



U.S.–European Summit on Science, Technology, Innovation, and Sustainable Economic Growth

Research on Environment and Sustainable Growth in the EU

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Washington DC, 28 September 2010

- ▶ **1. Enerdata**
- 2. Research in the EU
- 3. Key questions, insights and findings
- 4. Ideas for EU-USA forum

Enerdata : an independent information and consulting company specialized in energy since 1991

- Intelligence & information on energy markets, worldwide; In-house databases, research, models and indicators
- Specialized in global energy supply and demand issues:
 - Energy demand, DSM, energy efficiency
 - Global interactions: prices, availability of resources...
 - Forecasts and foresight, scenarios
- Over 150 clients in 40 countries; a strong commitment in EU research projects

1. Enerdata



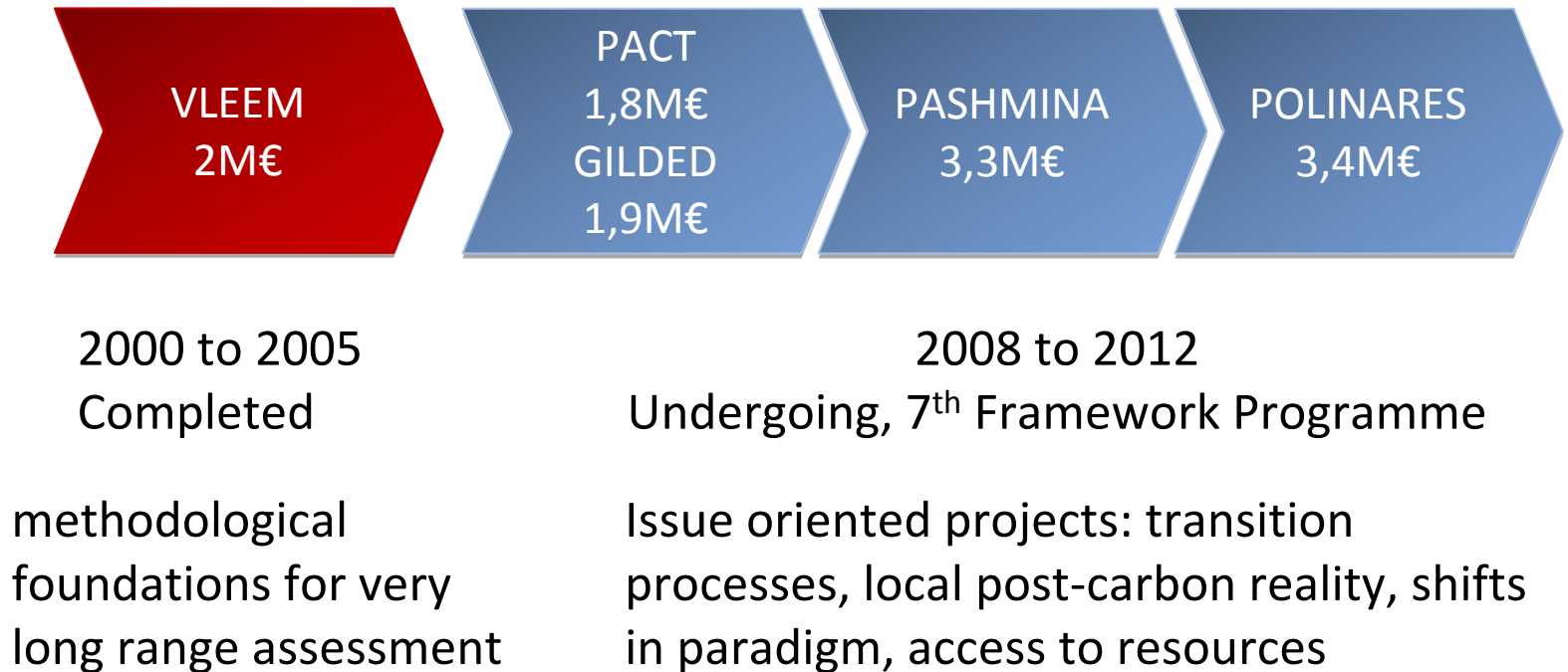
2. Research in the EU

3. Key questions, insights and findings

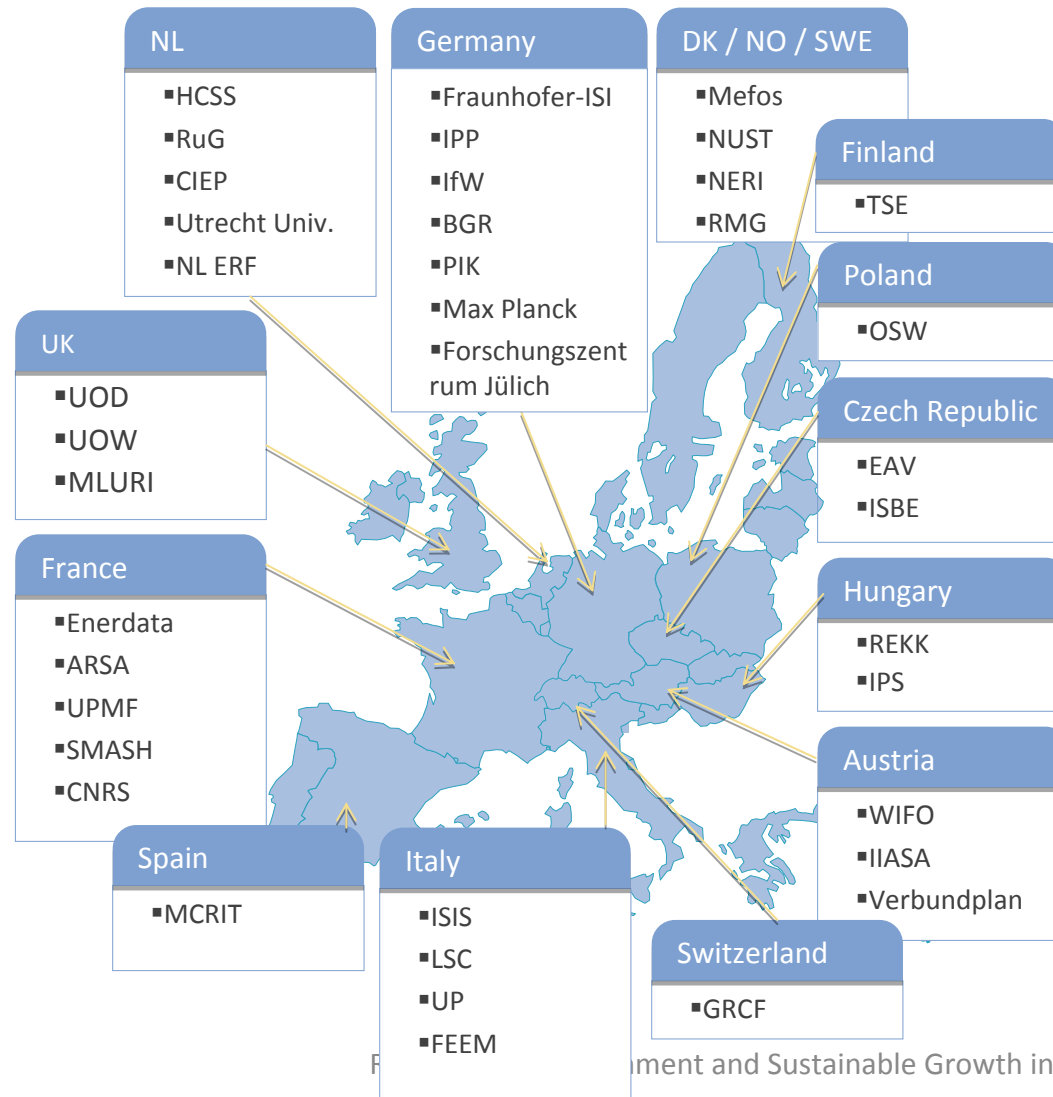
4. Ideas for EU-USA forum

A stream of research projects on environment and sustainable growth since 2000 in the EU

Some projects sponsored by the EC



Cross-fertilization among disciplines, organisations and countries in research projects sponsored by the EC

