1. Conclusions and recommendations

1.1. The EESC supports the objectives and welcomes most of the measures proposed in the action plan. In particular, the EESC has already made clear the link between the energy transition and the digital transformation, pointing to the benefits of digitalisation in terms of energy savings, reduced energy intensity and better management of energy infrastructure. However, while the action plan’s optimistic attitude is inspiring, the Commission tends to ignore the fact that the physical reality is very different from the use cases of digitalisation that are mentioned in the action plan.

1.2. While both the strategic approach and the specific measures of the action plan point in the right direction, the Commission fails to integrate the action plan into the general energy policy. A silo approach focusing only on digitalisation and ignoring the general framework will not generate the benefits that are rightly explained in the action plan. The digitalisation of the energy system must create cooperative solutions in which incentives are provided for users to participate in the digitalised energy system; for example, the use of smart meters and the use of dual-charging e-vehicles that support the stability of the electricity system. Peer-to-peer trading, virtual self-consumption and energy sharing all require digital tools. However, either administrative barriers make these practices unattractive or there is a lack of effective incentives.

1.3. The EESC confirms that it is definitely necessary to make the energy system smarter and more flexible, but the energy system is currently strained by deficits such as the inflexibility of the transmission and distribution network resulting from underinvestment in energy infrastructure. While some energy providers have made significant profits, not enough has been invested in smart grids to achieve the goals of the energy transition. Grid expansion and transformation is lagging behind due to the regulatory framework not incentivising investment in digitalisation and flexibilisation, among other things, and existing grids have become unsuitable for the transmission and distribution of volatile energy. In order to avoid network outages in the digitalised energy system, we urgently need to start transforming our energy system by developing and expanding the network (transmission and distribution grids).


ensuring a regulatory framework that effectively incentivises investment in the digitalisation of electricity grids. In parallel, flexibility markets need to be developed to make flexible consumption, generation and prosumption based on digital technologies attractive.

1.5. More than six years after the presentation of the Clean Energy Package, both energy communities and collective self-consumption still play a minor role in Europe’s energy systems. The European Commission has so far ignored the existence of barriers to these forms of energy generation and consumption. Europeans must be given incentives that eventually convince and motivate them to digitalise all their energy-related activities. In many cases a clear legal and administrative entitlement is needed as well. The EESC calls on the Commission and the Member States to develop corresponding initiatives, including direct support enabling energy communities and collective prosumers to develop their full potential, whereby, especially in terms of security of supply, these forms of generation and consumption must become a crucial part of the system. Otherwise, digital tools will not make a difference.

1.6. The EESC reiterates that, with the right approach, a climate-neutral, decentralised and digitalised energy supply structure can have significant positive effects on employment and the economy, especially regional economies. In the current crisis, the European Union needs a general approach to energy policy that combines specific energy and climate-related issues with the objectives of social and regional cohesion policy.

1.7. However, the EESC notes that a policy of change can only be successful if it takes into account the various social dynamics at work in the transition and addresses them in its strategies and measures. We should strengthen the role of active consumers in digitalisation and should encourage and entitle them to use as many smart solutions as possible, as they can improve the efficiency and performance of the internal energy market, while taking into account distribution system operators to ensure security of supply. The tools must be user-friendly and attention must be paid to vulnerable groups and people with disabilities. A policy for a just transition and active political management of change is therefore indispensable. If the social dimension is neglected in the implementation, the transformation risks failing due to public resistance.

1.8. With regard to the future design of energy systems and infrastructure, the EESC has repeatedly stressed that all consumers must be actively involved in the development of smart energy systems and that incentives must be put in place so that civil society can participate in the energy transition. ‘Connecting local and regional innovators’, as mentioned by the Commission in point 7.3, is very important. Collective action like cooperation between smart cities and communities can create the best and most affordable solutions that a region may need.

1.9. The EU’s digital and energy policies are already guiding the digitalisation of energy, as issues such as data interoperability, security of supply and cybersecurity, privacy and consumer protection cannot be left to the market alone and their proper implementation is key. In this context, the EESC points out that privacy violations and misuse of data must be prevented by all means. This includes not only technical precautions, but also responsibility over and monitoring of this data space by state authorities subject to political and democratic control. At the same time, particular attention must be paid to protecting critical infrastructure data.

