Employment and gross value added from market production of the environmental economy, by country, change from 2016 to 2017

This article presents statistics on the environmental economy of EU Member States as it is defined in the environmental goods and services sector (EGSS) accounts. The environmental economy produces goods and services such as organic vegetables, renewable energy, or treatment of waste and wastewater that help either protecting the environment or preserving the stock of natural resources. Together with Eurostat’s article “Environmental economy - statistics on employment and growth”, this article provides insight into a sector that is vital for Europe’s transition towards a competitive climate-neutral economy as envisioned under the European Green Deal.
Key figures

According to Eurostat estimates, the environmental economy as a whole grew by 2.3 % in 2017, generating a total gross value added of EUR 287 billion and contributing 2.2 % to the GDP of the EU-27. In the same year, overall employment grew by 1.3 %, reaching 4.2 million full-time equivalents. About 53 % of gross value added and employment is related to environmental goods and services sold or intended to be sold on the market; the remainder stems from production for own use (ancillary or final) or for non-market purposes (as give-away for free or at non-significant prices). As EGSS data reporting is mandatory for market production only, the article focuses in the following on market activities of the environmental economy.

Gross value added from market output grew by 2.7 % in 2017, contributing EUR 153 billion or 1.2 % to the EU-wide GDP. The related employment grew by 2.3 % to 2.2 million full-time equivalent jobs. Growth rates vary across countries (Figure 1). Gross value added and employment grew in eighteen and twenty EU Member States, respectively in 2017.

Figure 1: Employment and gross value added from market production of the environmental economy, by country, change from 2016 to 2017

Note: Gross value added in chain-linked volumes, reference year 2010; EU-27 data based on Eurostat estimates
(*) estimate
($) provisional
($) chain-linked volumes not yet available
Source: Eurostat (online data codes: env_ac_egss1, env_ac_egss2)
Gross value added

In 2017, market output of the environmental economy contributed between 5.9 % (Finland) and 0.6 % (Malta) to the GDP of Member States (Figure 2). Large parts of the gross value added in Finland stem from forest management and renewable energy production. The environmental economy had been growing faster in 2017 than the overall economy in thirteen Member States. Most noticeably, contributions to GDP increased by 16 % in Ireland and 12 % in Lithuania, while they decreased in Hungary (-41%) and Romania (-11 %). The large decrease for Hungary could be related to uncertainty in the provisional data. Most Member States generate more value added by producing goods and services for resource management than for environmental protection (Figure 3).

Figure 2: Gross value added from market output of the environmental economy, by country, 2016-17 Source: Eurostat (env_ac_egss2), (nama_10_gdp)
Employment

Eurostat estimates that market output of environmental goods and services has generated EU-wide 49 000 new full-time equivalent jobs in 2017. Most employment in the environmental economy is related to waste management, the production of renewable energy, and energy-efficiency measures (Figure 4). For the period of mandatory data reporting between 2014 and 2017, job creation varies across Member States and environmental activities (Figure 5).
Exports

Environmental goods and services contribute 16% in Finland, 12% in Denmark but only 0.6% in Ireland and 0.1% in Hungary to the economy-wide exports (Figure 6). The composition of environmental exports varies across countries. Finland exports large amounts of wood and paper products, Denmark, mainly equipment for renewable energy production.
Figure 6: Exports from the environmental economy, by country, 2017; data for Malta are confidential and not shown here Source: Eurostat (env_ac_egss2), (ext_tec01)

**Economic indicators**

**EGSS** data can be used to derive sector-specific indicators. Let us consider gross value added of the renewable energy sector, comprising energy production itself but also the manufacturing of equipment such as photovoltaic cells and wind turbines, the installation of equipment, and any related research, consultancy, and management services. Calculating the ratio of gross value added (EUR) and full-time equivalent (FTE) jobs provides insight into the labour productivity of the renewable energy sector.

Figure 7 suggests considerable differences between countries and provides scope for assessing the factors behind productivity levels, among them income, energy prices, subsidies for renewable energy, composition of the renewable energy mix, and the scope of activities covered. More detailed data for individual NACE sections suggest, for example, that large parts of value added are generated in Spain by energy production itself. By contrast, more than half of the value added of the renewable energy sector in Denmark is generated by manufacturing of energy technologies.
Figure 7: Labour productivity in the renewable energy sector, market production by country, 2017
Source: Eurostat (env_ac_egss2), (nrg_100a)

Data sources
This article presents the most recent data on gross value added, employment, and exports related to market production in the environmental economy. Eurostat collected the data in 2019 as part of the third mandatory reporting round for Member States.

Data for the environmental economy are recorded according to the principles of national accounting, following the guidance in the EGSS Handbook and the EGSS Practical Guide. As data reporting is mandatory since 2017 only, not all countries cover relevant goods and services in a comprehensive manner yet. Pertinent cases are flagged as estimate, provisional or break in time series. To account for the resulting uncertainty, EU-27 aggregates are not yet calculated from the data reported by Member States. Instead, Eurostat estimates aggregates by combining information from national accounts, environmental protection expenditure accounts, structural business statistics, industrial commodity statistics, labour statistics, international trade statistics, agriculture statistics and energy statistics.

