Technology Roadmap
Wind energy

IEA Wind Energy Roadmap

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Wind power potential (WEO 450 Scenario)

But the energy market alone will not achieve this deployment
Why do a wind roadmap?

• Wind has **value**
  – Security of supply, reduced gas consumption, climate change mitigation, local pollution reduction (air, soil, water), employment, water constraints

• Clear **objectives**: accelerated deployment of wind energy, vehicle for monitoring progress towards targets

• Capture full range of **tasks**
  – Resource assessment, technology, supply chain, transmission, system integration, regulatory

• **Consensus** on priorities, timelines, responsible parties
  – government, academia, industry, transmission and system operators consumers...
Strong AMBITION linked to allocated, scheduled TASKS
Cost reduction is a primary goal

In the IEA global wind roadmap, land-based investment costs reduces by 23% from 2010 to 2050, and by 38% offshore.
But it’s not just about technology cost

Efficient public & private investment in wind farms & system

Competitive technology
- R&D
- Standards
- Scale

Understanding the wind resource

Institutional support & policy framework
- Incentives & targets
- Strategic planning
- Clear competencies
- Removal of historical barriers

Access to market
- Transmission
- System evolution (flexibility, grid codes)

All roads lead to the investor
Task example 1: offshore technology

A complex range of forces act on wind turbines offshore.
Task example 2: grid reinforcement in the USA

US: early, coordinated planning, accounting for location of wind resource

(new transmission in red)
Task example 3: planning in the Netherlands

Dutch spatial planning takes into account the full range of competing sea uses: shipping, defense, ecology.
IEA Wind Roadmap origins

• **IEA publication** - *Energy Technology Perspectives 2008*
  – Around 20 technologies identified
  – Including on- and off-shore wind

• **Japan G8** committed to a new initiative
  – “*We will establish an international initiative with the support of the IEA to develop roadmaps for innovative technologies and cooperate upon existing and new partnerships.*”

• **Wind was 1 of the 5 highest priorities**
  – Norway, Denmark, European Wind Energy Association, Vestas