



European and national energy markets



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Consumer as a part of the energy market

Consumers are at the centre of the EU's energy policy, and a wide range of initiatives has been taken to make consumers an active part of the clean energy transition and help them save more money and energy.

By providing consumers with information and offering them options on how they can participate in the energy market, they will be better protected and in a stronger position in the energy supply chain.

Protection and rights

All EU citizens enjoy general [consumer rights guaranteed in EU legislation](#), as well as a set of defined energy related rights that have been in force since the opening up of the energy supply market in July 2007.

Energy consumer rights have to be clearly set out in the national laws of EU countries and must reflect provisions in EU legislation. On that basis, the national legislation must for example guarantee consumers the right to:

- an electricity connection so that households are connected to the local electricity network and supplied with electricity
- a choice of electricity and gas suppliers as well as an easy and fast switch of suppliers, without extra charges
- a clear contract information and the right of withdrawal
- accurate information on the consumption and billing based on it.

Clean energy for all Europeans

The Clean Energy for all Europeans Package, adopted in May 2019, is a legislative framework that will help accelerate the clean energy transition. The package includes eight legislative files of which four are collectively known as the electricity market design. The new rules outline a comprehensive framework for consumer protection, information and empowerment in the EU electricity sector, for example :

- energy bills will be made clearer and customers will get a summary of key contractual conditions to help them better understand sometimes complex terms and conditions
- providers should give free-of-charge access to at least one energy comparison tool allowing consumers to find the best deal in the market
- to help consumers better control their costs, information in electricity bills will be improved
- Useful factsheets: https://ec.europa.eu/energy/content/factsheet-electricity-market-design_en?redir=1

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Types of energy on the market



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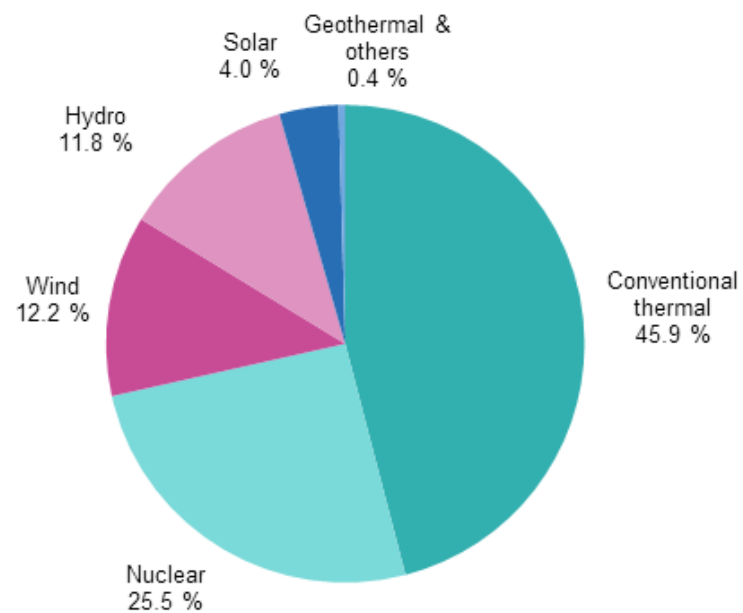
Electricity is usually the first one when we think about energy in our households. We are using it for lights, devices, some households also to heat water or heating system. This source of energy gives high comfort and flexibility – we can turn on/off devices with immediate effect – but electric energy used for heating purposes is relatively expensive, compared to gas or coal.

From the environmental point of view, electric energy can be seen as much better than fossils or oil as it generates less smog and CO₂. But we have to remember that this depends strongly on the sources used to produce it.

Green electric energy produced from wind, photovoltaic or hydropower plants is preferred to electricity produced in coal power plants.

Electricity production by source, EU-28, 2018

(%)



Source: Eurostat (online data code: nrg_105m)

Coal for heating

Coal for heating is usually cheaper comparing to other sources like gas or electricity. However, effects of using coal in private households are very negative for the environment. CO₂ emission and smog generation are two main arguments against coal. In some countries or cities solid fossils like coal are completely forbidden. However, in many areas with low infrastructure access there is no system heating or gas network and the only alternative is electricity, which can be expensive.

In such a case the quality of the stove is a very important factor. Old stoves have low efficiency (like 30%) – which means one has to burn much more coal to heat their household. This makes this type of heating system expensive as well.

Gas – from gas network or liquid – is often used for house heating or water heating. It is relatively easy to manage and gives high comfort. However, the price of gas varies very much across EU, therefore it is very hard to give one recommendation to all European consumers if this source of energy should be a first choice or not.

Biomass is a renewable energy source which can be used to produce electricity, heat and transport fuels. It accounts for roughly two thirds of renewable energy in the European Union (EU). Although biomass can come from many different sources, wood is by far the most common.

Under EU legislation, biomass is carbon neutral, based on the assumption that the carbon released when solid biomass is burned will be re-absorbed during tree growth. Current EU policies provide incentives to use biomass for power generation. At present, there are no binding sustainability criteria for biomass at EU level, although some exist at national and industry level.

Opportunities and challenges related to biomass have to do with greenhouse gas emissions (biomass can contribute to reducing carbon emissions, but emissions may not be fully accounted for); resource availability (biomass can contribute to energy security, but its sources are finite); environment and human health (increased use of biomass for energy can have adverse effects on air quality, soil properties and biodiversity). To address sustainability concerns, different responses have been put forward, including the principle of the cascading use of biomass, whereby it is used more than once, with energy conversion typically as the last step.

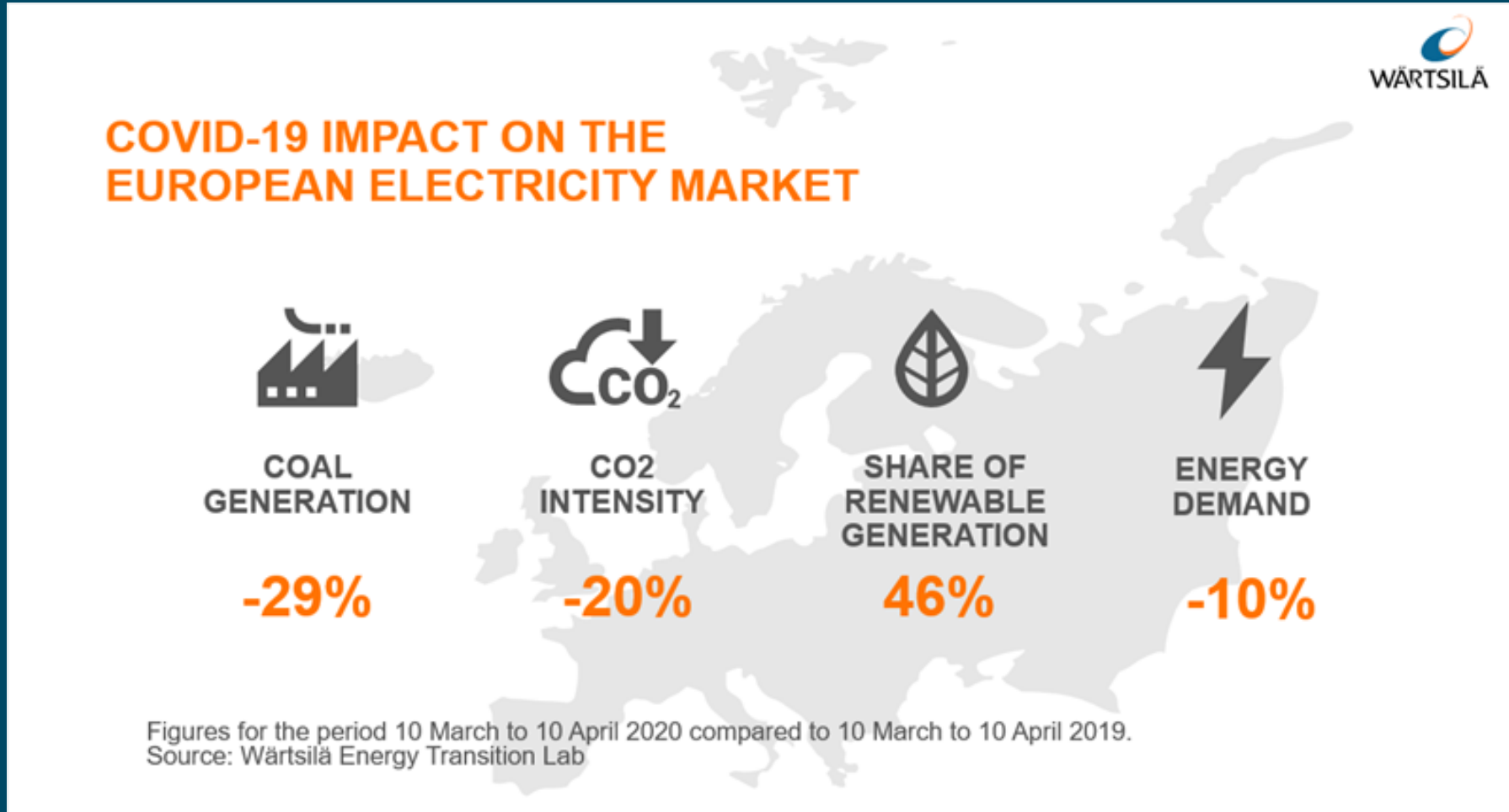
Renewable sources of energy

Renewable sources of energy for individual households or groups of consumers (i.e. living in one multi-family building) can be an excellent possibility to reduce the costs of energy. Once installed, they can produce energy for several years without big cost. This would be the best solution for tackling energy poverty in long term. However, it demands some investments at the beginning, before we get the return on investment.

