European Commission

ROADMAP	
Roadmaps aim to inform citizens and stakeholders about the Commission's work in order to allow them to provide feedback and to participate effectively in future consultation activities. Citizens and stakeholders are in particular invited to provide views on the Commission's understanding of the problem and possible solutions and to make available any relevant information that they may have.	
TITLE OF THE INITIATIVE	ACTION PLAN ON THE DIGITALISATION OF THE ENERGY SECTOR
LEAD DG – RESPONSIBLE UNIT	DG ENER – B5 (INNOVATION, RESEARCH, DIGITALISATION, COMPETITIVENESS)
LIKELY TYPE OF INITIATIVE	EUROPEAN COMMISSION COMMUNICATION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS
INDICATIVE PLANNING	*Q1 2022*
ADDITIONAL INFORMATION	-
This Roadmap is provided for information purposes only and its content might change. It does not prejudge the final decision of the Commission on whether this initiative will be pursued or on its final content. All elements of the initiative described by the Roadmap, including its timing, are subject to change.	

A. Context, Problem definition and Subsidiarity Check
Context

To meet the European Green Deal ambitions the twin green and digital transition calls for a better-functioning, smart, integrated and cleaner energy system. This should contribute to the creation of growth and jobs, improve competitiveness of the EU companies by opening up new opportunities for businesses, and drive innovative solutions by encouraging the development of trustworthy technology, while guaranteeing affordable energy and a just transition. At the same time, the digital transformation has to benefit everyone, putting people first and being an enabler for citizens, prosumers, and energy communities to play an active role in the energy markets.

The use of Information and Communication Technologies (ICT) in the energy system has emerged as a significant driver of change but the pace and scale of that change is likely to increase dramatically over the decades to come. Digitalisation is changing how we supply, purchase and interact with energy, as well as the pathways we can take towards decarbonising the system. Digitalisation in the energy system should, therefore, be considered an integral part of the energy transition. At each step of the supply chain, it impacts the management of the energy system and provides new tools for its management or creates opportunities for (new) market participants to offer data driven energy services. At the same time the transition to a decarbonised and decentralised energy system is taking place, based on variable and more distributed generation and greater electrification.

Digital technologies have a lot of potential to contribute to the energy transition. For example, it can provide system optimisation and substantial operational savings and savings in network infrastructure. It can also support energy system integration: it can enable dynamic and interlinked flows of energy carriers, allow for more diverse markets to be connected with another, and provide the necessary data to match supply and demand both at local or at system-wide level and close to real time. In addition, digitalisation can help optimising the use of the existing grid capacity and identifying bottlenecks quicker, which will increase the level of electrification needed to achieve carbon neutrality - particularly important for the roll-out of recharging infrastructure.

Digitalisation of the energy sector is already addressed in different rules, both sectoral and generic. In particular, data exchange is addressed in the Electricity Directive - (EU) 2019/944 and the Regulation on the internal market for electricity – (EU) 2019/943, that also address measures for the deployment of smart meters in the electricity sector, while the Energy Efficiency Directive – (EU) 2018/2002 (that will be reviewed as part of the 'fit-for-55 package) also includes provisions on smart meters. Generic data governance mechanisms are outlined in the Communication on "A European Strategy for Data" that identified an energy data space as one of the nine data spaces needed to "promote a stronger availability and cross-sector sharing of data, in a customer-centric, secure and trustworthy manner". Furthermore, the Regulation on the Free Flow of Non personal Data - (EU) 2018/1807 and the General Data Protection Regulation (EU) 2016/679 have created a transparent and well-functioning data protection framework. The proposal for a Regulation on European Data Governance (Data

Governance Act) – COM(2020)767 final sets the principles for data exchange and data spaces, and stresses the need to improve the conditions for data sharing in the internal market, while at the same time highlighting that such principles may be complemented by sector-specific actions.