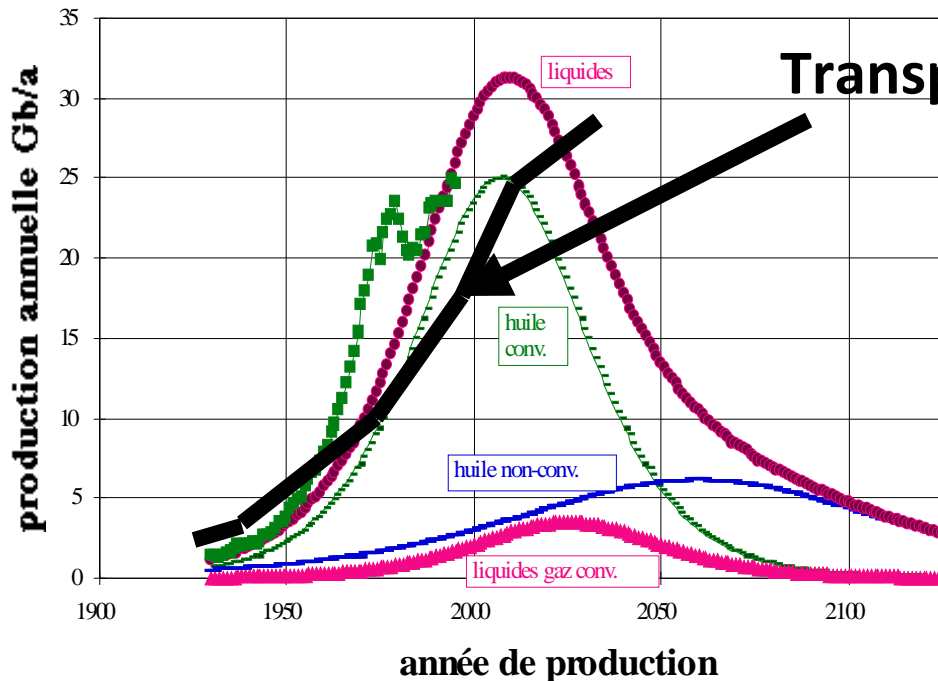


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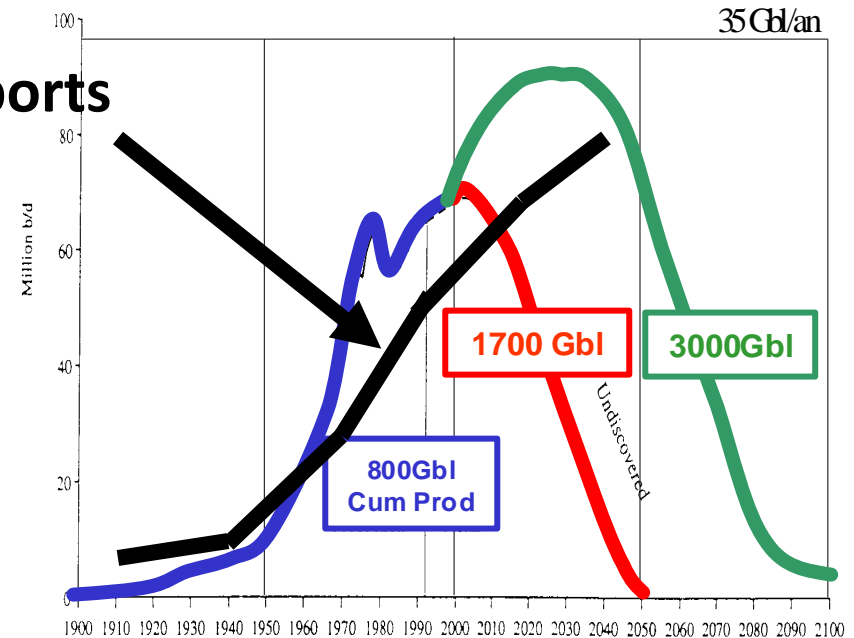
Key challenges ahead: example, oil and transport

If transport trends continue worldwide, transport would consume all conventional oil available by 2030, 2050 with unconventional

scénario pour une production mondiale de liquides
à partir de réserves ultimes conventionnelles
(1800+200 Gb) et non-conventionnelles (700 Gb)



