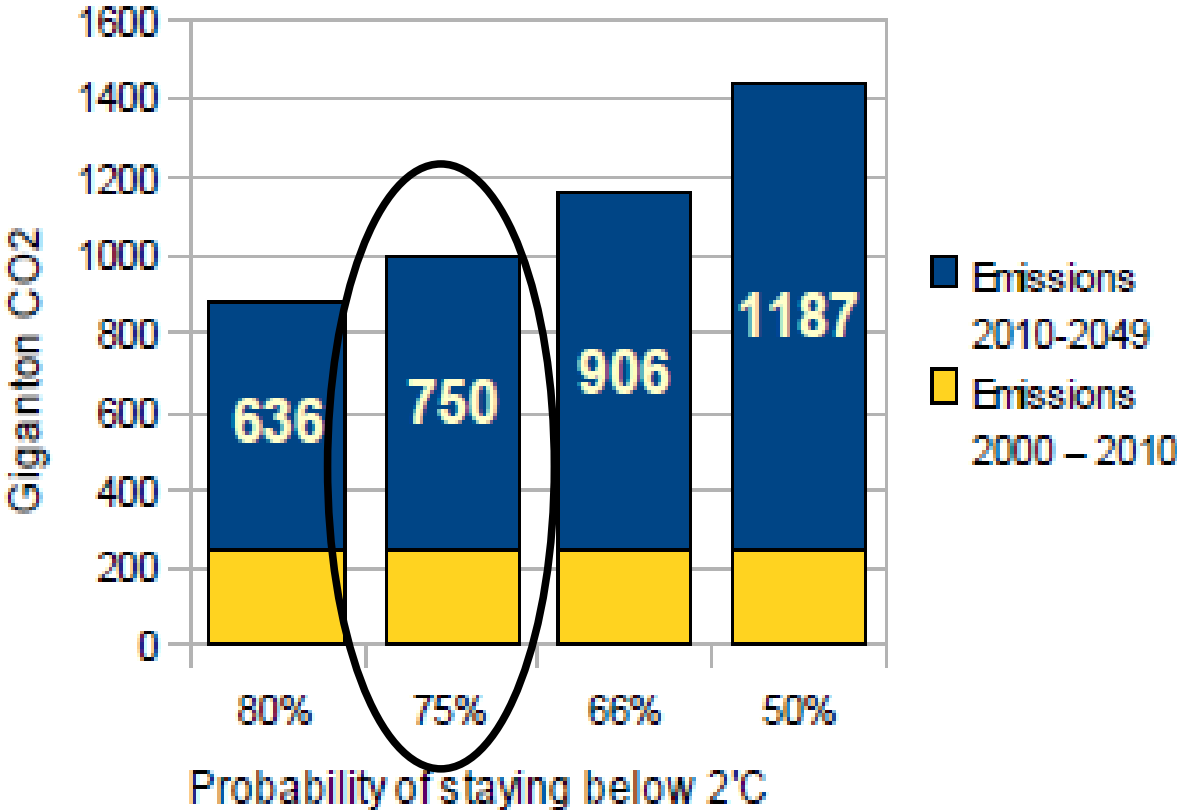


The risk of exceed 2°C global warming – depending on CO₂ emissions 2000 – 2049 (The Climate Budget)