The data presented in this article refer to market production and are not directly comparable to those presented in Eurostat’s article on Environmental economy - statistics on employment and growth, which cover total production consisting of market, non-market, and ancillary output as well as output for own final use within enterprises.

As methods and data sources for compiling EGSS accounts mature, accuracy and completeness of data will improve alongside. Data validation and the development of methodological guidance together with Member States will remain an important part of Eurostat’s efforts to increase the coherence and quality of EGSS data in the future.

Context
Regulation (EU) No 691/2011 (as amended by Regulation (EU) No 538/2014) implements environmental-economic accounts as satellite accounts of National Accounts (ESA 2010). The European environmental-economic accounts adhere to the same accounting principles as national accounts and are consistent with the United Nation’s System of Environmental-Economic Accounting – Central Framework (SEEA-CF), which serves
as an international statistical standard. At present, six separate modules present data on: (i) air emissions, (ii) environmental taxes, (iii) economy-wide material flows, (iv) environmental protection expenditure, (v) physical energy flows, and (vi) environmental goods and services. The industries producing environmental goods and services are commonly referred to as environmental economy.

Scope and variables

Goods and services are considered environmental if their purpose is either to protect the environment or to maintain the stock of natural resources. Environmental goods and services comprise a large and diverse basket of products including renewable energy, electric vehicles, organically grown fruits and vegetables, sewerage and waste treatment services or the rehabilitation of mining sites. It is not straightforward to delimit environmental products from conventional ones. As principle criterion, environmental goods and services should have an environmental purpose. Such a purpose is identified in practice by considering the actual environmental impacts in conjunction with technical product features that must be suitable to protect the environment or preserve natural resources. To guide data compilers, Regulation (EU) No 2015/2174 proposes an indicative compendium of environmental goods and services. EGSS accounts capture environmental goods and services produced within a country and report on the related output, gross value added, employment, and exports as defined in the international system of Accounts (SNA 2008) and its European version, the European System of National and Regional Accounts (ESA 2010).

The following definitions apply:

- **Market output** consists of all products that are produced for market disposal, either through sales at economically significant prices or through barter or payment in kind. Market output of environmental goods and services is valued at basic prices, that is, the prices received from purchasers plus subsidies minus taxes on products. Reporting of EGSS market output is mandatory for Member States, whereas reporting of the following characteristics is voluntary: (i) non-market output generated by governments and non-profit organisations, (ii) output produced for own final use, and (iii) ancillary output for transformation through in-house production processes.

- **Gross value added** is the difference between output and intermediate consumption. The gross value added of all economic sectors plus taxes minus subsidies on products comprises the gross domestic product (GDP) of a country.

- **Employment** comprises the number of persons engaged in the production of environmental goods and services. Employment is quantified in full-time equivalents, defined as total hours worked divided by the average annual working hours in a full-time job.

- **Exports** comprise all transactions of market output, including sales, barter and gifts, from residents to non-residents.

Output, gross value added, employment, and exports are reported in the EGSS accounts as totals and disaggregated by (i) twenty-one economic sections according to NACE Rev. 2 and (ii) two groups of activities, that is, environmental protection and resource management.

- Environmental protection activities prevent, reduce and eliminate pollution or any other degradation of the environment. Air and climate protection, treatment of waste and wastewater, or environmental research and development represent environmental protection activities that are classified according to the international standard on the Classification of Environmental Protection Activities (CEPA 2000) into nine classes and several more sub-groups (see EGSS handbook).

- Resource management activities preserve the stock of natural resources, thereby safeguarding them against depletion. The production of renewable energy, measures to use heat and energy more efficiently, or the management of forests are typical resource management activities. There is no international standard for the classification of resource management, so activities are grouped into seven classes, each disaggregated further into sub-groups according to a generic Classification of Resource Management Activities (CReMA) developed by Eurostat task forces.

Other articles

- Environmental economy – statistics on employment and growth
- Environmental protection expenditure accounts
Database

- Environment, see:
  - Environmental goods and services sector (env_egss)
  - Employment in the environmental goods and services sector (env_ac_egss1)
  - Production, value added and exports in the environmental goods and services sector (env_ac_egss2)
  - Production, value added and employment by industry groups in the environmental goods and services sector (env_ac_egss3)

Dedicated section

- Environment

Methodology

Methodology

- Environmental goods and services sector accounts Handbook 2016 edition
- Environmental goods and services sector accounts Practical guide 2016 edition
- Production, value added, employment and exports in the environmental goods and services sector (ESMS metadata file — env_egs_esms)

Legislation

- Regulation (EU) No 691/2011 on European environmental economic accounts
- Summaries of EU legislation: European environmental economic accounts
- Commission Implementing Regulation (EU) No 2015/2174 on the indicative compendium for environmental goods and services sector
- Regulation (EU) No 549/2013 of 21 May 2013 on the European system of national and regional accounts in the EU (ESA2010)
- Summaries of EU legislation: European Union system of national and regional accounts

External links

- European Green Deal
- EU Circular Economy Action Plan
- Eco-innovation Action Plan (EcoAP)
- European ETAP Fora on Eco-innovation
- Study on the competitiveness of the EU Renewable Energy Industry (EU REI)
- Communication of the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions 'Green Employment Initiative: Tapping into the job creation potential of the green economy' (COM (2014) 446 final)
- OECD - Eco-Innovation in Industry: Enabling Green Growth