

- EUSUSTEL -

*European Sustainable Electricity; Comprehensive Analysis of
Future European Demand and Generation of Electricity and its
Security of Supply*

Recommendations for R&D priorities

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Challenges for the EU

- Sustainability
 - Not in conflict with energy provision
- Competitiveness
 - Climate policy
 - Security of investment: coherent energy policy and legislation
 - New economic framework: liberalised market
- Security of Supply
 - Extreme dependence of oil and gas



Guidelines for sustainability

- Reduce overall energy use; not necessarily electr use
- Use of RES sources: do not exceed rate of regeneration
- Use of non-RES sources: ensure compensation for future generations
- Emissions: do not exceed the absorption capacity of the natural environment
- Risks for health and environment from energy provision: must be smaller than natural risks and those avoided by the use of energy
- Energy service: at lowest possible total cost
- Total cost: to measure relative sustainability

R&D priorities

- End-use efficiency
 - Reduction of energy intensity
 - Structural changes to less energy intensive industry vs. efficiency measures
 - Internalise all cost, to emphasise value of energy
- RES technologies
 - Solar
 - Photovoltaic and thermal solar: large technical potential
 - Cost reductions
 - Solutions for night and winter times => storage?!
 - ...



R&D priorities (2)

- RES technologies (ctd.)
 - Biomass
 - Optimise energy use
 - High quality feedstock is scarce in EU
 - Wind
 - Large potential
 - Focus on good locations (on- and offshore)
 - Improved power predictions on short term: 6 to 48 hour
 - For distributed generation technologies: enhance grid integration

R&D priorities (3)

- Nuclear fission
 - Plays important role in electricity provision in EU
 - Now and in the future
 - Focus on
 - Safety and security of new built power plants
 - Safe disposal of waste
 - Better fuel management/usage in future designs
- Nuclear fusion
 - Important role on long term
 - Not in 2030 scope of EUSUSTEL-project



R&D priorities (4)

- Clean coal technologies
 - Large reserves => important role in future electricity provision
 - Focus on
 - Efficiency increase for existing technologies ~ material research
 - Possibilities of coal PP for load cycling
 - New technologies: focus on easy CO₂ capture
 - Carbon Capture & Storage
 - Further R&D + demonstration projects



Conclusions

- Prepare for more expensive oil and gas
- Prepare for more stringent environmental regulations
- R&D: good coordination required between programmes of different Member States
- Do not focus on one technology to become the dominant electricity production method
 - Keep serene debate, based on objective arguments