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What the electricity sector needs to motivate investment in carbon-free techniques

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(based on paper « Assessment of EU CO2 regulation », Bouttes JP , Dassa F,
Trochet JM, to be published in 2007)

1. the European Emission Trading Scheme

- Electricity today : around 40% of energy related worldwide CO2 emissions
 - A large potential to reduce emissions lies mainly in new investment in best available CO2-free & low-CO2 emitting technologies (supply and demand sides)
- ↪ EU ETS does not provide the right incentives to invest in CO2-free or low-CO2 technologies, given its current market design
- 4 key details of the market design have to be improved:
- ✓ long-term visibility (15-20 years) and banking
 - ✓ allocation rules decided at European level; all new projects should have to buy their CO2 emissions
 - ✓ Extension to other CO2-emitting energy sources to avoid sector "leakage": ETS or CO2 tax for fossil fuel in final stationary use
 - ✓ risk of geographical "leakage": safety valves and/or border adjustment mechanisms ?

2. Consistent use of complementary policies instruments

To reduce CO2 emissions at an affordable cost, we must act quickly with the whole portfolio of policies instruments. Choice of relevant public policies instruments must be adapted to the various maturity of technologies.

- **Investment required over the next 15-20 years must be based on CO2-free or low-CO2 technologies already available.**
 - ↪ Supply side: economic incentives for investment are needed (electricity prices reflecting total costs of new plants including CO2 value). But they will have little effect if it is not possible to build plants and networks.
 - choice and acceptability must be based on clear public debate frameworks
 - clear and appropriate licensing and siting procedures have to be adopted
 - ↪ Demand side: need for norms, standards (to tackle asymmetric information) and energy prices that include CO2 values to avoid the rebound effect

Control & command regulations and economic instruments (tax, cap&trade) are complementary tools for a consistent and effective mitigation policy
- **Beyond 20 years, need to prepare the next technologies**
 - public policies promoting R&D and deployment (via, for instance, PPP)

3 (1). International architecture

Technologies & public policies should help to reconcile climate and development.

Energy should contribute to reduce inequalities.

Cap-and-trade is a relevant instrument: the full & effective implementation of its design requires consistent public policies and credible compliance, possible on a country level.

International architecture could be based:

- **on Kyoto-like mechanisms for developed countries**

- in order to trigger major changes in their own energy systems
- in order to have a CO2 value to maintain and improve CDMs

- **on commitment based on SDPAM's for developing countries, to reconcile climate and development**

3 (2). International architecture

- For developing countries, international cooperation frameworks should be based on concrete analysis of technologies and their accessibility to different regions, taking their insight into account

Some examples:

- Sharing knowledge for best practices regarding existing technologies
- Promote and deploy mature technologies (or close to maturity) used in developed countries, to make them affordable in developing countries (CDMs, JVs to transfer technology, decrease trade barriers...)
- Collaborative research for future technologies (ex CCS)
- For less developed countries, promote deployment of existing and competitive low CO2 technologies, with specific international support for financing, national or regional institutional framework and competences (ex large hydro in some Asian and African countries)