1.10. The Commission states in its communication that it is essential to ensure that digitalisation does not undermine the framework for consumer protection already established in the internal market in electricity. The EESC takes note of this and adds that consumer rights must be adapted and improved in the energy market. Consumers must not be disadvantaged or overcharged. They should benefit from digital tools, which, if rightly developed, can help increase consumer protection.

1.11. For all initiatives, it is important that consumers have a smart meter at home. This is still not the case in many Member States, which is why there is an urgent need to step up efforts to more widely deploy smart metering as a fundamental prerequisite for most digital solutions in the energy sector, especially for electricity supply and, to a lesser degree, for gas supply. Member States who have not yet fully rolled out smart meters need to speed this up and increase their national objectives with regard to this rollout. International evidence shows that smart meter rollouts are most effective when the grid operators are accountable. Smart meters should be considered as an integral part of the electricity grid.

1.12. There is a risk that new data-driven services and innovative technology solutions will not be implemented fast enough if there are not enough skilled workers and trained professionals to help deploy them. The necessary labour market and education policy measures require sufficient financial resources as well as the development of an action plan to ensure a coordinated approach. The EESC believes that close cooperation with the social partners is essential in this regard.

1.13. Cybersecurity is an essential requirement to ensure the reliability of the increasingly digitalised energy system. The developments of the last few decades, and in particular recent events, show the danger of cyberattacks and acts of sabotage against critical infrastructure. However, problems can arise not only as a result of cyberattacks or sabotage actions, but also from hardware and software failures, so the Commission must pay special attention to hardware and software design during digitalisation to ensure robustness. A failure or impairment of critical infrastructure can cause devastating supply shortages and endanger public safety. More decentralised generation and use of energy in conjunction with the internet increases the 'attack surface' and cyber-related risks. The digitalised energy system (both in terms of hardware and software) must be reliable, ensuring continuous availability.

1.14. The EESC believes that a combined strategy for energy transition and digitalisation in rural areas has not received the expected level of attention and support. It calls for the rapid implementation of the Commission's long-term vision for the EU's rural areas and the mobilisation of stakeholders under the EU Rural Pact.

2. Background

2.1. The Commission published a Communication with the aim of driving forward the digitalisation of the energy system. The EU Action Plan on Digitalising the energy system aims to achieve the objectives set out in the Strategic Foresight Report on the green and digital transitions, with digital technologies contributing to the creation of a climate-neutral and resource-efficient society, while ensuring that everybody can benefit from this transition.

2.2. In its EU Action Plan, the Commission proposes a set of actions in five areas: promoting connectivity, interoperability and seamless exchanges of energy data through the creation of a common data space, promoting and coordinating investment in the smart grid, providing better services based on digital innovation to engage consumers in the energy transition, ensuring cybersecurity in the energy system, and ensuring that the growing energy needs of the ICT sector are in line with the European Green Deal. The Commission believes that digitalisation can improve the affordability, sustainability and resilience of the EU energy system.

2.3. Smart solutions are designed to give consumers more control over their energy consumption and bills, thereby improving management of energy use, even though many end consumers might understand this potential without requiring a smart solution. Innovative energy services should reduce energy consumption and energy should be used when it is cheap. Smart meters provide important information to reduce energy consumption costs, e.g. smart charging of electric vehicles, smart heat pumps together with photovoltaic panels. Smart meters help customers to control the data in their bills and enable them to eliminate incorrect bills and back-billing, which are currently among the biggest consumer concerns. The action plan provides for support for digital tools, which serve the interest of consumers and in some cases are developed in collaboration with them, improved digital skills, funding for smart digital solutions through programmes that can help meet the objective of digitalising the energy system, support for national regulators in defining and monitoring common smart grid indicators, the creation of a common European energy data space and the close involvement of all relevant stakeholders, in particular grid operators and energy suppliers.

