

# STEAM3D Academy

IO1: Green Best Practice guide

BEGIN



**National Desk Research**

**Poland**

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# Background

**Full name:** Republic of Poland

**Area:** 312,679 km<sup>2</sup>

**Borders:** Russia (210 km, Kaliningrad Oblast), Lithuania (104 km), Belarus (418 km), Ukraine (535 km), Slovakia (541 km), the Czech Republic (796 km), Germany (467 km)

**Population:** 37 340 001 inhabitants

**Population density:** 121 people/km<sup>2</sup>

**Administrative division:** 16 provinces/voivodeships

**Capital:** Warsaw

**Currency:** złoty (PLN) = 100 grosz

Poland covers an area of approximately 312,679 km<sup>2</sup>, of which 98,52% is dry land and 1,48% is water. Extending across several geographical regions, the country is the 9th largest by area in Europe and 69th largest in the world. Topographically, Poland is diverse and has access to the sea, the mountains and open terrain. Although most of the central parts of the country are flat, there is an abundance of lakes, rivers, hills, swamps, beaches, islands and forests elsewhere.

The climate is mostly temperate throughout the country. The climate is oceanic in the north-west and becomes gradually warmer and continental towards the south-east. Summers are generally warm, with average temperatures between 18 and 30°C depending on the region. Winters are rather cold, with average temperatures around 3°C in the northwest and -6°C in the northeast. Precipitation falls throughout the year, although, especially in the east, winter is drier than summer.

Poland is a parliamentary republic with a head of government – the prime minister – and a head of state – the president. The government structure is centred on the council of ministers. The country is divided into 16 provinces/voivodeships, largely based on the country's historic regions. Administrative authority at provincial level is shared between a government-appointed governor, an elected regional assembly and an executive elected by the regional assembly.

The most important sectors of Poland's economy in 2018 were: wholesale and retail trade, transport, accommodation and food services (26,2%), industry (25,6%) and public administration, defence, education, human health and social work activities (14%).

Intra-EU trade accounts for 80% of Poland's exports (Germany 28%, Czechia and France both 6%), while outside the EU 3% go to both Russia and the United States.

In terms of imports, 69% come from EU Member States (Germany 27%, the Netherlands 6% and Italy 5%), while outside the EU 8% come from China and 7% from Russia.

Energy from renewable sources has continued to grow in the EU in recent years. Renewable energy sources in the EU include wind power, solar power, hydropower, tidal power, geothermal energy, biofuels and the renewable parts of waste. Although, in Poland only 6,88% of energy comes from renewable sources.

## Energy policies

- **Evolution in the last 10 years**

The European Union climate and energy policy, including its long-term vision of striving for EU climate neutrality by 2050 and regulatory mechanisms stimulating the achievement of effects in the coming decades, had a significant impact on shaping the national energy strategy. Achieving the EU's 2020 and 2030 climate and energy targets is key to a low-carbon energy transition. Following the dynamically accelerating EU climate and energy trends was a huge challenge for Poland.

Energy consumption increased in year 2019 in comparison with year 2000 by 13,8% in case of primary energy and by 25,3 in case of final consumption. The key driver of this growth was the increase in activity, understood as bigger production, more travels, bigger homes, etc. Energy saving reflecting energy efficiency improvement were achieved in year 2000-2019 in all sectors being large energy consumers: industry, transport, households. Total energy savings rate amounted in 2019 to 32,1%, making energy efficiency as important in energy economy as other fuels.

Among the pro-efficiency measures most significant were projects supported by national funds through environmental funds and from the European Union Cohesion Fund within the framework of Regional Operational Programs and the Operational Program Infrastructure and Environment. Stimulating for improvement of energy efficiency in industry was a modified white certificate system implemented by the Law on energy efficiency. The information and education campaigns of the National Fund for Environmental Protection and Water Management and of the ministry responsible for energy affairs raised awareness and knowledge on energy efficiency improvement options and served practical help to citizens and institutions and enterprises.

The most important documents defining energy efficiency policy until 2020 were:

- Poland Energy Policy until 2030,
- National Energy Efficiency Action Plans (NEEAPs: 1, 2, 3, 4 from 2007, 2012, 2014, 2017 respectively).

The Fourth Energy Efficiency Action Plan, adopted in 2018 and prepared in 2017, took stock of the energy efficiency improvement targets achieved, presented the targets for 2020 and updated the actions and measures taken and planned to achieve them.

