

## PANEL 2

# Energy Union – Integrated approach to research and innovation

*Elaborated by the European Affairs Department of the Chancellery of the  
National Council of the Slovak Republic*

The Energy Union project is based on 5 mutually interconnected pillars:

1. energy security, solidarity and trust
2. fully integrated European energy market,
3. energy efficiency, which should contribute towards reducing energy demand
4. decarbonisation of the economy and
5. **research, innovation and competitiveness**

### SET plan

**SET plan (Integrated Strategic Energy Technology Plan) is currently the main tool for the implementation of the 5<sup>th</sup> pillar of the Energy Union.** SET plan was created in 2007 and, after assessing its functioning, the Commission presented a revised integrated SET plan in 2015. The new integrated SET plan defines the strategy for energy related research and innovation for the following years. Its purpose is to accelerate the process of placing new, effective and economically efficient low-carbon technologies on the market and accelerate energy transformation in an economically sustainable way.

The integrated SET plan identifies 10 research and innovation activities based on the analysis of the needs of the energy sector and their importance in the context of transforming the energy system and the potential to create new jobs and economic growth in the EU.

**The Energy Union's priorities in the area of research, innovation and competitiveness within the framework of the SET plan are the following:**

- Core Priority 1: Number 1 in renewable energy:
  - Action 1: Sustain technological leadership by developing of highly performant renewable technologies and their integration in the EU's energy system.
  - Action 2: Reduce the cost of key technologies
- Core Priority 2: The future smart EU energy system, with the consumer at the centre:
  - Action 3: Create technologies and services for smart homes that provide smart solutions to energy consumers

- Action 4: Increase the resilience, security and smartness of the energy system.
- Core Priority 3: Develop and strengthen energy-efficient systems:
  - Action 5: Develop new materials and technologies for, and the market uptake of, energy efficiency solutions for buildings.
  - Action 6: Continue efforts to make EU industry less energy intensive and more competitive.
- Core Priority 4: Diversify and strengthen energy options for sustainable transport.
  - Action 7: Become competitive in the global battery sector to drive e-mobility forward.
  - Action 8: Strengthen market take-up of renewable fuels needed for sustainable transport solutions.
- Additional priority 1: Driving ambition in carbon capture storage and use deployment.
  - Action 9: Step up research and innovation activities on the application of carbon capture and storage (CCS) and the commercial viability of carbon capture and use (CCU).
- Additional priority 2: Increase safety in the use of nuclear energy
  - Activity 10: Maintaining a high level of safety of nuclear reactors and associated fuel cycles during operation and decommissioning, while improving their efficiency.

Individual working groups have been established and assigned to each of the activities. Their task is to elaborate a unified action plan which shall contain a list of deadlines and measures to be completed by Member States within the individual priority areas. The action plan shall function as an amendment to the SET plan and will be introduced by the Commission towards the end of 2017.

### **Integrated strategy for research, innovation and competitiveness**

The new **Integrated Strategy for Research, Innovation and Competitiveness** will follow the integrated SET plan. The Commission is expected to introduce the document on 30 November 2016 as part of a big energy package. It will be accompanied by an expert discussion which will form part of the SET Plan Conference taking place in Bratislava on 1-2 December 2016.

In its State of the Energy Union Report 2015, the Commission states that this integrated strategy will develop along three interconnected thematic axes: energy technologies, transport and global competitiveness. The integrated strategy should include the SET plan updated with an action plan, Strategic Transport Research and Innovation Agenda, the Global Technology and Innovation Leadership strategy and other initiatives included in programmes such as the Investment Plan for Europe, the digital single market, decarbonisation of the transport sector and some parts of the Horizon 2020 programme in the fields of climate change, energy, transport, bio-economy etc.

Specific measures within this new strategy should directly influence the achievement of Europe's climate and energy objectives and contribute towards modernisation and competitiveness of the EU economy through supporting the leading position of the EU in the area of clean technologies.