2.4. According to the Commission, ICT technologies offer great greening potential. Digital solutions should help to balance energy supply, storage and demand and make the energy system more flexible, facilitating the integration of decentralised renewable energy sources. Flexibility markets need to be developed in order to make investments in flexibility options attractive, regardless of whether these investments are made by generators, consumers or prosumers taking advantage of digital tools.

2.5. At the same time, the action plan emphasises the need to curb the rising energy consumption in the ICT sector. The action plan also provides for the creation of a digital twin of the European electricity grid, support for energy communities through digital tools, the development of energy-related labels for computers, data centres and blockchains, and the development of an EU code of conduct for the sustainability of telecommunications networks.
2.6. In an increasingly digitalised energy system with decentralised generation, transmission and distribution of energy and more digitally connected devices in homes, the risk of espionage, cybercrime and hardware failure related to energy consumption is increasing. Therefore, the Commission proposes well-coordinated cybersecurity measures to strengthen the system's overall resilience.

2.7. The action plan outlines that this requires both medium- and long-term action, as well as a governance framework. The Commission explains that it will involve multiple stakeholder communities, businesses and international partners and notes that limited public funding must be used wisely and more private investment is needed.

3. General comments

3.1. In its action plan, the Commission rightly addresses the enormous potential of digital technologies to increase the flexibility of the electricity system. The EESC supports these objectives and welcomes most of the measures proposed in the action plan. In particular, the EESC has already made clear the link between the energy transition and the digital transformation, pointing to the benefits of digitalisation in terms of energy savings, reduced energy intensity and better management of energy infrastructure. However, while the action plan's optimistic attitude is inspiring, the Commission tends to ignore the fact that the physical reality is very different from the use cases of digitalisation that are mentioned in the action plan.

3.2. The EESC is of the opinion that the main challenges facing the energy sector are: diversifying Europe's energy sources, reducing dependence on energy imports, securing an integrated internal energy market, improving energy efficiency, rapidly expanding the energy grid, ensuring security of supply, decarbonising the economy, reducing emissions, transitioning towards a low-carbon economy, with low-carbon and clean energy technologies, increasing and massively expanding renewable energy to meet the climate goals, promoting related research and education, ensuring a just transition and supporting the social dimension of energy, like reducing energy poverty. Digitalising the energy system is the basis for this and can help meet all these main challenges.

3.3. While both the strategic approach and the specific measures of the action plan point in the right direction, the Commission fails to integrate the action plan into the general energy policy. A silo approach focusing only on digitalisation and ignoring the general framework will not generate the benefits that are rightly explained in the action plan.

3.4. The Commission's proposal paints a picture of an ideal state that builds on a well-developed energy system (e.g. transmission and distribution networks) and digitalises it. However, in Europe, transmission and distribution networks must be developed first before complex digital technology can be developed. We are digitalising in vain if intelligently managed energy cannot be transmitted through energy transmission networks. Furthermore, a huge amount of energy is wasted on transmission and distribution networks. Even today, the cost of green electricity that cannot be used or transmitted and that has to be curtailed amounted to more than EUR 2 billion before the energy crisis and has amounted to more than EUR 12 billion during the energy crisis in large countries like Germany. This economic loss will increase many times over unless electricity grids and system-compatible storage capacities are expanded quickly and better ways of using electricity directly on site are found at the same time. Digitalisation in this area can play a role in identifying these losses and using the data thus generated in network development.

3.5. It is true that considerable investment is needed in energy infrastructure to make grids smart. It is also true that many Member States do not incentivise such investment as their regulation shows a clear bias towards capital expenditure (CapEx), and investment in digitalisation is mainly operational expenditure (OpEx). Coordinating and monitoring such investment and associated progress will not be enough. The EESC calls on the European Commission to incorporate the ideas behind ‘promoting investments in digital electricity infrastructure’ into an amendment to Article 58 of Directive (EU) 2019/944 on common rules for the internal market of electricity, ensuring a regulatory framework that effectively incentivises investment in the digitalisation of electricity grids.

