



Towards  
a low carbon  
future

**Investing in the Development of Low Carbon  
Technologies**

**SET-Plan TECHNOLOGY ROADMAPS**

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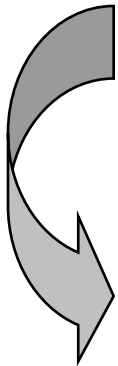


EUROPEAN COMMISSION

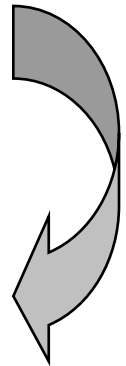


## EU energy and climate change policies

- greenhouse gas emissions
- security of energy supply
- competitiveness



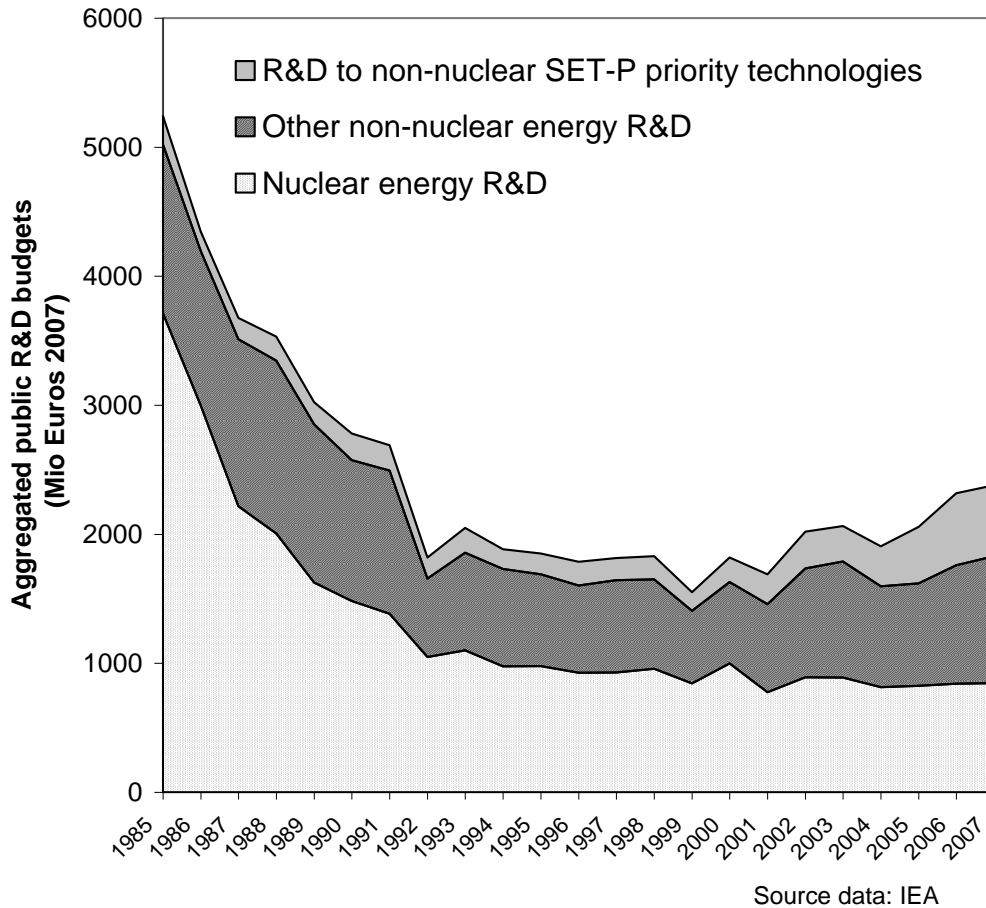
**The SET-Plan is the TECHNOLOGY PILLAR**