The Communication on "An EU strategy for Energy System Integration" - adopted in July 2020 - set out key actions to drive the energy transition, including a "system-wide Digitalisation of Energy Action Plan that could accelerate the implementation of digital solutions and energy system integration across multiple energy carriers, infrastructures and consumption sectors". The Digitalisation of Energy Action Plan will need to build on the existing policy framework described above. The Action plan will set out concrete steps for the development of a common European Energy data space in a way that supports the implementation of the Clean Energy Package (2019) as well as the 'fit-for-55' proposals to be tabled this year and in line with the Communication on "the European way for the Digital Decade" adopted in March 2021 and the Taxonomy Regulation (EU) 2020/852.

Problem the initiative aims to tackle

Digitalisation of the energy sector can bring a lot of benefits, but it also brings risks and challenges: An EU policy response is required to ensure that investments in digital technologies in the energy sector contribute to the Green Deal and to a Europe that is fit for the digital age, and to ensure that it contributes to a single market for energy and for data.

In particular, policy measures are needed to ensure that new markets based on energy data are open and competitive, while respecting ethics, data protection and privacy and cybersecurity, with consideration to the specificity of the energy sector. The increased energy demand for ICT equipment, networks and services needs to be adequately managed in the context of an integrated energy system. Thus, digital and energy value chains need ever increasing collaboration.

The Action Plan therefore aims at tackling the following problems:

- Without an overall strategy that exploits synergies between the various legal instruments and financial support for data exchange projects at national and EU level, a fragmented approach is likely to persist, as energy undertakings take advantage of new technologies to improve their operations but often miss out on ensuring the appropriate links between the different parts of the energy supply chain, and new digital solutions are rolled out without them being interoperable at EU level, thus jeopardising scalability, system integration, and consumer/prosumer participation.
- Citizens' trust in data-driven energy services, acceptance of new technologies, data protection and privacy concerns, digital divide and lack of adequate skills are the main social challenges to tackle in a digitalised energy system. It needs to be assessed if existing tools enable citizens and consumers to exercise their rights effectively in a digitalised energy market.
- Not all actors in the energy sector are fully benefiting from the potential of digital technologies. The development, implementation and upscaling of digital solutions in energy supply, demand and transportation (transmission and distribution) to support the energy transition has not yet reached the full potential, for example because IT companies focus on other more profitable sectors or because energy companies are not sufficiently aware. There are good examples and best practices that need to be further promoted, such as integrating data from weather forecast and sensors in wind blades that can reduce the cost of maintenance and increase the output of wind turbines, hence reduce the cost of renewables
- Digitalisation increasingly exposes the energy system to cyberattacks and incidents that may jeopardize the security of energy supply.
- Digitalisation is leading to a growth in overall the energy consumption of Information and Communication Technologies (ICT) that can be unsustainable if it is not accompanied by a substantial improvement in energy efficiency and a transition to a completely decarbonised energy supply based on renewables.

Basis for EU intervention (legal basis and subsidiarity check)

The legal basis for this initiative is Article 194(2) of the Treaty on the Functioning of the European Union. It is therefore an initiative in the area of energy, which is a shared competence between the EU and Member States.

When identifying how to support the development of a sustainable, (cyber)secure, transparent and competitive market for digital energy services, ensuring data protection and privacy, and supporting investment in digital energy infrastructure, the Communication on the **Digitalisation of Energy Action Plan** will properly take into account the principle of subsidiarity.

The same is applicable for the policy initiatives that will follow the Communication.

In general, EU action is efficient and effective in addressing the transition of the energy system in a coordinated way, ensuring transversal reduction of greenhouse gas emissions and harnessing the benefits of the internal energy market.

B. What does the initiative aim to achieve and how

The **Digitalisation of Energy Action Plan** will outline how different EU policy and funding instruments will work together to exploit the benefits of digital solutions in the energy sector, while minimising their risks and environmental footprint. The Action Plan will identify possible complementary actions to ensure synergies between those, for example in relation to data sharing for smart grids, smart buildings and smart cities.