For many households it is an obstacle not possible to tackle. It is worthy to search for financial support mechanisms – many programs on EU, national, regional and even local scale give the possibility to cover some costs from public schemes, or at least provide cheap credit for such investments.

Proper calculation of energy needs, the size of PV installations and budget needed can bring big savings – it may be possible to pay credit instalments only from savings on the energy bills within 3-4 years and then have owner savings in following years.

Covid-19 impact on the energy market



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Market participants

Who is who?

European Energy market actors are horizontally unbundled. This means that separated companies: produce energy, operate distribution network, sell energy.



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From the Consumer perspective, the „old“ energy market combined all utility functions in one company. This was just the „energy company“, operating the electricity network, providing distribution services and selling electric Energy to consumers. This structure of the market was a classical monopoly, causing lack of competitiveness, high margins and finally, lack of choice on consumers' side.

This was changed from 2007 in the whole EU (with some small exemptions). Supply chains were reshaped significantly. Energy production, transmission, distribution and selling were split into separated companies and the last chain link – sale was opened for competition, also for new market players.

More information: https://ec.europa.eu/energy/topics/markets-and-consumers/market-legislation/third-energy-package_en



In practise we can see the same company logo and name for production, distribution and sale!
Does it mean the new system is not working properly?

No. It means only that unbundling is obligatory in functional and legal dimensions, but not affects ownership of the separated companies. This is why it is so important for consumers „who is who“.

Market actors: Energy producers

The energy supplied to your household comes from the „network“. You have no influence where and how this energy was produced. The network is supplied by multiple Energy power plants around the country, sometimes also imported.

So, how it is possible to offer „green energy tariff“? I thought the Energy I used comes only from green energy sources?

It is a little bit „virtual“. The deal is that for each „green energy“ 1 kWh used by the Consumer in such a tariff, the supplier has to possess 1 kWh „green energy“ bought from producers.

NOTE: consumers can also supply the network by their micro power plants like photovoltaic or wind turbines connected to the network. In such a case they become prosumers 😊

Distribution System Operator (DSO):

This company:

- is an owner of the energy networks (lines, transformers, cables but also energy meters etc.)
- ensures continuity of supply and the quality of the Energy (parameters like tension, frequency, harmonic curves, etc.) therefore it is responsible for supply breaks or inadequate quality
- provides metering and metering data to the suppliers.
- is partially responsible for supplier switching process (like to what moment and meter reading we were supplied by „old” one and when the „new” one can charge us)

DSO is a regulated natural monopoly company, which means:

- one cannot change the DSO (because we have only one Energy line and meter in our household)
- the pricelist for distribution services is regulated by the regulatory office and the consumer has no influence on this
- the consumer can only impact the consumption volume (counted in kWh), because part of the final price depends on this

The Energy Supplier is a company responsible for:

- concluding contracts with consumers
- selling energy to households
- providing invoices based on billing provided by the DSO
- handling complains (in case one has a complex contract, the energy supplier can also handle the complaints concerning distribution, for example those regarding supply breaks and the quality of energy).

Energy suppliers are generally not regulated and there is a competition among them, which means one can choose the best offer and switch supplier.

The companies established on a base of old energy monopolies, called „incumbents” are usually obliged to provide such specific, regulated tariffs, such as social tariffs.

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Types of energy contracts

Two basic types of consumer contracts for energy or gaseous fuels supply



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What should an energy or gaseous fuels supply contract contain?

It should contain provisions to specify:

- the place of delivery to the recipient, broken down by contractual periods
- contracted capacity and the conditions for its modification
- the price or tariff group used for billing and the conditions under which it may change
- the manner of settlement
- damages for breach of contract
- contract duration
- the conditions of contract termination and an indication of the consequences of selecting a reserve seller;

The contract for the provision of transmission or distribution services of gaseous fuels or energy should include:

- The same elements as those contained in the contract with the seller of fuels or energy.
- In addition, there should be provisions to specify:
 - ✓ quality standards;
 - ✓ conditions for ensuring reliability and continuity of fuel and electricity supply.

These elements of the agreement are important in order to ensure that the distribution service is provided in an appropriate manner.

REMEMBER!

You can change your gas or electricity supplier if you think you have found a better deal. Pay attention not only to the price but also to the other terms and conditions of the contract. Compare offers, not just commercials. The seller of gas or electricity will be different, but the company providing the distribution service will remain the same and its high cost of the service will also remain unchanged.

What is a comprehensive agreement?

It is a contract containing provisions of a sales contract and a distribution service contract concluded with a seller, under which the seller both sells and delivers electricity to the consumer.

We receive one collective bill, but it includes the costs calculated by two entrepreneurs - a fuel or energy seller and a distribution service provider.

Settlement by means of a prepayment metering and settlement system

This system of payment and control of energy consumption often affects vulnerable consumers.

When can an energy company install pre-paid meters?

If the customer:

- ✓ at least twice in the preceding 12 months delayed payment for the consumed gas, electricity or heat or services for at least one month;
- ✓ has no legal title to the property or premises to which fuels, electricity or heat are supplied;

Settlement by means of a prepayment metering and settlement system

- ✓ uses the real estate, object or premises in a way that makes it impossible to check the condition of the measurement and settlement system cyclically, in which case the costs of installing the prepayment measurement and settlement system shall be borne by the distributor.

The consumer for whom the prepayment meter is installed decides about the time of consumption and the amount of electricity.

This requires reasonable planning of expenditure and use of energy, especially for the poor or those affected by energy poverty.

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Smart energy transition

The central role of prosumers



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Smart Energy Transition

- The energy transition is not only about decarbonisation of energy - moving away from fossil fuels - but also, and even mainly about its **democratization** and **decentralization** - increasing the number and participation of energy **prosumers (producers and consumers)** in energy - and therefore also climate - policy. Individual prosumers, prosumers-companies, prosumers-cities are at the centre of this transformation as they co-create and co-govern it.
- You can use renewable energy sources by yourselves as a prosumer or as an the group of neighbours as a member of the energy community.

Cluster

- Energy clusters are civil law agreements between different entities including local governments, which aim at becoming energy efficient regions through a more effective use of local renewable energy sources. Energy clusters cover the area of one county or five municipalities.
- The energy clusters concept aims to use a higher proportion of renewable energy regionally and to make it possible to plan and predict the amount of energy for defined intersections or interfaces of the transmission network, as well as to reduce or optimise the exchange with the transmission network. Consequently, this presents the challenge to maintain a constant balance with regard to the generation and consumption of electricity at all times, since especially fluctuating renewable energy varies permanently.

Cluster members (e.g):

- Energy companies,
- Local governments,
- RES producers,
- Cities,
- Municipal companies and public transport companies
- Research Institutions,
- Institutional customers, including companies with different energy consumption profiles,
- Individual customers (natural persons however mostly as an aggregated group) can be member of the cluster.

Cooperatives

- Cooperatives are organizations enabling economic collaboration among individual actors, for example, to collectively install and use renewable energy sources.
- A cooperative can increase the value and reduce the cost of renewable resources for individual producers, aside from the social benefits that may accrue.
- Local energy cooperatives could be an alternative to the more conventional and highly centralized energy infrastructure.

Cooperatives

- Energy cooperatives may also differ according to the types of services or products offered:
 - Energy cooperatives can produce energy and supply energy to their consumer-members and non-member clients or feed it into the national grid. For this purpose, they can either use fossil fuels or renewable energy sources. In some countries, whole villages (so-called bioenergy villages) are organized using the cooperative model.
 - Consumers may group together into energy cooperatives to purchase energy, as means to obtain better prices.
 - Cooperatives may organize the distribution of energy, for example by operating electricity distribution lines.
 - Cooperatives may also provide services related to the provision of energy, such as advisory or training services.

