

# Clean Energy Research and Innovation at European level



**1st UNI-SET Energy Clustering  
Event,  
Trondheim, Norway**

**25 February 2016**

**Gwennaél Joliff-Botrel**  
*Head of the Energy Strategy Unit,  
European Commission  
DG Research and Innovation*

## Strategic Energy Technology Plan (SET Plan)

↔ **Technology pillar of the EU energy and climate policy**

### **Objectives for 2020**

- 20% reduction of CO2 emissions (ref. 1990)
- 20% share of renewable energy [of EU energy consumption]
- 20% improvement in Energy Efficiency



- **Focus on all technologies for energy supply**
- **Key objectives: to better align European and national programmes & to trigger investment in energy R&D on common priorities**

## New Developments

### ⇒ New policy challenges

#### Objectives for 2030

- 40% reduction of CO2 emissions (Ref. 1990)
- 27% share of renewable energy [of EU energy consumption]
- 27% improvement in Energy Efficiency

### ⇒ From technology sectors to energy system

### ⇒ Keep technology options open

### ⇒ Reinforce the implementation of actions beyond EU-funded projects



## 'Towards an Integrated Roadmap', Dec. 2014

Developed by more than 150 stakeholders

### 4 blocs:

- ↪ Active consumer
- ↪ Demand focus (energy efficiency)
- ↪ System optimisation
- ↪ Supply

- ➔ New integrated approach – going beyond technology silos
- ➔ 1st time in Europe – a comprehensive energy R&I agenda for solutions to accelerate the energy transition

#### Strategic Energy Technology (SET) Plan

Towards an Integrated Roadmap:  
Research & Innovation Challenges and Needs  
of the EU Energy System



## Energy Union: 5 Pillars

1. Energy security, solidarity and trust
  2. A fully integrated European energy market
  3. Energy efficiency contributing to moderation of demand
  4. Decarbonising the economy
  5. Research, Innovation and Competitiveness
- ⇒ the Strategic Energy Technology Plan (SET Plan) as a key implementing pillar



- A new impetus given to the SET Plan
  - A key innovation pillar of the Energy Union
    - A key contributor accelerating the European energy system transformation
- 

↪ A more targeted focus



↪ A more integrated approach

↪ Towards prioritisation

↪ A new SET Plan management:

- results-oriented;
- involving a wide range of stakeholders;
- ensuring increased transparency, accountability, monitoring of progress and knowledge sharing (via SETIS Strategic Energy Technology Information System).





# More focused & integrated priorities

## Energy Union Priorities

## SET Plan Ten Key Actions

### 4 Core priorities

#### No1 in Renewables

1. Performant renewable technologies integrated in the system
2. Reduce costs of technologies

#### Smart EU energy system, with consumer at the centre

3. New technologies & services for consumers
4. Resilience & security of energy system

#### Efficient energy systems

5. New materials & technologies for buildings
6. Energy efficiency for industry

#### Sustainable transport

7. Competitive in global battery sector (e-mobility)
8. Renewable fuels



# More focused & integrated priorities

## Energy Union Priorities

## SET Plan Ten Key Actions

### 2 Priorities for interested Member States

**9 Driving ambition in  
carbon capture storage and use deployment**

**10 Increase safety in  
the use of nuclear energy**





# The SET Plan Actors

## European Commission & Countries [EU28 + CH, IS, NO, TR]

- **Steering Group (SG):** Highest level discussion platform, chaired by the EC.
- **The SG Bureau:** smaller representation of the SG to assist the EC in the preparation of meetings, chaired by the countries.
- **Joint Actions Working Group:** a working group of the SG open to all interested countries to discuss joint actions, chaired by the countries.

## Stakeholder platforms

- **European Technology and Innovation Platforms (ETIPs)**
- **The European Energy Research Alliance (EERA)**
- Other EU Stakeholder platforms active/relevant in/to the energy sector, e.g. the **European Platform of Universities in Energy Education and Research (EPUE)**





# The SET Plan Process to prioritise

## For each of the 10 Key Actions

1. A few R&I targets proposed by the EC from the Integrated Roadmap
2. Large consultation among the relevant stakeholders (incl. EPUE!)
3. Comments provided by Member States
4. A meeting between all to decide on the final R&I targets  
→ **'Declaration of Intent'**

## Next step - Implementation

1. Agreeing on the R&I actions to reach the targets
2. Development of implementation plans
3. Implementation by all stakeholders via EU and national programmes, industry, European Investment Bank – private investors





# Example of R&I targets

## Solar Thermal Electricity (CSP/STE): 'Declaration of Intent'

1. **Short-term:** > 40% cost reduction by 2020 (from 2013) translating into  
➔ Supply price\* < 10 c€/kWh for a radiation of 2050 kWh/m<sup>2</sup>/year (conditions in Southern Europe)
2. **Longer-term:** develop the next generation of CSP/STE technology  
➔ New cycles (including supercritical ones) with a first demonstrator by 2020, with the aim to achieve additional cost reductions and opening new business opportunities.

*\* The supply price is meant to be the targeted price within Power Purchase Agreements (PPA) with a duration of 25 years*





# The role of universities

## EPUE – European Platform of Universities engaged in Energy Research, Education and Training

- Observer in the Executive Committee of EERA – we welcome the Memorandum of Understanding between the two organisations
- The voice of universities in the SET Plan – EC consults EPUE on the whole exercise of prioritisation for the SET-Plan 10 Key Actions, with a focus on gaps that need to be addressed in education:

<https://setis.ec.europa.eu/towards-an-integrated-SET-Plan>





# Follow-up SET Plan Education Roadmap 2012-2013

## 3 Networks

among academia, research institutes & industry

launched in 2015:

→ BioEnergyTrain supports emerging qualifications in the bioenergy field by developing new industrial job profiles, the Bio Refinery Engineer and the Bio-Resource Value Chain Manager

*Horizon 2020 support: EUR 3.8 million (100% project cost)*

→ The INPATH-TES project will create a network of universities and research institutes to implement a joint PhD programme on thermal energy storage (TES) technologies

*Horizon 2020 support: EUR 4.3 million (100% project cost)*

→ CORONA II aims to establish a VVER training academy to enhance the safety of nuclear installations through further improvement of the training capabilities

*EU contribution under Euratom: EUR 1.0 million (~50% project cost)*



# The role of universities



## UNI-SET – a key dimension of the energy R&I landscape

➔ FP7 project of EUA-EPUE and KIC InnoEnergy

*EU contribution: EUR 1.5 million*

➔ Mapping of education and research programmes across Europe

➔ Mapping of skills needed in evolving energy fields

## We look forward to the second phase of the project:

**Developing collaborative programmes** among universities in energy research / education

**Linking academia to research and industrial stakeholders**

➔ *Addressing education gaps*

➔ *Building clusters of excellence among universities to develop new energy technologies /encourage breakthrough innovation in fundamental research for the development of new low-carbon energy technologies and solutions*



# Outcome of COP 21: New opportunity for SET Plan

## Mission Innovation, 22 Nations



- ✧ **Double Governmental Investment in Clean Energy Innovation**
- ✧ **Link with Breakthrough Energy Coalition, i.e. Private investors**
- ✧ **Implementation**
- ✧ **Information Sharing**



# Conclusions

- **Revamped SET-Plan: A key implementation pillar of the Energy Union;**
- **Prioritisation has started and is initiated by the Commission;**
- **Open and transparent consultation on priorities;**
- **Universities a key player in the Innovation chain: from basic research to technology transfer.**



***Thank you  
for your attention***

