Global Energy Challenges

- The world energy use is beyond the environmental limits, e.g. Greenhouse gas emissions should be reduced > 80%
- Does not provide basic energy needs as light and healthy cooking facilities to 1/4 of the world’s population
- We must limit global warming to 2°C above pre-industrial level
- EU must take the lead

Energy Services per Capita

Primary Energy (TWh/y)

INFORSE Sustainable Energy Visions
- Vision for the World
- Vision for EU-27
- For Denmark, Latvia, Lithuania, Romania, Slovakia, Ukraine, (Bulgaria, Russia, Belarus)
  - Phase out nuclear 2025 and fossils ’30-’50
  - Factor 4 energy efficiency when possible
  - Sustainable use of national renewables
  - Efficient energy systems
  - Electric and hydrogen transport
  - Energy Balance for every decade to show path
INFORSE's EU-27 Vision

Renewable Energy Supply

INFORSE's EU-27 Vision

Electricity Divided in Supply

Biomass, Sustainably in EU (PJ)

Energy Demand

- Most energy consuming equipment will be replaced many times before 2050. Factor 4 energy efficiency increase is possible (consumption per unit 25% of today). Technology learning drives prices down.
- One exception is houses. In EU houses could use only 1/7 of today's heat demand in 2050. For the vision is proposed 1.7%p.a. specific reduction leading to 57% reduction 2000 – 2050.
- For transport is expected increase in conversion efficiency from today's 15-20% to 50%, and re-gain of "break energy": factor 4 efficiency increase
- Energy service demand will increase, -33% in car use in EU-15, but +100% in Lithuania

Realise Efficiency

Realising factor 4 in electric equipment, industry, transport, many examples:
- Computer screens: change to flat screens save 50 - 66% in one generation.
- A hydrogen car can be 4 times as efficient as present petrol cars, electric cars are 6 times as efficient.

Buildings:
- Industry (Eurima/EuroACE) finds that more than 50% of energy use in buildings could be reduced – INFORSE-Europe proposes 57% until 2050.

Vision for Denmark (OVE)

- Strong growth in windpower until 2030
- Half specific building consumption 2005-2025
- Flexible electricity use: heat pumps and hydrogen
- Sustainable transport system by 2030 (33% reduction in car use)
- el-storages from 2030
By Gunnar Boye Olesen, INFORSE Europe, OVE, Denmark


Primary Net Energy Supply, Denmark (PJ)

Energy & Employment (Poland)

Employment of Change to Biomass

Thank you

See www.inforse.org/europe/Vision2050.htm