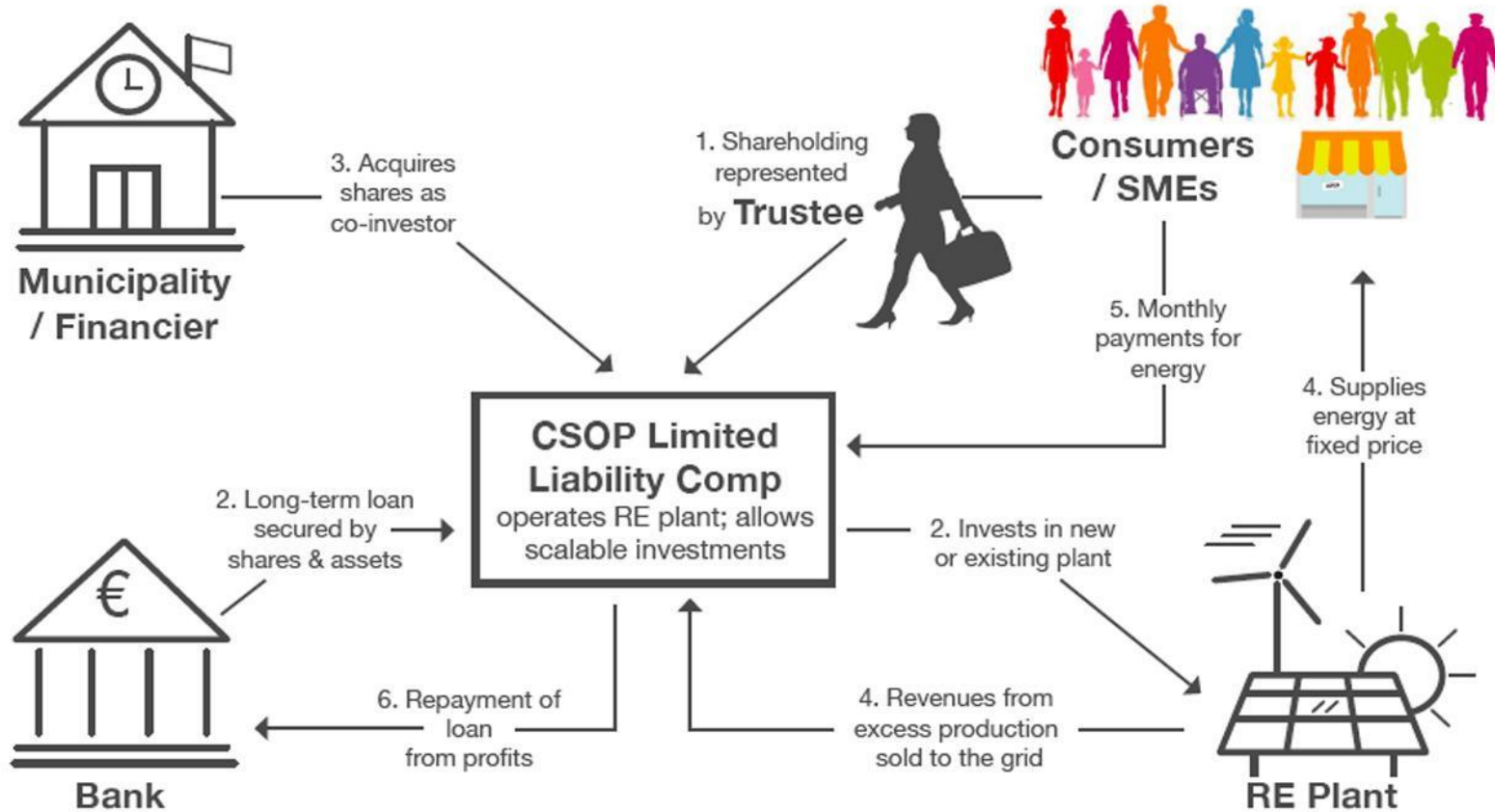
A CSOP - Consumer Stock Ownership Plan

- **enables consumers – especially those without savings or access to capital credit** – to acquire an ownership stake in a utility they use and thus to become “prosumers”:
- It is a consumer-centred investment model for general services providing participation both financially and in regards to management decisions.
- Avoiding personal liability of the consumer-shareholders, a CSOP permits co-investments of municipalities, small and medium sized enterprises (SMEs) and other local stakeholders.
- An intermediary entity (CSOP-Ltd.) invests into a new or existing RE plant and operates it on behalf of different actors as co-owners.
- With the help of a CSOP, investments can be made into any kind of utility, for example water, energy, transportation and the like. When investing in renewable energy installations, CSOPs contribute to the energy transition and climate change mitigation by facilitating local, decentralised production.
 - *Prosumer: someone who both produces and consumes energy*

More:

<https://www.score-h2020.eu/>

Financing structure of a Consumer Stock Ownership Plan (CSOP)



Renewable Energy Community - a new option

Renewable Energy Community is a legal entity:

- which, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;
- the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities;
- the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.
- *Article 2(16) Renewables Directive, more information:*
https://ec.europa.eu/energy/topics/renewable-energy/renewable-energy-directive_en

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Smart energy transition - The central role of prosumers (some examples and how it works)



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SMART GRID DEVELOPMENT PARTNERSHIP

Ghent – Belgium

- The city of Ghent initiated a very unique cooperation with a number of local partners and launched the “Buurzame Stroom” (neighbourhood power in Dutch) pilot scheme which started operation in 2018. The partners include two energy cooperatives, the Ghent university, which acts as a trusted, neutral contributor, a social protection association that is notably tasked with reaching out to vulnerable households and the local distribution system operator
- The EnerGent cooperative provides citizens with the opportunity to invest in local solar power production by acquiring the photovoltaic panels. In addition, an electric car-sharing cooperative called Partago is making electric vehicles and charging stations available to allow for the excess power that is not directly consumed to be used in the charging stations or stored in the car batteries. And to complete the picture, the project will experiment with storing electricity in batteries on household level. The project covers a specific neighbourhood, with plans to install some 5000m² of solar panels by the end of 2019, targeting residents with different profiles (families with migration background, transit inhabitants, elderly people, vulnerable social groups³) and various types of building ownership structures. This multi-stakeholder cooperation, with strong citizen involvement, is proving very successful.

JOINTLY OWNED ENERGY INFRASTRUCTURE

Wind blowing near the harbour directly profits the city and its community in Copenhagen – Denmark

The Middelgrunden wind farm in Denmark is a famous success story of a city and community co-owned large-scale energy project, and one of the largest offshore wind farms in the world. The story dates back to end of the nineties, when a newly set-up energy cooperative started to engage in planning and contractual discussions with the municipally-owned energy utility of Copenhagen on the construction of 20 wind turbines (2MW each) located a few kilometres outside the harbour of the city.

JOINT INVESTMENT COOPERATIVE A city-co-owned investment cooperative in Mouscron – Belgium

The City of Mouscron, Belgium, which in 2017 launched the “Coopem” (Cooperative Energy of Mouscron) together with a group of citizens and two other partners. The city owns a 15% share in the cooperative, with the majority 55% stake belonging to the citizens of Mouscron and the remaining 30% to a green investment cooperative and company. On top of an expected yearly return on investment of up to 6%, the first members to join the Coopem were granted a favourable tax rebate on their investments.

The activities of the cooperative focus on helping households install solar PV on their roofs. The Coopem removes the barrier of high upfront costs by advancing the payment of regional solar subsidies, normally granted over a five-year period. It also handles the overall technical and administrative process from A to Z. This notably involves the joint purchase of equipment from local suppliers as well as the monitoring and validation of the installation process. In the end of 2017, the cooperative completed the joint purchase of 31 solar installations for Mouscron’s households.

JOINT ENERGY UTILITY Citizen participation in the ownership and governance of the local utility, Wolfhagen – Germany

In Germany the remunicipalisation movement has led cities to create fully-integrated energy companies (covering the whole value chain of production, distribution and supply)⁵ where citizen cooperatives have sometimes been offered financial ownership and voting power. In Wolfhagen, a city in Northern Hesse, the local “stadtwerke” supported the creation of a citizen cooperative which now owns 25% of its capital and contributes to the strategic orientations taken by the utility, with two representatives of the cooperative sitting in the nine-member supervisory board of the Stadtwerke. Interestingly, the 14, 000 inhabitant town was also one of the first German cities to remunicipalise its electricity grid.

Sources:

- <https://energy-cities.eu/>
- https://energy-cities.eu/wp-content/uploads/2019/06/EnergyCities_RNP_Guidebook_Web.pdf
- <https://www.renewable-technology.com/projects/middelgrunden-wind-farm-denmark/>
- <https://www.renewables-networking.eu/documents/BE-Mouscron.pdf>
- <https://www.score-h2020.eu/>
- www.elsevier.com/locate/enpol

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Tariffs: evaluation, change, special tariffs



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Tariffs: Energy contract type

Starting from the consumer contract – important elements

First, you should check the type of contract you have. How to do it? It is very simple:

- if you receive one bill for energy – it is a complex contract.
- if you have two separate invoices – one for energy used, and second for distribution – you have two separate contracts, probably because you have changed the energy supplier before.

What you can change?

The supplier part of the complex contract or, in case of two separate bills, supplier contract itself.

Distribution price stays the same, because infrastructure and its' owner stays the same and it is regulated.

However, because of European regulations of the energy sector, your “electricity cables” can be used by various companies selling energy, which means there is a competition. Therefore, you have the choice.

Tariffs: My Energy profile

Switching supplier is worthy to consider, but not always the best way. Sometimes you can achieve similar effect just by changing your tariff.

