



**COMMISSION DRAFT COMMUNICATION  
ON  
FINANCING LOW CARBON  
TECHNOLOGIES**



## GENERAL OVERVIEW

- Due to be adopted last June, but **delayed** several times
- Follows the **Communication on the Strategic Energy Technology-Plan** (SET-Plan) dated November 2007 which paved the way to the Industrial Initiatives
- Major purpose is to **implement and monetise** the measures already identified with the SET-Plan

## WHAT'S IN IT

- **Technology Roadmaps 2010-2020 for**
  - **European Industrial Initiatives**
  - **European Energy Research Alliance**
  - **Energy Efficiency Initiative**
- The roadmaps are based on the **best available information today** – meaning there is a strong need to **periodically review and update** them



# **EUROPEAN INDUSTRIAL INITIATIVES (EII)**



# EUROPEAN INDUSTRIAL INITIATIVES

- **There are 7 (plus 1, see after) initiatives:**
  - **European Wind initiative**
  - **Solar Europe initiative**
  - **European Electricity Grid initiative**
  - **Sustainable Bio-Energy Europe initiative**
  - **European CO2 capture, transport and storage initiative**
  - **Sustainable nuclear fission initiative**
  - **Fuel cells and hydrogen**



# EUROPEAN WIND INITIATIVE

- **Purpose of the initiative**
  - Reduction of costs and better use of offshore potentials (e.g. deep offshore)
- **What's needed to realise the initiative**
  - Map of wind resources in Europe
  - 5-10 testing facilities for new turbine components
  - Up to 10 demonstration projects of next generation turbines
  - Minimum 5 prototypes of offshore infrastructures
  - Manufacturing processes
  - New logistics strategies
  - Erection techniques in extreme environments
- **Estimated costs: 6 billion Euros over 10 years**
- **Electricity production foreseen: up to 20% of EU electricity by 2020; 33% by 2030**
- **Job creation: some 250.000 skilled jobs**



# SOLAR EUROPE INITIATIVE

- **Purpose of the initiative**
  - Reduction of costs enhancing performance and lifetime for PV; improvement of overall system efficiency for CSP
- **What's needed to realise the initiative**
  - **Photovoltaics (PV)**
    - Long term research programme on PV concepts and systems
    - Up to 5 pilots plant for automated mass production
    - Portfolio of different demo projects for centralised and decentralised production
  - **Concentrated Solar Power (CSP)**
    - Industrial up-scaling of demonstrated technologies with up to 10 power plants
    - Research programme to reduce costs and improve efficiencies (e.g. heat storage)
- **Estimated costs: 16 billion Euros over 10 years**
- **Electricity production foreseen: up to 15% of EU electricity by 2020**
- **Job creation: some 200.000 skilled jobs**



# EUROPEAN ELECTRICITY GRID INITIATIVE

- **Purpose of the initiative**
  - Optimisation of internal market; integration of intermittent sources and greater interaction supplier/customers
- **What's needed to realise the initiative**
  - Integrated research and demonstration programme to monitor, control and operate networks both in normal and emergency conditions
  - Up to 20 large scale demo projects to validate solutions, including smart metering, automation and control of the whole networks, etc..
- **Need for the involvement of networks operators, industry and regulatory authorities**
- **Estimated costs: 2 billion Euros over 10 years**
- **Estimated coverage: up to 50% of EU networks would operate along smart principles and would integrate RES by 2020**



# **SUSTAINABLE BIO-ENERGY EUROPE INITIATIVE**

- **Purpose of the initiative**
  - Most efficient CHP production from biomass (e.g. maintenance of plants) and sustainable production of advanced bio-fuels
- **What's needed to realise the initiative**
  - Up to 30 demo plants to be built across Europe taking into account different geographical and climate conditions + logistical constraints
- **Estimated costs: 9 billion Euros over 10 years**
- **Benefits foreseen: at least 14% of EU energy mix (electricity & heat, bio-fuels)**
- **Job creation: some 200.000 jobs**



