Accelerating Energy Innovation: Successful Strategies for RD&D

Tom Kerr, Joana Chiavari
Energy Technology Policy Division
IEA programme of work

Where are we today?
- Global Gaps analysis of low-carbon energy RD&D spending
- In-depth country reviews

Where do we need to be in 2030? 2050?
- 2030: World Energy Outlook
- 2050: Energy Technology Perspectives

How do we get there?
- Global Energy Technology Network (Implementing Agreements, CERT, Working Parties and Experts' Groups)
- Energy technology roadmaps
- Low-carbon energy technology platform
- **Accelerating energy innovation project on technology RD&D**
A portfolio of technologies is needed

Energy efficiency is the first priority

Baseline emissions 57 Gt

BLUE Map emissions 14 Gt

WEO 2009 450 ppm case

ETP2010 analysis

- CCS 19%
- Renewables 17%
- Nuclear 6%
- Power generation efficiency and fuel switching 5%
- End-use fuel switching 15%
- End-use fuel and electricity efficiency 38%

Energy efficiency is the first priority
Government spending on clean energy RD&D: technology push

Stimulus packages are a one-time funding increase; how to achieve sustained higher levels of investment?
Countries investing in a wide variety of technologies

Clean energy RD&D by country (million 2008 USD)
The importance of technology policy

Many low carbon technologies will not be competitive in the next decade, even with a price on carbon.
Smart policies can accelerate clean energy uptake today

A strategic approach is needed
Steps to successful energy RD&D

- Develop a comprehensive national energy technology strategy
  - Establish a baseline - where is the country today?
  - Forecast future growth pathways
  - Prioritise energy technology investments through resource mapping, technology assessments, roadmaps
  - Engage private sector in planning
  - Ensure flexibility through portfolio approach

- Implementation
  - Technology push: government spending on RD&D
  - Market pull: mandates or incentives to drive private investment
  - Fiscal and other measures, combined approaches
  - Develop institutions and coordination mechanisms

- Monitor and evaluate impacts
  - Develop indicators and assessment tools
  - Collect data and report regularly
  - Modify/terminate programmes to incorporate lessons learned
Project timeline

- **April – December 2010**
  - Create an informal group of advisors; host expert workshops
    - First workshop 29-30 June at IEA
    - Next workshop early 2011 to share preliminary findings
  - Review IEA *In-Depth Reviews*, identify tools to assess ‘return on investment’ in energy RD&D spending, identify energy RD&D evaluation methods
  - Select countries for further analysis, follow with site visit, roundtables and meetings
    - Site visits conducted: Norway, Sweden, Denmark, Finland
    - Planned visits: Netherlands, US, EU, Brazil, UK, France, China, India, Korea, Japan...

- **Publish study in June 2011**
- **Include updates in ETP 2012**
Outcomes

- Identify **successful approaches** to energy technology RD&D planning, including tools, strategies and approaches
- Provide **case studies of successful programmes/institutions/policies** that optimise technology support
- Identify **indicators/evaluation tools** that measure the impacts of energy RD&D investment
- Disseminate information on **lessons learned** from deployment programs and policies in different countries

[www.iea.org/about/best_practices.asp](http://www.iea.org/about/best_practices.asp)
Questions for country visit

Development of a National Energy Strategy

- What policy drivers have affected the evolution of your energy technology RD&D policies and strategies?
- What approaches have been used to set RD&D priorities?
- Have industry and other stakeholders been involved in the setting of priorities? How have they engaged?
- How are targets and goals of RD&D programs and criteria for individual project selection formulated?

Implementation

- What mechanisms/policy approaches are used to accelerate the introduction of new energy technologies to the market?
- Were there any new institutions created to achieve energy technology RD&D goals in the last 5/10 years?
- Are there examples of successful international technology collaboration? How does the country decide which types of international collaboration offer value?

Monitoring & evaluation

- Does the country assess the “cost effectiveness” or “return on investment” of energy RD&D measures? What methodology is used?
- What types of evaluation methodologies do you use to monitor progress of RD&D programs? Which criteria or indicators are used?
- Do the results of the measurements feed back into planning and energy RD&D decision making?