European Parliament

Renewable energy in EU agriculture

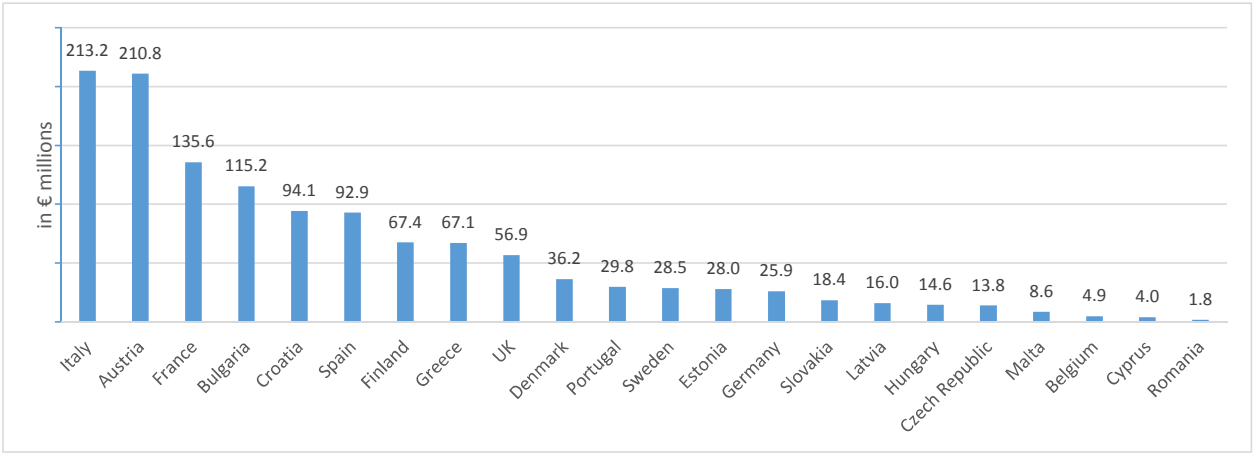
The agricultural sector accounts for almost 10 % of greenhouse gas emissions in the European Union, mainly for food production and transport. In recent years, European farmers have made efforts to significantly reduce this environmental footprint by increasing their consumption and production of renewable energy, which is derived from natural resources that are naturally replenished. While there is enormous potential for the production of renewable energy on farms due to the availability of wind, sunlight, biomass and agricultural waste, important barriers and challenges still remain.

Support for renewable energy under the common agricultural policy

The production and consumption of renewable energy is supported by the rural development pillar of the common agricultural policy (CAP). In particular, under priority 5, 'Resource efficiency and shift to low carbon and climate resilience economy in agriculture, food and forestry sectors', Member States can include measures to encourage the production and use of renewable energy in their rural development programmes.

Figure 1 shows the public expenditure that Member States, including their regions, have directly committed to renewable energy in their rural development programmes for the 2014-2020 period, a total amount of almost €1.3 billion. Italy, Austria and France are the biggest spenders in this regard, while Belgium, Cyprus and Romania contribute much smaller amounts of financial resources to renewable energy. Six Member States (Ireland, Lithuania, Luxembourg, the Netherlands, Poland and Slovenia) have not explicitly included support measures for renewable energy in their rural development programmes, as they have decided to focus their funds on other elements of the six rural development priorities.

Figure 1 – Support for renewable energy in the rural development programmes for 2014-2020



Source: Rural development programmes 2014-2020.

In its resolution of 7 June 2016 on technological solutions for sustainable agriculture in the EU, the European Parliament considers it essential for the Commission and the Member States to develop innovative projects for producing non-food products (bio-economy, renewable energy, etc.) and services with a view to developing a more resource-efficient agriculture industry, and one which is more autonomous.

Production of renewable energy in EU agriculture

Based on a 2011 study on the impacts of renewable energy on European farmers, the total amount of renewable energy produced on farms can be estimated at 22.6 Mtoe (million tonnes of oil equivalent) in 2015, which represents around 10 % of total renewable energy production in the EU. Most of this renewable energy is produced as **electricity**, which is exported to other sectors through the electricity grid since the agricultural

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sector produces more renewable electricity than it consumes. **Wind energy** is by far the largest resource for the on-farm production of renewable electricity, followed by **biogas**, while the contribution of other renewable electricity sources, such as **solar energy** and **biomass**, is more limited. By contrast, renewable **heat** produced from solid biomass represents a much smaller share than electricity and is mostly used directly for on-farm consumption.

According to the future projections set out in the 2011 study, renewable energy production in EU agriculture will increase considerably by 2020, being expected to almost double to 35.9 Mtoe. This will mainly be the result of additional electricity production, in which wind will continue to be the most dominant on-farm renewable electricity source. Under a more ambitious scenario, with a stronger increase in the production of heat, renewable energy production could even rise to 62.5 Mtoe.

Environmental impact

The **reductions in greenhouse gas emissions** as a result of on-farm renewable energy production can be estimated at 183 million tonnes CO_2-equivalent in 2015, which roughly corresponds to 37.7 % of the total GHG emissions of the EU agricultural sector. Wind energy is responsible for the majority of these savings, followed by solid biomass for heating, biofuels and biogas, while other types of renewable energy sources only have a marginal share. The potential benefits of solar energy are still largely unexploited.

Greenhouse gas emissions savings are expected to rise significantly to 315 million tonnes CO_2 equivalent by 2020, which would correspond to 65 % of the 2008 GHG emissions from the agricultural sector. Wind energy will continue to be the biggest contributor to these reductions, followed by biogas, solid biomass for heating and electricity from second generation energy crops.

Opportunities for farmers

Farmers mainly get involved in the production of renewable energy for **economic reasons**, as it represents an opportunity for them to diversify, increase and **stabilise their income**, given that their farm incomes are highly dependent on fluctuating prices for their products, and price volatility may be expected to increase in future. Other motivations for farmers to invest in renewable energy include becoming less dependent on external energy supplies and the desire to contribute to environmentally friendly energy production.

Subsidies and feed-in tariffs for renewable energy production also play an important role in encouraging farmers to shift towards more environmentally friendly production and use of energy, as public funds are considered to be crucial to make renewable energy economically competitive with fossil fuels.

Impact on rural development

The expansion of on-farm renewable energy activities can also make a positive contribution to the wider region in the form of rural development and rural vitality. Apart from contributing to higher, and more stable and diversified income for farmers, renewable energy production can lead to the development of technical **infrastructure** and have a positive effect on **employment**, in the sense that more labour is required on farms engaging in renewable energy production.

In particular, solid biomass and biogas production often lead to additional local employment, while this is less the case for wind, solar and geothermal energy installations. Most of the additional employment in these regions is created indirectly, in the form of jobs along the whole renewable energy supply chain. The specific impact on farms and rural development will nevertheless depend on a variety of elements, such as the type of renewable energy produced, the farm type and the region in which a farm is located.

Barriers and challenges

The main barriers to renewably energy production most often identified by farmers are complicated procedures to obtain **permits and subsidies**, high **investment costs**, **limited credit access** and uncertainty about **profitability**. The availability of assistance to implement renewable energy technology, for instance for its installation and maintenance, is usually not seen as problematic.

Another concern is that on-farm renewable energy production might encourage the intensification of agriculture, as it is often produced on large-scale farms that are able to afford the required installation and technologies, while young and **small-scale farmers** are largely excluded due to the high investment costs. This can be particularly problematic for farmers in central and eastern Europe, who mostly have very small farms and often have a lack of funds to invest in renewable energy production.