ROADMAP			
TITLE OF THE INITIATIVE	Communication on accelerating energy system transformation – an integrated SET Plan		
LEAD DG – RESPONSIBLE UNIT	ENER.C.2	**DATE OF ROADMAP**	07/2015
This indicative roadmap is provided for information purposes only and is subject to change. It does not prejudge the final decision of the Commission on whether this initiative will be pursued or on its final content and structure.			

A. Context and problem definition

(1) What is the political context of the initiative?

(2) How does it relate to past and possible future initiatives, and to other EU policies?

(3) What ex-post analysis of existing policy has been carried out? What results are relevant for this initiative?

(1) The Communication will respond and build on the goals of the Energy Union and in particular its dimension on Research, Innovation and Competitiveness. The Communication aims to set out a strategy based on an integrated-system-approach that defines how to accelerate the transformation of the energy system and reach the research and innovation goals along the core priorities defined in the Energy Union Strategy:

- Being the world leader in developing the next generation of renewable energy technologies;
- Facilitating the participation of consumers in the energy transition through smart grids, smart home appliances, smart cities, and home automation systems;
- Efficient energy systems and buildings;
- More sustainable transport systems.

It will also address the two priorities for cooperation with interested Member States:

- Carbon Capture and Storage (CCS) and Carbon Capture and Use (CCU);
- Nuclear.

The Communication will set key actions and concrete objectives for these goals (e.g. cost reductions, efficiency improvements), updating the Energy R&I ambitions in view of the profound changes in the field of energy since the SET Plan was launched in 2008. It will also indicate the mechanisms to deliver them, in particular increased cooperation between the EU, Member States, research institutes and industry, a better use of financial instruments and the promotion of synergies with the regulatory aspects that can promote the market pull for new solutions.

The Communication aims to focus research and innovation in the above priority fields of energy by reinforcing the functioning and the role of the SET Plan. The objective is to step up efforts to bring new, cost-competitive, secure, affordable and sustainable energy solutions faster to the market, contributing to the achievement of the targets of the 2020 and 2030 Frameworks for Climate and Energy policies.

This initiative will also address the objectives of the European Energy Security Strategy, which called for further development of a broader range of new energy technologies to reduce EU energy dependence and emphasised the need to encompass the whole technology supply chain, from materials to manufacturing.

Time wise the initiative bring low-carbon technologies in the spotlight during the LU Presidency, which emphasizes innovation, research and new technologies for the energy transition in the Informal Energy Council and is organising the annual Set-Plan Conference back to back with the Informal Energy Council.

(2) This initiative follows the Communication on Energy Technologies and Innovation (ETI) adopted in May 2013, which announced a strengthening of the SET Plan in order to:

(a) address energy system and innovation chain integration,

(b) incorporate energy efficiency as a stand-alone priority and

(c) consolidate the individual SET Plan technology roadmaps with the development of an Integrated Roadmap.

This initiative addresses the possibilities for cooperation between national and EU R&I programmes, notably Horizon 2020, as well as the synergies with other EU instruments and policies, such as the Structural Funds.

This initiative is a key element of the fifth dimension of the Energy Union, on Research, Innovation and Competitiveness. By focusing on the provision of low-carbon fuels and electricity for the Transport System, it is complementary to the Strategic Transport Research and Innovation Agenda (STRIA). Furthermore, this Initiative

is in line with the forthcoming EU global Technology and Innovation Leadership Initiative on energy and climate to boost growth and jobs (TILI) as it considers the competitiveness of Europe in key technologies as a guiding point for orienting R&I efforts and covers the whole innovation chain from basic research up to market uptake.

The Initiative for Global Technological and Innovation Leadership should focus on delivering to domestic and 3rd country markets the energy and climate-related technologies in the SET-Plan, aligned on the core priorities identified in the Energy Union Strategy and including the industrial applications needed for energy-intensive industry to decarbonise.