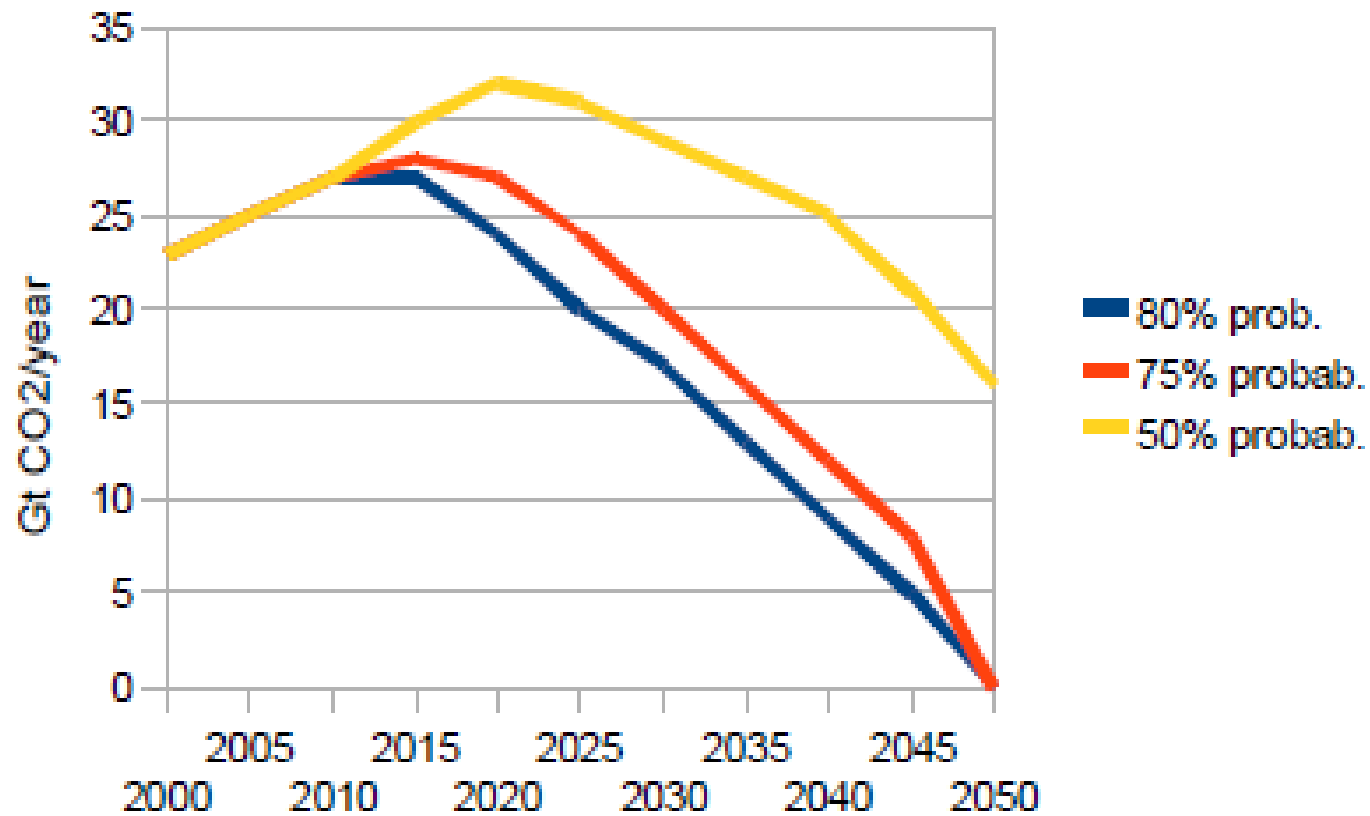
Climate budget

CO2 emission budget 2000 - 2049

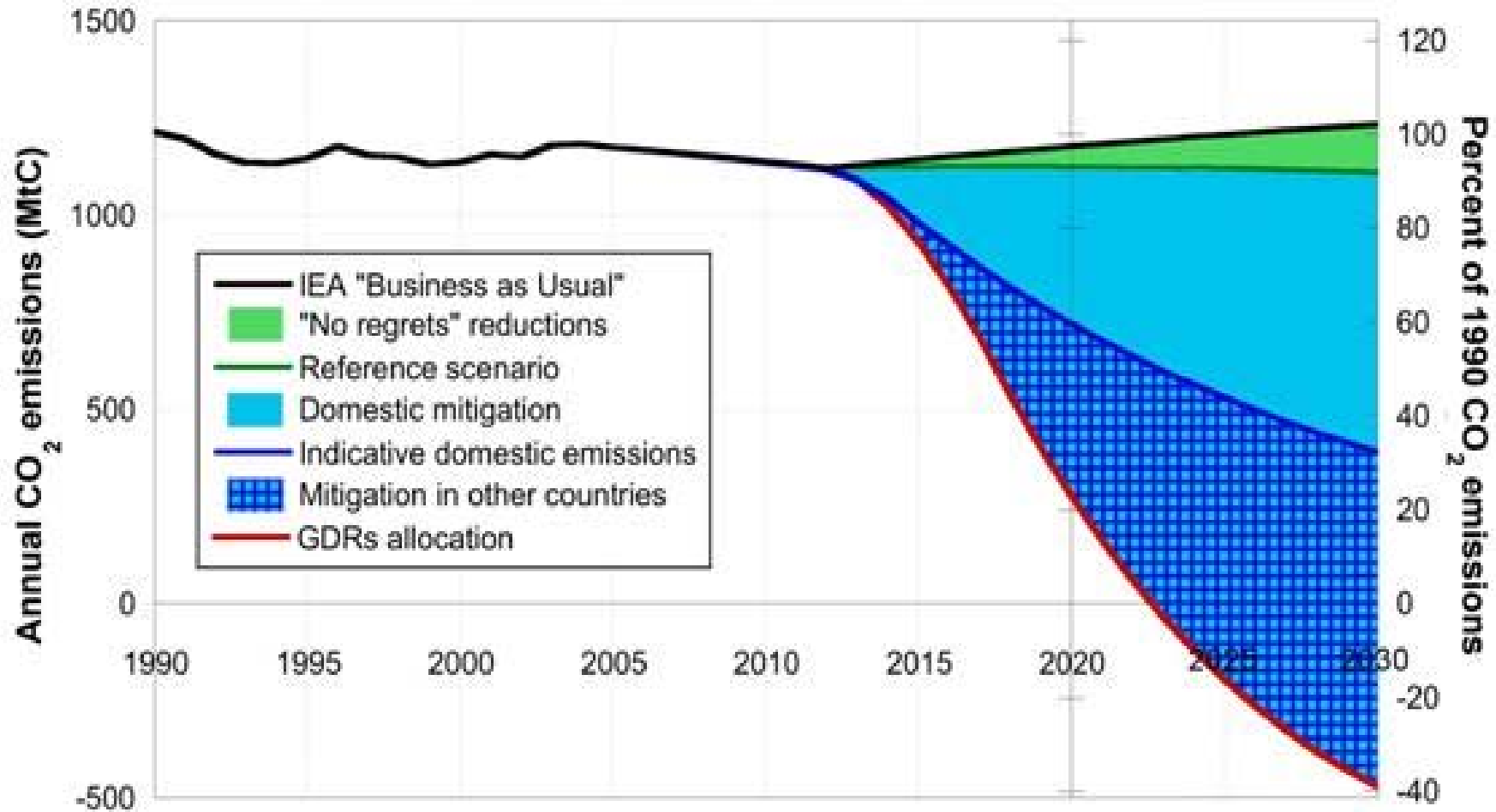


Pathway

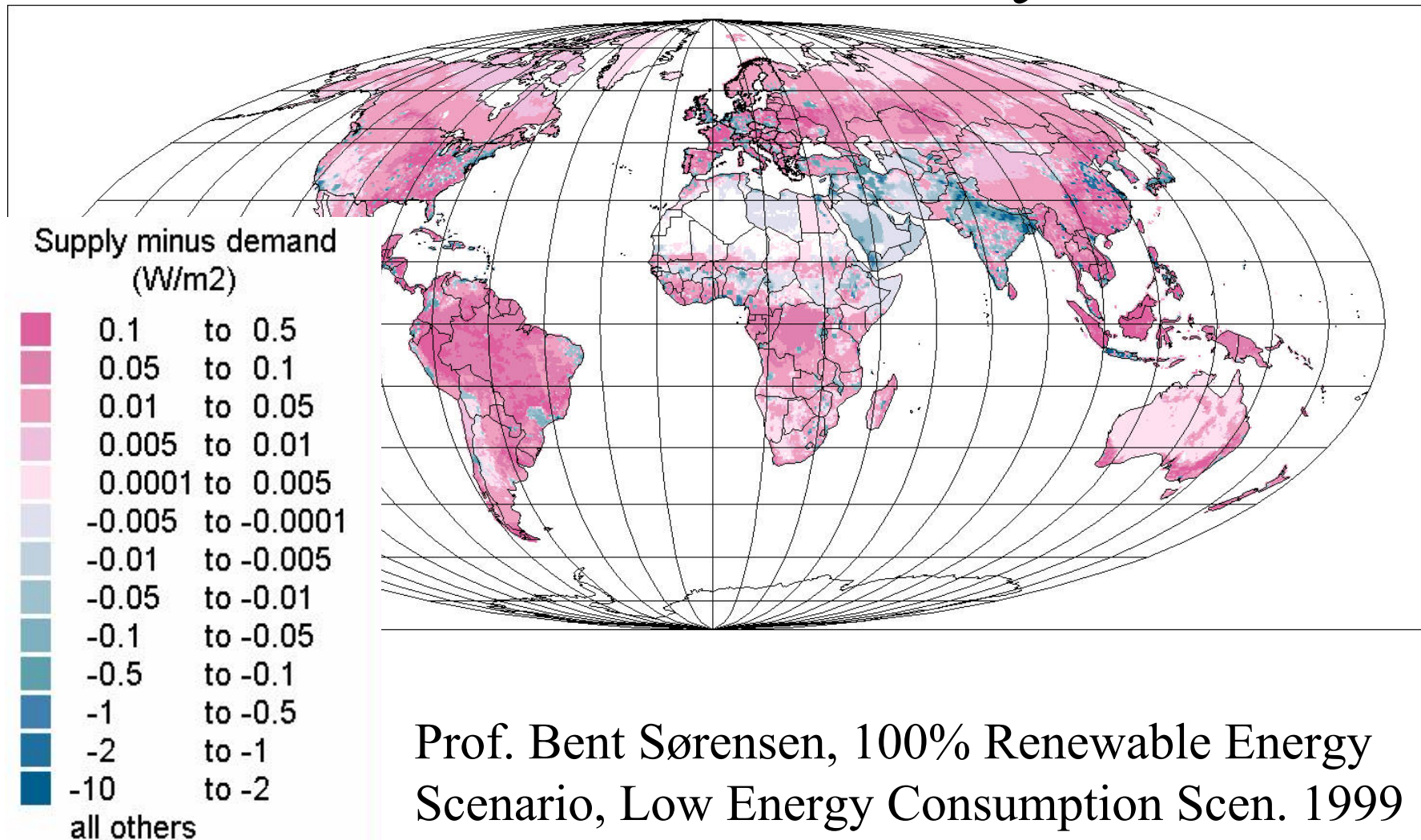
Global CO2 emissions to keep below 2°C



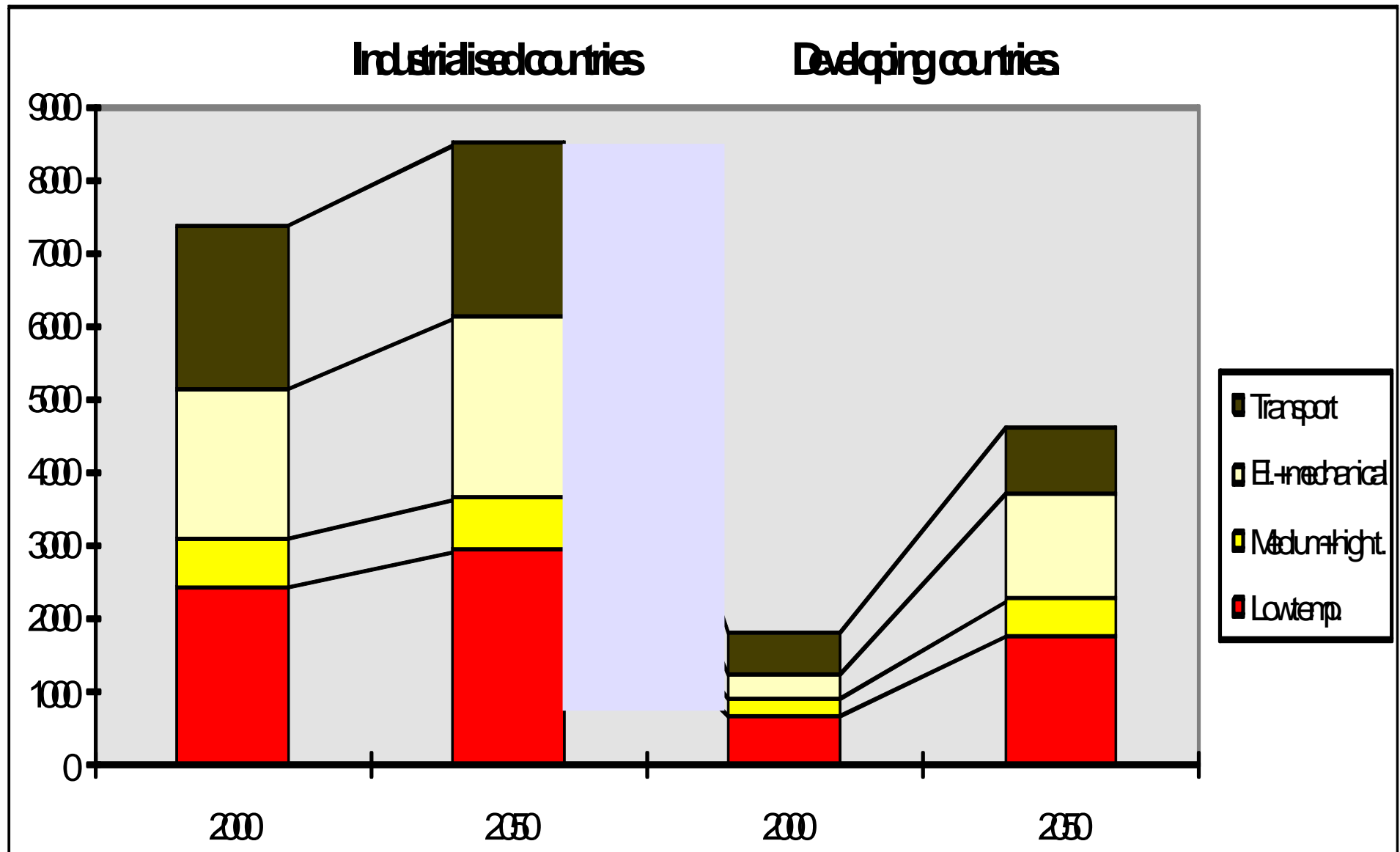
EU's Challenges in a Global Development Rights Framework