3.6. The European Commission rightly points out that digital tools play an important role in developing collective self-consumption schemes and energy communities. Both guidance and the planned experimentation platform can help, but they are not the most important aspects. More than five years after the presentation of the Clean Energy Package, both energy communities and collective self-consumption still play a minor role in Europe's energy systems. In many cases, the main reasons for this are significant bureaucratic barriers and a lack of information on the part of consumers and producers. The European Commission has so far ignored the existence of these barriers. Europeans must be given incentives
that eventually convince and motivate them to digitalise all their energy-related activities. The digitalised energy system as a whole must be so attractive to the parties operating in that system that not only do financial incentives help to create this digitalised energy system, but the entire environment encourages them to create a controlled, managed and secure energy system. The EESC calls on the Commission and the Member States to develop corresponding initiatives, including direct support enabling energy communities and collective prosumers to develop their full potential, taking into account distribution system operators to ensure security of supply. Otherwise, digital tools will not make a difference.

3.7. Bidirectional e-vehicle charging is another very promising case that shows that more active consumers can directly contribute to system stability with digital technology, including ICT, both on the grid and the consumer side. However, there are almost no business cases for bidirectional e-vehicle charging in the whole of Europe as the market was not designed for providing market-based incentives for feeding flexible electricity in and out. In its efforts to redesign the market, the Commission should focus in particular on designing a market that makes cases like the ones named in chapter 4.2 of the action plan attractive and helps mainstream them, whereby bidirectional charging can also be used in the future by network operators as a factor in load control, which should also be taken into account in legislation to ensure security of supply.

3.8. The EESC reiterates that, with the right approach, a climate-neutral, decentralised and digitalised energy supply structure can have significant positive effects on employment and the economy, especially regional economies (3). In the current crisis, the European Union needs a general approach to energy policy that combines specific energy and climate-related issues with the objectives of social and regional cohesion policy.

3.9. The EESC emphasises that the technocratic design of the economic framework conditions and the financial promotion of new technologies, especially the digitalisation of the energy system, play an important role in the energy transition. At the same time, the EESC notes that a policy of change can only be successful if it takes into account the various social dynamics at work in the transition and addresses them in its strategies and measures. We should strengthen the role of consumers in digitalisation and should encourage them to use as many intelligent solutions as possible, as they can help improve the efficiency and performance of the internal energy market, with all parts of the energy value chain being closely involved to ensure security of supply. A policy for a just transition and active political management of change is therefore indispensable. If the social dimension is neglected in the implementation, the transformation risks failing due to public resistance.

3.10. The transformation of the energy system may generate unexpected profits for service providers, who may ask for higher charges for their new solutions. However, innovative services, apps and energy management systems can unlock the huge untapped potential for energy users, generating a relief for consumers suffering from high energy prices. Digitalisation can help to make prices on the market comparable, to make prices for flexibility options such as load shifting fair and to reveal at an early stage of the market process that energy consumers, such as vulnerable households, could pay less for the service provided. For example, smart energy accounting solutions can give socially disadvantaged people the opportunity to use as much energy as they can pay for and does not allow them to run into debt.

3.11. The EESC also calls on the Commission to take into account the reality of the smart meter market and to intervene if necessary. The envisaged installation of smart meters could lead to high costs for tenants. In practice, there is hardly any competition between the various metering service providers. Sector inquiries in Germany and Austria have shown that there are considerable indications of the existence of a non-competitive oligopoly in the submetering sector (4). To ensure competitiveness, it must be ensured that consumption recording devices can also be used by third-party providers. Otherwise, a change of billing company would always be associated with the costs of replacing existing consumption recording devices.

3.12. In this connection, the EESC reaffirms its position that a two-tier energy society is to be avoided at all costs. We cannot have a situation in which only affluent and technologically well-equipped households benefit from the energy transition and all the rest have to bear the costs. The EESC therefore supports the incentives and tools for implementing the Energy Efficiency Directive to help vulnerable customers and households, and points out that ambitious targets for district heating/cooling may worsen the conditions of social housing.