The measures should focus on these four key priorities:

- Global leadership in the development of new generation technologies for renewable energy resources including organic production, the use of the biomass and biofuels and energy storage.
- Supporting the involvement of suppliers in the transformation process through smart grids, domestic appliances, places and systems of household automation.
- Efficient energy systems and use of technology with the aim of achieving technology neutrality of the housing stock.
- More sustainable transport systems which develop and generally use innovative technologies and services to achieve energy efficiency and reduce greenhouse gas emissions.

### **Funding for Research and Innovation**

Funding is key for the market replication of innovation. That is why the Commission collaborates with the European Investment Bank on the investment plan for Europe and the European Fund for Strategic Investments (EFSI). Their joined initiative for energy demonstrational projects, InnovFin<sup>1</sup>, provides risk financing in the form of credit, capital and guarantees and thus reaches beyond the regular grant support. It should support the competitiveness of innovative technological companies from the energy sector.

The EU's emissions trading scheme also offers funding opportunities for innovation. In 2014 Member States used or were planning to use approximately 87% on average of the overall revenue from auctions of emission allowances within EU ETS (EU Emissions Trading System) for climate and energy purposes, which is equivalent to EUR 3.2 billion. The NER 300<sup>2</sup> programme conducted with the aim of funding innovation projects in 20 Member States has at its disposal cumulative funding in the amount of EUR 2.1 billion and is expected to mobilise additional EUR 2.7 billion from private investments.

Within the proposals for the review of the ETS (Emissions Trading System) directive from July 2015, the Commission has proposed a new innovation and modernisation fund. The innovation fund builds upon the NER 300 programme and widens its scope by the low-carbon-based innovation of industry. In addition, by supporting the low carbon innovation and demonstration, the innovation fund shall contribute towards the implementation of key measures from the strategic plan for

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<sup>1</sup> InnovFin – EU Finance for Innovators is a joint initiative launched by the European Investment Bank Group in cooperation with the European Commission under Horizon 2020.

<sup>2</sup> NER 300 is one of the world's largest funding programmes for innovative low-carbon energy demonstration projects. is funded from the sale of 300 million emission allowances from the New Entrants' Reserve (NER), set up for the third phase of the EU Emissions Trading System (EU ETS).

energy technologies. The new modernisation fund is designed for those Member States, the GDP *per capita* of which is under 60% of the EU average and it will be aimed at modernising the energy system and increasing energy efficiency. The revised ETS Directive also proposes more focused measures for carbon leakage in order to ensure international competitiveness of the sectors with the highest risk of production shifting outside the EU.

The Horizon 2020 framework programme also plays a key part in supporting research and innovation objectives of the Energy Union. Its financial contribution for energy research (including nuclear energy), green transport, climate and the efficient use of resources, bioeconomy and key enabling technologies was in 2014-2015 higher than EUR 9 billion. In addition, energy and low carbon research and innovation are most frequently chosen as areas for smart specialisation (more than 100 EU regions) which indicates substantial funding from the EU structural and investment funds. This activity should also be supported by the Smart Specialisation Platform, which was launched by the Commission in 2015.

### Points for discussion:

- **Energy Research and Development Funding:**

Despite Europe being globally the biggest energy research and development funding resource (EUR 3.9 billion), funding in this area still remains problematic. Besides the relatively low share of public finances, there has recently been a drop in private investments in this area. The overall decline in investments from the period of financial crisis has also influenced the decline in investments in the so-called clean energy. The amount of private investments in research and development in the energy sector is 4.5 times lower than 20 years ago<sup>3</sup>.

- **EU and the increasing global competition:**

Europe is a leader in the number of patent applications for high-value technologies designed to mitigate the consequences of the climate change. However, there is an untapped potential in the EU when it comes to technologies for clean energy and zero-emission vehicles. The EU is also beginning to lag behind its competition in the area of technologies for renewable sources. There is a clear need to improve the placement of innovations on the market and ensure their commercial use.

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<sup>3</sup> World Energy Technology Perspectives, IEA 2015