With regard to legal regulations, the Energy Efficiency Act was adopted in 2011, the aim of which was to develop mechanisms stimulating the improvement of energy efficiency. First of all, the Act

introduced the obligation to obtain an appropriate number of energy efficiency certificates, the so-called white certificates, by energy companies selling electricity, heat or natural gas to final customers connected to the grid on the territory of the Republic of Poland. The Act of 2011 was replaced by the new Energy Efficiency Act of 20th May 2016, aimed at further improving the energy efficiency of the Polish economy and ensuring the implementation of the national energy efficiency target.

The Act introduced a regulation according to which a public sector entity may implement and finance projects on the basis of an energy efficiency improvement contract. All Polish public authorities are obliged to purchase energy-efficient products and services. They must buy or rent energy-efficient buildings and comply with energy efficiency recommendations in state-owned and retrofitted buildings.

In 2019, the European Commission published a communication on the European Green Deal, i.e. a strategy whose ambitious goal is to achieve climate neutrality by the EU by 2050 - as a world leader in this field. Poland supported this goal, however, working out a specific national derogation, due to the difficult starting point of the Polish transformation and its socio-economic aspects. In the last dozen or so years, Poland has made great strides in reducing the environmental impact of the energy sector, in particular through the modernization of generation capacity and diversification of the energy generation structure. Our dependence on carbon fuels is still much higher than that of other EU Member States, which is why a fair (just) transition is so important to us, which means taking into account the starting point, the social context of the transformation and counteracting the uneven distribution of costs between countries, which is more burdensome for economies with high use of carbon fuels. It should be noted that the costs relate to both the regions of coal (mining and energy production), as well as entire economies, which in a short time incur expenditures for new capacity, often immature economically more expensive technologies, network infrastructure, which is also reflected in the the price of energy.

- **Current situation**

The Polish energy sector is on the verge of changes. In 2019, the work on the Clean Energy for All Europeans regulatory package was completed. The package indicates how to operationalize the EU's 2030 climate and energy targets. The Polish government took an active part in shaping the final wording of the provisions, as these regulations strongly affect the functioning and determination of the future of the energy market model in Poland.

The share of coal in Poland, although still high – 73,6% in 2019 – is gradually decreasing, while the importance of renewable energy sources is growing – the dynamics of increasing power in photovoltaic sources is unprecedented, and the consumption of gas for energy purposes is also increasing.

At the TOGETAIR 2021 Climate Summit, Poland informed that enormous changes are being prepared in the Polish energy sector. The most important of these is the abandonment of the use of coal, which was finally approved by the mining industry. According to the plan, Poland is reducing coal consumption in the energy sector from 75% now to 11% in 2040, and to zero in 2049.

In 2020, the world was hit by the coronavirus pandemic, affecting all global economies. This emergency situation also highlighted the important role of the energy sector, including energy security, for the functioning of the economy of Poland and other European countries. In the coming years, the energy sector will face a number of post-COVID challenges related to the reconstruction or substitution of supply chains in order to conduct investments, mobilize financial resources in budgets strained by the effects of the epidemic, and sometimes – verification of investment plans and accumulation of funds for key projects. And so it is important that investment decisions are made taking into account the aspect of green and low-carbon economic recovery. Post pandemic recovery efforts are designed to create a rapid and effective growth impulse and create new opportunities for the national economy.

When it comes to regional and local level, it is seen that the challenges mobilize cities and towns to change. Contemporary cities are an area that, on the one hand, is exceptionally strong thanks to the development of technology. On the other hand, they are particularly sensitive, because they are the concentration of the greatest ecological deficiencies and the most urgent challenges in the field of environmental protection. It is where everyday life meets the idea of sustainable development. It is where the investments are planned and implemented not only with a better life of residents in mind, but also with care for the environment. There is one goal: fighting the progressive climate change and improving the quality of life of the local community.

For several years, regional and local governments have been carrying out pro-climatic and ecological activities increasingly and in greater numbers, achieving measurable social and environmental effects of implemented investments. Polish cities are more and more often proud of solutions in the field of environmental protection, electromobility and resource management. They are working on the topics of energetic efficiency, waste management, water management, municipal greenery and sustainable transport.

There are many examples of such investments and few can be mentioned among others: extension of bicycle paths and adoption of sustainable urban mobility plans, increasing the number of public transport passengers, reducing air pollution caused by individual transport, greening cities through new plantings, pocket parks and community gardens, ban on the use of single-use plastic at events organized by the municipality, development of the landfill site for a photovoltaic farm and many more. These and similar investments are currently taking place all over the country.