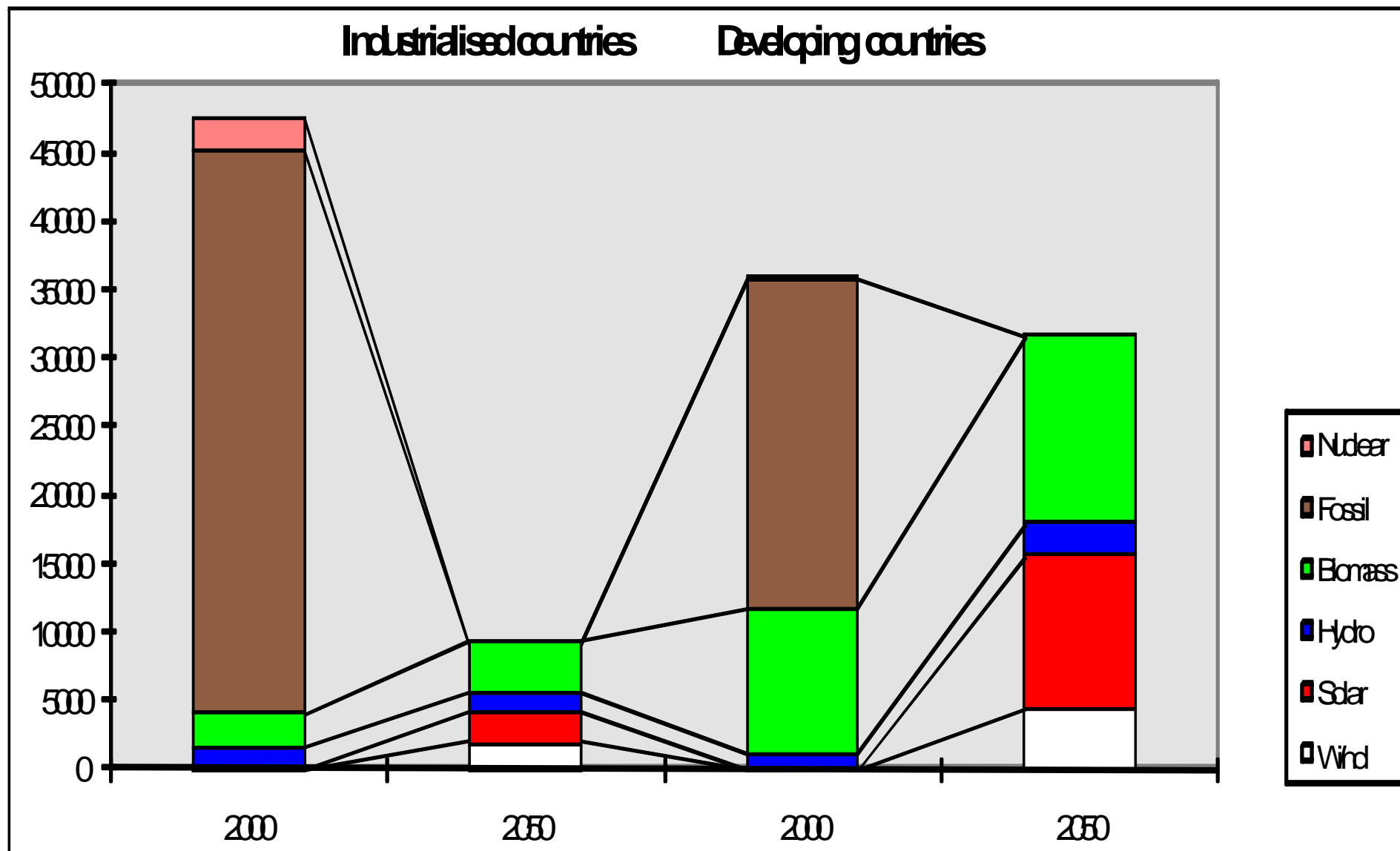
The Global Vision – Enough Renewables for 9 billion people if we use it efficiently



Energy Services per capita



Primary Energy (TWh/y)

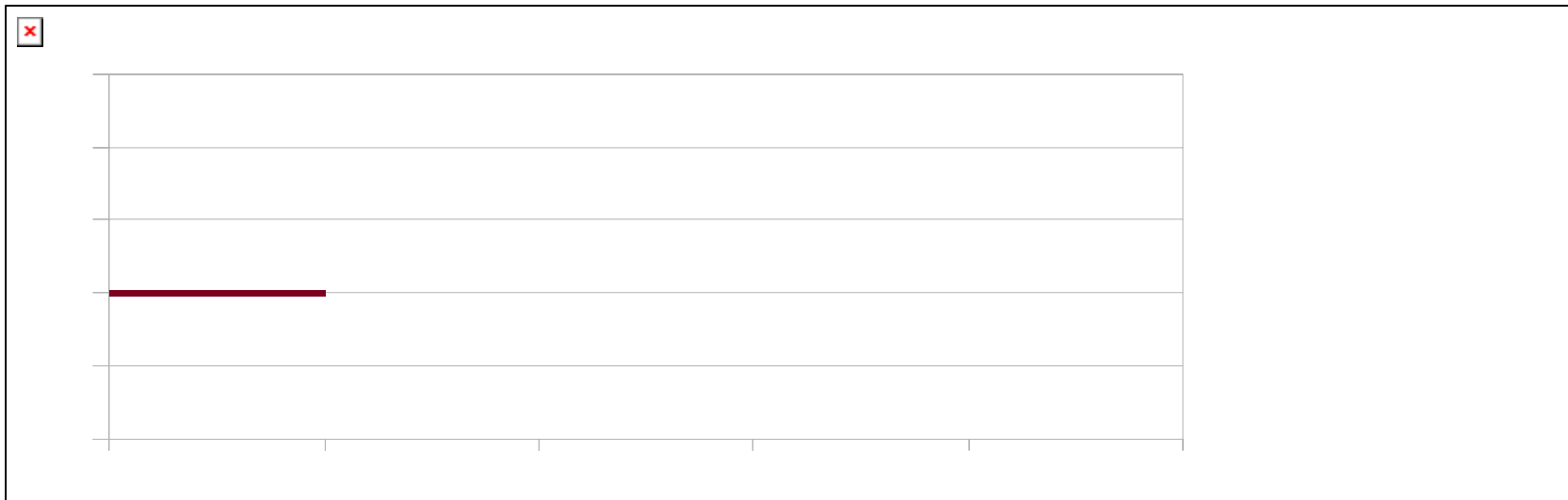
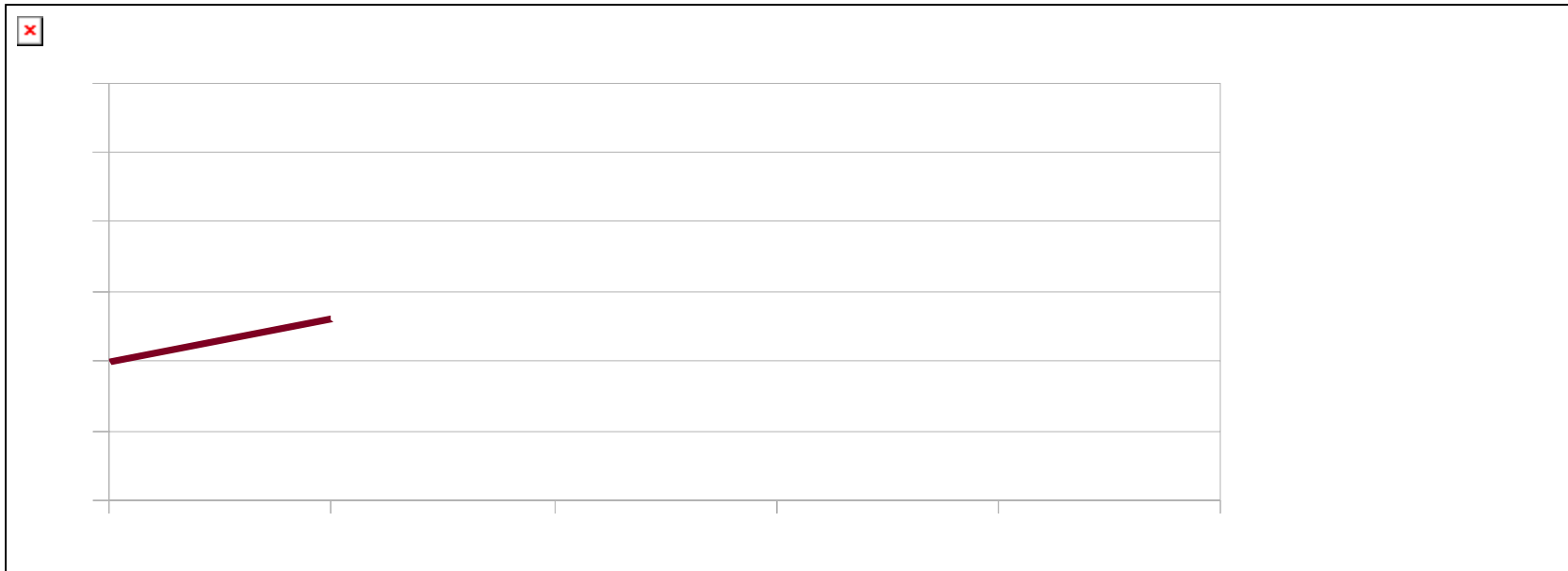


EU-27 Sustainable Energy Vision

- Above 95% reduction by 2050 (98%),
- Fast application of known solutions to 2020 and 2030
- Sustainability issues addressed (biomass, biofuels)
- No net import or export over longer periods