(4) For example, it was found that the largest metering service provider in Austria had attempted to exclude third-party providers from using its smart meter equipment by using forms of hardware protection (Austrian Federal Competition Authority (BWB), 2022).
3.13. With regard to the future design of energy systems and infrastructure, the EESC has repeatedly stressed that all consumers — households, businesses and energy communities — must be actively involved in the development of smart energy systems and that incentives must be put in place so that civil society can participate in the energy transition, but also so that it helps fund it. ‘Connecting local and regional innovators’, as mentioned by the Commission in point 7.3, is very important. Collective action like cooperation between smart cities and communities can create the best and most affordable solutions that a region may need.

3.14. The action plan envisages the creation of a common European energy data space and sound governance to ensure EU-wide coordinated exchanges and use of energy data. The EU's digital and energy policies are already guiding the digitalisation of energy, as issues such as data interoperability, security of supply and cybersecurity, privacy and consumer protection cannot be left to the market alone and their proper implementation is key. In this context, the EESC points out that privacy violations and misuse of data must be prevented by all means. This includes not only technical precautions, but also responsibility over and monitoring of this data space by state authorities subject to political and democratic control. Public data ownership must be promoted since data are an important economic factor in a networked and digitalised society. On the other hand, private GAFA (5) data monopolies must be prevented. At the same time, particular attention must be paid to protecting critical infrastructure data.

3.15. The proposed data space is a promising approach but requires clear rules governing access to the anonymised data for all market participants that are interested in using the data, for example to better plan energy trading and sharing. It is important to quickly elaborate on the ‘solid governance’ mentioned in the action plan by formulating basic rights for all market players, including consumers, prosumers, energy traders, etc.

3.16. With regard to strategic coordination at EU level, the action plan provides for the establishment of a Smart Energy Expert Group (formerly Smart Grids Task Force). Its purpose is to contribute to building the European framework for sharing energy-related data, to strengthen the coordination of data exchanges for the energy sector at EU level, to determine the driving principles and ensure consistency across different data-sharing priorities and initiatives, and to support the Commission in developing and rolling out a common European data space for energy. The EESC points out that clear guidelines and objectives must be developed in this context and that the involvement of the social partners and organised civil society is essential.

3.17. The idea of supporting transmission system operators and distribution system operators in creating a digital twin of the electricity grid is an interesting approach and can help to improve grid modelling. However, it needs to be specified exactly what role the digital twin will play in planning grid expansion, in making the grid smarter, in integrating flexibility options, including virtual power plants, energy prosumption and energy sharing, and in optimising resilience. In this respect, amendments to Directive (EU) 2019/944 also appear necessary.

3.18. The Commission states in its communication that it is essential to ensure that digitalisation does not undermine the framework for consumer protection already established in the internal market in electricity. The EESC takes note of this and adds that consumer rights must be adapted and improved in the energy market. Consumers must not be disadvantaged or overcharged. Particular attention should be paid to vulnerable groups, people with disabilities and those with low digital skills. Adequate protective regulations are needed here because it is already apparent that many consumers lose track of digital information and bills.

3.19. The Communication provides that the potential for Member States to establish regulated prices, notably for vulnerable customers and people experiencing energy poverty, must not be negatively affected by digitalisation. Digital tools also allow public authorities to better map, monitor and address energy poverty, while the energy sector can further optimise its operations, focusing on security of supply, and prioritise the use of renewables.

3.20. The EESC welcomes the Commission’s announcement to ensure that key R&I projects work together to identify strategies to engage consumers in the design and use of accessible and affordable digital tools by mid-2023. The EESC points out once again that there is still a need for significant investment in research and innovation.

Against this background, public investment in smart and renewable energy systems is of great importance in terms of ensuring security of supply, combating energy poverty, ensuring affordable prices and creating jobs. The EESC recommends

(*) The four internet giants Google, Apple, Facebook and Amazon.
once again, as in opinion ECO/569, that the golden rule be applied to public investment. For all initiatives, it is important that consumers have a smart meter at home. This is still not the case in many Member States, which is why there is an urgent need to step up efforts to more widely deploy smart metering as a fundamental prerequisite for most digital solutions in the energy sector. Member States who have not yet fully rolled out smart meters need to speed this up and increase their national objectives with regard to this rollout.