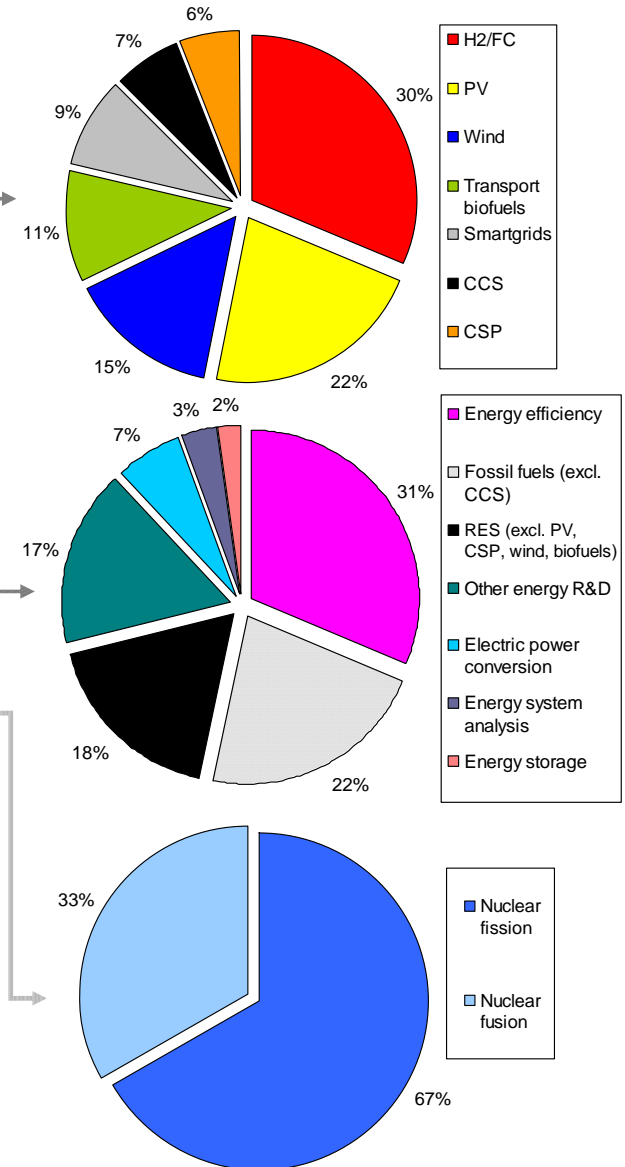
**A reinvention of our energy system  
...towards the 2050 system**

- **Joint Strategic Planning – Steering Group and Information System (SETIS); annual ‘summits’**
- **Effective implementation:**
  - × **European Industrial Initiatives: strategic technology alliances**
  - × **European Energy Research Alliance – research institutes**
  - × **Trans-European Energy Networks and Systems of the Future – transition planning**
- **Reinforce international cooperation**
- **Increase in resources, both financial and human**

# EU investment trends ...



2007 (Gap filled)





# Why technology roadmaps?

- Investment over the next 10 years is key
- In a carbon constraint world, technology is key
- The regulatory framework sets the direction
- Opportunity for industry
- European Industrial Initiatives to make the opportunity a reality

## **The technology roadmaps help us to**

- ✓ **identify key challenges and bottlenecks;**
- ✓ **the actions to tackle them;**
- ✓ **the investment needed;**
- ✓ **prioritisation**
- ✓ **the optimal level of intervention**