Energy Service Developments



EU-27 Sustainable Energy Vision

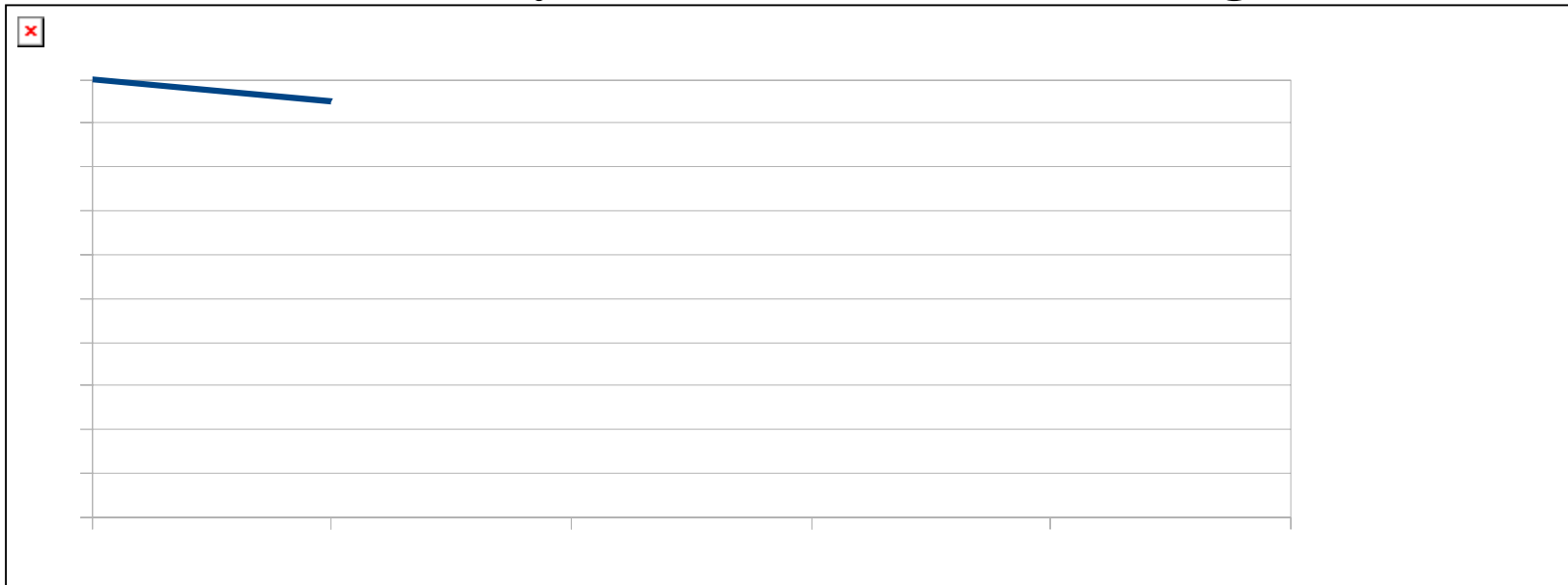
Demand side:

- **Modest increase in energy services (sufficiency/sust.)**
- **Less road transport in EU-15 (sufficiency, environm.)**
- **Large increase in energy efficiency, factor 4 in end-use sectors when possible until 2050**
- **Transition to electric and hydrogen transport, ~95%**

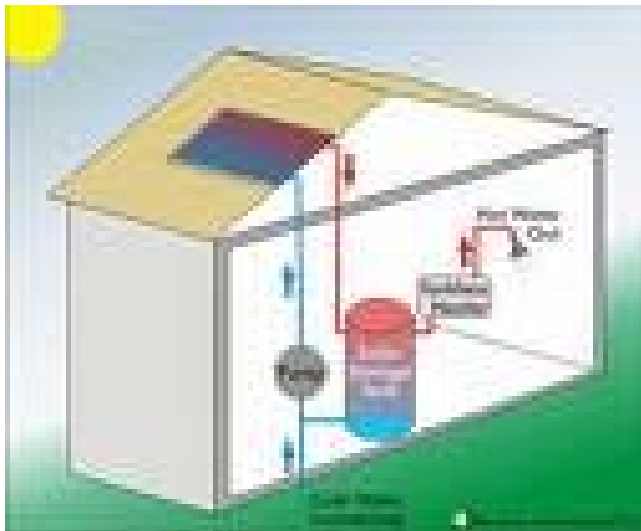


Energy Efficiency Increases

- ▶ Ecodesign, EU will drive efficiency of many products until 2020, and with updates until 2030 and beyond
- ▶ Factor 4 for personal cars, industry, until 2050
- ▶ 55% for space heating, until 2050
- ▶ 40% for railways, 60% for road freight until 2050



How the energy efficiency looks like

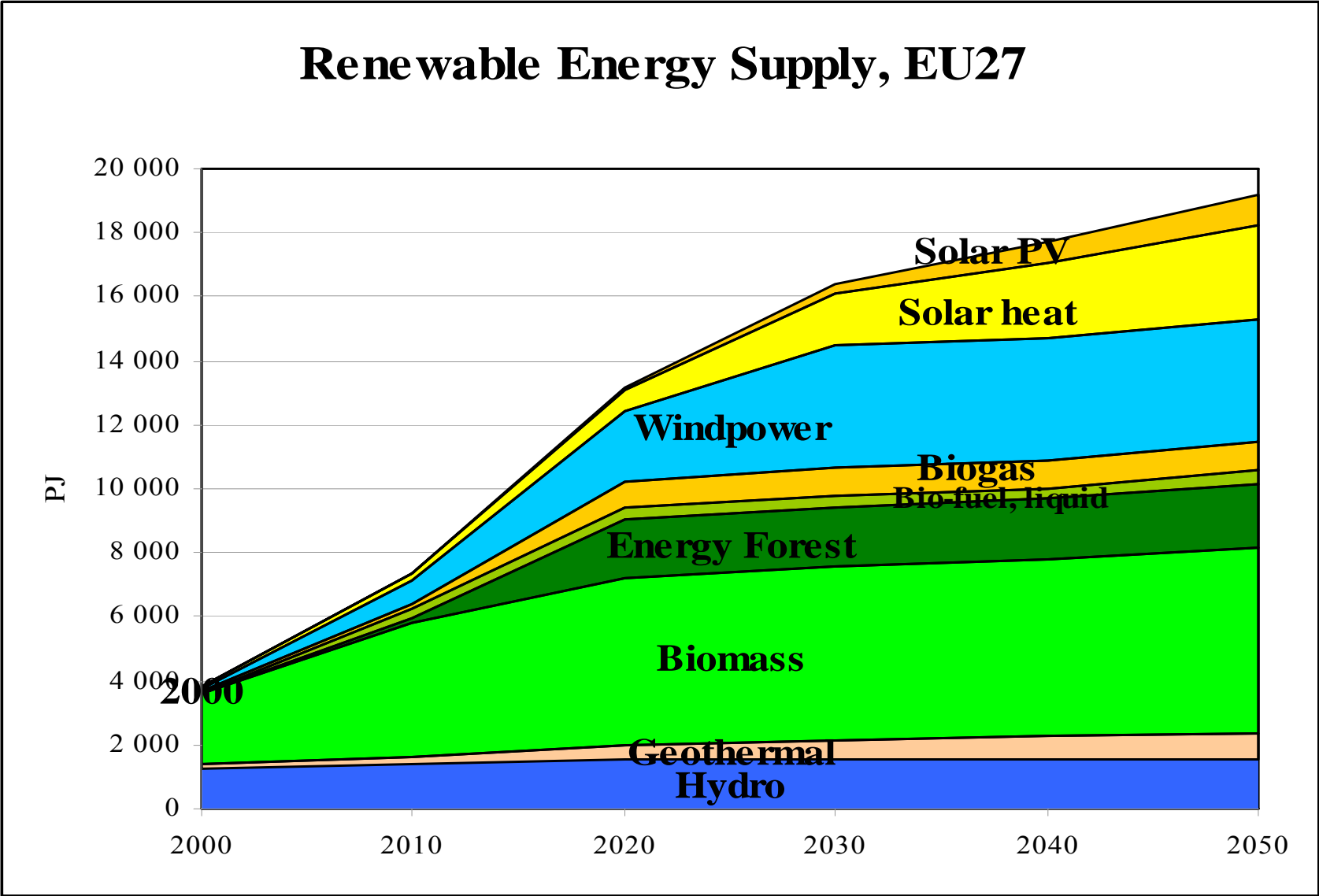


EU-27 Sustainable Energy Vision

Supply side:

- **Efficient energy supply with combined heat and power(CHP), smarter and more efficient grids**
- **Rapid development of renewable energy**
- **Phase out of nuclear until 2025 (end of lifetime), no CCS**