Next step is to describe your household consumption profile:

- Is the energy consumed all day long on the similar level, or maybe mostly in specific hours, like evenings?
- Do you have an electric equipment using huge amounts of energy, but only some hours daily, like electric heating, water heating boiler or air conditioning?
- Do you have the same needs during work-days and weekends?
- Or maybe you use a lot of energy during weekend, but from Monday to Friday the consumption is small?

Answers for the above questions should give you the picture of your energy consumption profile. And after than check for the best tariff for you.

Savings brought by this decision can be really significant!

Tariffs: what and how to compare?

Do you know what are the positions on your energy bill? Sometimes there are several lines and it seems too complicated. But it is very helpful to evaluate this and choose the tariff best for you.

There are a lot of comparison tools, mostly online. However, please keep in mind that:

- kWh price is not the only factor
- companies often offers a very good price, but only if you buy something in addition (telecom services, insurance, various services), so please think twice if you really need it?
- some comparison tools are sponsored by suppliers (!) and you see “promoted offer” on the top, instead of best offer
- the price can significantly vary depending on proposed duration of contract. Long contracts (like 4 years) can be cheaper, but you are bonded and the next choice will be possible far ahead of time. So compare the same durations terms (i.e. between 24 months offers)

If you still have doubts, maybe you should contact Energy advisor?

Flat costs, variable costs

Now, you should compare both, flat and variable costs, calculating on the base of your current consumption.

There can be two major kind of costs:

- Flat, fixed costs – they do not depend on consumption level (in kWh) and they are usually paid as monthly fee, nevertheless how much energy you used.
- Variable costs – they depend on kWh of energy consumed. It means that the more you use, the more you pay.

Remember:

- if you use small number of kWh, the saving can be found in fixed costs reduction,
- if your consumption is big – the reduction of price per kWh will be much more important.

| | kWh price in EUR | flat rate /monthly | kWh yearly consumption / yearly costs | | | | |
|-------------------------------|---------------------|-----------------------|---------------------------------------|----------|----------|----------|----------|
| | | | 2000 | 3000 | 4000 | 5000 | 6000 |
| cheap kWh, high flat rate | € 0,10 | € 8,00 | € 296,00 | € 396,00 | € 496,00 | € 596,00 | € 696,00 |
| high kWh price, low flat rate | € 0,12 | € 1,00 | € 252,00 | € 372,00 | € 492,00 | € 612,00 | € 732,00 |

Break event: below 4000 kWh yearly cheaper monthly fee will give you more savings, above this it is better to choose cheaper kWh price

Social Tariffs: criteria and terms

In Poland we do not have any social tariff.
Please describe here your national solution, or delete this slide.



Thank you for your attention!

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Collective switching of the energy supplier

European consumers are free to change their energy supplier
Collective switching allows consumers to get special benefits



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The consumer has the right to:

- Free supplier change
- Equal treatment
- Fair commercial practices

Considering the above principles, some European consumer institutions organized collective switching campaigns.

Collective switching consists - in principle - of negotiations organized by a third party with suppliers of electricity or gas.

The organization (third party) gathers a group of consumers interested in switching, e.g. by means of registration or a membership model, and then organizes a collective deal.

During collective switching, an organization representing consumers shall consider:

- contracts binding the consumer who joins the campaign,
- contracts offered by potential suppliers (e.g. examination of contracts for illegal provisions, contractual penalties, binding consumers with a timely contract, contract transparency),
- checking potential suppliers' credibility,
- the possibility of activating consumers as a group aware of their rights,
- exerting pressure on suppliers to correct their market practices.

Organization task

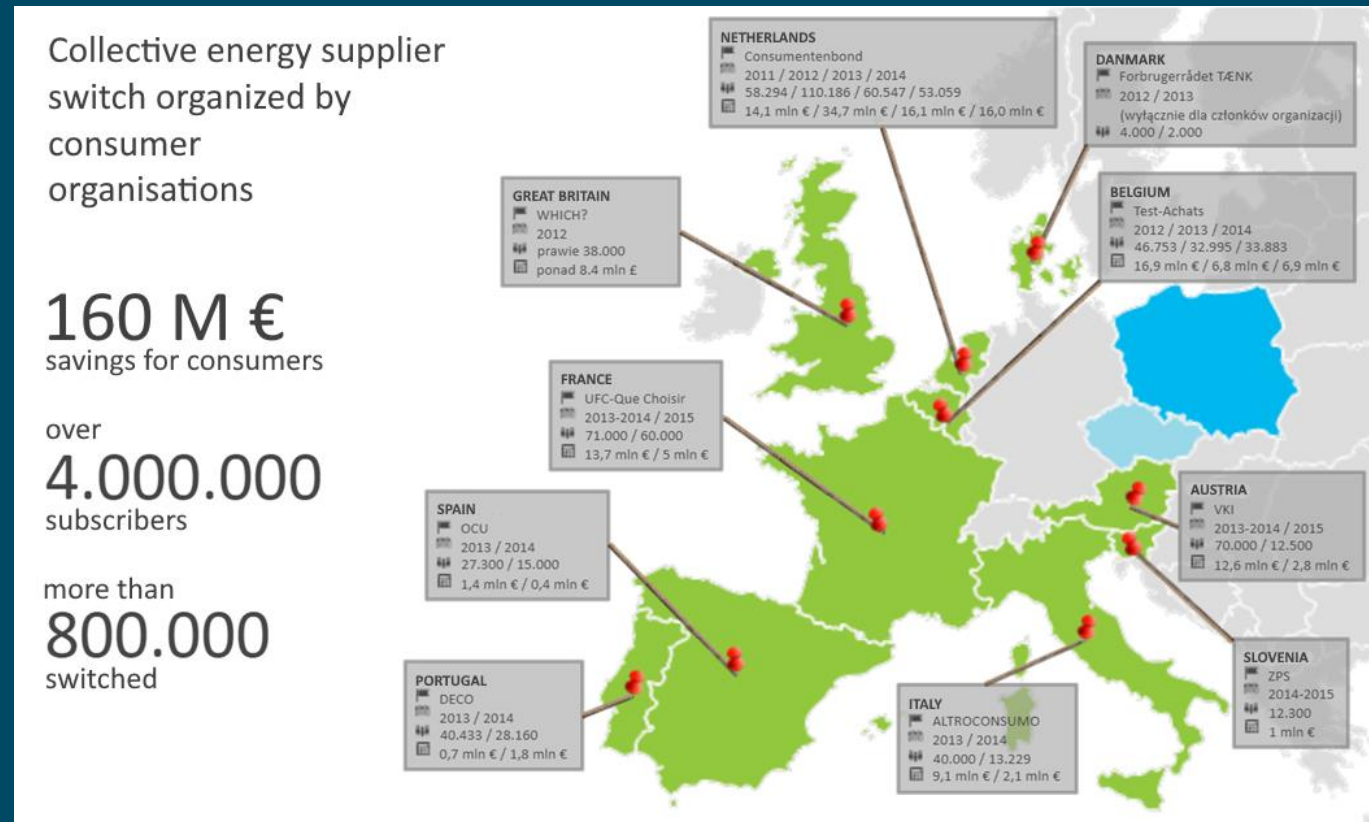
The task of the organization representing the group is to get the best price for the consumers while maintaining fair contract terms.

In a collective switching, usually:

- registration is free,
- switching the supplier does not involve any fees, also for the organizer,
- the organizer receives remuneration from the winner,
- indication of the winner of the negotiations does not oblige the consumer to make a real change.

Collective switching campaigns

In Europe, before the year 2014, there were a lot of campaigns related to collective switching of energy supplier. The map below was created by FK during the Polish switching campaign “Energia razem”.



National rules:

On this slide you can put information about collective switching in your country, if there were such campaigns.



Thank you for your attention!

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Energy market

This text is only a sample illustrating how module 1.8 should look like in our proposal. The shape of market, level of regulation / liberalisation will be significantly different in partner countries, therefore partners will probably have to strongly adapt or re-write this module



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Market regulation

Energy market in Poland, despite partial liberalisation, is still a regulated market in many aspects.

According to the law, the role of regulator is given to URE (Energy Regulatory Office). But other issues are governed by purely commercial terms and Civil Code. We can say that consumer rights in energy market is a mix of administrative, civil and contractual rules. Which of them comes from regulatory powers?

As you may already know, market segmentation demands distribution and sale of energy to be separated. This rule, known as **unbundling**, is common for all EU countries. However, it may be different in details.

In Poland distribution segment of energy market is based on former national companies, which previously had full monopoly in relevant region (“big 5” namely Tauron, PGE, Enea, Energa and Stoen). We can have also some smaller or specialised distributors (PKP Energetyka, developers, etc.)

The common factor is the ownership of infrastructure – energy meters, energy lines, transformers etc.). Distribution market is almost fully regulated in Poland, which means energy companies are obliged to propose distribution tariff to URE every year and those tariffs can be implemented only if regulator agreed. Consumer can see this on billing – in the part named “distribution fees”.