- **Future tendencies**

The base point on the path of energy transition are the 2020 targets. In 2009, a regulatory package was adopted setting out three headline targets for counteracting climate change by 2020 (the so-called 3 x 20% package), with Member States participating in accordance with their capabilities. Poland is obliged to:

- increase energy efficiency by saving primary energy consumption by 13.6 Mtoe in 2010-2020 compared to the forecasts of demand for fuels and energy from 2007;
- increase the share of energy from renewable sources in gross final energy consumption to 15% by 2020;

- contribute to the EU-wide reduction of greenhouse gas emissions by 20% (compared to 1990) by 2020 (in terms of 2005 levels: -21% in the EU ETS sectors and -10% in non-ETS).

In 2014, the European Council maintained the direction of combating climate change and approved four targets for the 2030 perspective for the entire EU, which after the 2018 and 2020 revision have the following shape:

- reduction of greenhouse gas (GHG) emissions by at least 55% compared to 1990 emissions;
- at least 32% share of renewable energy sources in gross final energy consumption;
- increase in energy efficiency by 32,5%;
- completion of the EU internal energy market.

The above objectives are the EU's contribution to the implementation of climate agreements.

In the future, it is assumed that the key EU regulations concerning the energy sector will be further revised, which will refer to the goals and tools of the European Union's energy and climate policy in a time horizon that goes beyond the 2030 framework. This applies in particular to the decisions regarding the long-term vision of reducing greenhouse gas emissions in the EU until 2050. For this reason, the perspective after 2030 has been defined in a directional manner, although the forecasts made for Energy Policy of Poland until 2040 (EPP2040) have a 2040 perspective in accordance with statutory requirements.

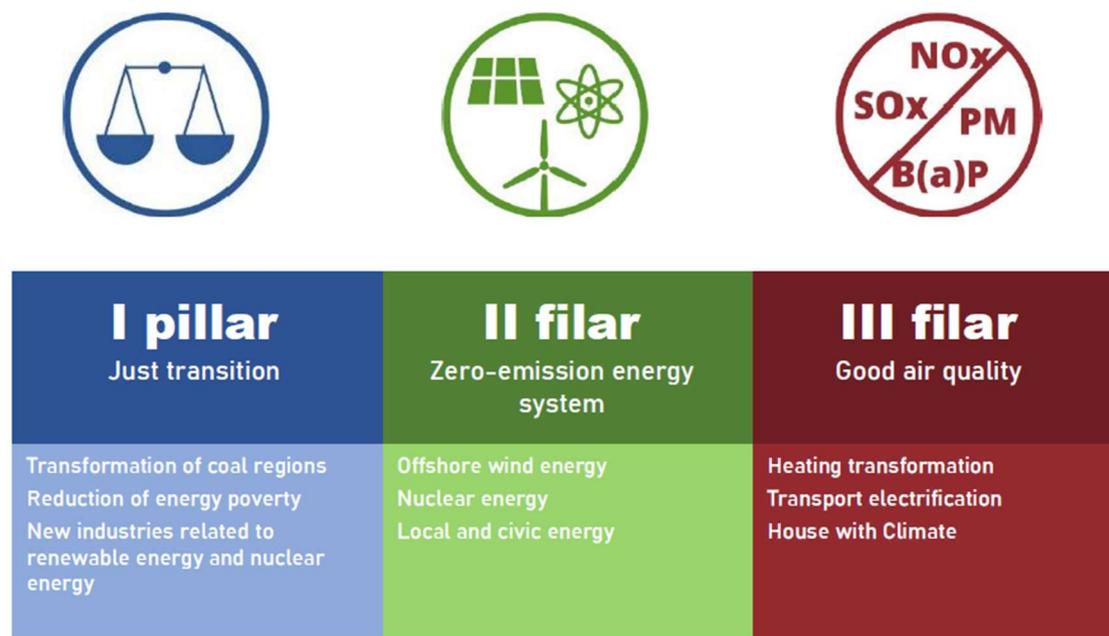
The energy transformation will require the involvement of many entities and incurring capital expenditure. In the years 2021–2040 their scale may reach approx. PLN 1,600 billion. Investments in the fuel and energy sectors will involve approximately PLN 867-890 billion. The projected outlays in the electricity generation sector will amount to PLN 320-342 billion, of which approx. 80% will be allocated to zero-emission capacities, i.e. renewable energy and nuclear energy. As a result of transformations in the fuel and energy sector, energy costs may increase. Numerous investments may obtain financial support (operational and capital), which enable changes to take place as quickly as possible and on a larger scale. It is important that the way in which the transformation is carried out ensures socially acceptable energy prices and does not intensify energy poverty.

