



EUROPEAN COMMISSION  
DIRECTORATE GENERAL FOR RESEARCH & INNOVATION  
DIRECTORATE GENERAL FOR ENERGY

SET Plan Secretariat

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**SCOPING PAPER**  
**INTEGRATED ROADMAP – AS PROPOSED IN THE COMMUNICATIONS ON ENERGY**  
**TECHNOLOGIES AND INNOVATION**

**DRAFT**

## 1. INTRODUCTION

On 2 May 2013, the Commission adopted a Communication on Energy Technologies and Innovation<sup>1</sup>. As part of the key measures proposed in this Communication is the proposal to develop an *Integrated Roadmap* under the guidance of the SET Plan Steering Group by the end of 2013.

As specified in the Communication, this *Integrated Roadmap* should: (1) address energy system and innovation chain integration, (2) consolidate the (up-dated) technology roadmaps of the SET Plan (3) cover the entire research and innovation chain from basic research to demonstration and support for market roll-out and (4) identify clear roles and tasks for the various stakeholders such as the European Energy Research Alliance (EERA), the European Industrial Initiatives (EIIs), the European Institute of Technology (EIT), the relevant European PPPs and other stakeholders such as universities, investors and financiers.

**This scoping paper proposes a draft outline and guidelines for the development of the *Integrated Roadmap* as well as a process for its making.**

The **objective** of the Integrated Roadmap is to prioritise the development of innovative solutions which will respond to the needs of the European energy system by 2020, 2030 and beyond. The Integrated Roadmap will be the basis for EU level, national level, and variable geometry (joint between some MS) activities and can serve as well as a basis for private investments in energy research and innovation.

The Integrated Roadmap will be framed for its content by scenarios of the EU energy system pointing out the major trends and evolution in terms of energy demand.

## 2. DRAFT OUTLINE AND GUIDELINES

It is proposed to organize the *Integrated Roadmap* according to 5 main parts:

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<sup>1</sup> COM(2013) 253 final

**Part I** will be dedicated to '*Energy efficiency*' encompassing energy efficiency in buildings, appliances, industrial sectors and in the energy system as a whole. It will cover the impact of energy efficiency measures on the needs for heating and cooling.

**Part II** will be dedicated to '*Competitive, efficient, secure, sustainable and flexible energy system*'.

It will focus on actions enabling **energy system integration, ensuring flexibility of the European energy system, security of energy supply and active consumer participation**, covering, in particular, energy networks (electricity and heating and cooling), storage, demand response, virtual power plants and /or combinations of technologies, modeling, cross-sector solutions, etc.

It will also focus on **enhancing the portfolio of cost-effective and sustainable energy options** to respond to the **cost competitiveness, flexibility, energy performance and industrial leadership challenges** covering, in particular, carbon capture, storage and utilization (CCSU), renewable energy for electricity, heating and cooling, transport, nuclear energy, hydrogen and fuel cells, bioenergy, etc.

**Part III** will be dedicated to *fostering innovation in real environments and through a market driven framework*, encompassing market uptake measures supporting energy policy implementation (for grids, renewable energy, energy efficiency and other EU energy policy areas as well), tackling non-technological barriers including through capacity building and innovative financing solutions.

A particular focus is needed on cities, district and communities. **Smart Cities and Communities** will look at urban applications integrating energy, transport and ICT technologies and solutions.

**Part IV** will identify synergies between Parts I, II, III, provide an overview of the role and tasks of the different stakeholders such as the EERA, the EIIs, the EIT, the relevant European PPPs, local and regional authorities, industry organisations and other stakeholders (i.e. universities, investors and financiers) for the implementation of the activities defined in **Parts I to IV**.

**Part V** will deal with the Monitoring and Review of the *Integrated Roadmap* to be undertaken by SETIS.

Innovation required in new materials, key enabling technologies such as ICT, nanotechnology, micro and nano-electronics, photonics, biotechnology and advanced manufacturing processes routes, market integration and uptake as well as socio-economics, international cooperation aspects will be addressed in each of the three parts (Part I to III).

The *Integrated Roadmap* will have a 6 year time coverage for research and innovation actions to provide sufficient time perspectives for investments in the sectors. A mid-term review of the *Integrated Roadmap* is foreseen to account for any new developments as necessary.

The content of **Parts I to III** will be organized according to specific challenges (about 5 to 10 for each part) to be solved and should be developed as follows:

**Specific Challenge description** - 10 lines max. outlining the problem in a clear, unambiguous manner (Examples of challenges: *flexibility and security of the European energy system; Cost-effective and sustainable energy supply; Active consumer participation; Deliver sustainable alternative fuels to the European transport fuel mix*)

etc ). These challenges should be linked to energy /research policy objectives and related EU legislation

**Key Research and Innovation Activities** - no more than +/- 5 key research and innovation activities should be described per challenge.

(i) These activities should address, to the extent relevant, the entire research and innovation chain from basic research to market up-take, including skills development, business models and financial and regulatory developments.

(ii) These activities should address EU and national levels. An indication on the modalities for their implementation (i.e. EU, National, Variable geometry) should be included.

(iii) These activities should ensure that options for the development of new technologies remain open.

(iv) Quantified Key Performance Indicators and TRL levels should be defined for each research and innovation activities.