Source : Laherrère-Petroconsultants

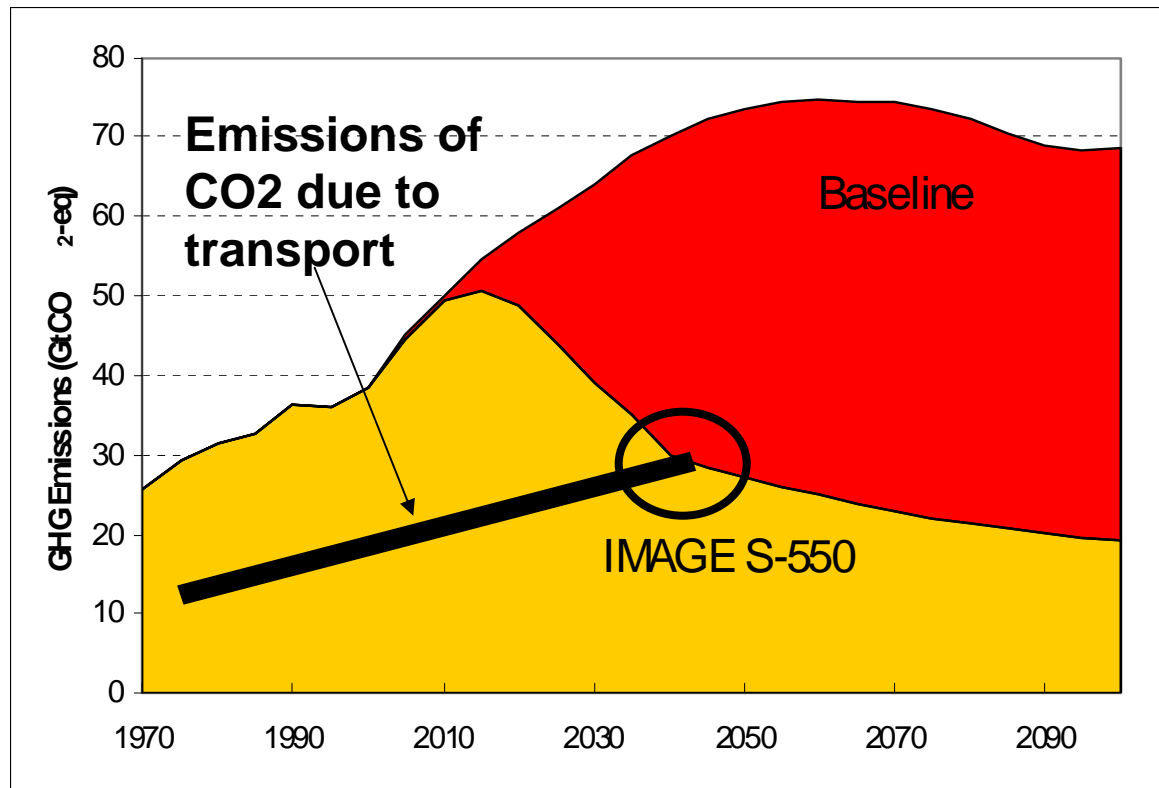


Source of historical data: *Oil Economist Handbook*; De Golyer and McNaughton, *Twentieth Century Petroleum Statistics*; *Petroleum Economist*, various editions

Source : Barnes-CIES

Key challenges ahead: transport and climate

If transport trends continue worldwide, it would emit by 2040 the maximum amount of CO₂ tolerated to avoid climatic disaster



Methodology: how to assess sustainability over 50 years or more to support action?

- Back-casting versus forecasting / foresight
 - coping with huge uncertainties
 - no replicability of the past
 - sustainability needs long term goal oriented action
- The critical issues of time-lags in transition processes:
 - heritage duration: cities, buildings, infrastructures
 - new technologies, from R&D to market
 - behavioural transformation
 - policy design and implementation
- Road-maps rather than curves to sketch out the transition and account for key milestones

Theory & Model: GDP, welfare and physical limits over the very long run, in a sustainable perspective

- Education and human capital in long term economic growth
 - demographic transition
 - labour productivity
 - Innovation and technology performance
- Time-use, welfare and energy needs:
 - working for money versus non priced services: beyond GDP?
 - food, shelter, self-accomplishment: less time, more energy needs
 - Mobility, accessibility and speed
- International cooperation and world economic growth:
 - financial flows to build up physical capital
 - technology transfer / sharing
 - Governance of global issues: resources, climate

Focus: better understand and quantify the transition process towards low carbon future