Through the implementation of the goals and activities indicated in PEP2040, a low-emission energy transformation will be carried out with the active role of the end-user and the involvement of the domestic industry, giving an impulse to the economy, while ensuring energy security, in an innovative, socially acceptable way and with respect for the environment and climate.

The energy transformation that will be carried out in Poland will be:

- a. just – will not leave anyone behind,
- b. participatory, carried locally, initiated from bottom up – everyone will be able to participate,
- c. focused on modernization and innovation – it is a plan for the future,
- d. stimulating economic development, efficiency and competitiveness – it will be the motor of economic development

## The energy transition will be based on three pillars:



It is also worth saying that behind many changes, especially at the local level, there are people who can responsibly and boldly implement visions that bring long-term benefits to the residents of cities. Urban challenges require the mobilization of deep layers of energy, provoking socio-economic changes and forcing a review of our attitude towards the environment. The energy of change released in this way shapes trends and revives the tissue of cities for a long time. By using the energy and knowledge of their inhabitants, cities will be able to become part of the solutions to nowadays problems and phenomena. It will also be easier for them to develop effective strategies against new, dramatic events, such as global epidemics. Thanks to these efforts numerous innovative solutions have been already implemented or initiated and many more will be developed.

- **Main threats and challenges**

Energy Policy of Poland until 2040 (EPP2040) establishes the framework for the energy transformation in Poland. It contains strategic decisions regarding the selection of technologies for building a low-emission energy system.

EPP2040 is a national contribution to the implementation of the EU's climate and energy policy, whose ambition and dynamics have increased significantly in the recent period. The policy takes into account the scale of challenges related to the adaptation of the national economy to the EU regulatory conditions related to the 2030 climate and energy targets, the European Green Deal, the economic recovery plan after the COVID pandemic and the striving to achieve climate neutrality as a contribution to the implementation of the Paris Agreement, according to national potential. The low-emission energy transformation provided for in EPP2040 will initiate broader modernization changes for the entire economy, guaranteeing energy security, ensuring a fair distribution of costs and protection of the most vulnerable social groups.

EPP2040 describes the state and conditions of the energy sector and indicates three pillars of EPP2040, on which the eight specific objectives of EPP2040 were based, along with the activities necessary for their implementation, and strategic projects.

### I PILLAR



Just transition

### II PILLAR



Zero-emission energy system

### III PILLAR



Good air quality

SPECIFIC OBJECTIVE 1. Optimal use of own energy sources	SPECIFIC OBJECTIVE 2. Development of electricity generation and network infrastructure	SPECIFIC OBJECTIVE 3. Diversification of supplies and expansion of the network infrastructure of natural gas, crude oil and liquid fuels
STRATEGIC PROJECT 1. Transformation of coal regions	STRATEGIC PROJECT 2A. Capacity market, STRATEGIC PROJECT 2B. Implementation of smart power grids	STRATEGIC PROJECT 3A. Construction of the Baltic Pipe STRATEGIC PROJECT 3B. Construction of the second line of the Pomeranian Pipeline
SPECIFIC OBJECTIVE 4. Development of energy markets		SPECIFIC OBJECTIVE 5. Implementation of nuclear power
STRATEGIC PROJECT 4A. Implementation of the Action Plan (aimed at increasing cross-border electricity transmission capacity) STRATEGIC PROJECT 4B. Gas hub,		STRATEGIC PROJECT 5. Polish Nuclear Power Program
SPECIFIC OBJECTIVE 6. Development of renewable energy sources	SPECIFIC OBJECTIVE 7. Development of district heating and cogeneration	SPECIFIC OBJECTIVE 8. Improvement of energy efficiency
STRATEGIC PROJECT 6. Implementation of offshore wind energy	STRATEGIC PROJECT 7A. Development of district heating	STRATEGIC PROJECT 8. Promotion of the improvement of energy efficiency

The statutory goal of the state's energy policy is energy security, while ensuring the competitiveness of the economy, energy efficiency and reducing the impact of the energy sector on the environment.

The specific objectives of EPP2040 cover the entire energy supply chain – from obtaining raw materials, through energy production and supply (transmission and distribution), to the method of its use and sale. Each of the eight specific objectives of EPP2040 contributes to the implementation of three elements of the state energy policy objective and serves Poland's energy transformation.

