



European Strategic Energy Technology Plan (SET-Plan) towards a powerful European Energy RTD

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Context

By 2020 – the three 20s:

- **20% reduction in greenhouse gas emissions compared to 1990 levels (30% if global agreement)**
- **20% reduction in global primary energy use (through energy efficiency)**
- **20% of renewable energy in the EU's overall mix (minimum target for bio fuels of 10% of vehicle fuel)**

By 2050 : indicative 60 to 80% reduction in GHG



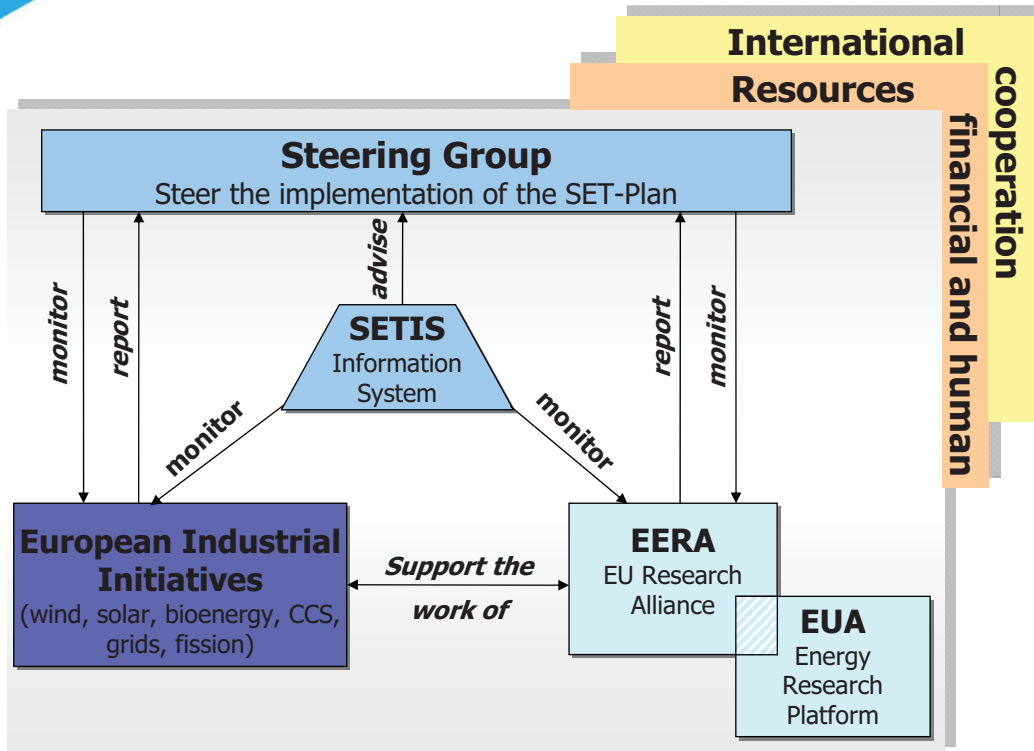
Why a SET Plan?

- ➔ **Technology is a key component for the success or failure of a European energy policy**
 - ➔ **no chance to reach the ambitious goals without a unprecedented stimulation of the development of low carbon energy technologies**
 - ➔ **we need to tackle both short and long term perspective**
 - ➔ **ST: reinforced research and pro-active support measures**
 - ➔ **LT: development of new generation of technologies through breakthroughs (FET Basic Research)**
 - ➔ **no country is strong enough to act alone – a coordinated effort of all stakeholders (MS, EC, industry, research centres, universities, funding organisations, etc.) required**

European Energy Research-Status Quo

- ➔ **Enormous differences between countries**
 - ➔ **1/4 without specific Energy Research Programme**
 - ➔ **per capita expenditures vary by a factor of 10 (and more)**
 - ➔ **Big differences regarding**
 - ➔ **priorities and priority setting procedures**
 - ➔ **program implementation (centralised/decentralised)**
 - ➔ **industry participation**
 - ➔ **significance of international cooperation**
- ➔ **Up to now no strong cooperation between countries (change through ERANETs?)**
- ➔ **only weak links between national and EU programmes**

SET Plan measures



European Industrial Initiatives

➤ European Industrial Initiatives:

- **European Wind Initiative**
- **Solar Europe Initiative**
- **Bio-energy Europe Initiative**
- **European Electricity Grid Initiative**
- **European CO2 capture, transport and storage initiative**
- **Sustainable fission initiative (Gen IV)**
- **Smart Cities (*new*)**

➤ On-going initiatives:

