



OPINION

European Economic and Social Committee

The energy and digital transition of rural areas

The energy and digital transition of rural areas
(Own-initiative opinion)

NAT/859

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1. **Conclusions and recommendations**

- 1.1 The EESC considers that a combined strategy of energy and digital transition in rural areas has not received the level of attention and support that one would expect. The EESC calls for the swift implementation of the Commission's long-term vision for the EU's rural areas and the mobilisation of stakeholders through the EU Rural Pact. The most vulnerable rural areas need special attention so that no one is left behind. It is vital to focus on energy poverty and areas of rural poverty.
- 1.2 The EESC is convinced that the future success of Europe will largely depend on how we deal with rural areas in a way that is in balance with urban areas. Rural communities should not be disadvantaged when it comes to digitalisation and options for energy use, e.g. necessary use of private cars due to a lack of public transport.
- 1.3 The role of local communities has to be leveraged to achieve a just energy transition combined with community development, through the establishment and scaling up of renewable energy communities and citizen energy communities comprising the voluntary coming together of citizens, local authorities and SMEs to promote social and economic benefits.
- 1.4 The EESC calls for the following policies and instruments to be stepped up:
 - Renewable energy policy: the current renewable energy policy is primarily driven by the need to increase capacity rather than increasing synergies with rural community welfare. The necessity to maximise renewable energy capacity is essential and equally essential is the need to quantify and deliver on all rural development issues.
 - Tendering policy: the current tendering policy for renewable energy installations is unhelpful for rural communities due to its primary focus on cost reductions rather than the socio-economic needs of rural citizens. All renewable energy installations should aim to be established as cost-efficiently as possible and make a meaningful contribution to the socio-economic needs of rural communities and rural citizens.
 - Electricity storage: the electricity storage sector needs to grow. One of the key challenges will be the seasonal security of electricity supplies. Battery storage and smart electrification combined with demand-side responses will help in this regard. Green hydrogen storage will be needed as a backup.
 - Specific financing through earmarking of the national recovery and resilience plans and thus ensuring that the money is actually spent in rural areas.
- 1.5 The EESC calls on the Commission to propose a Digital Rural Act as the third component of the EU digital strategy, together with the Digital Markets Act and the Digital Services Act. Digitalisation will open up new opportunities, especially for young people, which could change population trends by enabling people to work from home and from rural work hubs.

- 1.6 The EESC stresses that for EU or national recovery and resilience plans to benefit fully from the contribution of rural areas, it is imperative that high-speed internet connectivity is ensured in the whole territory, including sparsely populated zones. The EESC urges governments to either create the conditions for private operators to provide this service or use a state company to provide the service.
- 1.7 The EESC considers that government authorities and service providers need to develop user-friendly applications specifically adapted to the realities of rural lifestyles and activities. The application of these technologies will for example reduce the carbon footprint of agriculture (precision farming) and help improve the accessibility of remote areas (drones). The public sector must step in if the private sector fails to supply these solutions.
- 1.8 The EESC stresses that rural users of different ages must be provided with the possibilities for appropriate training and upskilling to use this new digital technology. The inclusivity in less-favoured areas must also enable access to the required devices, either through shared use or through a state subsidy for their purchase.
- 1.9 The EESC concludes that the deployment of digital technologies in rural areas is necessary to support the energy transition. The rural energy system must be decentralised, which implies a huge need for more and better interconnection, which of itself requires the deployment of digital technologies to match supply and demand and ensure efficient energy flows. The digital application at rural level will have to be highly energy efficient because of the lower utilisation rate and the lower population density. Low energy IT connectivity is a must for rural areas.
- 1.10 The EESC emphasises that, with 30% of the EU population living in rural areas, a just rural energy transition is a key element in the just transition to a climate-neutral, sustainable and prosperous European Union, in line with the Territorial Agenda 2030.
- 1.11 The Commission has proposed that an investment of 20% of NextGenerationEU will be in digital. The EESC recommends that all Member States devote at least 10% of these funds to rural digital without imposing undue bureaucracy.