Implementing such a vision, Poland will be better prepared for the challenges the whole world is facing and experiencing – the climate crisis, loss of biodiversity, the effects of technological progress, global inequalities or the demographic changes. Climate change and smog are a real threat to large agglomerations. Heat waves, downpours and storms are more and more common and at stake is the fight for the health and safety of the inhabitants. For this reason investments are made to green areas, build water storage tanks, develop renewable energy sources and more sustainable public transport and to reduce CO2 emissions. Moreover, objectives, areas and policies are set and implemented based on respect for both natural and cultural values.

- **Legislation and Regulations about green energies in cities infrastructures**
  - Energy Policy of Poland until 2040 (EPP2040), Ministry of Climate and Environment, Warsaw 2021 – EPP2040 is one of nine integrated sectoral strategies resulting from the Strategy for Responsible Development. EPP2040 is compatible with National Energy and Climate Plan for the years 2021-2030;
  - National Energy and Climate Plan for the years 2021-2030, Ministry of State Assets, Warsaw 2019 – the document has been developed in fulfilment of the obligation set out in Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action and presents an integrated approach to the implementation of the five dimensions of the Energy Union;
  - Strategy for Responsible Development, Ministry of Development Funds and Regional Policy (former Ministry of Economic Development), Warsaw 2017 – The Strategy covers the period up to 2020 (including the perspective up to 2030) and is an applicable and key document the Polish State in the field of the medium- and long-term economic policy.

## Grants and subsidies

About PLN 260 billion from EU and national funds under various mechanisms will be allocated to the national energy and climate transformation by 2030, including:

- a. Cohesion Policy,
- b. Recovery and Resilience Facility,
- c. Just Transition Fund,
- d. ReactEU,

- e. Other instruments (e.g. priority programs of the National Fund for Environmental Protection and Water Management and funds from the Common Agricultural Policy),
- f. New instruments that will support the transformation of the energy system in Poland, e.g. the Modernization Fund and the national special purpose fund, supplied with funds from the sale of CO2 emission allowances, i.e. the Energy Transformation Fund.

## References

<https://encyklopedia.pwn.pl/haslo/Polska;4169123.html>;

[https://european-union.europa.eu/principles-countries-history/country-profiles/poland\\_pl](https://european-union.europa.eu/principles-countries-history/country-profiles/poland_pl);

[https://european-union.europa.eu/principles-countries-history/key-facts-and-figures/life-eu\\_pl](https://european-union.europa.eu/principles-countries-history/key-facts-and-figures/life-eu_pl);

<https://ec.europa.eu/eurostat/web/main/home>;

Ministry of Climate and Environment; Energy Policy of Poland until 2040 (EPP2040); Warsaw 2021 (<https://www.gov.pl/web/klimat/polityka-energetyczna-polski-do-2040-r-przyjeta-przez-rade-ministrow>);

Statistics Poland, The Polish National Energy Conservation Agency; Energy Efficiency trends and policies in Poland; Warsaw 2021 (<https://www.odyssey-mure.eu/publications/national-reports/>);

Statistics Poland; Energy Efficiency in Poland in years 2005-2015; Warsaw 2017;

<https://www.muratorplus.pl/technika/elektroenergetyka/polityka-energetyczna-polski-aa-2VwJ-rrph-SEiD.html>;

[https://energy.ec.europa.eu/index\\_en](https://energy.ec.europa.eu/index_en);

J. Rączka, A. Rubczyński; Ostatni dzwonek dla ciepłownictwa w Polsce; Forum Energii, 2017;

A. Gawlikowska-Fyk, J. Maćkowiak-Pandera; PEP 2040 pod lupą Forum Energii; Forum Energii, 2018;

<https://magazynbiomasa.pl/eco-miasta-coraz-wiecej-zielonych-miast-na-mapie-polski/>;

Ambasada Francji w Polsce, Centrum UNEP/GRID-Warszawa; Eco-Miasto 2020 Energia Zmian;

Warsaw 2020 (<https://www.eco-miasto.pl/miedzynarodowa-konferencja-eco-miasto-2020/publikacja/>);

Ambasada Francji w Polsce, Centrum UNEP/GRID-Warszawa; Eco-Miasto 2021 Zielona Odbudowa;

Warsaw 2022 (<https://www.eco-miasto.pl/konferencja/>);

<https://www.gridw.pl/publikacje>;

Ministerstwo Klimatu i Środowiska; Miasto z klimatem - Podręcznik Dobrych Praktyk; Warsaw 2021