- **Fuel cells and hydrogen (JTI)**
- **Fusion (ITER)**



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European Industrial Initiatives

- **Launched the first four EIIs (3 June 2010)**
 - **Wind, Solar, CCS and Electricity Grids EIIs**
 - **Joint Statement supported by the public (EC, MS) and private side (relevant industry)**
 - **All parties committed to support:**
 - **Technology Roadmaps 2010-2020**
 - **Implementation Plans 2010-2012**
 - **Light and non-bureaucratic governance structure**



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European Industrial Initiatives

- **Sustainable Nuclear and Bioenergy EIIs**
 - **Launch foreseen at the SET Plan Conference in Brussels, 15-16 November 2010, under the Belgian Presidency**
- **Smart Cities EII in the phase of developing the concept**
 - **Taking stock during the SET Plan Conference in Brussels, 15-16 November 2010, under the Belgian Presidency**
 - **Launch foreseen in 2011**





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Technology Roadmaps (1)

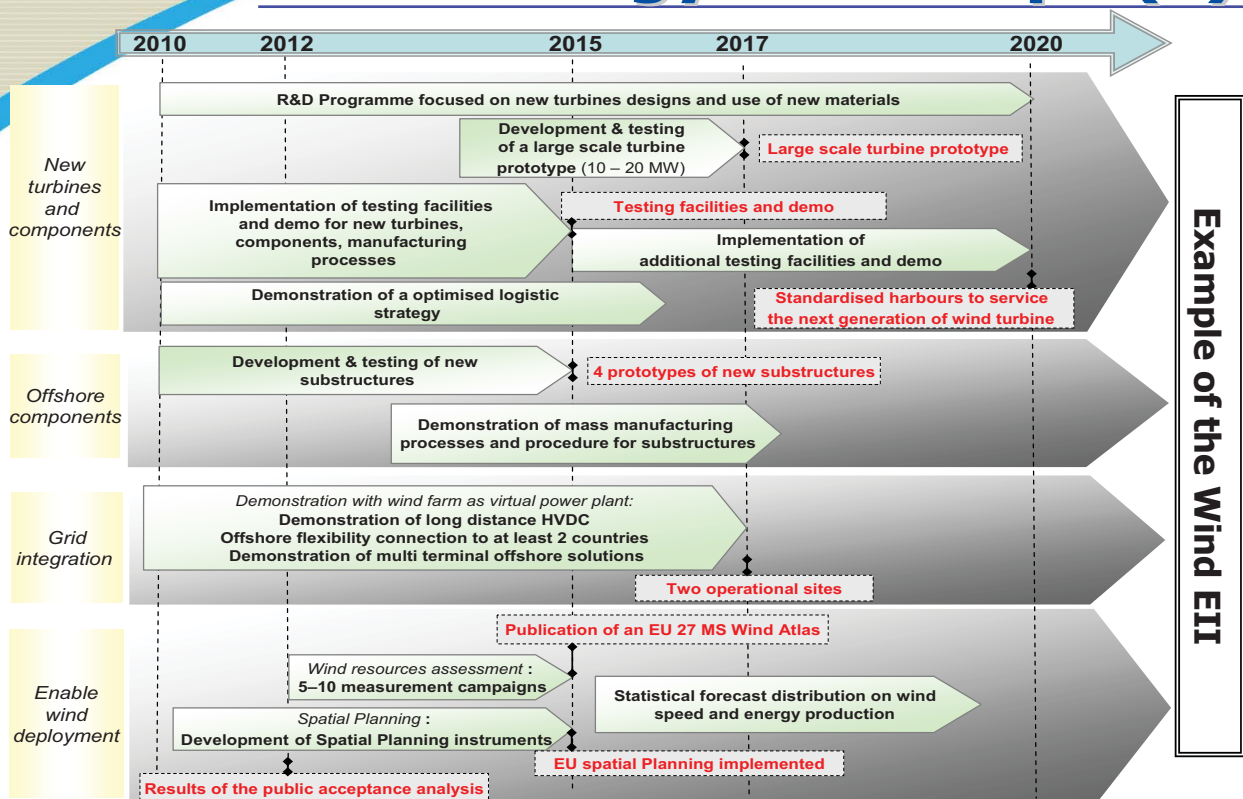
- **Technological objectives → Concrete action plans → Estimated investments needed for the period 2010-2020 to achieve:**
- Up to 20% of the EU electricity produced by **wind** energy
- Up to 15% of the EU electricity produced by **solar** energy
- 50% of **networks** operate along "smart principle" effectively matching supply and demand
- At least 14% of the EU energy mix from cost-competitive, sustainable **bio-energy**
- **CCS** technologies become cost-competitive within a carbon-pricing environment by 2020-2025
- First Generation-IV **nuclear** reactor prototypes in operation by 2020, allowing commercial deployment by 2040
- 25 to 30 European **cities** will be at the forefront of the transition to a low carbon economy