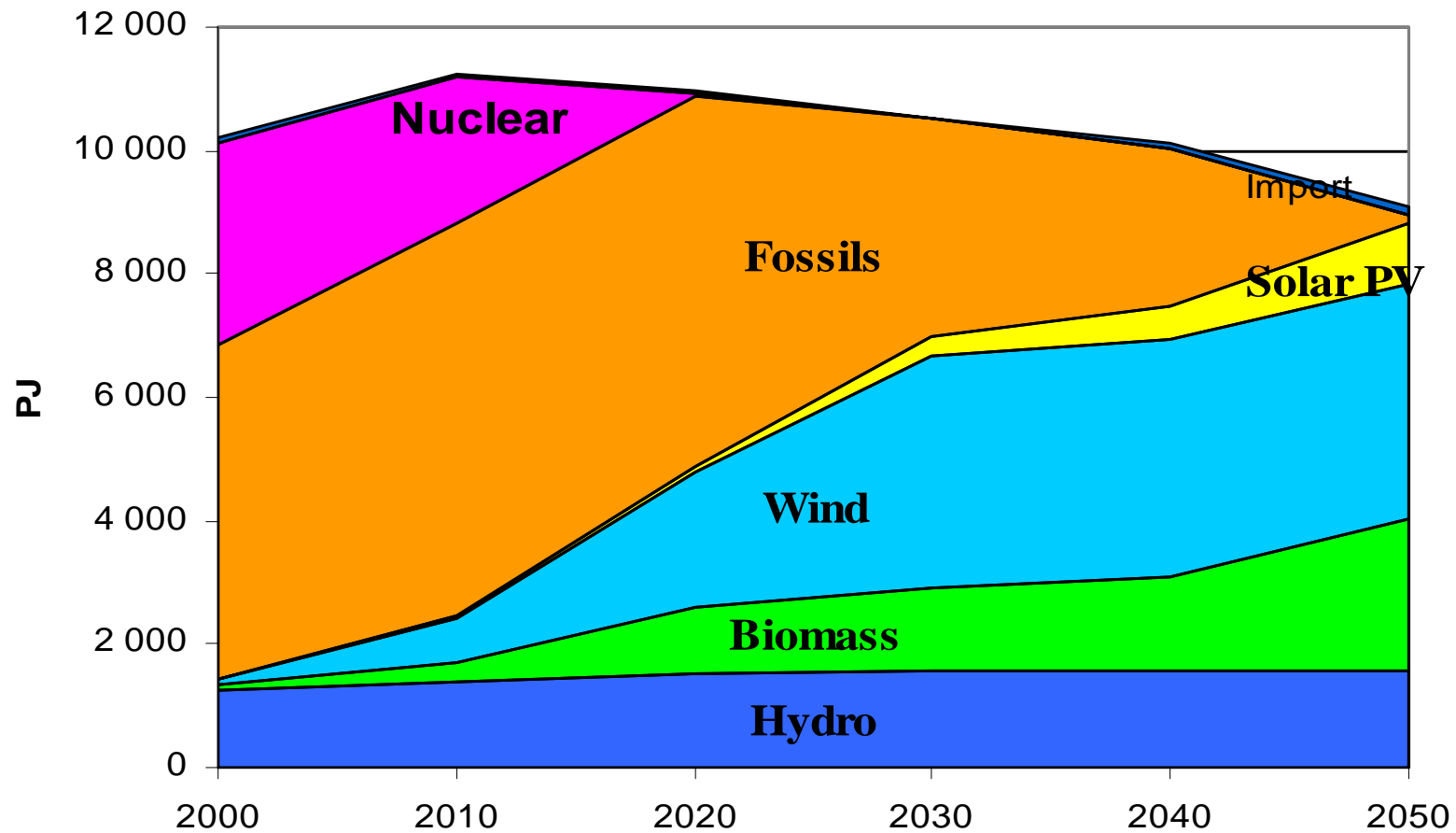
Renewable Energy Supply - EU27





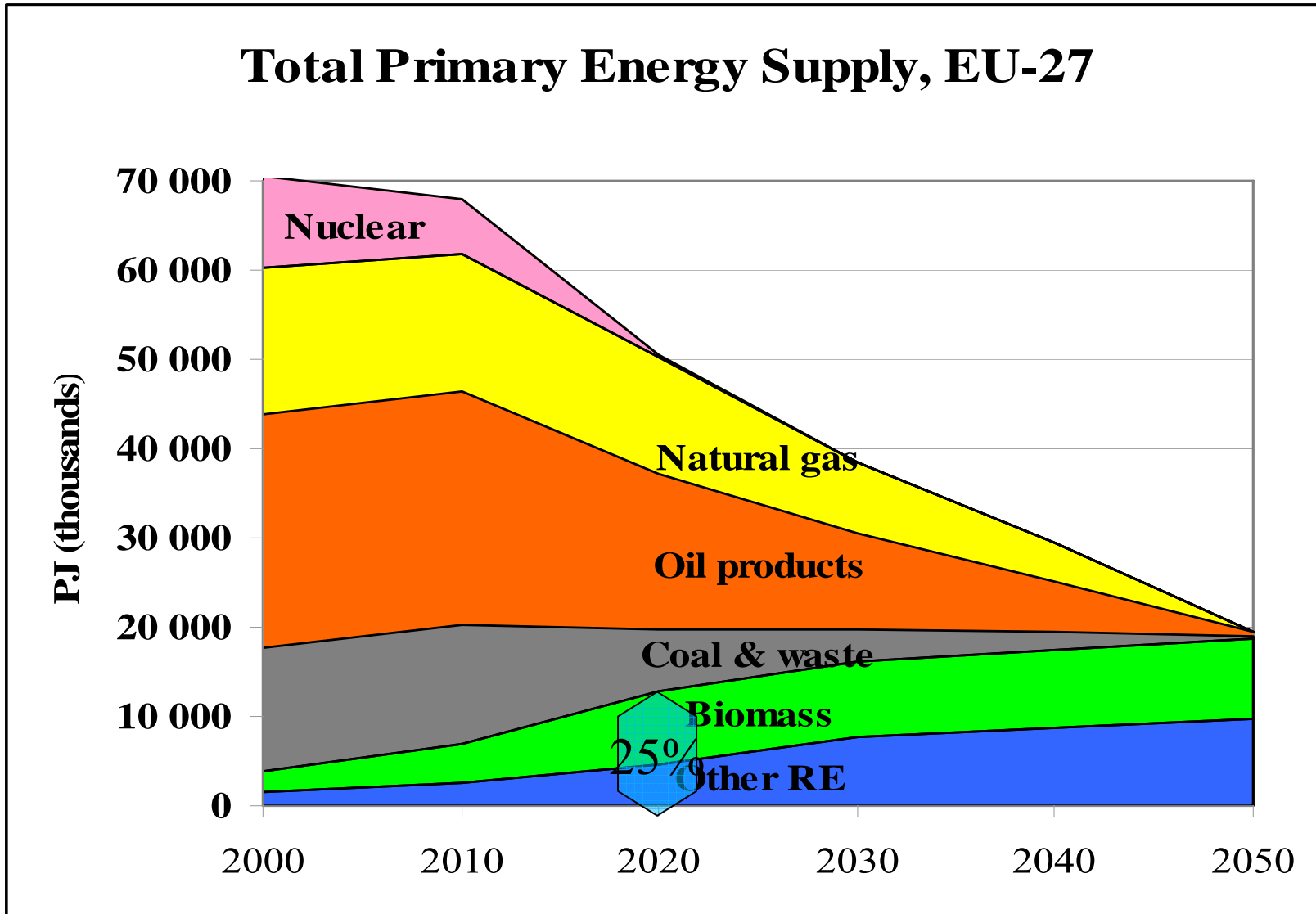
Electricity

Electricity Divided in Supply, EU-27



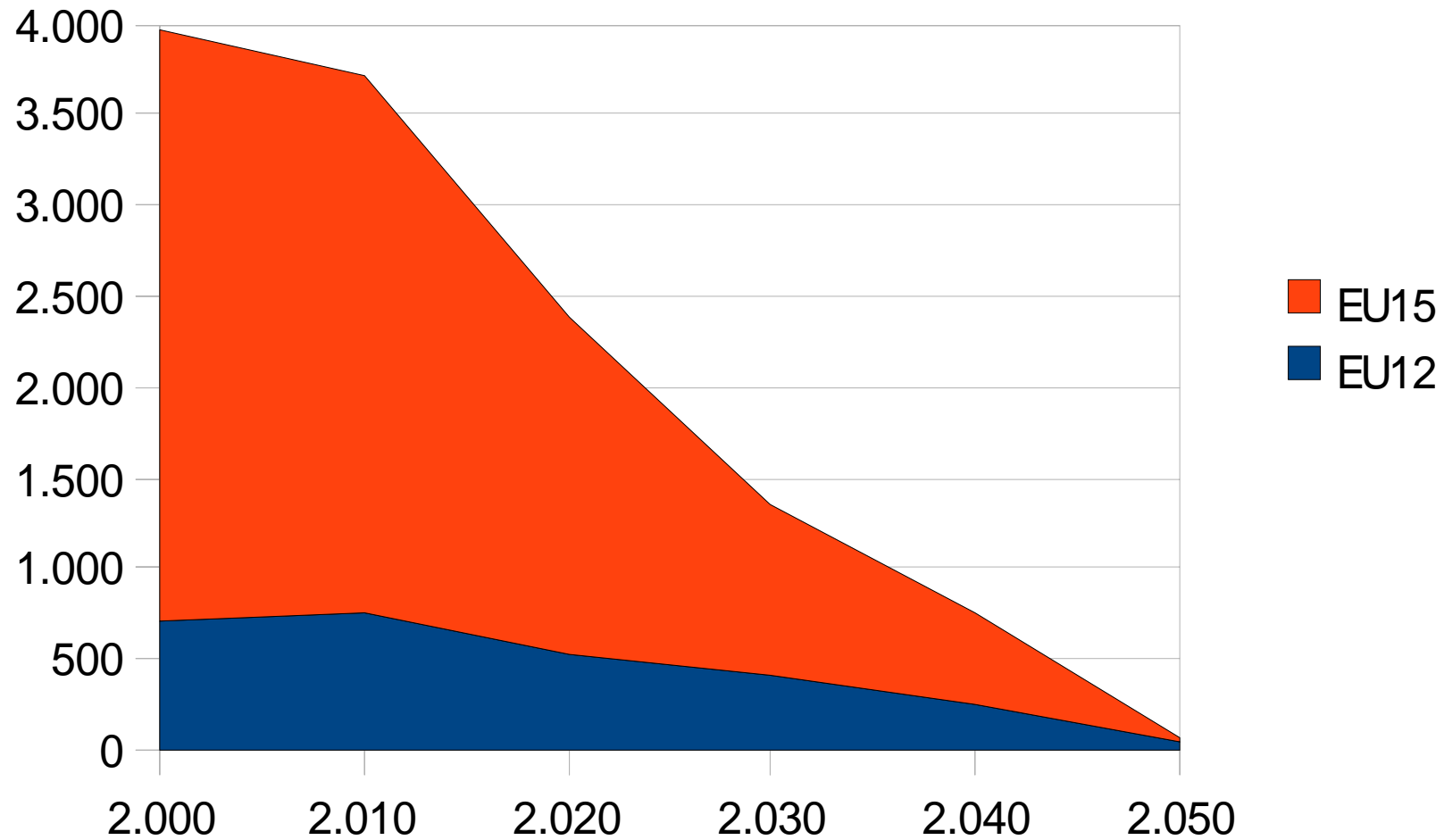
Primary Energy

Total Primary Energy Supply, EU-27



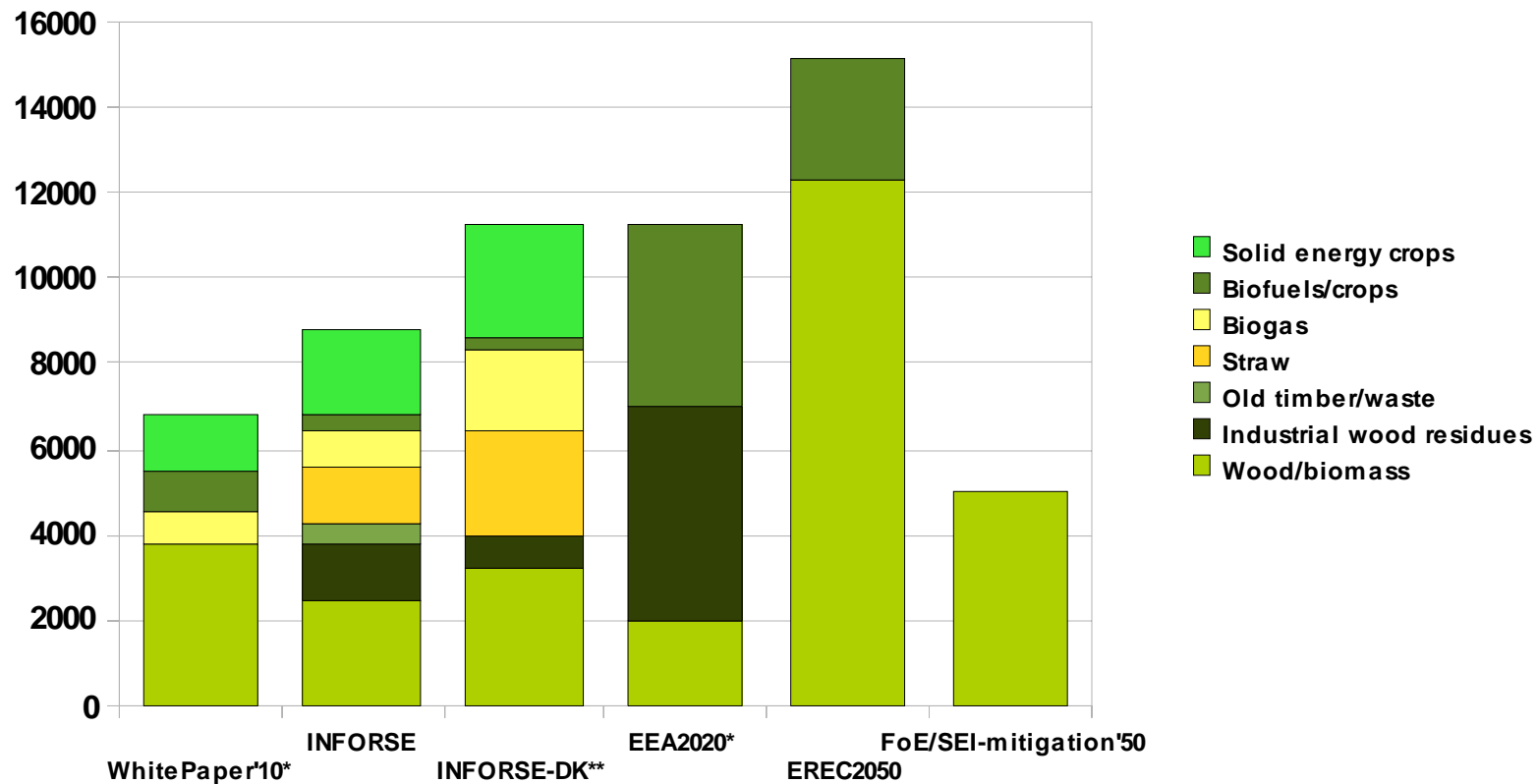