(3) The Communication on Energy Technologies and Innovation made a first assessment of the results of the SET Plan, identifying some its successes such as the "increased alignment of national energy research and innovation policies" and the "move towards joint actions to deliver common objectives with greater speed and effectiveness" The Communication concluded that "the SET Plan also needs reinforcing, to respond to the new challenges and to better consolidate research and innovation capacity and resources across Europe" and proposed a number of follow-up actions.

One of these actions was the consultation with stakeholders carried out for the development of the Integrated Roadmap, which highlighted the vast amount of resources needed to address the research and innovation challenges in the energy system and the need to promote cooperation and synergies between European and national programmes, as well as with industry, to ensure a cost-efficient use of resources and increase the scale and impact of research and innovation actions. This was followed by a consultation with Member States on their areas of interest for R&I cooperation (which were the basis for the 'higher-level' Energy Union R&I objectives).

What are the main problems which this initiative will address?

1) The need for an updated SET Plan to accelerate the energy transformation by updating the SET Plan from its current technology-oriented structure to an integrated approach that addresses the needs of the energy system as a whole, boost the development of new low-carbon technologies and solutions with improved performance, reduced costs and efficient integration into the system and ensures the market uptake of innovative products and services for consumers, lower energy bills for households and companies and increased security and sustainability of the energy system as a whole.

2) A more cost-efficient use of existing resources and support mechanisms to research and innovation at national and European level in a complex financial situation and in a context of increasing competition within the low-carbon sectors. This will help avoiding duplication of efforts while at the same time promoting synergies between national and EU programmes, research actors and industrial capacities with the objective of maximising R&I efforts and therefore achieving the priorities of the Energy Union in a more effective way.

3) By promoting research and innovation in the field of energy, the Communication will spur scientific research in line with article 13 of the Charter of Fundamental Rights of the EU and contribute to the development of a sustainable economy and to improve the quality of the environment as required by Article 37 of the Charter.

Who will be affected by it?

Universities, research institutes, technology developers, energy providers, TSOs and DSOs, construction sector, urban and spatial planning as well as consumers.

The initiative will be fully compliant with Articles 13 and 16 of the Charter of Fundamental Rights of the EU.

Is EU action justified on grounds of subsidiarity? Why can Member States not achieve the objectives of the proposed action sufficiently by themselves? Can the EU achieve the objectives better?

Article 181 of the TFEU indicates that the Union and the Member States shall coordinate their research and technological development activities.

Cooperation in research and innovation activities across Europe needs to be supported at European level to ensure that the capacities and resources available throughout all Member States are used in the most cost-efficient way, to promote collaboration between universities, research institutes and companies throughout Europe and to achieve an appropriate scale and impact of research and innovation activities to address the technological challenges in the energy field.

B. Objectives of the initiative

What are the main policy objectives?

The Communication will contribute to the two following main objectives : to favour investment in the field of energy R&I and to build an Energy Union in R&I by improving coordination of efforts and cooperation among/between Member States in a more focused manner.

In particular the Communication will:

- Provide a comprehensive overview of the priority research and innovation needs of the energy system to deliver Energy Union objectives, from demand to supply, with concrete objectives towards which the EU, Member States and stakeholders are called to work, and give a perspective of the main features of the integrated energy system resulting from technology developments in line with the EU Energy and Climate policy objectives;
- Identify the key technology developments for the energy transformation and assess the strengths and weaknesses of Europe's research institutions and companies for key technologies
- Highlight the need for stepping up the efforts in low-carbon energy technologies and the added value of maximising the R&I efforts by strengthening cooperation across the EU in Energy research and innovation and indicate concrete actions for the future;
- Provide transparency/visibility on areas of common interest between Member States and the EU within the R&I priorities identified in the Energy Union, which should improve the confidence of investors which is needed to facilitate the deployment of the new technologies;
- Identify synergies within Member States, in view of stimulating cooperation and identify possible gaps in EU activities to achieve the transition to low carbon energy and to decrease its energy dependence;
- Establish a strengthened framework for the SET Plan and propose measures to improve the functioning and interaction of the SET Plan implementation structures and monitoring tools;

Do the objectives imply developing EU policy in new areas?