2. The energy transition of rural areas

Introduction

- 2.1 There is general scientific agreement that the most likely manner in which mankind is influencing global climate change is due to carbon dioxide release from burning fossil fuels.
- 2.2 Climate scientist Michael Mann says in his book *The New Climate War* that our planet has now warmed into the danger zone and that we are not yet taking the necessary measures to avert the largest global crisis that we have ever faced.
- 2.3 Dangerous climate change has already arrived in some places due to rising seas. Venice and Miami face significant challenges in this regard. The Amazon region has seen massive forest

clearances and climate change induced drought. The quicker than expected melting of the Arctic Ice Cap is of major concern.

- 2.4 Action is needed among all stakeholders on a global scale to take immediate steps on climate change, by way of mitigation and adaptation measures to reduce greenhouse gas (GHG) emissions. The swift reduction in the use of fossil fuels must be an immediate priority.

Rural areas

- 2.5 130 million people or 30% of the EU population live in rural areas. Rural areas are diverse and greatly influenced by their location. In many areas, especially in Southern Europe, climate change will progressively increase water scarcity, exacerbate flooding and increase the intensity and frequency of wild fires. In Northern Europe, increased rainfall and storms can and will cause significant and costly damage to infrastructure. Higher temperatures will intensify the water cycle and increase the frequency of severe storms. These circumstances demonstrate the need for the fastest possible energy and digital transition in rural areas.

- 2.6 The idea of rural energy transition has not received the level of attention that one would expect. This is surprising because the resources needed to produce renewable energy are very much linked to rural areas. The majority of renewable energy infrastructure, such as wind turbines, solar and biogas plants are located in rural areas. Transmission grids are also a feature of the rural landscape. Many rural inhabitants feel that these structures are imposed upon them and provide greater benefit to urban areas.

- 2.7 Rural areas have varied and distinct needs depending on their location. Rural areas can be designated as follows:

- Rural areas within commuting areas of a city (60 km radius) and whose development is integrated with the city.
- Rural regions that are not part of the urban labour market but have a flow of goods and environmental services and other economic activities in and out of the region.
- Remote rural regions where the local economy depends largely on the exporting of primary activities such as agricultural produce out of the region. In particular, these areas tend to have scattered populations and be subject to poor public services.

- 2.8 These different rural areas face many and varied challenges in implementing an energy transition, which indicates the importance of a just transition in order to achieve the desired objective.

- 2.9 Many rural areas are physically isolated with little economic diversity and a low population density. In many cases, low incomes and an ageing population increase the vulnerability of rural communities. People living on their own in isolated rural areas with little social interaction presents enormous problems when implementing an energy transition. Energy poverty is a significant problem in these areas.

- 2.10 The roll out of smart meters is an essential part of the rural energy transition. To date it would seem the roll out of smart meters has been rather slow in rural areas. We must also ensure that low-income households and people with limited computer skills can make the best use of smart meters as part of a just energy transition where no one is left behind. The Recovery and Resilience Facility has allocated EUR 25 billion to support digital skills and education. Member States need to ring-fence an adequate proportion of this fund towards digital skills and literacy training for rural people. The fact that parts of Europe do not have internet is an intolerable situation and must be remedied as soon as possible.
- 2.11 The EESC has highlighted in its opinion *Towards a holistic strategy on sustainable rural/urban development*¹ that agriculture, food and rural policies must tie in with climate change and biodiversity policies. The multifunctional aspect of agriculture is as important as the promotion of non-agricultural activities such as establishing businesses in the clean energy services sector to create job opportunities. The potential of e-commerce needs to be explored.
- 2.12 The Communication *A long-term vision for the EU Rural Areas*² includes a Rural Pact which aims *inter alia* to foster territorial cohesion and create new opportunities to attract innovative businesses. The implementation of this vision would greatly facilitate a just energy transition in rural areas. The EESC has welcomed this approach in its opinion *A long-term vision for the EU's rural areas*³.