Cost of energy - regulated tariffs

Energy itself is sold by the supplier. The majority of Polish households never changed supplier and stays with “incumbents” – energy companies created from former monopolies. Such companies, also in supply segment (not distribution) is also partially regulated.

We still have “regulated tariff”, which is proposed by energy company and accepted by URE. In case URE decide to oppose, the tariff proposal has to be adjusted. However, URE cannot propose certain prices himself. This regulation scheme seems to be the base for the future “social tariff”, which should be regulated even after full liberalisation.

Free market - who sets the prices

Apart of regulated supply tariffs we have also commercial tariffs. The pricing in this case is not regulated and competitive market should bring the best offer to consumer. Energy suppliers – both, incumbents and new ones – can propose pricing, terms and conditions like in every other services. When does it make sense to go out from regulated tariff to free market scheme? The simplest answer is when competition mechanism provides prices more attractive than those in regulated tariff. But, of course, it can be some additional reasons – like buying several services (i.e. electric energy, gas, telecommunication services) in one package with significant discount, or the guarantee of the price for 2 or 3 years without increase. But consumers should be aware that waste majority of commercial tariffs is proposed for certain loyalty period, like 2 years. This means early termination of contract will result in fine paid to supplier as a compensation. So, advice is to use commercial, not regulated tariffs only if we had time and information sufficient to evaluate it.

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Representing consumers in energy matters



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Energy Consumer rights

Since the opening-up of the energy supply market in the EU consumers have several rights that entitle them to:

- an electricity connection and use of the electricity supply
- clear information on their contract, better deals, and tracking of their energy use
- assistance in case of disputes⁽¹⁾

Energy consumer rights have to be clearly set out in the national laws of EU countries and must reflect the provisions in EU legislation. On that basis, the national legislation must for example guarantee consumers the right to:

- an electricity connection so that households are connected to the local electricity network and supplied with electricity
- a choice of electricity and gas suppliers as well as an easy and fast switch of suppliers, without extra charges
- clear contract information and the right of withdrawal
- accurate information on the consumption and billing based on it.

[1\) https://europa.eu/youreurope/citizens/consumers/energy-supply/index_en.htm](https://europa.eu/youreurope/citizens/consumers/energy-supply/index_en.htm)

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- providers should give free-of-charge access to at least one energy comparison tool allowing consumers to find the best deal in the market
- to help consumers better control their costs, information in electricity bills will be improved

<https://ec.europa.eu/energy/en/topics/markets-and-consumers/energy-consumer-rights/protecting-energy-consumers>

Accordingly to this legislative package, Member States should:

Take action on consumer information and education by:

- informing consumers and businesses about their rights and obligations,
- informing about dangerous products on the market,
- issuing communications about the market presence of worrying behaviour or phenomena which may pose a serious threat to the consumers' interests;

Set standards, control quality and security by:

- Developing and carrying out product verification and safety tests;
- Settlement of collective disputes;
- Legal aid to individual consumers, out-of-court dispute resolution;
- Cooperation with consumer organisations.

The competences of UOKiK

The President of the Office of Competition and Consumer Protection (UOKiK) implements consumer policy. As a central authority of the state administration, he/she is responsible for applying consumer policy and acts in the public interest. UOKiK initiates administrative proceedings concerning **infringements of consumers' collective interests and reviews standard contracts used in transactions with consumers.**

In particular, they have the authority to conduct proceedings:

- Concerning infringements of consumers' collective interests
- Concerning prohibited clauses
- Concerning misleading advertising

The competences of URE (ERO)

Due to the inherent advantage of the power company over the consumer, the President of the Energy Regulatory Office (ERO) balances interests by strengthening the position of the consumer through:

- undertaking informational activities, e.g. Guidebook for Energy and Gaseous Fuels Consumers,
- handling complaints related to grid-connection, including prosumers
- interventions - assistance in clarifying individual cases - Information Point for Energy and Gaseous Fuels Consumers,
- out-of-court settlement of disputes - conducting amicable proceedings before the Coordinator for negotiations to the President of the ERO.

Consumers' Federation and municipal advocates

Federacja Konsumentów, as a consumer association:

- assists individual consumers in disputes with energy companies, also through mediation;
- carries out evaluations of energy use in individual households and provides trained experts' advice on energy efficiency, among others;

as well as:

- works with a wide range of institutions and companies to influence pro-consumer policy-making in the energy sector,
- participates in shaping the state policy - prepares and comments on draft legal acts concerning the energy sector,
- takes action on consumer information and education.

The contact database of FK branches is <http://www.federacja-konsumentow.org.pl/63,tu-znajdziesz-pomoc.html>

Consumer assistance in individual cases is provided by municipal or district consumer advocates, local government employees. The consumer advocates search directory: <https://www.uokik.gov.pl/>

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Energy efficiency and the quality of the indoor environment



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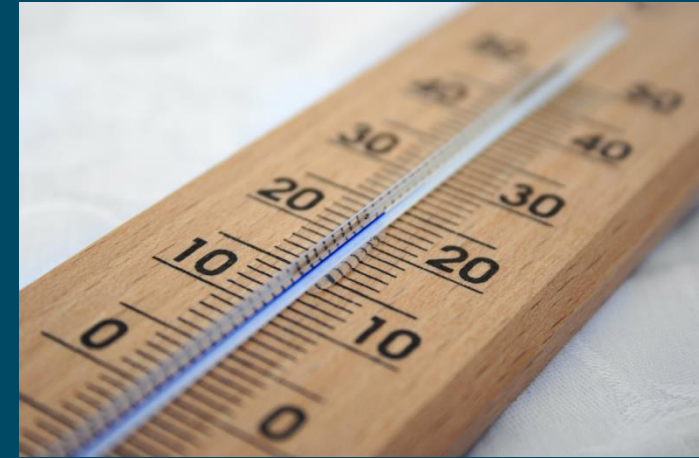
The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

The most important parameters of the indoor environment that affect thermal comfort

The quality of the indoor environment affects thermal comfort, a state in which the human body achieves a heat balance with the environment (the heat generated through metabolism is equal to the heat transferred to the environment), and at the same time there is no discomfort related to overheating or being cold.

Parameters affecting thermal comfort and determining the internal environment:

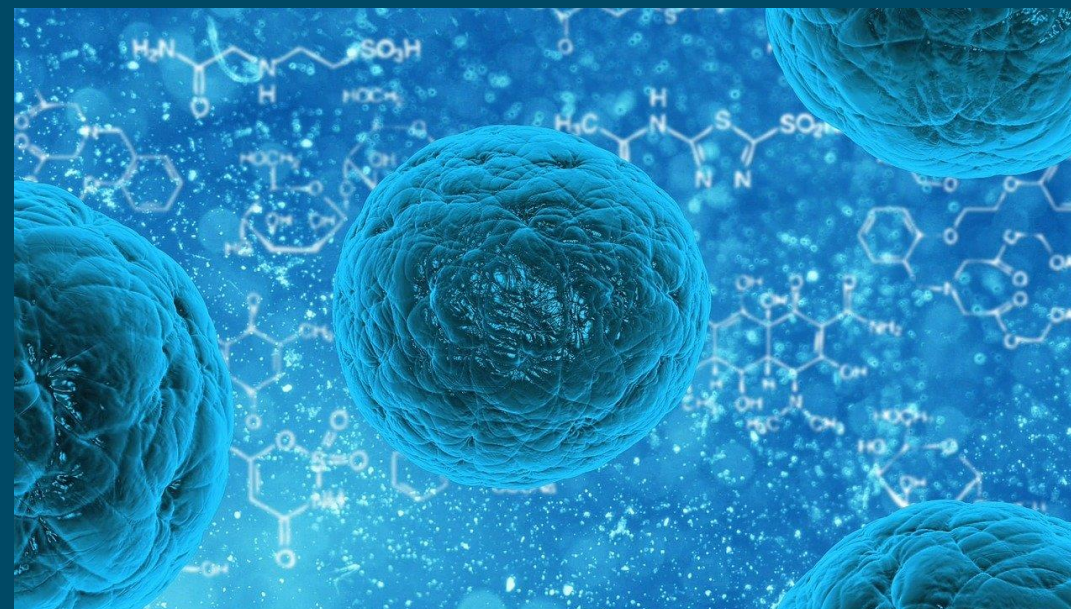
- temperature of the air and the surfaces of internal partitions
- relative humidity of the air
- air purity (content of PM 2.5, PM 10, VOCs, carbon dioxide and other particulates)
- the velocity of the airflow in the place where people are present
- access to daylight and artificial lighting.



zdjęcie - źródło: <https://pixabay.com/images/id-2125/>

The effects of prolonged exposure to low-quality indoor environment

- respiratory diseases
- allergies
- lung cancer
- cardiovascular diseases
- depression, fatigue
- reduced work efficiency
- legionellosis.