The Action Plan may focus on **five** areas:
- **Developing a European data-sharing infrastructure** to create a competitive market for energy services that value demand-side flexibility and support planning and monitoring of energy infrastructure. It may include the creation of a common European energy data space that is compatible with other data spaces, that fosters the development of an interoperability framework, and addresses the governance of the data spaces. Therefore the Action Plan will be aligned with the planned Implementing Act for data interoperability requirements and procedures stated in article 23 and 24 of the Electricity Directive (EU) 2019/944 - foreseen for Comitology in 2022 and will assess the need for additional measures to promote data sharing if needed.
- **Empowering citizens** by providing them with tools for participation in the energy markets, tailored data driven services and implementing reskilling and upskilling pathways. The Action Plan will see how to promote best practices and experience from R&I projects that have developed new services and/or user-friendly tools/apps for people to grant access to their data and smart metering and that should make it easier for citizens to engage in the energy transition as active consumers and/or investors.
- **Enhancing the uptake of digital technologies**[1] in the energy sector by mobilising research, fostering innovation and making use of complementary instruments to support the scaling up of piloted solutions.
- **Enhancing the cybersecurity of the energy sector** facing real-time requirements, cascading effects and the mix of legacy technologies with smart/state of the art technology. The Action plan will be aligned with the general framework for cybersecurity, in particular the proposed Directive on Security of Network and Information Systems (NIS-2 Directive) and the planned Network Code on cybersecurity of cross-border electricity flows – foreseen to be adopted by the end of 2022 and will assess the need for additional measures for other aspects if needed.
- **Supporting** the development and uptake of **climate neutral solutions for the Information and Communication Technologies** sector as complementing in the European Digital Strategy focussing on measures that promote cooperation between the energy sector and the digital sector.

Given the importance of digitalisation for a flexible electricity system and the growing electrification needed to reach the 2050 climate and energy objectives, the Action Plan will primarily focus on electricity, while addressing other energy carriers such as hydrogen and natural gas, at least from an energy system integration perspective.

C. Better regulation

Consultation of citizens and stakeholders

This exercise will consist in an online open public consultation (tentatively foreseen for Q3 2021). All citizens and organisations can contribute to the online public consultation. This open public consultation will be available via the Commission consultation website "Have your say". A "Synopsis Report" will be published there after the consultations are completed.

The main stakeholders that have been identified are from the digital and energy value chains and include Transmission System Operators, Distribution System Operators, IT suppliers, SMEs, aggregators, consumers, energy communities, appliance manufacturers, energy intensive industries, building operators and car manufacturers.

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[1] E.g. Big Data,Artificial Intelligence (AI), Machine Learning, Internet of Things (IoT), 5G (5th Generation Network Technology), Blockchain, Distributed Ledger Technology (DLT), High Performance Computing (HPC)

Furthermore, the Commission will use its citizen and stakeholder discussion events and forums to ensure proper consultation, such as the European Union Sustainable Energy Week (EUSEW), regulatory Forums (e.g. the Citizens' Energy Forum), the Smart Grids Task Force, and the Bridge R&I projects cooperation platform.

Evidence base and data collection

While the Communication on the Digitalisation of Energy Action Plan will identify a list of actions to be implemented, these specific actions will follow their own approval process, in line with better regulation requirements, including the requirement to conduct an impact assessment and an in-depth public consultation when applicable.

This Communication will be accompanied by a Staff Working Document to provide evidence and concrete examples of the benefits and risks of digitalisation of energy.
It does not require its own impact assessment, it will draw from a comprehensive set of sources on top of the standard literature and position paper review.

- Making use of results from R&I projects supported by Horizon 2020 and other EU programmes[2].
- Making use of evidences collected under the publication of the first edition of the Competitiveness Progress Report.
- Already available data and documentation used by the various related initiatives such as the Digital Europe Program, Clean Energy Package, Data strategy, Energy System Integration Strategy, 'Fit for 55' Package'.
- Studies performed to support the European Commission activities.
- Fact finding workshops to be organised during 2021.

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[2] Digital Europe Programme, Earth Observation Programme (Copernicus) with the use of the EU Global Satellite Navigation System (Galileo), among others