# EUROPEAN CO<sub>2</sub> CAPTURE, TRANSPORT AND STORAGE INITIATIVE

- **Purpose of the initiative**
  - Demonstration of CCS technologies (whole chain) at industrial scale; reduction of cost and improvement of the overall efficiency
- **What's needed to realise the initiative**
  - Address all parts of the chain, not only capture but also transport and storage options
  - Increase public awareness and acceptance
  - Favour the knowledge sharing
  - Start a research programme on improved components and integrated systems and processes for plants going into operation after 2020
- **Estimated costs: 13 billion Euros over 10 years**
  - Initiative already financed through EPR and ETS – NER 300
- **Foreseen benefit: reduce cost of CCS to 30-50 Euros per tonne of CO<sub>2</sub> captured by 2020**



# SUSTAINABLE NUCLEAR FISSION INITIATIVE

- **Purpose of the initiative**
  - To move to **Generation IV reactors** which will
    - Use fissile materials in better ways using the full energetic potential of uranium
    - Produce less radioactive waste
    - Avoid proliferation risks
    - Potentially, produce both electricity and process heat for industrial purposes
- **What's needed to realise the initiative**
  - New reactor type with a brand new concept and functioning
  - Select technologies (e.g. sodium fast reactors), designs production and prototype/demo plan production
- **Estimated costs: 7 billion Euros over 10 years**
- **Foreseen timetable: Generation-IV prototypes and demonstrators built by 2020 (commercial deployment starting in 2040)**
- **Job creation: (?)**



# FUELS CELLS AND HYDROGEN INITIATIVE

- **Purpose of the initiative**
  - Development and following deployment of cost competitive EU technologies
- **What's needed to realise the Initiative**
  - Large scale-demo and pre-commercial deployment for
    - Portable, stationary and transport applications
  - Long term Research & Development on
    - whole hydrogen chain
    - sustainable hydrogen infrastructures
- **Estimated costs: additional 5 billion Euros for 2013-2020**
  - Joint Technology Initiative (JTI) already established for the period 2008-2013 with a budget of 430 million Euros



# **EUROPEAN ENERGY RESEARCH ALLIANCE (EERA)**



# EUROPEAN ENERGY RESEARCH ALLIANCE

- **Founded by 10 EU Research Institutes, it aims to accelerate the development of new energy technologies in support of the SET-Plan**
- **Now the Commission wants to expand it and create an EU-level dynamic body of researchers which will launch and implement Joint Programmes**
- **Strong links with the European University Association**
- **Links to be developed with the Industrial Initiatives**
- **Funding: combined EU and national funds for additional 5 billion Euros over 10 years**



# ENERGY EFFICIENCY



# ENERGY EFFICIENCY INITIATIVE

- **Brand new European Initiative called “Cities – Smart Cities”**
- **It would support low carbon technologies for**
  - **Buildings**
  - **Energy networks (electricity, heating and cooling)**
  - **Transport systems**
- **Such a programme at EU level will also spread best practices all across Europe**
- **Final aim: move towards low carbon zone and eventually low carbon cities and regions**
- **Costs: 11 billion Euros over 10 years**



# **OTHER ACTIVITIES AND INITIATIVES**



## **OTHER ACTIVITIES AND INITIATIVES**

- **The Commission is examining other areas with great potential:**
  - **Marine energy (e.g.: tide)**
  - **Energy storage**
  - **RES heating and cooling**
  - **Nuclear waste**
  - **Lifetime extension of nuclear power plants and facilities**
  - **Nuclear Fusion**



# **TOTAL BUDGET REQUESTED AND FINANCING MEASURES**



# TOTAL BUDGET FORESEEN

(provisional figures, they could change)

- **The purpose of the communication is to change the current public funding situation rising the EU level**
  - **Current non-nuclear energy research financing (2007 level):**
    - 70% private – 30% Public
  - **Public share is divided into**
    - 80% National level
    - 20% EU level
- **Total costs (both public and private) to implement the programme is 50 billion Euros over the next 10 years**
  - **Current level: 3 billions per year**
  - **Future level: 8 billions per year, meaning more than twice the current level !**



## **FINANCING OF THE IDENTIFIED MEASURES**

- **Where the public funding come from?**
  - **National level**
    - **Emission Trading System, through auctioning of allowances from 2013 onwards (at least 50% of the revenues should be used for climate change related activities)**
    - **300 million allowances under the New Entrants Reserve (NER 300) available via Member States**
  - **EU level**
    - **Use of existing Community programmes to support the SET-Plan**
- **There is no clear reference to the EU programmes mentioned, although in the previous drafts the EEPR and the FP7 were clearly mentioned, together with the revision of the EU budget for 2011-2013**