No

C. Options

(1) What are the policy options (including exemptions/adapted regimes e.g. for SMEs) being considered?

(2) What legislative or 'soft law' instruments could be considered?

(3) How do the options respect the proportionality principle?

1) Option 1 business as usual. Continue to finance projects or programmes at EU and national level according to technology roadmaps and national priorities.

Option 2 Development of a sector by sector approach with the risk of not making use of potential synergies between R&I advances in different sectors and without considering the integration of solutions and technologies in the energy system.

Option 3 Development of a comprehensive energy technology and innovation policy that takes into account the challenges of the energy system as a whole and promotes stronger cooperation between R&I actors and instruments across the EU and its Member States in areas of common interest.

2) Legislative: no need for new legislation: Horizon 2020 and other EU programmes comprise all the tools for all options mentioned above.

3) The actions foreseen under the initiative are proportional to the objectives pursued. The initiative will not develop new policy areas, while it will strengthen the current Energy R&I policy, in order to deliver the ambitions of the Energy Union. The initiative will develop synergies with other existing policies and instruments such as the Smart Specialisation and complement related initiatives of the Energy Union, notably the Strategic Transport and Research Agenda and the Global Technology and Innovation Leadership Initiative on energy and climate to boost growth and jobs.

D. Initial assessment of impacts

What are the benefits and costs of each of the policy options?

Option 1 would not fully exploit the potential synergies between research actors and instruments and would not ensure the most cost-efficient use of resources.

Option 2 would require less coordination across technologies and Member States, but may not achieve an overall optimal result.

Option 3 would provide the sufficient scale and impact to address technology and innovation challenges which require efforts going beyond the capacity of individual Member States, it would avoid gaps and duplication of efforts and make a more efficient use of available resources.

Could any or all of the options have significant impacts on (i) simplification, (ii) administrative burden and (iii) on relations with other countries, (iv) implementation arrangements? And (v) could any be difficult to transpose for certain Member States?
Options under consideration for this policy communication would not have significant impacts on any of the points above.
(1) Will an IA be carried out for this initiative and/or possible follow-up initiatives? (2) When will the IA work start? (3) When will you set up the IA Steering Group and how often will it meet? (4) What DGs will be invited?
No, as the Communication would not propose new legislation nor have budgetary implications.
(1) Is any option likely to have impacts on the EU budget above € 5m? (2) If so, will this IA serve also as an ex-ante evaluation, as required by the Financial Regulation? If not, provide information about the timing of the ex-ante evaluation.
No

E. Evidence base, planning of further work and consultation
(1) What information and data are already available? Will existing IA and evaluation work be used? (2) What further information needs to be gathered, how will this be done (e.g. internally or by an external contractor), and by when? (3) What is the timing for the procurement process & the contract for any external contracts that you are planning (e.g. for analytical studies, information gathering, etc.)? (4) Is any particular communication or information activity foreseen? If so, what, and by when?
(1) Latest versions of Capacity Map (information on R&D investments in selected low carbon technologies by public and private sectors in EU, under preparation by JRC) and Technology Map (state of the art of technologies and prospects up to 2030) issued by the Joint Research Centre in 2014,, JRC ETRI report with reference indicators on the cost and operational performance of low carbon energy technologies now and in the future, new versions of JRC status reports on individual technologies. The IAs for the 2030 Framework for Energy and Climate Policies and for the Communication on Energy Efficiency. (2) Need to assess the strengths and weaknesses of the European innovation capacity in energy technologies, in particular compared against other key countries worldwide. Being done by external partner, INSIGHT-E, in the first half of 2015: Report on "Analysis of strengths and weaknesses of the European innovation capacity in energy technologies".
Which stakeholders & experts have been or will be consulted, how, and at what stage?
Since September 2013 the Commission has carried out a broad stakeholder consultation involving more than 150 representatives of organisations from across the entire energy system, and this will continue: the European energy technology platforms, sector associations, the research community, market actors and investors.