EU CO2 emissions from energy - mill. tons

INFORSE Vision



Will the EU Biomass Use be Sustainable?

EU-27 Biomass potential/use 2050 (PJ)



* EU-15 figures up-scaled with 20% to EU-27

** DK figures up-scaled with population ratio to EU-27

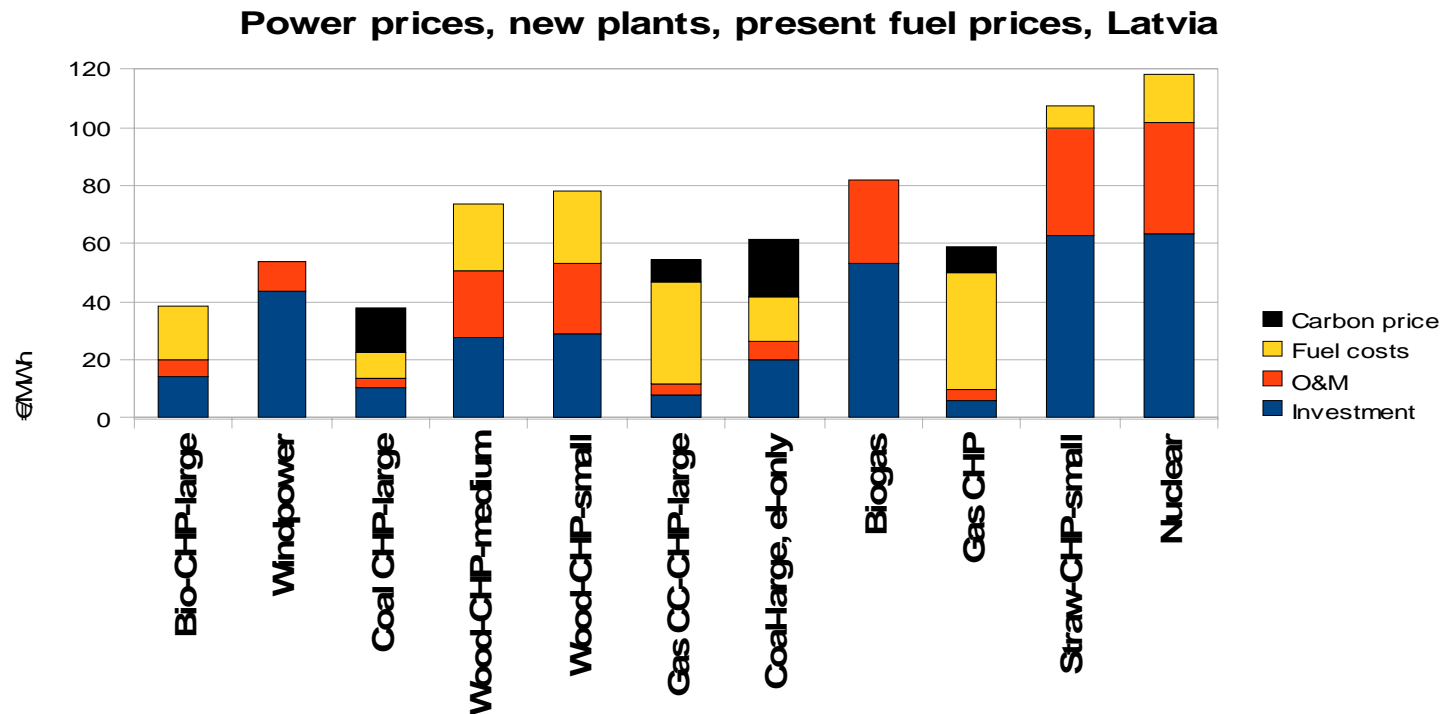
Why no nuclear?

