

Integrated Climate Technology Development and Diffusion

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Technology Development and Diffusion

Question:

- How can technology development and diffusion be included in international agreements so that it facilitates integrated development and climate action?

Proposed Answer: in 4 parts

- Exchanging best practice, including adopting standards
- Capacity building, supported by a funding facility
- Public-private partnerships, with development funding
- Mechanisms, with project funding development transfers



Technology Development and Diffusion

Scope of this presentation:

- Technology in existing conventions, protocols, agreements
- Technology & development in generating and using power
- Promoting technology research, development and diffusion
- Promoting technology by signals from market mechanisms
- Technology diffusion in diverse approach to climate action



Technology Development and Diffusion

UNFCCC Convention: Aspirational

- **Commitments (Article 4c):** - ‘promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes ...’
- **Article 4g:** ‘promote and cooperate in ... research’
- **Article 9, SBSTA:** Identify innovative, efficient & state-of-art technologies ... promoting development and transfer
- **Article 12.4:** ‘developing country Parties may propose projects ... including technologies, techniques, practices
- **IPCC Process:** with strong technology components



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Kyoto Protocol: Projects, policies and measures

- Research on, promoting new and renewable technologies
- Specific focus on carbon sequestration technologies
- Projects, particularly the Clean Development Mechanism
 - Companies implicitly engaged (they are not in emissions trading)
 - Technology is defined in relation to sustainable development
- Financial resource transfers are essential to achieve the transfer of technology that will be needed to promote sustainable development in developing country Parties
- KP emissions trading has no relationship with technology



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Montreal Protocol: Best technology opportunity

- Provides for transfer of best technology, including use of financial mechanism for developing Parties
- Promotes research, development, awareness, and exchange of information on technology options
- Most powerfully, some major companies took the strategic signal to develop enabling technologies
- Technology opportunity enabled political decision



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Technology Standards: Trade barriers or opportunity

- International companies develop the technology solutions
- Regional technology standards can become trade barriers
- Business in TABD developed the concept of ‘technical equivalence’ for technology meeting regional standards
- But, common technological solutions can provide linkages; countries can adopt energy efficiency and other standards
- Use of similar technology standards can help demonstrate climate action and strategies in global agreement context



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IEA Energy Technology Perspectives 2006:

- In support of the **G8 Gleneagles** Plan of Action July 2005
- **Premise:** Secure, reliable and affordable energy supplies

Main conclusions:

- The world is not on course for a sustainable energy future
- With current trends, CO₂ emissions would increase to 2½ times current levels by 2050, with a greater carbon intensity as more coal is used for power & oil for transport
- But, this alarming outlook can be changed, for example using the **Accelerated Technology scenarios** proposed