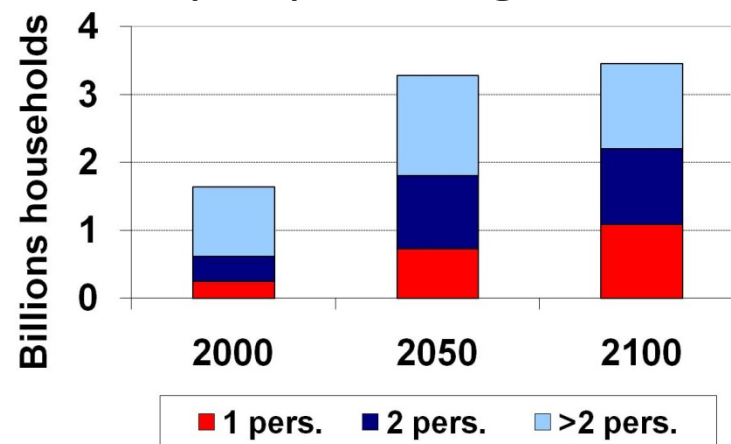
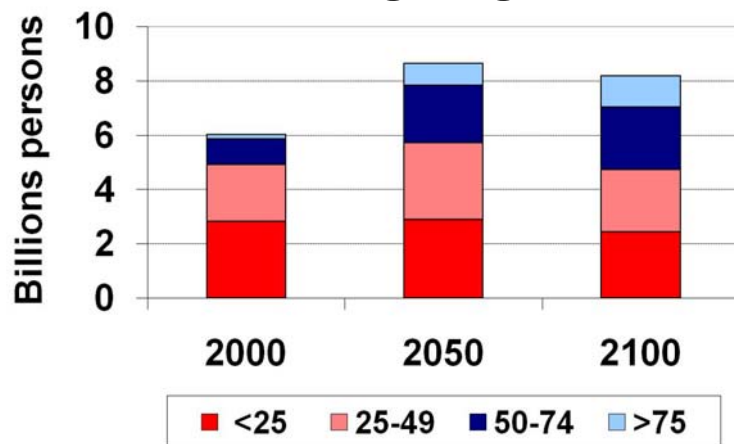
- What « post-carbon » societies may look like in 2050 ?
 - technology and materials
 - cities and land-use
 - social behaviours and consumption pattern
- What transition processes towards « post-carbon » ?
 - learning from anticipatory experiences
 - governance and risks , role of major stake-holders
 - economic crisis and transition scenarios
- Modelling the transition to « post-carbon » paradigms
 - interdependance between technology, organisation and behaviours
 - global interactions between energy and carbon markets

Insights from VLEEM: the world over the century

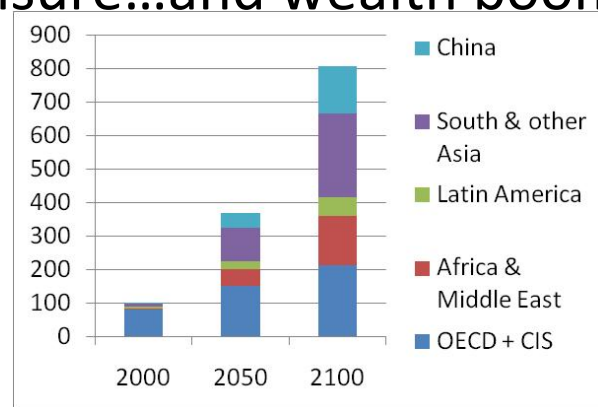
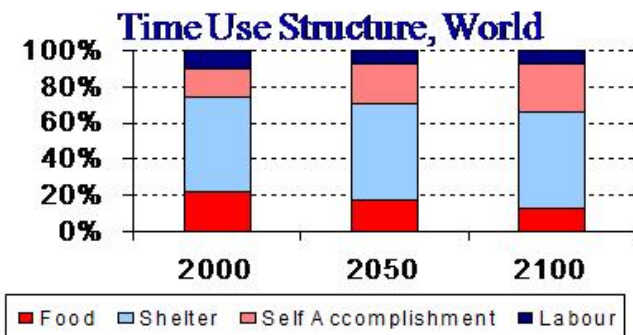
Source: WEEETO (World & European Energy Environment Transition Outlook)