Not a safe energy source, lifetime extension increases safety problems

Waste problems not solved (not even in Sweden)

Expensive, new nuclear more costlier than alternatives

Inflexible



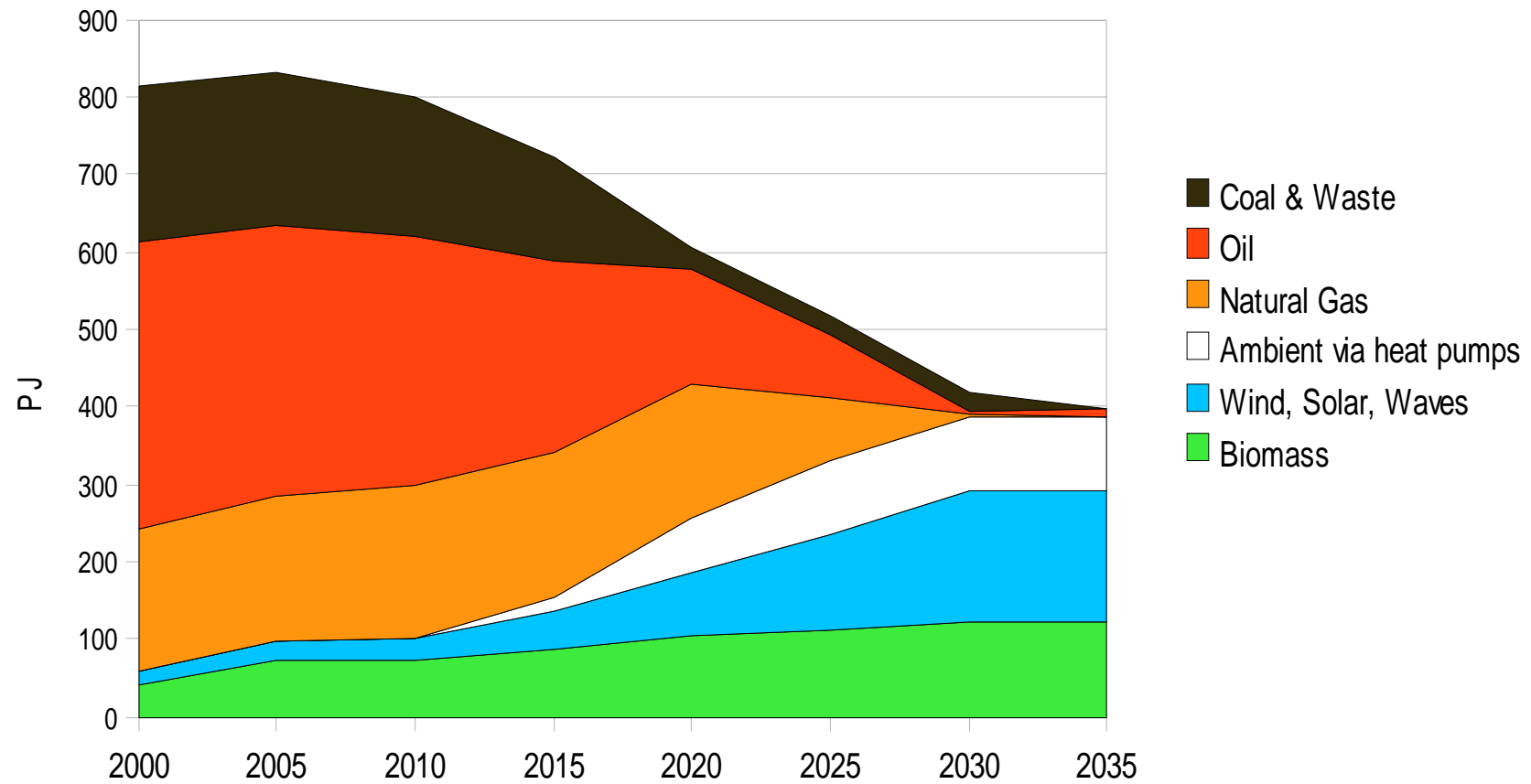
Vision for Denmark (OVE) 2030

- Strong growth in windpower, sust. biomass
- Reduce specific building consumption 39% to '30
- Reduce specific electricity use, industry 42% to '30
- Flexible energy: district heating, heat pumps, electric cars and hydrogen
- Sustainable transport system, 80% more efficient
- No new international power lines