**Expected Impact** - 10 lines max. The impacts expected from the research and innovation activities should be as explicit and operational as possible and expressed in different types of impacts: on energy costs (for electricity, heating and cooling, transport), on the economy (jobs creation and growth, effect of energy costs on energy intensive products), on the cost of the technologies, on the environment, on resource use (energy performance), on industrial application (private investments triggered) etc., particularly those providing added value at the European level, and those contributing to EU policies and the innovation dimension. The expected timescale for realizing the impacts should be mentioned (10 lines max.)

**Cost:** Estimated total cost of the R&I activities under the specific challenge

**Role and task of the different stakeholders for the implementation** of the specific challenge e.g. EERA, EIIs, the EIT, the relevant European PPPs, TP RES Heating and Cooling, regional and local authorities, industry organisations and other stakeholders such as universities, investors and financiers.

### 3. WORKING MODALITIES

The Commission (DG RTD/DG ENER/JRC) will be in charge of steering the drafting of the *Integrated Roadmap*. JRC/SETIS will be, in particular, in charge of its operational and scientific management. Member States will be involved through the SET Plan Steering Group and their participation to the various expert groups as described below will be on a voluntary base.

The *Integrated Roadmap* development will be organized into two phases as follows:

#### **Phase 1: Integrated Roadmap making**

- A *Coordination Group* will be established to support the Commission in the drafting of the *Integrated Roadmap*.
- This *Coordination Group* will be responsible for:
  - Drafting a detailed outline of the *Integrated Roadmap* as guidance for the Working Group (see below); this document will present scenarios of the EU energy system pointing out the major trends and evolution in terms of energy demand, policy needs. It will include recommendation in terms of system integration, supply chain and innovation integration and point out areas for

reorientation, adaptation and integration of the existing Technology Roadmaps and their updates according towards integration aspects, cost competitiveness and energy performance objectives. It will also define a set of criteria to formulate and prioritize research and innovation activities.

- Drafting the Integrated Roadmap. To do this, they will be supported by a *Working Group* for which members of the *Coordination Group* will act as a rapporteur;
  - Monitoring and steering the progress of the *Working Group*;
  - Ensuring the overall coherence of the *Integrated Roadmap*, including cross cutting issues between the different parts.
- *Coordination Group* composition - about 30-35 experts in total split up into:
    - about 25 experts appointed by different EU mechanisms - i.e. EERA, EIIs, Fuel cell and Hydrogen JU, PPPs (Energy Efficient Building, SPIRE), the European Innovation Partnership on Smart Cities and Communities, the European Platform of Universities engaged in Energy research (EPUE), TP RES Heating and Cooling, European Association for Storage of Energy, European Ocean Energy Association, European Geothermal Energy Council, EIT/KIC Inno Energy, European Strategy Forum on Research Infrastructures (ESFRI), EIB, key market actors (market uptake of energy innovation, e.g. IEE, utilities representatives, e.g. EURELECTRIC) and importantly experts in the field of energy efficiency (e.g. IEE II constituencies, energy efficiency stakeholder groups and committees under the Directives on Eco-design, Energy Performance of Buildings and Energy Efficiency).
    - 5 independent experts invited by the Commission to act as rapporteurs of the *Working Group*.
    - MSs Representatives from the SET Plan Steering Group on a voluntary basis.
  - A *Working Group* will be established to formulate the content of **Parts I to III** of the *Integrated Roadmap*. It will be coordinated by the *Coordination Group*.
  - Composition of the *Working Group*:
    - The 5 members from the *Coordination Group* appointed as rapporteurs for the *Working Group*. The role of the rapporteurs will be to coordinate the work and at the same time draft the content based on the working group inputs.
    - The exact composition will be adapted depending on the part of the *Integrated Roadmap* to be addressed. Nonetheless, one can expect besides the rapporteurs and JRC/SETIS, about 60 experts from Industry, the research community, financing sector, market actors in order to cover all areas addressed in the *Integrated Roadmap*.
    - JRC/SETIS will chair the Working Group, provide a secretariat, and be the main contact point of the rapporteurs.

## **Phase 2: Hearings**

- To ensure an open and transparent approach to the *Integrated Roadmap*, it is proposed to organize a set of hearings with key stakeholders.
- These hearings will be organized by the Commission and supported by the relevant rapporteurs.

#### 4. TIMELINES

<b>June/July 2013</b>	MSs and Stakeholders consultation on the scoping paper: <ul style="list-style-type: none"> <li>• Meetings with Stakeholders in the course of June</li> <li>• Steering group meeting on beginning of July</li> </ul>
<b>Beginning of July 2013</b>	Set up of the <i>Coordination Group</i> Set-up of the <i>Working Group</i>
<b>Beginning of September 2013</b>	Kick-off meeting of the <i>Coordination Group</i>
<b>October 2013</b>	2 <sup>nd</sup> meeting of the <i>Coordination Group</i> → draft detailed outline of the Integrated Roadmap by the <i>Coordination Group</i> Kick-off meeting of the <i>Working Group</i>
<b>October-December 2013</b>	Dedicated hearings 2 <sup>nd</sup> meeting of the <i>Working Group</i> 3 <sup>rd</sup> meeting of the <i>Coordination Group</i> → Final draft of the <i>Integrated Roadmap</i>
<b>December 2013</b>	Endorsement by the SET Plan Steering Group