Transport

- 2.13 Rural transport provision is a key issue because of poor public transport, sparse population and remoteness from shops and services. In addition, rural people working in urban centres frequently cover long commuting distances to their workplaces.
- 2.14 There is a need for local and national planning to provide a multi-modal transport system to transition to renewable energy. Such a system must provide choices and alternatives for people transport and goods transport.
- 2.15 Goods transport in rural areas needs specific attention as regards the energy transition. For example, deliveries of farm supplies and collection of farm produce must be an important part of the planning for the energy transition. Electric-powered heavy goods vehicles (HGVs) and hydrogen-powered HGVs must be the objective to be reached. In the short-term, sustainable biofuels and hybrid vehicles could help to reduce GHG emissions.
- 2.16 The major expansion of online purchases, especially in rural areas, indicates the importance of reducing the GHG emissions of delivery vans. The use of electric-powered vans would suit this purpose as soon as adequate charging infrastructure is in place. As well, the courier companies

¹ EESC opinion [Towards a holistic strategy on sustainable rural/urban development, OJ C 105, 4.3.2022, p 49.](#)

² [COM\(2021\) 345.](#)

³ EESC opinion A long-term vision for the EU's rural areas [OJ C 290, 29.07.2022, p. 137.](#)

need to finance the purchase of electric-powered vans. The immediate priority is to start reducing emissions in every way possible.

- 2.17 Better public transport provision in rural areas, encompassing reduced GHG emissions and social inclusion and enabling rural development opportunities, needs to be prioritised. Rural public transport must be seen as a public good in the context of energy transition and so public funding is required to promote and facilitate sustainable public transport.
- 2.18 Private cars are considered to be an indispensable means of rural transport as rural living would be impracticable in their absence. The priority must be to help and encourage rural residents to reduce the use of private cars when possible and to change to low emission vehicles as soon as possible. Financial aid to promote the purchase of electric vehicles must be a key objective for the energy transition in rural areas.
- 2.19 Battery storage is an effective means of flattening the net demand curve for renewable electricity. The widespread use of electric vehicles (EVs) could help in this regard. When EVs are enabled to send electricity back to the grid, the electric fleet can act as a battery storage asset in addition to other forms of battery storage. It must be financially attractive for consumers to return electricity to the grid from EVs as outlined in the EESC opinion on the Regulation on deployment of alternative fuels infrastructure⁴.

Tourism

- 2.20 Rural areas often depend on tourism as an important income earner. Therefore, rural areas need to have an adequate alternative fuels infrastructure to encourage the tourist industry while reducing GHG emissions. Car hire companies must be encouraged to move to low emission vehicles and preferably to electric vehicles. Energy transition in rural areas requires action to facilitate greater income from tourism.

Renewable electricity

- 2.21 Renewable electricity such as wind, solar and biogas is a major component of the rural landscape. The harmonisation of the legislation among Member States must promote and protect prosumers' interests and motivate investments in renewable energy infrastructures. The capacity to sell the energy produced into the national grid must be made possible in all Member States. There must be adequate compensation schemes between the renewable energy produced by the prosumers and the energy consumed to ensure the energy independence of rural areas.
- 2.22 Recent auctions for centralised procurement of renewable electricity have become increasingly widespread and have succeeded in many cases in reducing the construction costs of wind and solar facilities. In general, the development of rural electricity is primarily linked to the decarbonisation of the energy sector and there are no synergies with rural development objectives. Rural inhabitants frequently object to such developments as they foresee little benefit to the local community.

⁴ EESC opinion on the Regulation on deployment of alternative fuels infrastructure, [OJ C 152, 6.4.2022, p. 138](#).