3.21. There is a risk that new data-driven services and innovative technology solutions will not be implemented fast enough if there are not enough skilled workers and trained professionals to help deploy them (*). The EESC believes that, in order to achieve the goals, appropriate measures must be taken immediately, in close cooperation with the social partners.

3.22. However, sufficient financial resources and programmes are also needed to train long-term unemployed people, women and young people in particular through specific programmes and to create attractive framework conditions for them. This includes job guarantees as well as a training and qualification initiative and a wide range of retraining and further education opportunities. The necessary labour market and education policy measures require sufficient financial resources as well as the development of an action plan to ensure a coordinated approach.

3.23. The EESC calls for close cooperation between training providers and businesses in designing training courses that provide the skills and competences needed for the digital and sustainable transformation of the economy, including through further education and retraining of workers and entrepreneurs. The European Year of Skills 2023 will be used to strengthen and effectively implement these measures.

3.24. Cybersecurity is an essential requirement to ensure the reliability of the increasingly digitalised energy system. The developments of the last few decades, and in particular recent events, show the danger of cyberattacks and acts of sabotage against critical infrastructure. However, problems can arise not only as a result of cyberattacks or sabotage actions, but also from hardware and software failures, so the Commission must pay special attention to hardware and software design during digitalisation to ensure robustness. A failure or impairment of critical infrastructure can cause devastating supply shortages and endanger public safety. More decentralised generation and use of energy in conjunction with the internet increases the ‘attack surface’ and cyber-related risks.

3.25. The whole energy system value chain, from production and transmission to distribution and the consumer, including all digital interfaces along its path, can be a target for cyberattacks and physical attacks. It is in the interest of everyone in Europe to better protect this critical infrastructure. The EU must be better prepared for possible attacks of this kind. The EESC therefore calls for an immediate critical assessment of the measures taken so far and for a comprehensive strategy to protect the EU against threats such as natural disasters, physical attacks and cyberattacks. In this context, the EESC draws attention to its other opinions on this matter (§) and recommends that all foreign investment in strategic sectors in the EU should be in line with the EU’s security policy.

3.26. The ICT sector accounts for approximately 7% of global electricity consumption. As part of the green and digital transitions, it is therefore essential to ensure that the growing energy needs of the ICT sector are reduced in line with the climate neutrality objective. The EESC agrees that it is vital to address energy and resource consumption throughout the ICT value chain and the key emerging additional sources of ICT-related energy consumption. Solutions already exist on how to reuse waste heat from data centres to heat homes and businesses. Therefore, it is important that waste heat be treated on an equal footing with renewables as part of the revision of the Renewable Energy Directive (RED III) and other energy-related legislation connected with the Fit for 55 package. However, concrete and feasible solutions that can serve as best practices are needed to achieve optimal results.

3.27. Interoperable technical standards, cybersecurity, data protection and other key features of a digitalised energy system must be ensured globally, in international fora and in cooperation with partner countries. To advance the green and digital transitions with partner countries through bilateral contacts, the EESC calls on the Commission to integrate digital and green aspects into energy-related projects, partnerships and cooperation agreements.

(*) Based on the results of the public consultation, the Commission has identified shortcomings in skills development and the lack of adequate skilled workers as the most important barriers to the uptake of digital technologies (Synopsis Report available in Have Your Say).

4. Specific comments

4.1. The EESC believes that a combined strategy for energy transition and digitalisation in rural areas has not received the expected level of attention and support. It calls for the rapid implementation of the Commission's long-term vision for the EU’s rural areas and the mobilisation of stakeholders under the EU Rural Pact.

4.2. The EESC recommends ensuring labour market equality in the energy sector by exploring opportunities for women, while preventing the energy transition and digital transformation from becoming traps for women's careers and pay, and expanding social dialogue and collective agreements on equality in energy companies across Europe.


The President
of the European Economic and Social Committee
Christa SCHWENG