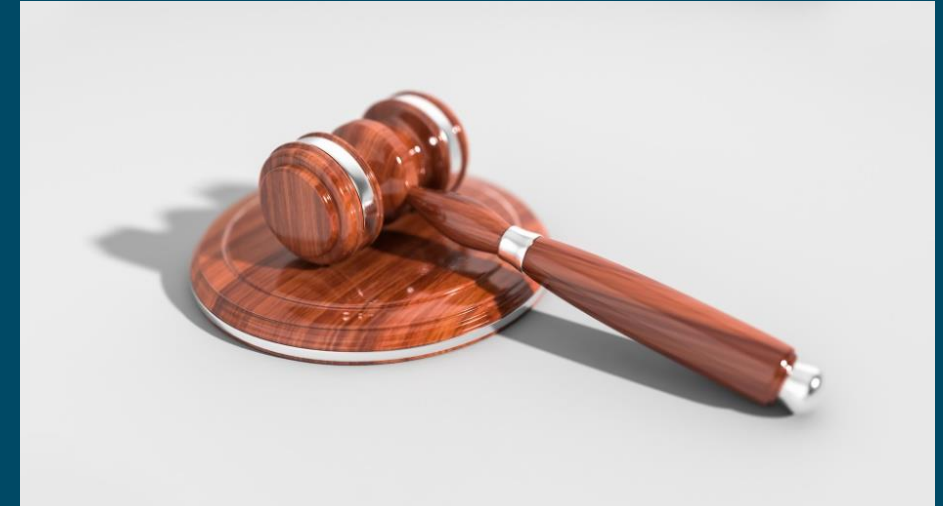


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The most important legal acts concerning the indoor environmental quality

Legal acts set requirements for building design parameters. All buildings must meet the requirements that ensure a basic quality of the indoor environment.

- **The Building Law dated 7 July 1994.**
- Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC - Annex 1.
- Regulation of the Minister of Infrastructure of 12 April 2002 on technical conditions to be met by buildings and their location.
- **PN-EN 15251:2012 Standard: Input parameters of the internal environment concerning design and evaluation of energy performance of buildings, covering internal air quality, thermal environment, lighting and acoustics.**



zdjęcie - źródło: <https://pixabay.com/pl/photos/gavel-aukcja-prawa-m%C5%82otek-symbolu-2492011/>

Energy efficiency or quality of the indoor environment?



zdjęcie - źródło: <https://pixabay.com/images/id-3183317/>

- Energy efficiency is very important and new buildings must meet increasingly stringent energy requirements - reducing energy consumption, resulting in lower operating costs.
- However, legal acts also set a number of requirements concerning indoor conditions (appropriate temperature, minimum airflow, air humidity) to be met.
- On average, people spend as much as 80%-90% of their time indoors.
- Human health and comfort should be a priority!
- The expertise of designers and engineers can be combined to increase energy efficiency while ensuring good quality of the indoor environment.

What to look for when designing and modernizing buildings and during their operation?

- ensuring adequate, energy-efficient heating, ventilation and air-conditioning installations, preferably those using low-emission energy sources (elimination of open combustion of fuels)
- ensuring sufficient window surface to increase the availability of solar radiation, and using additional good quality artificial lighting
- use of building partitions limiting the inflow of pollutants from the outside and influencing the change of thermal and humidity parameters in the room
- use of materials with very low pollutant emissions, materials with low VOC content, e.g. natural materials (stone, glass)
- using apartments in accordance with the recommendations, including regular ventilation, ensuring adequate flow of ventilation, not smoking indoors
- Additionally, applying air purifiers, air humidifiers, paints with the addition of TiO₂ or growing special plants that absorb air pollution.



zdjęcie - źródło: <https://pixabay.com/images/id-187949/>

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Energy efficiency and health conditions

Energy poverty contributes to health inequalities



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

What is energy efficiency?

It means using energy efficiently, i.e. we get the desired result with lower energy consumption.

The current building regulations focus on the **energy efficiency** of buildings. Therefore, when renting or buying an apartment, special attention must be paid to the **Energy Performance Certificate** of the building. This document is an energy assessment of a building, which is based on the calculation of the energy needs of the house or apartment for the purposes of heating and ventilation, hot water preparation and air conditioning.

The certificate itself does not directly cause energy savings, i.e. paying lower bills, because they depend on the household appliances and lighting and the daily habits of the inhabitants. It also does not automatically guarantee the appropriate living comfort, e.g. warmth or healthy environment.

Above all, those new buildings constructed according to increasingly stringent standards are not inhabited by vulnerable consumers - affected by or at risk of energy poverty.

We spend most of our time indoors - about 20 hours a day

Of course, not only in our home or apartment, but also at work or in school or in other places. But we can have a direct impact on whether the home environment has a positive or negative impact on our health.

- A survey conducted in the UK in 2017 showed that only 9% of people agree with the statement below: "I'm worried about the impact of the buildings in which I spend time on my health and well-being." This low percentage indicates a lack of public awareness of how buildings influence our health.⁽¹⁾
- 80 million Europeans live in humid and unhealthy buildings where there is a risk of developing respiratory diseases such as asthma and people spend 90% of their time indoors. The report ⁽²⁾ also shows that children's cognitive abilities increase by 15% if a good indoor climate is provided. At the same time, 90% of Europe's building stock are existing buildings, many of which need to be modernized, incorporating sustainable solutions.

(1) Health & Environment Alliance "Healthy buildings, healthier people"

(2) Fraunhofer Institut für Bauphysik, Report, 2014

Improving energy efficiency + health + wellbeing of residents

Identification of energy losses - modernization of lighting, heat sources or additional insulation of external walls and roof, replacement of windows and doors, improvement of ventilation, analysis and possible change of user behaviours and habits.

These and other improvements affect not only energy bills, but also, in the long term, the health of the consumers.

Of course, the actions taken are relevant to the situation of specific individuals, above all the economic situation. Therefore, in many cases assistance programmes helping to fund e.g. thermomodernisation are necessary, especially for the indigent.

Some actions can be taken while minimising costs.

Improving energy efficiency + health + wellbeing of residents cont.

As we have pointed out, the identification of energy losses and recommendations should result in improved energy efficiency of the household, but also affect the health condition of inhabitants.

- **Modernization of lighting.** Replacing traditional light bulbs with energy-saving ones is not only energy efficient, but also provides a possibility of choosing the right light source for the place, e.g. work, leisure or imitating daylight, which - as we know - has a huge impact on the human body, especially on brain function, and its deficiency has a negative impact on mental health.
- **Modernisation of heat sources and their controls.** This results in savings and thermal comfort. Thermal comfort is subjective, depending on the health condition and age of the residents. And so in the bathroom we maintain a temperature of 22-24°C, in the living room 20°C, in the kitchen it can be slightly lower, in the bedroom the temperature of 16°-18° C will ensure a healthy sleep, in the children's room, especially if it is a baby, the temperature should be 22°C. If we are used to higher temperatures, let's try to change our habits slowly - for health reasons, but also for the sake of savings. It is estimated that lowering the heating temperature in rooms by one degree reduces energy consumption by 6%.

Improving energy efficiency + health + wellbeing of residents cont.

- Thermomodernisation or additional insulation of external walls and roof, replacement of windows, doors, improvement or repair of ventilation/air-conditioning will result not only in savings but also in increased living comfort and will have a positive impact on the health of residents. Improving the quality of indoor air, proper ventilation will prevent moisture and mold in the apartment. And moisture and mold can cause lung and respiratory diseases. People living in humid rooms and breathing polluted air are 40% more likely to develop asthma. This is particularly dangerous for children. (1)
- Changing daily habits - behavioural factors that can reduce power consumption but also have an impact on health: protecting windows and doors from draughts, reducing heating instead of opening windows when the heating is on, moving furniture and removing curtains covering radiators, using thermostatic radiator valves, all these and many other cost-free measures provide savings and increase living comfort.

(1) Healthy Homes Barometer (2017), Buildings and their impact on the health of Europeans

Energy efficiency, energy poverty, and health

- One in six Europeans lives in a building that makes him/her sick. These are often humid, energy inefficient houses, which are either too hot in the summer or too cold during the winter, because residents cannot afford to pay their energy bills. (1)
- Energy poverty can have a negative impact on physical and mental health and can aggravate existing diseases, such as respiratory or cardiovascular problems. (2)
- Evidence suggests that low indoor temperatures are often associated with a wide range of negative health effects, including an increased risk of strokes, heart attacks, and respiratory diseases, as well as frequent mental disorders.(3)

(1) Marmot M, Geddes I, Bloomer E, et al. The health impacts of cold homes and fuel poverty, London: Friends of the Earth & the Marmot Review Team, 2011.

(2) Rudge J, Gilchrist R. Excess winter morbidity among older people at risk of cold homes: a population-based study in a London borough. *J Public Health (Oxf)* 2005; 27: 353–358; Webb E, Blane D, de Vries R. Housing and respiratory health at older ages. *J Epidemiol Community Health* 2012; 67: 280–285.