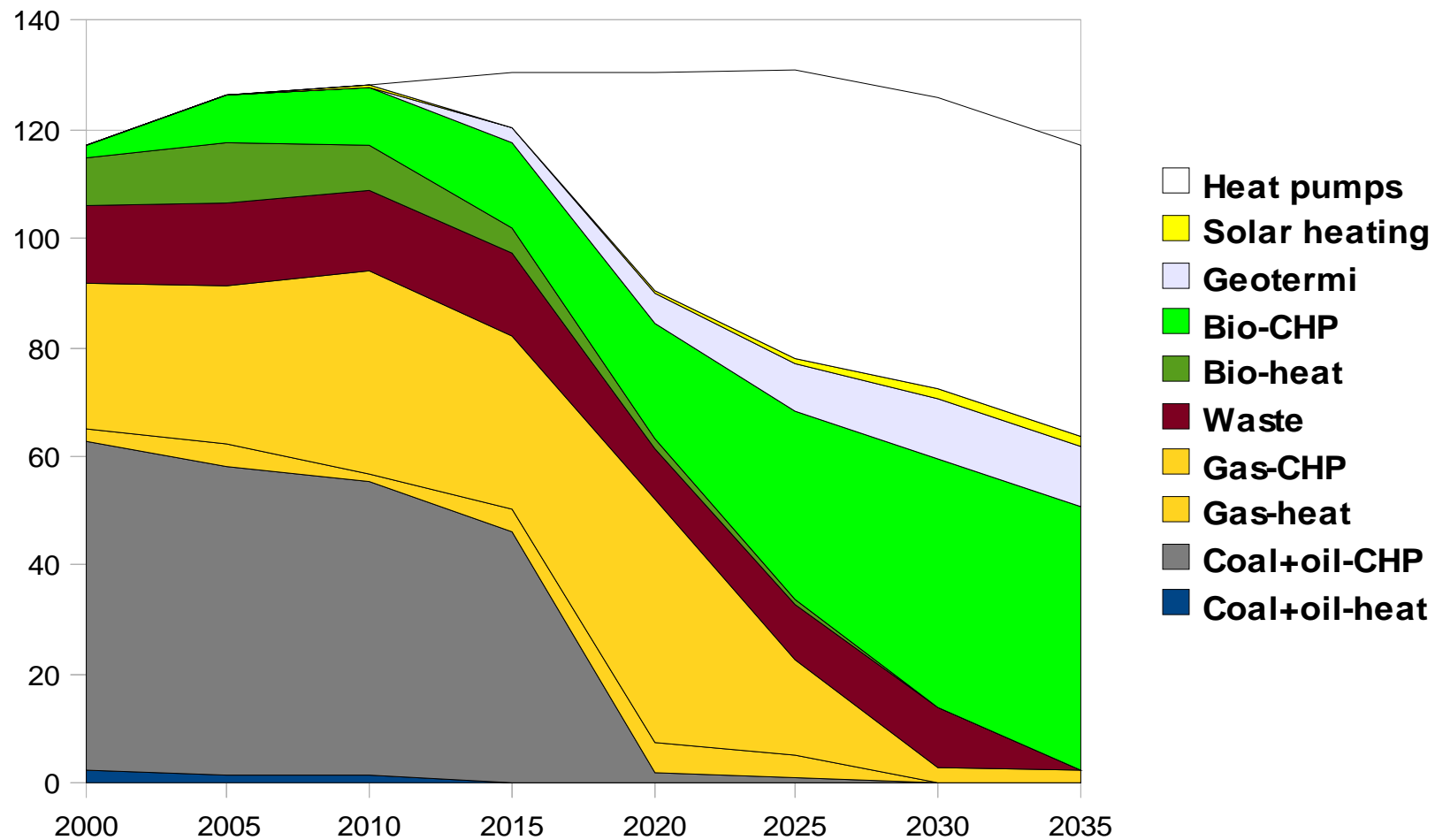
Danish Primary Energy Demand

Danish Primary Energy Supply

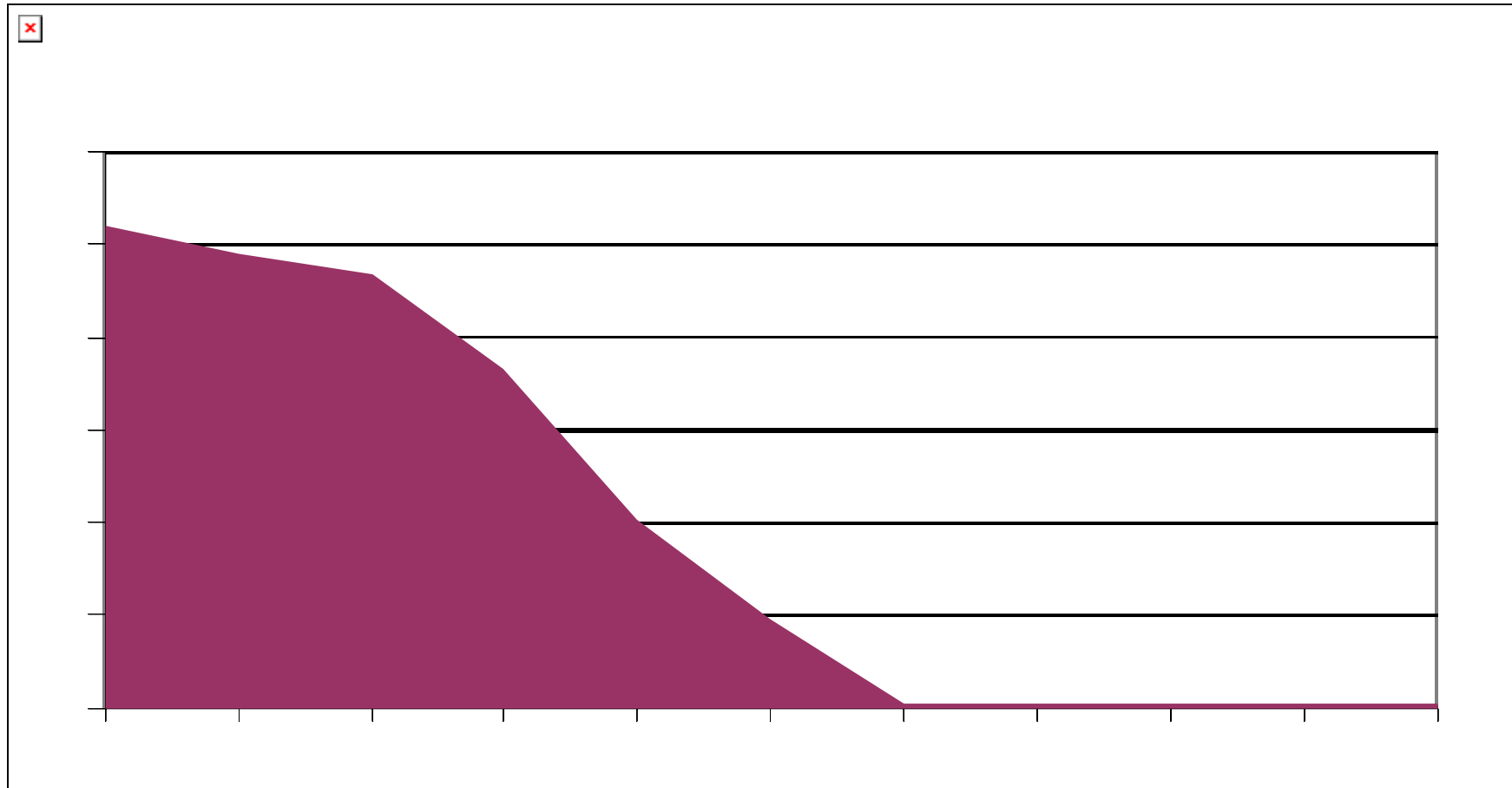


District Heating = 70% of Heat

District Heat Supply, Denmark (PJ)



DK CO₂ emissions from energy



- In total 2 t/capita per year in average 2010 – 2049
= sustainable level

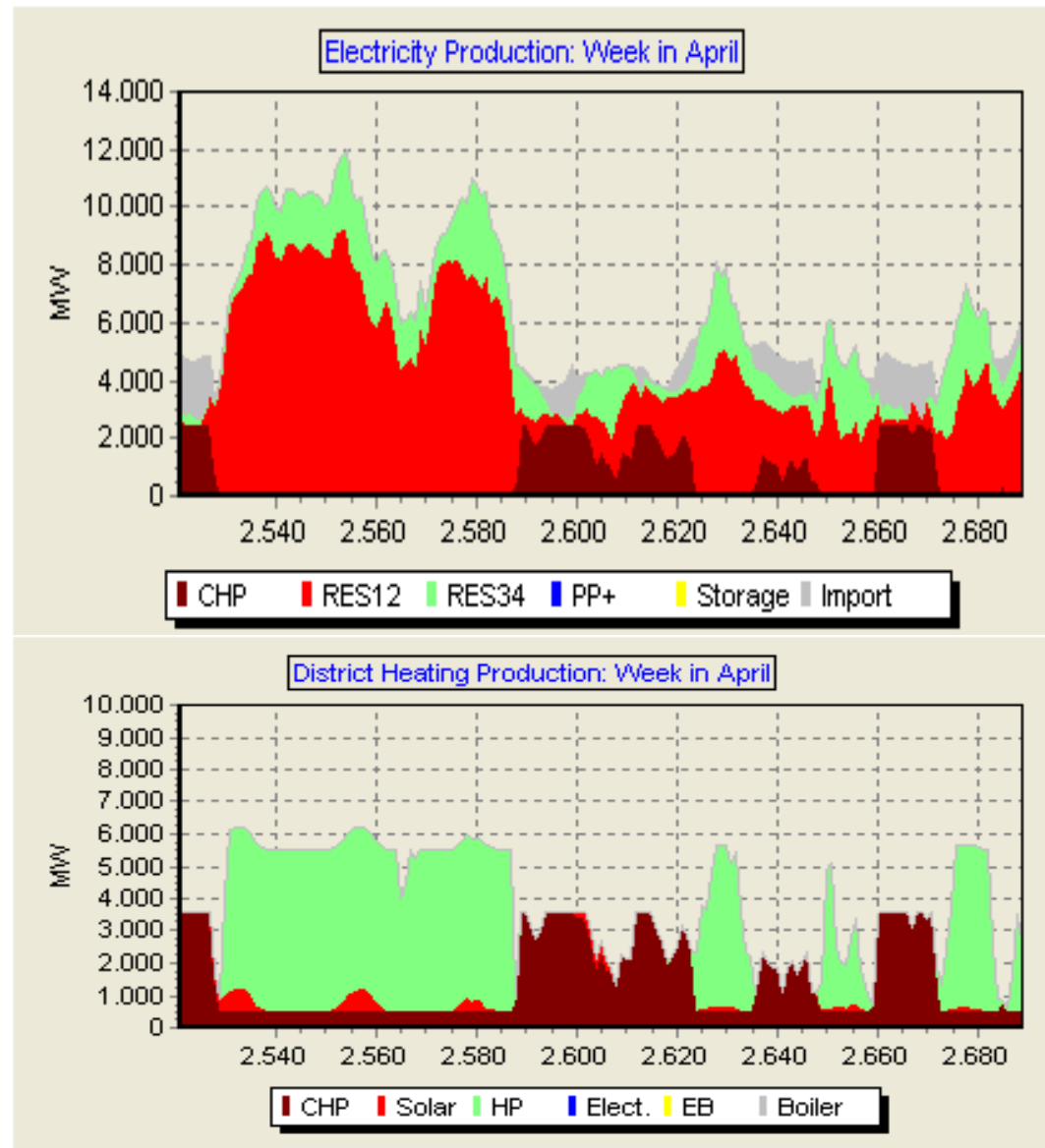
DK System in balance in 2030

Hourly balances
made with Energy
Plan programme
1% unused
windpower
Existing import/
export lines

RES12 = Wind

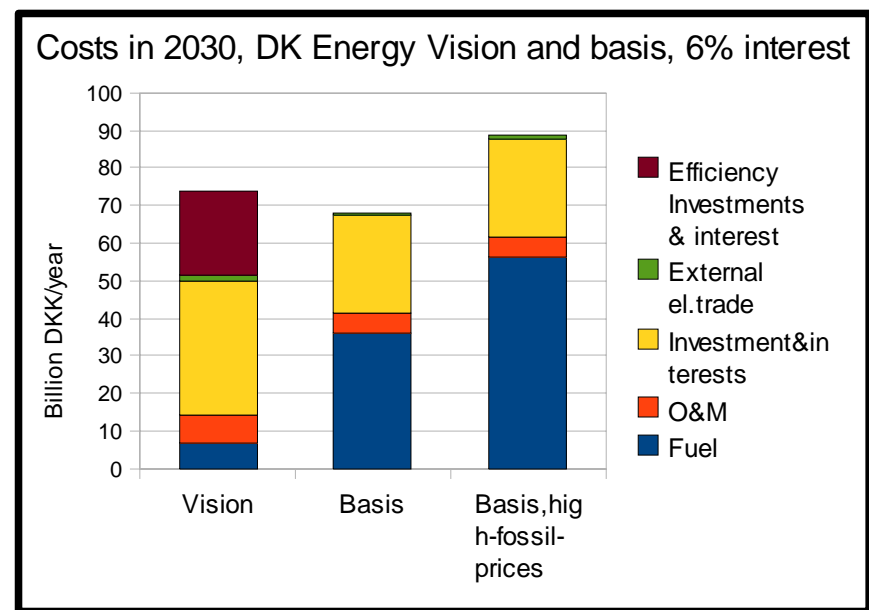
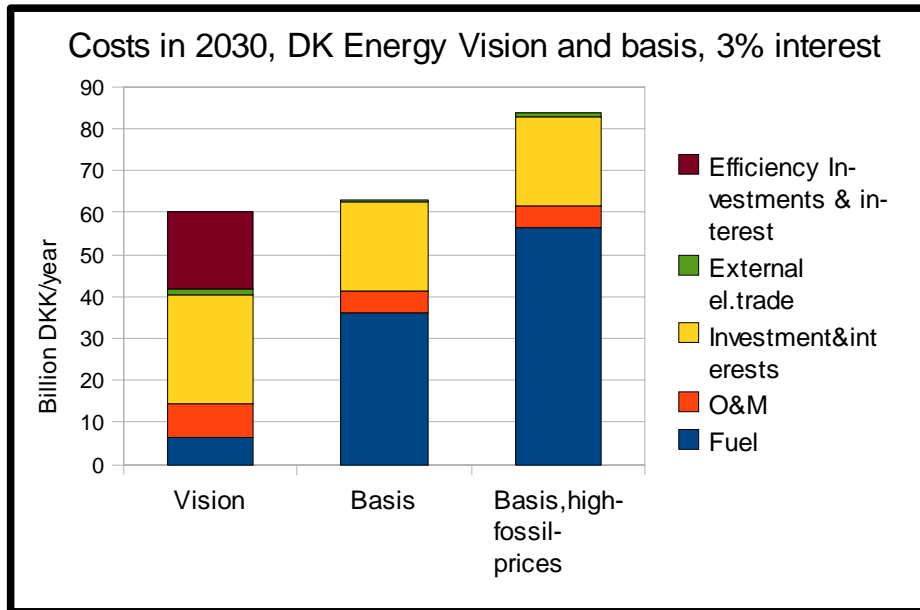
RE34 = wave+PV

CHP incl. geothermal



Costs

Costs calculated based on Danish national price forecasts, standard and high fossil fuel prices, Price for entire Danish energy supply system in 2030



In Conclusion

Europe can move to 100% renewables,
with energy efficiency and reduced/no
growth in energy services

In Denmark a fast transition can pay.
We need to change!

What about Catalunya?

Thank you



See
www.inforse.org/europe