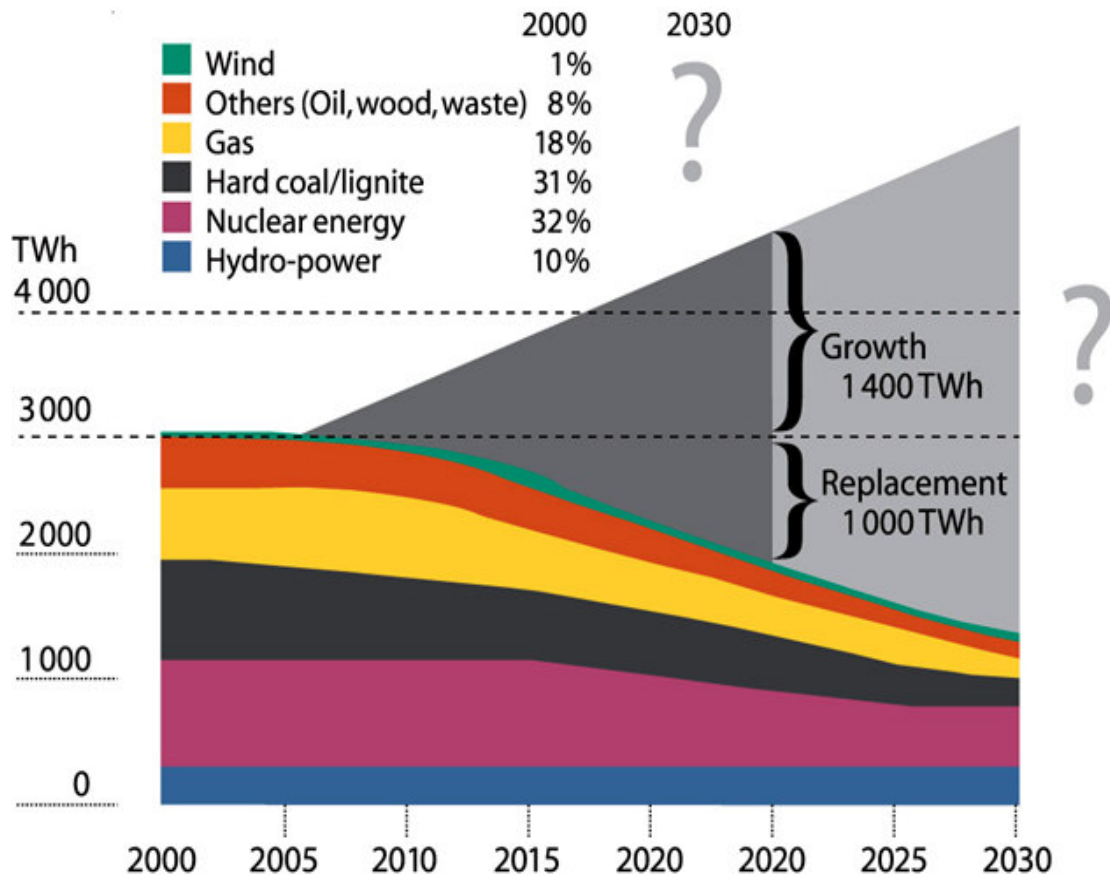
Technology Development and Diffusion

IEA ACT scenarios have ambitious assumptions but

- Demands for oil, gas & coal are all greater in 2050
- Demand for energy grows rapidly, especially in developing countries, so issue is technologies used
- Low carbon technology options already exist, but
- Technology portfolio needed promoted by policies to encourage research, development, and their use
- IEA estimates that most are within \$25/t CO₂ cost

Ensuring Investments

Development of electricity generation in the EU 25 between 2000 and 2030



- ✓ Need for huge investments up to 2030 (750 GW)
- ✓ Costly investments (€1 trillion)
- ✓ No technology revolution in sight within 10 years
- ✓ Create an attractive business environment



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Investment trends in the power sector:

- Eurelectric estimates EU-25 will need to invest by 2030 in as much capacity as it has now, 1/2 for growth 1/2 replaced
- Germany, USA, China, India and others will rely on coal
- Germany has 8 GWh capacity planned, mainly coal-based, encouraged by German EU ETS 14y rule, some CCS ready
- China commissions a major coal-based plant every 5 days
- China energy choices driven by supply security, economics and efficiency, to a lesser extent air quality, GHG even less
- A major priority for less developed countries is to provide power and energy access to all, including poorest citizens



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Policies & Measures, Signals & Markets for Power:

- Coal power plants planned now will operate/emit to 2050, so it is important that the most efficient technology is used
- CCS option increases cost, and reduces energy efficiency, which runs counter to the priorities of developing countries
- Renewable energy costs more, but has off-grid opportunity
- So far only CDM bridges the gap left by developmental aid
- There is a major opportunity for a CDM-type mechanism:
-one conclusion of the Stern report on climate economics?
- Development & climate point to public-private partnership



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Promoting Technology R&D, and Market Diffusion:

- Governments need to set policies with market ‘pull’ for climate policy objectives, encouraging technology ‘push’
- Market signals build climate action into company strategy
- Company research driven by perceived risk & opportunity
- Public-private partnerships: DoE energy security funding
- Companies will use new more efficient technology where it offers competitive advantage, and reduces strategic risk



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Promote Technology by Market Mechanism Signals

EU ETS brave experiment in market & emission transparency

- EU ETS first impact has been a focus on energy efficiency
- Second impact has been on strategic thinking in companies
- Third impact has been to kick-start the CDM mechanism
- Its main limitation is weak linkage to investment decisions

Mechanisms enable governments to delegate climate change decisions to companies, as part of commercial strategies



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Technology Diffusion in Diverse Approach to Climate Action

- A post-2012 approach will take time to agree, and likely to be diverse
- Competitive trade and commercial concerns likely to become greater
- A global approach will need linkages between strategies and markets
- Technology options are important for trade, can be for climate action
- Technology for investment can help to demonstrate climate strategies
- Public-private partnerships, demonstrating new, cleaner technologies, can become important way to integrate climate & development action
- Mechanisms can give commercial incentives for development projects



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