# Technology Roadmaps 2010-2020

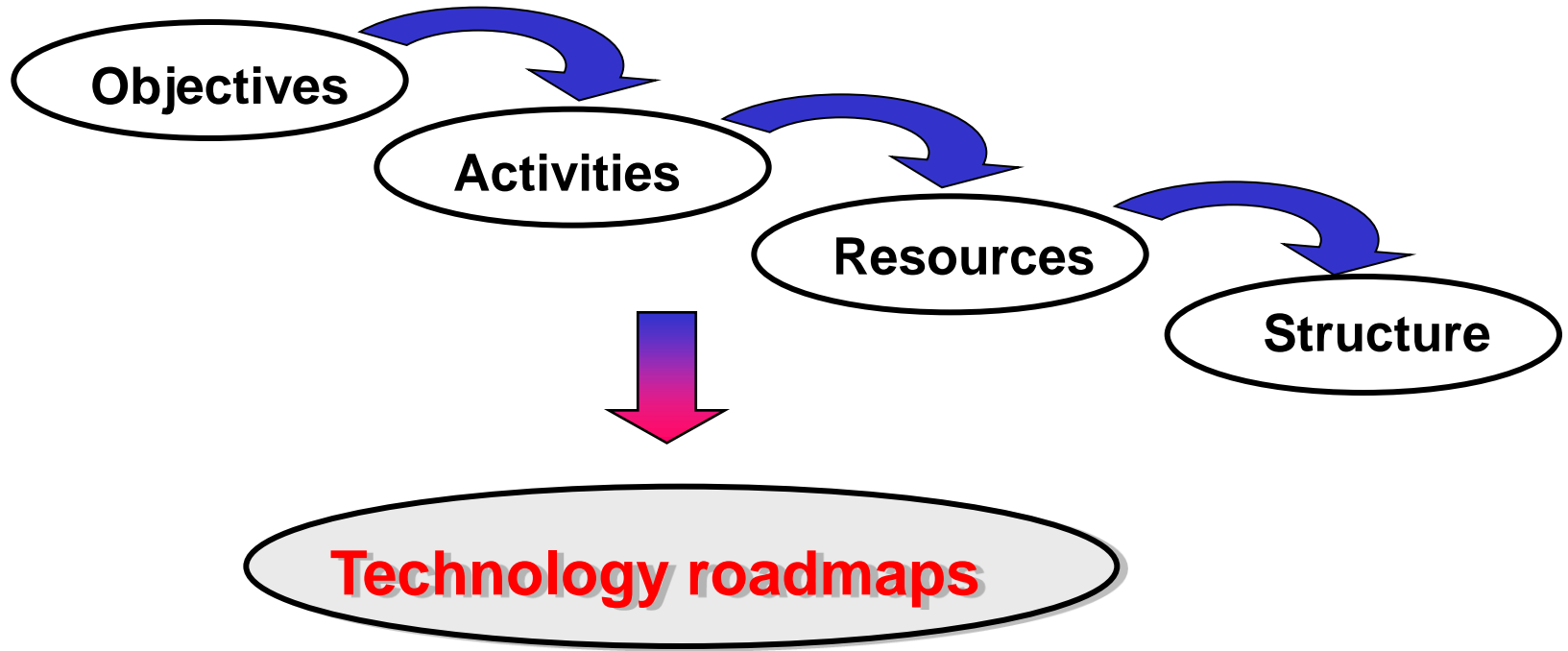
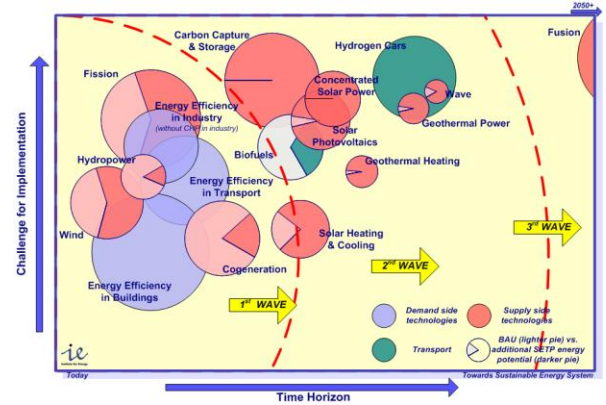
-  **Wind**
-  **Solar**
-  **Sustainable Bioenergy**
-  **Smart Grid**
-  **Carbon capture, transport and storage**
-  **Sustainable fission**
-  **Smart-Cities**