report

A world ageing, with an explosion of people living alone

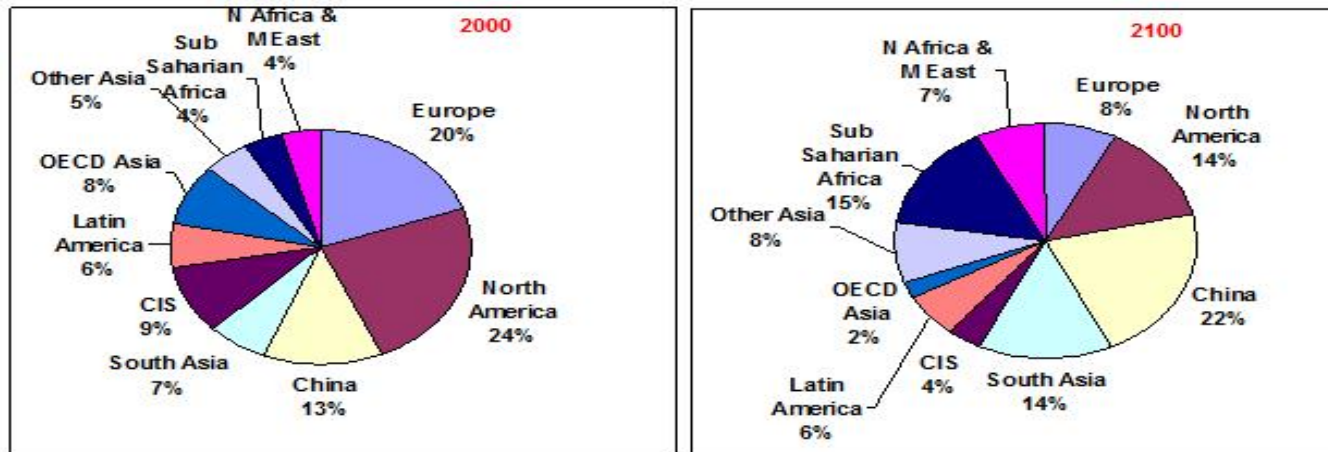


Less time at work, much more for leisure...and wealth booming

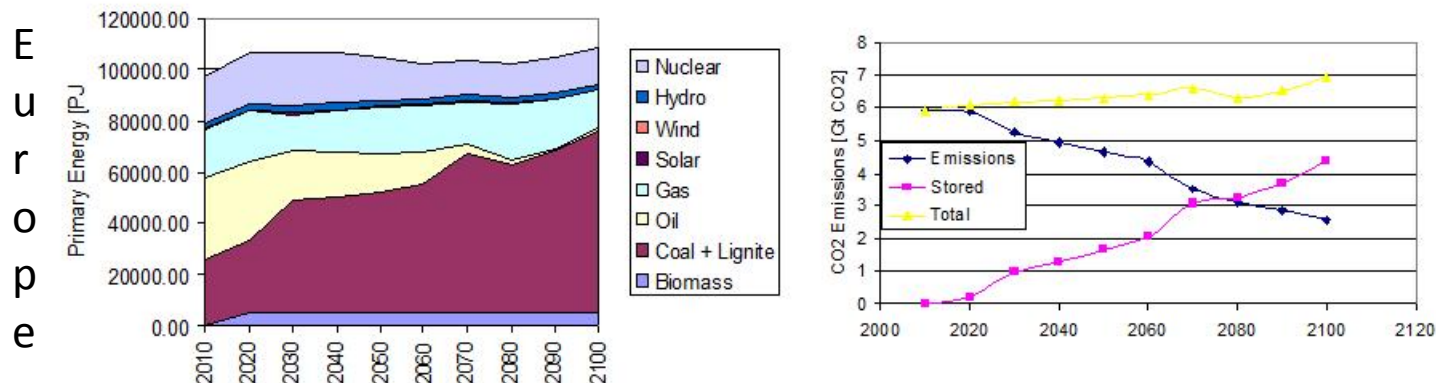


Where are the main energy-environment challenges?