(3) Marmot M, Geddes I, Bloomer E, et al. The health impacts of cold homes and fuel poverty, London: Friends of the Earth & the Marmot Review Team, 2011. Public Health England. Minimum home temperature thresholds for health in winter – a systematic literature review. London: Public Health England, October 2014.

Energy efficiency is an important objective in the context of health and reducing energy poverty

"In the UK, a quarter of all families have to choose between paying for food and for heating.

In total, at least 50 million Europeans are experiencing energy poverty, usually due to a combination of low income, rising energy prices in the EU, and highly energetically inefficient buildings.

Cold homes and energy poverty have therefore been identified as factors that can be improved through energy efficiency measures. Research results show that improving the energy efficiency of homes at risk of energy poverty has a profound impact on well-being and quality of life, financial stress, thermal comfort, social interactions, and the use of building space.”(1)

Cold homes and fuel poverty have been identified as factors of health and social inequalities that could be alleviated through energy efficiency interventions.

(1) Za HEAL Briefing, Healthy buildings, healthier people: Grey, Charlotte N. B., et al. “Cold Homes, Fuel Poverty and Energy Efficiency Improvements: A Longitudinal Focus Group Approach.” Indoor + Built Environment, SAGE Publications, Aug. 2017

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Energy efficiency and user habits



zdjęcie - źródło:
<https://pixabay.com/images/id-1013662/>



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Consumption of heat and electricity in the household

- The share of energy consumption by households in the final energy consumption in Poland in 2016 amounted to 30%,
- In households there is a demand for heat and electricity,
- Thanks to heat and electricity, in our households we can:
 - ensure comfortable thermal conditions (proper temperature of rooms, stable ventilation),
 - prepare domestic hot water,
 - power the electronic devices and household appliances needed for everyday life,
 - ensure sufficient light levels.
- There is a great potential for reducing the consumption of this energy and thus reducing the cost of living.

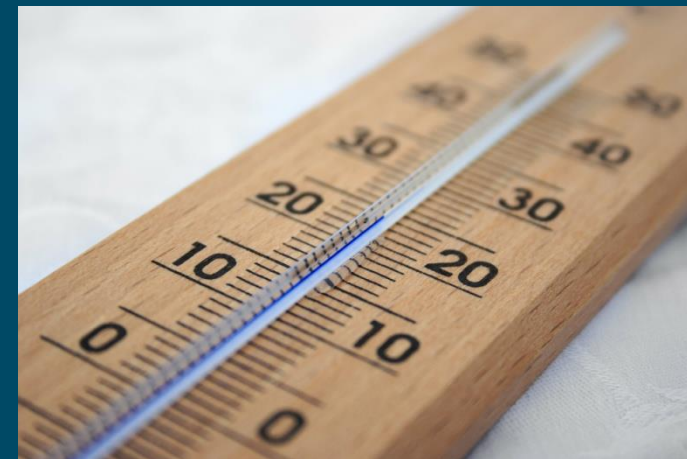


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Actions to reduce energy consumption

Household energy consumption can be reduced through activities requiring financial outlays as well as activities that do not require investments,

- Activities requiring high financial outlays:
 - thermal modernization of the building (insulation of the building, replacement of heating devices, etc.),
 - purchase of energy-saving equipment and devices,
- Activities requiring low financial outlays:
 - replacing lighting with energy-efficient lighting,
 - the purchase of energy-efficient equipment and appliances when the current ones have broken down,
- Activities that do not require any financial outlays:
 - **changing users' habits.**



zdjęcie - źródło: <https://pixabay.com/images/id-2125/>

User habits – potential for energy savings

- Changing user habits has a high impact on reducing energy consumption,
 - these are activities that do not require any financial outlay,
 - but demanding willingness and commitment,
- In order to encourage users to change their habits, they need to understand the purpose of doing so.
- Arguments can be:
 - financial by reducing the operating costs of heat and electricity,
 - improving the quality of the environment and health,
- Education is needed to understand the negative effects of consuming more energy than needed and the benefits of reducing/optimising energy consumption.



zdjęcie - źródło: <https://pixabay.com/images/id-2123970/>

Bad and good habits - what can we do?

Even small changes in everyday habits can bring annual savings of several hundred zlotys for each household.

BUT: Don't allow rooms to cool too much, as low temperatures can result in condensation and mould. Warmer rooms are losing heat all the time, while colder rooms lose much less. They don't need more energy per degree C to reheat, but the cold air loses moisture as condensation on the walls.

What can we do?

- Control thermostatic valves by:
 - lowering the temperature in rooms where you rarely stay,
 - lowering the temperature at night and during absence,
 - adjusting the temperature in the room to its intended use and the time of day,
- Adjusting the room temperature to the outside temperature,
- Turn off the radiators when the rooms are being ventilated (especially when it's cold, short and intensive ventilation is preferred),
- Do not let the rooms freeze, because reheating them requires more energy than keeping them a little lower but on constant temperature,
- Do not cover or block radiators (for example with curtains, furniture etc.),
- Behind the radiator you can place a reflective panel, so that less heat is lost through the outside wall,
- Regularly check the condition of gaskets in windows and their adjustment (reduction of heat loss), use draught proofing to help prevent heat loss around windows and doors.



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Bad habits - what can we do?

- use audio/video devices and household appliances in accordance with the manufacturers' recommendations,
- use natural light for as long as possible during the day (unveiling of blinds and curtains),
- switch off the lighting in unused rooms,
- disable household appliances and audio/video devices and do not keep them in "stand-by" mode when they are not used and their continuous operation is not necessary (TV, radio, computer),
- unplug the charger when the phone is not charging,
- save water when washing dishes and turn on the dishwasher when fully loaded,
- if the appliance has this function, use energy- and water-saving programs (washing machine, dishwasher),
- boil as much water in a kettle as you need,
- use reusable or recyclable packaging.

By taking care of the environment, you can go one step further and save energy even when you leave your home. Good "energy" habits should be transferred to work. When going to work or to other places, it is recommended to use environmentally friendly means of transport or public transport.



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Energy labels



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

What is an energy label?

- When considering the purchase of new electrical equipment, its characteristic parameters should be compared - the energy label.
- Energy label - this is a label that provides information about the energy class of the device and describes its most important parameters, making it easier to compare several products from the same group.
- The energy label of equipment includes the expected annual consumption of electricity and other resources, the level of noise generated and other parameters depending on the equipment.
- The energy efficiency classes shall be divided into letters A (most efficient) to G (least efficient). Additional classes were introduced with Directive 2010/30/EU: A +, A ++ and A +++.
- Any product subject to mandatory labelling, and any advertisement for such a product containing price or energy information, must indicate the energy class of the appliance.
- The label shall be clearly visible.

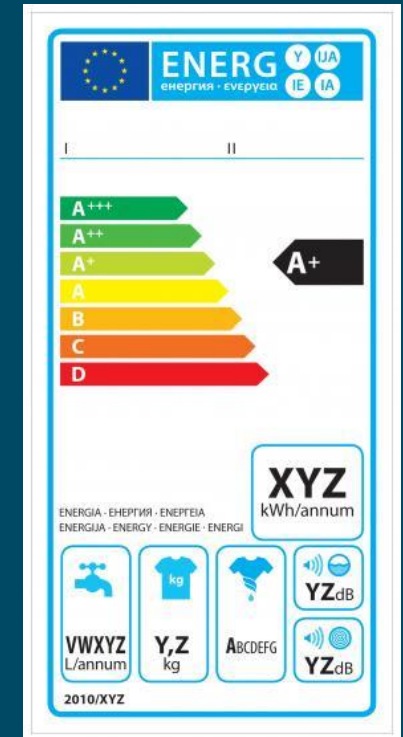


Photo source:
https://commons.wikimedia.org/wiki/File:New_label.jpg#/media/Plik:New_label.jpg

Main pieces of legislation on energy labelling

- The energy efficiency labeling system was introduced by the **EU Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances** – since the introduction of the energy efficiency labeling system, all new home appliances must have an energy label.
- All major EU legal texts related to energy efficiency and labeling, presented in the form of regulations, are applied directly in 28 EU Member States.
- They are available in all European languages on the European Commission's website.
- **Indicating appropriate energy classes in Poland is described by the Act of 14 September 2012 on the obligations regarding information on energy consumption of the energy-using products.**

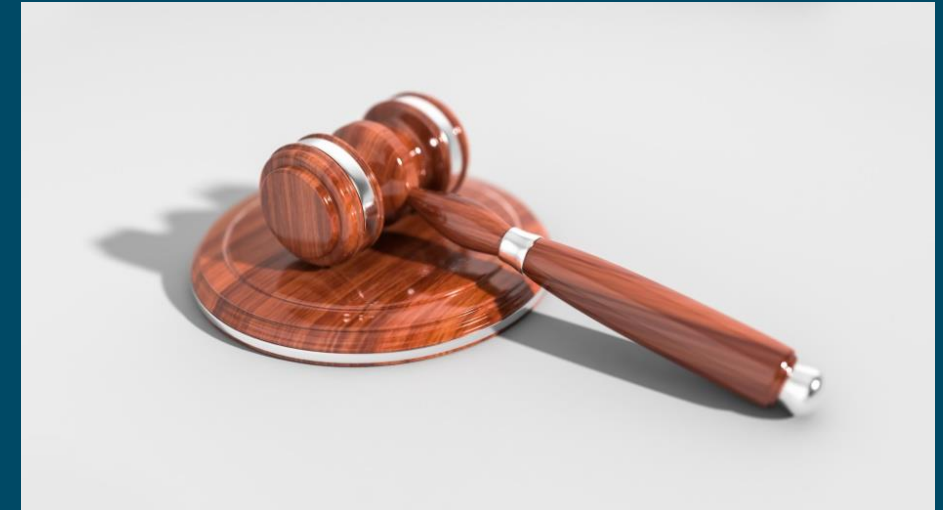


Photo source: qimono via Pixabay.com:
<https://pixabay.com/images/id-2492011/>

Advantages of labelling

Energy labelling:

- allows customers to make a conscious choice when purchasing equipment - **information on the energy consumption of a given product,**
- contributes to energy savings and reduces customer's energy bills - **less energy consumption,**
- promotes innovation and investment in the production of energy-efficient products - **more efficient appliances,**
- benefits producers, industry and the economy of the European Union.
- It helps to achieve the EU energy efficiency targets for 2020 and 2030.