# From potential to targeted actions

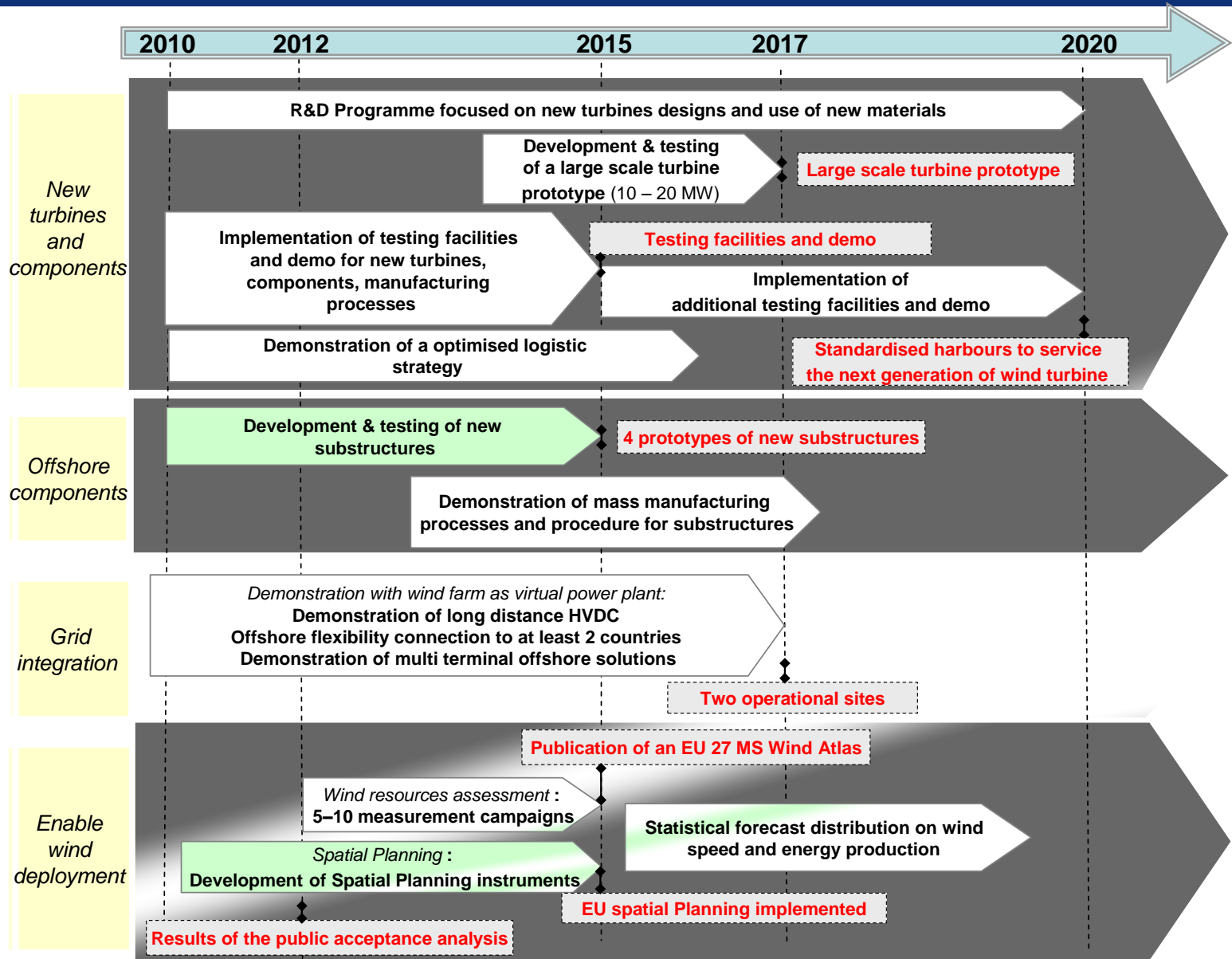


- **Technology Maps:**
  - Potential contributing to energy and climate goals
  - EU added value and additionally;
  - Willingness of actors to join forces
  - Potential market penetration – 2020 / 2050





# WIND – Technology Roadmap 2010-20





## WIND



➔ *Up to 20% of EU electricity by 2020*

**What:** reduce costs, move offshore and resolve the associated grid integration

**How:** testing facilities; demo of next generation turbines; offshore substructures; new manufacturing; hostile weather

**Cost:** 6 bn€

## SOLAR



➔ *Up to 15% of the EU electricity by 2020*

**What:** reduce costs and gain efficiency

**How:** new PV concepts, materials; automated mass-production; centralised and decentralised demos; large industrial CSP