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Technology Roadmaps (2)



Implementation Plans 2010 - 2012

- **Implementation Plans 2010 – 2012 of the Electricity Grids, Solar, Wind and CCS available**

- **Coordination between the Electricity Grids Initiative and other EIIs to ensure:**
 1. **All necessary new requirements concerning grid integration of low-carbon energy sources are addressed**
 2. **RD&D activity overlaps between the initiatives are minimized**

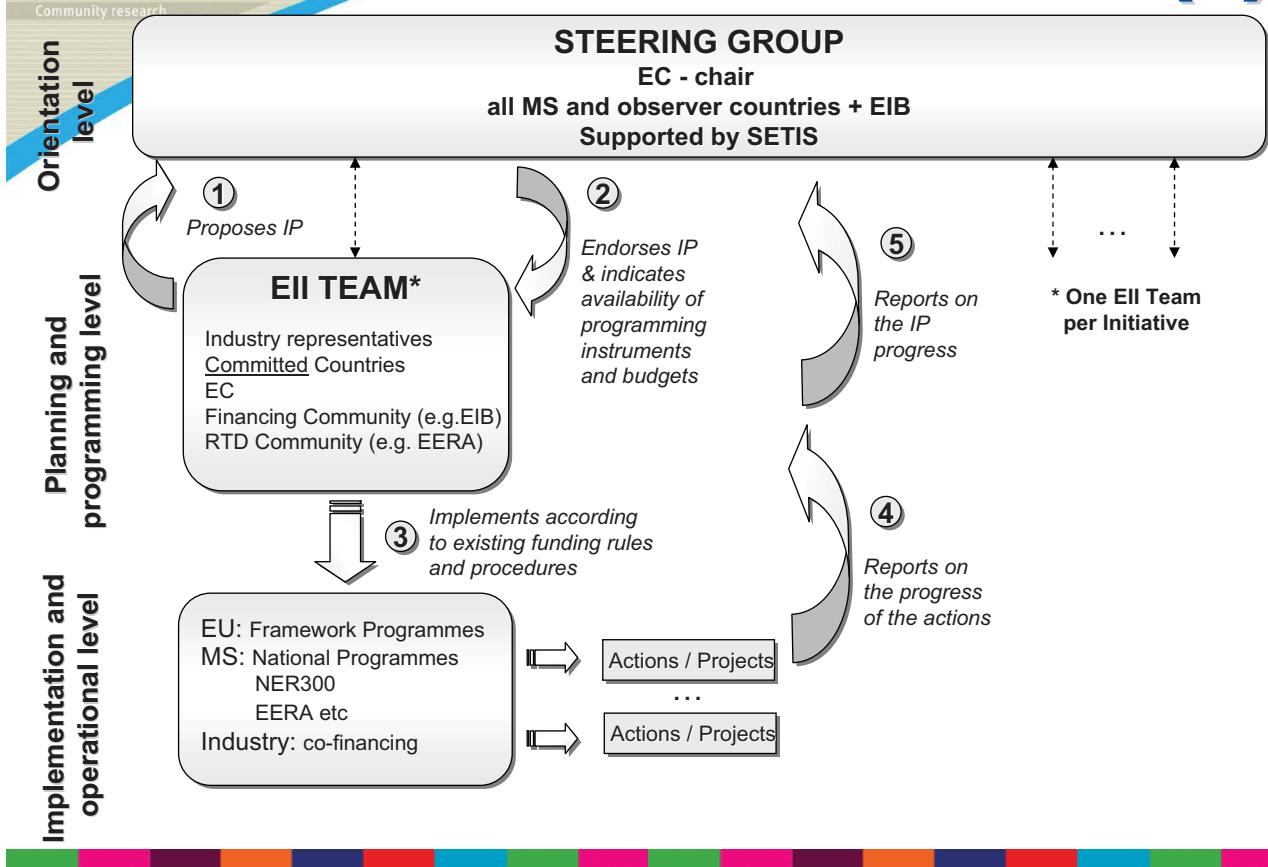
- **Coordination with Solar and Wind Initiatives**
- **Cooperation launched with other initiatives (Storage, Electric Car, Smart Buildings)**

Governance Architecture (1)