World needs of energy services to be multiply by 3 to 2100

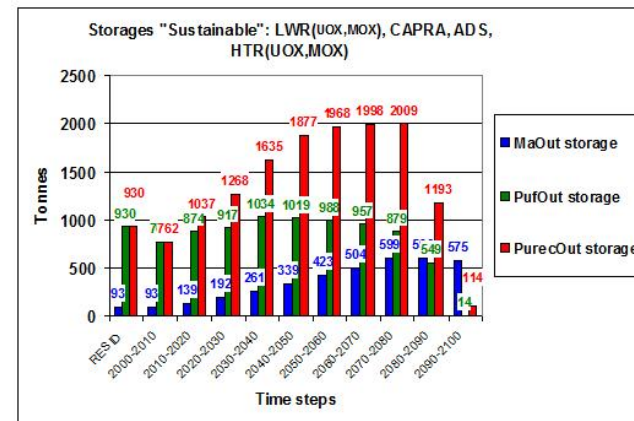
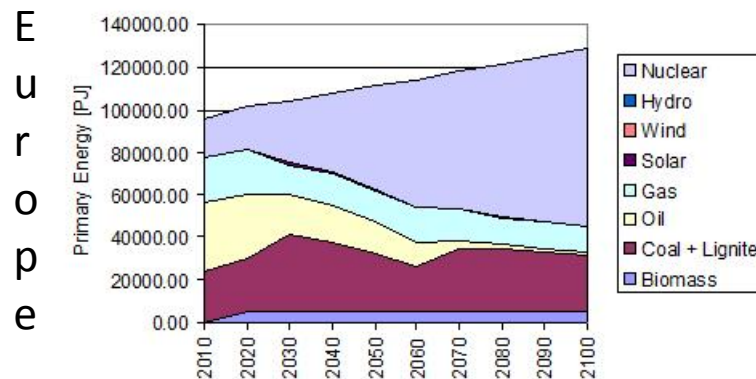


A new age for fossil, thanks to coal? Hard for demand & CCS!

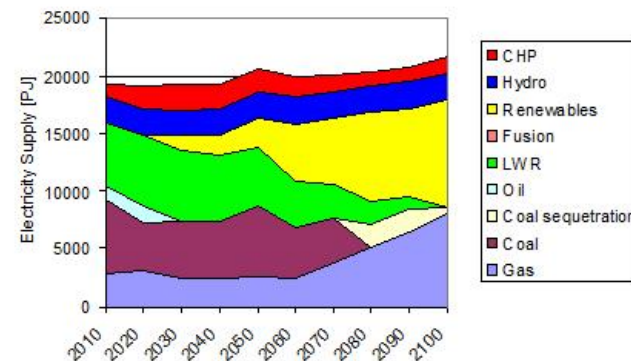
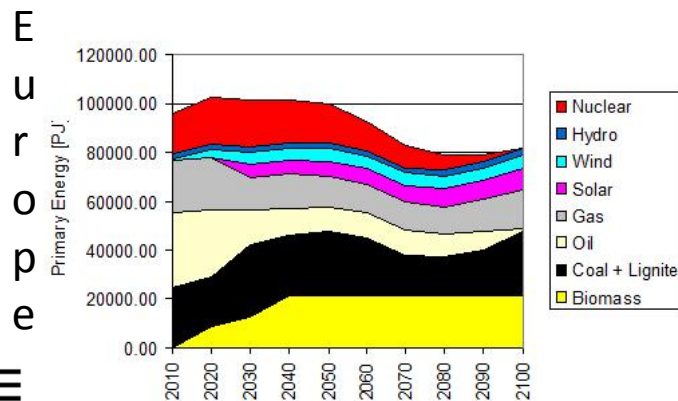


Where are the global solutions (new paradigms)?

Nuclear + electricity / H2 : huge technical challenges for sustainability (security, wastes,...) and low social acceptance



Renewables + very high efficiency: combining decentralized and global link...and rather high costs



Some findings on environment and sustainable growth (so far...)

- Timing is key
- Technology alone will not be enough
- Change in welfare measurement needed
- Transport-energy-environment nexus is a core issue
- GHG mitigation: a win win strategy to reduce economic, climatic and energy risks
- The cost of doing nothing probably much higher than ambitious policy action

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Some ideas for future EU-USA forum

- **Technology:** the revolution of the electric systems, a chance for a new Kondratieff Cycle?
- **Organisation of society:** sustainable cities and mobility, a condition for sustainable economic growth?
- **Social behaviours:** how to sustain / increase well being whatever GDP growth perspectives?
- **Economics:** instruments to bring long term sustainability objectives into the market



Merci pour votre attention!



www.enerdata.net

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