- 2.23 Co-operatives and other locally based organisations need to be involved in agreeing locations for renewable electricity facilities, both land-based and in coastal regions. Local communities need to have a shareholding and obtain a local benefit from such facilities.
- 2.24 In these large projects, the development of renewable energy is primarily linked to the decarbonisation of the energy sector; there is little concern for rural development. Small-scale wind farms, small solar and anaerobic digesters operated by co-operatives and local people can be more targeted towards rural development, as well as social and economic inclusion of rural communities. There is a need for a balance to be achieved in relation to these two systems. Renewable energy communities and citizen energy communities provide a way to achieve a just energy transition combined with community development.
- 2.25 A case study in rural Sweden (Ejdemo and Söderholm, 2015) found that, in the absence of community benefit schemes, employment opportunities were very modest in the context of rural development.
- 2.26 A citizen energy community is a legal entity where citizens, SMEs and local authorities come together as final users to cooperate in the generation of renewable energy. One such example is in the Municipality of Feldheim, (a small village southwest of Berlin) which has become self-sufficient in energy. They have set up wind turbines in their backyard and installed an independent grid. Residents pay minimum prices for electricity. The establishment of a biogas plant enabled the village to establish a district heating network. This is an excellent example of a renewable energy community in operation. It also demonstrates that a bottom up approach is vital for the future of rural areas⁵.
- 2.27 Demand-side response shifts electrical consumption to periods of time when the system can cope with the demand. We need to flatten the net demand curve for electricity during peak demand periods so as to avoid outages as more green electricity is produced. The use of battery storage, hydro storage and smart electrification will provide flexibility in flattening the net demand curve.
- 2.28 Speaking in Dublin to Irish parliamentarians, energy commissioner Kadri Simson said that the war in Ukraine had forced Brussels to move further and faster to end Russian fuel imports. She said that, under proposals yet to be agreed, the EU will aim to take 45% of its energy consumption from renewables by 2030. That will be an increase from the present 32% target and more than double the 22% share in 2020. The EESC endorses this new target but warns that it can only be achieved by rapidly driving forward with new and greater investment in the rural energy transition.
- 2.29 The wind does not always blow so a backup will be necessary. Green hydrogen can provide a backup to satisfy the varied demand for electricity and can be stored until required.

⁵ [ERP WORKSHOP REPORT Workshop 21.](#)

Agriculture

- 2.30 Agricultural activity is central to the development and prosperity of most rural areas. This sector of the rural economy faces enormous challenges in achieving energy transition.
- 2.31 Major work has not been done to reduce the carbon footprint of farm machinery.
- 2.32 In the immediate future, it would seem that the use of sustainable biofuel provides the best possibility of reducing emissions as existing machinery could be used, when suitably modified.
- 2.33 Sustainable biofuels are not cheap to manufacture and can be more than twice the price of diesel. Prices may reduce slightly going forward.
- 2.34 In the future, when electric-powered farm machinery becomes more widely available, it will be possible to significantly reduce emissions.
- 2.35 Agriculture is mostly a low profit enterprise and so the capital costs of changing to electric-powered machinery would be extremely difficult to finance. Overcoming the problem of financing the change to electric- or hydrogen-powered machinery will be a major issue in the energy transition of rural areas.
- 2.36 The use of solar panels on farm buildings would enable farmers to use green electricity and, as farming is a high user of electricity, this would be a significant gain in the energy transition. Any surplus could be sold back to the grid.
- 2.37 Precision agriculture is a data-driven approach to farm management that can improve production and yields and reduce the carbon footprint of farming. This is possible because of advances in digital technology with remote sensing, GPS and satellite steering systems for tractors. All this will be important in the energy transition in farming combined with the requirement for investment, training and upskilling.
- 2.38 Farmers may have opportunities to sell surplus electricity to the grid as dairy and beef farmers have extensive roofs on their farms. Some farmers may be able to become partners in establishing biomass plants and sell gas to the gas grid. The use of forest residues in biomass plants is important in facilitating forest management in those areas where such materials are available.
- 2.39 The consequences of the Ukraine war mean that we must look again at food security in the EU. As a priority, land must be used to produce food. There should be no competition with the installation of industrial-scale panels and production of biomass for renewable energy; this should rather be complementary.

Biomethane

- 2.40 Biomethane is a biogas from which carbon dioxide, hydrogen sulphide and water have been removed; it can then be injected directly into the gas grid or used in a gas-powered vehicle.