- **Light and non-bureaucratic governance**

- **EII governance: three levels of intervention:**
 - **Orientation level - SET-Plan Steering Group**
 - **Planning and programming level - EII Team**
 - **Implementation and operational level – in which activities and projects are carried out**

Governance Architecture (2)



Governance Architecture (3)

- **Open to MSs, companies and research institutions of all sizes**
- **Each financing actor decides on its own contribution and modalities, in accordance with own rules and procedures**
- **Based on available instruments**

Available instruments

Common EU Roadmap and Implementation Plan

- **'public (MS)-public (EC)-private partnerships' with a variable geometry, open architecture**
- **share objectives, planning, monitoring and reporting tools and implementation instruments**

Public funding partners	Project typology	Instruments
EC	High EU added value	FP, CIP-IEE
EC and MS	Large projects, EU added value, shared interests	FP (ERA-NET+), coordinated calls, Art 185...
MS and MS	Localised shared interests	NER300, ad-hoc arrangements, EERA etc
MS	Supporting domestic industry	national programmes, NER300, structural funds
EIB	Large projects	EIB loans, RSFF, guarantees, equity

Common EU reporting, monitoring and assessment – KPIs

European Energy Research Alliance

- **Initiative by a number of leading research institutes (October 2008):**
 - **Total annual turnover approx 1,300 M€**
 - **Over 10,000 scientists**
- **Aim: accelerate development of new energy technologies through Joint Programmes (JPs):**
 - **Strengthen, expand and optimise research capabilities**
 - **Harmonisation of national and EC programme**
 - **Decrease fragmentation**
- **Launch of the first 4 JPs in June 2010 on PV, Smart Grids, Wind and geothermal**

➔ **So far 13 participating institutions:**

➔ **AIT (AT), ECN (NL), ENEA (IT), ERSE (IT), IWES (DE), JRC (NL), LABEIN (ES), LABORELEC (BE), Risø (DK), SINTEF (NO), TUBITAK (TR), VITO (BE) and VTT (SF)**

➔ **2 coordinators and 4 Sub-Programmes for joint research:**

- ➔ **Network operation**
- ➔ **Energy management**
- ➔ **Control system interoperability**
- ➔ **Electrical storage technologies**

➔ **Annual commitment of 52,5 person years**



➔ **So far 14 participating institutions:**

➔ **CEA, CIEMAT, CRES, ECN, ENEA, FhG-ISE, FhG-ISET, FZ-Juelich, IMEC, HZB, Risø, Sintef/IFE, VTT and the Warsaw University of Technology**

➔ **1 coordinator (ECN) and 5 Sub-Programmes for joint research:**

- ➔ **Silicon Materials (Inorganic)**
- ➔ **Thin film PV**
- ➔ **Organic PV**
- ➔ **Module Technology**
- ➔ **Education and Training and use of Infrastructures**

➔ **Annual commitment of 111 person years**



- **So far 10 participating institutions:**
 - **CENER, CIEMAT, CRES, ECN, LNEG, ISET1, Risø, SINTEF, University of Porto and the University of Strathclyde**

- **1 coordinator (Risø) and 5 Sub-Programmes for joint research:**
 - **Wind Conditions**
 - **Aerodynamics**
 - **Offshore Wind Energy**
 - **Grid Integration**
 - **Research Facilities**

- **Annual commitment of 125 person years**

Hydrogen and fuel cells

CO2 capture and storage
technologies for zero
emission power generation

Renewable
electricity
generation

Clean coal
technologies

Renewable
fuel production

Smart energy
networks

Renewables
for heating and cooling

Energy savings
and energy efficiency

Knowledge for energy policy making

Horizontal Programme Actions

The SET Plan and the EIT

- **Knowledge and Innovation Communities of the European Institute of Technologies (EIT)**
 - **webs of excellence**
 - **cross-linking education and research to business**
 - **integrating the whole innovation web and entrepreneurship**
 - **co-locating people**
 - **world leaders in their field**

- **Sustainable Energy KIC: INNOENERGY**
 - **35 Partners**
 - **lead: Karlsruhe Institute for Technology**

- **Strong links between the KIC and the SET plan**
 - **overlapping objectives**
 - **KIC members participate in EERA**
 - **human resources considered crucial**



The SET Plan - Next steps

- **Strong EU institutional support (Council and Parliament)**
- **Launch of next EIIs and Joint R&D programmes of EERA**
- **Need a shared effort from EU, MSs, Industry and financial community for a successful implementation**
- **Start developing international cooperation**
- **SET-Plan Conference in November 2010**





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AN ENERGY POLICY FOR EUROPE



energy for a changing world