**Cost:** 16 bn€

## GRID



→ 50% of networks in Europe operate along "smart principle" by 2020

**What:** Internal market, RES and demand intelligence

**How:** large smart grid demos; suitable grid architectures; modelling and planning tools; innovative market designs

**Cost:** 2 bn€

## BIO-ENERGY



→ 14% of EU energy mix –sustainably

**What:** second generation biofuels

**How:** large demonstration plants of alternative thermo-chemical pathways

**Cost:** 9 bn€

## CCS



→ *Reaching cost competitiveness within a carbon pricing environment*

**What:** reduce cost, increase efficiencies, test storing, and acceptance

**How:** “up to 12 demonstration plants”

**Cost:** 13 bn€

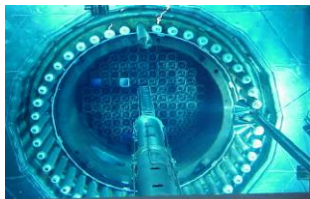
→ *Generation IV in operation*

**What:** maximise safety and efficiency, reduce waste and proliferation risk

**How:** one prototype and a demonstrator, supporting fuel processing facilities

**Cost:** 7 bn€

## Nuclear





# SMART CITIES

↪ *40% reduction of GHG emissions by 2020*

**What: energy efficiency** - pioneers and nuclei of the sustainable energy system of the future

**How:**

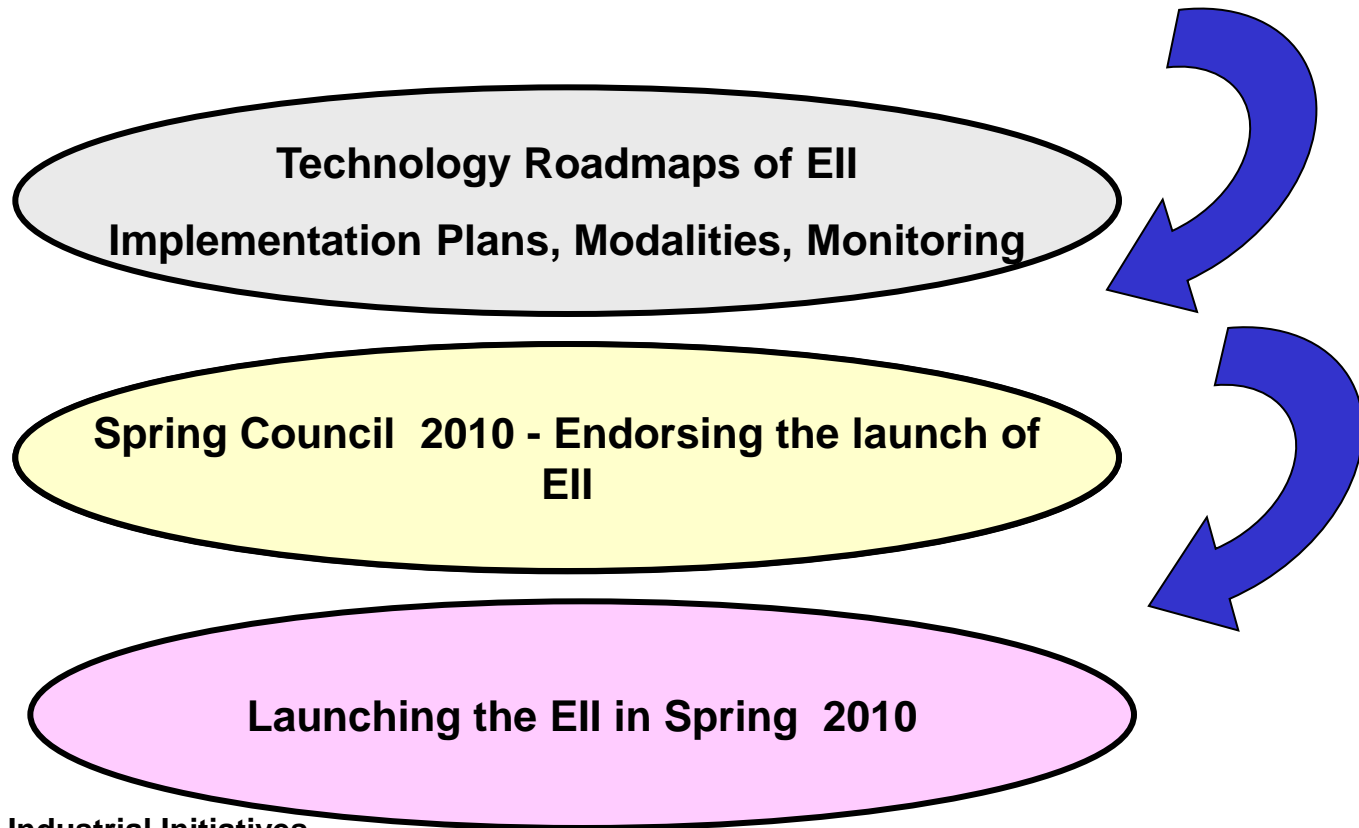
- New generation of buildings
- Smart energy networks
- Low carbon transport

**Cost:** 11 bn€

## Investment has to increase

- **Need for an additional investment of 50b€ – public and private – over the next 10 years**
- **From 3 b€ to 8 b€ per year**
- **Public partnering of the private sector is the most credible way forward**
- **Public side has to offer appropriate incentives and consistent policy signals**
- **Private side has to grasp the opportunity – world leadership can change quickly**
- **Short-term rise in public share could pay dividends – lower future spending**

*Discussion of the Roadmaps*  
*SET-Plan Summit – Swedish Presidency (Oct 09)*



EII: European Industrial Initiatives



[http://ec.europa.eu/energy/technology/set\\_plan/set\\_plan\\_en.htm](http://ec.europa.eu/energy/technology/set_plan/set_plan_en.htm)

<http://setis.ec.europa.eu/>

Technology Roadmaps: SEC(2009)1295

R&D Investments: SEC(2009)1296

**THANK YOU**