- 2.41 Anaerobic digesters need to be established near where there is an adequate supply of slurry. Surplus grass silage and maize silage can also be used, provided it does not conflict with food and fodder production.
- 2.42 There is a need for further research to improve the efficiency of anaerobic digesters and to reduce the cost associated with the process.
- 2.43 The use of anaerobic digesters needs to be promoted and financed as part of the energy transition in rural areas.
- 2.44 Biomass energy can be used to produce heat or generate electricity. Biomass will play a vital role in the generation of renewable electricity.

Rural houses

- 2.45 There is scope for many rural households to install micro-generation technology such as solar panels and small wind turbines with the possibility of selling any excess supply back into the grid.
- 2.46 Low-income households need financial assistance to install micro-generation facilities. This would make a significant energy transition in rural households.
- 2.47 Rural houses are in general less well-insulated and less energy-efficient than urban houses. Many rural houses are standalone houses in weather-exposed sites.
- 2.48 A major investment programme to retrofit rural housing to improve insulation and energy efficiency is necessary as part of the energy transition. Such an investment will be a major step forward in reducing energy consumption and decarbonising rural home heating. A grant aid scheme will be required as the capital costs of a major retrofit scheme are very high. Low-income households and those experiencing fuel poverty will need special help to achieve such a transition.

3. The digital transition in rural areas

- 3.1 In 2021, the European Commission presented its vision for Europe's digital transformation by 2030. First of all, it highlighted the need for the Digital Markets Act and Digital Services Act legislative proposals to ensure a safer digital space, where users' fundamental rights are protected, and to establish a level playing field for European businesses in the digital world.
- 3.2 To feed a growing world population, with minimal environmental impact and in a way that promotes carbon neutrality, digital and technological infrastructure is needed in rural areas to facilitate the efficient and precise use of resources in farming. Despite the fact that 30% of Europe's population lives in rural areas, however, and that these areas account for 80% of the 27 Member States' territory, digitalisation faces greater difficulties in rural areas which, if not

addressed, will undermine Europe's digital ambitions. The European legislative framework for the Digital Rural Act is designed to address these difficulties by promoting:

- guaranteed equal broadband network coverage for all of Europe's regions: currently coverage is good in large urban centres and poor in rural areas; to meet digitalisation targets, this problem must be tackled urgently so as not to open up an even wider gulf between regions;
- infrastructure: ensuring private investment in developing last-mile infrastructure, taking into account non-financial benefits such as socio-economic externalities;
- capacity building: improving the digital literacy of people living in rural areas;
- suitability: promoting the development of applications that meet the needs of the agricultural and rural community, which make little use of digital services designed for the urban environment.

3.3 The Digital Rural Act, as a legislative mechanism of the European Commission, just like the Digital Markets Act and the Digital Services Act, will be a set of rules, obligations and responsibilities aimed at ensuring that European rural areas have access to a set of initiatives, tools and forms of access which, due to low population density, are economically unfavourable to private investment. In this way, the Digital Rural Act will ensure that digitalisation takes place in rural areas, where the need for it is inversely proportional to the financial returns obtained.

3.4 Finally, the Digital Rural Act will be the biggest forerunner of the European Green Deal, the Farm to Fork Strategy and Europe's carbon neutrality in 2050, as the transition to a fair, healthy and environmentally-friendly food system will only be possible if technology and digitalisation are available and accessible to the agricultural and rural world.

3.5 As stressed in the EESC opinion *Upgrading inclusive, secure and trustworthy digitalisation for all*⁶, the importance of digitalisation cannot be underestimated, because it can "support increased mobility in the labour market, enhance productivity and flexibility at the workplace and enable work-life integration when workers work remotely from home". For this to happen, a comprehensive set of digital skills is necessary, irrespective of whether workers live in urban or rural areas. However, additional multi-faceted barriers exist in remote locations. Therefore the EESC calls for the dedicated digital skills agenda to support European citizens living in rural areas. This approach, to be represented at the centre of the Digital Rural Act, should simultaneously help to bridge the digital divide and to reap the benefits of the digital transformation of the society.

Brussels, 21 September 2022

Christa SCHWENG

The president of the European Economic and Social Committee

⁶ EESC opinion *Upgrading inclusive, secure and trustworthy digitisation for all*, [OJ C 374, 16.9.2021, p. 11](#).