Energy labels - the future

- Energy-intensive devices, which are today in the lowest classes, will no longer be produced and will be withdrawn from the market.
- In March 2021, the EU will return to the scale of energy efficiency classes: A-G - the "pluses" will disappear.
- Devices that today are classified as A +++ will receive the letter "C" in the new scale. The letters "A" and "B" are reserved for products that have not yet appeared on the market and will be more energy efficient than currently available.
- The labels will be scaled up from time to time, depending on the market situation.
- Changes will be introduced gradually until all devices are covered.
- In the transition periods, the new energy labels will be used in parallel with the old ones until the old ones are completely withdrawn.
- A database of EPREL products will be created, where you will be able to find detailed technical documentation on products - market development and new technologies.



Photo source: Wokandapix via Pixabay.com: <https://pixabay.com/images/id-2372183/>

How to read the energy label - example of a washing machine

- I - the name of the manufacturer of the device.
- II - model of the device.
- A+ - energy efficiency class - the higher the class, the lower the bills, and the greater care for the environment.
- Each label contains a complete scale of all available energy classes.
- XYZ [kWh/annum] - annual electricity consumption.
- YZ dB - noise levels during washing and spinning cycles.
- VWXYZ l[/annum] - annual water consumption.
- Y,Z [kg] - capacity.
- ABCDEFG - spin-drying efficiency class.
- Depending on the device, other characteristic parameters may appear.



Product data sheet

- A set of additional parameters for equipment that do not fit on the energy label but characterise the product.
- Additional information to help you choose a new device.
- The product data sheet is issued in the language of the country where the equipment is sold.
- The manufacturer of the equipment designs the layout of the product data sheet.
- The actual consumption of energy and other resources depends on how the customer uses this product.

Examples of labelling:



Average annual water consumption in litres per year



Nominal capacity in kilograms



Drying efficiency class



Spin-drying efficiency class



Nominal capacity (number of place settings)



Noise level in dB



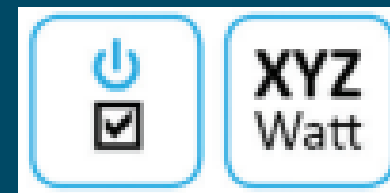
Usable volume of all compartments in litres, excluding freezer compartments



Volume of frozen food storage compartments in litres



Diagonal size of the screen in centimetres and inches



Visible switch to limit power consumption to 0.01 W or less

Power consumption during operation in watts

Bibliography:

1. Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances.
2. Directive 2010/30/EU of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products.
3. Act of 14 September 2012 on the obligation to inform about the consumption of energy by energy-using products.
4. Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU.
5. Act of 12 April 2019 amending the Act on the obligation to inform about the consumption of energy by energy-using products and on control of the implementation of the office equipment labelling programme and certain other acts.
6. Website: <https://www.gov.pl/web/energia/etykiety-energetyczne-prawo>.
7. Website: <http://fewe.pl/wp-content/uploads/2018/08/Label-Guide-B5-PL-www.pdf>.
8. Who reads, saves. Energy labels - a guide for consumers. Ewa Barczuk, Office of Competition and Consumer Protection, Warsaw 2013.

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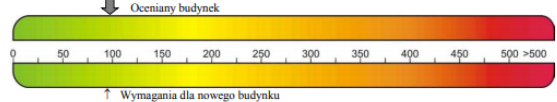


Energy performance certificates for buildings



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

What is an energy performance certificate of a building?

| ŚWIADCTWO CHARAKTERYSTYKI ENERGETYCZNEJ BUDYNKU | | | |
|--|--|--|----------------------------------|
| Numer świadctwa ¹⁾ | | | |
| Oceniany budynek | | | |
| Rodzaj budynku ²⁾ | | Zdjęcie budynku | |
| Przeznaczenie budynku ³⁾ | | | |
| Adres budynku | | | |
| Budynek, o którym mowa w art. 3 ust. 2 ustawy ⁴⁾ | | | |
| Rok oddania do użytkowania budynku ⁵⁾ | | | |
| Metoda wyznaczania charakterystyki energetycznej ⁶⁾ | | | |
| Powierzchnia pomieszczeń o regulowanej temperaturze powietrza (powierzchnia ogrzewana lub chłodzona) A_v [m ²] ⁷⁾ | | | |
| Powierzchnia użytkowa [m ²] | | | |
| Ważne do (rrrr-mm-dd) ⁸⁾ | | | |
| Stacja meteorologiczna, według której danych jest wyznaczana charakterystyka energetyczna ⁹⁾ | | | |
| Ocena charakterystyki energetycznej budynku¹⁰⁾ | | | |
| Wskaźniki charakterystyki energetycznej | Oceniany budynek | Wymagania dla nowego budynku według przepisów techniczno-budowlanych | |
| Wskaźnik rocznego zapotrzebowania na energię użytkową | $EU = \dots \text{ kWh/(m}^2 \cdot \text{rok)}$ | | |
| Wskaźnik rocznego zapotrzebowania na energię końcową ¹¹⁾ | $EK = \dots \text{ kWh/(m}^2 \cdot \text{rok)}$ | | |
| Wskaźnik rocznego zapotrzebowania na nieodnawialną energię pierwotną ¹¹⁾ | $EP = \dots \text{ kWh/(m}^2 \cdot \text{rok)}$ | $EP = \dots \text{ kWh/(m}^2 \cdot \text{rok)}$ | |
| Jednostkowa wielkość emisji CO ₂ | $E_{CO_2} = \dots \text{ t CO}_2\text{(m}^2 \cdot \text{rok)}$ | | |
| Udział odnawialnych źródeł energii w rocznym zapotrzebowaniu na energię końcową | $U_{oe} = \dots \%$ | | |
| Wskaźnik rocznego zapotrzebowania na nieodnawialną energię pierwotną EP [kWh/(m ² · rok)] | | | |
|  | | | |
| ↓ Oceniany budynek | | | |
| ↑ Wymagania dla nowego budynku | | | |
| Obliczeniowa roczna ilość zużywanego nośnika energii lub energii przez budynek¹²⁾ | | | |
| System techniczny | Rodzaj nośnika energii lub energii | Ilość nośnika energii lub energii | Jednostka (m ² · rok) |
| Ogrzewania | 1) n) | | |
| Przygotowania ciepłej wody użytkowej | 1) n) | | |
| Chłodzenia | 1) n) | | |
| Wbudowanej instalacji oświetlenia ¹³⁾ | 1) n) | | |
| Sporządzający świadctwo: | | | |
| Imię i nazwisko: Nr wpisu do wykazu ¹⁴⁾ Data wystawienia świadctwa: | | Podpis i pieczęć | |

A certificate is an official document that defines the energy performance of a building - a set of data and energy indicators for a building or parts of a building that define the total energy demand for its intended use.

European law introduced the obligation to have a certificate, the aim of which was primarily to promote energy-efficient buildings and to raise public awareness of the possibilities of achieving energy savings in buildings.

The obligation to draw up certificates applies to buildings or parts of buildings being sold or rented.

The energy performance certificate is valid for **10 years** from the date of issue.

What does an energy performance certificate of a building show us?

The certificate compares a building (from an energy point of view) with buildings that comply with the current regulations.

The certificate makes it easier for the owner to consistently demonstrate the advantages of a building or premises offered for sale or rent. For the buyer or tenant, it provides protection against possible undisclosed defects of the purchased or rented building or premises.

The information contained in the certificate shall enable the owner or tenant to estimate the approximate annual energy demand and costs.



Photo source: <https://pixabay.com/pl/illustrations/znak-zapytania-stos-pytania-symbolu-2492009/>

The most important legal acts regarding these certificates

- The Energy Performance Certificate was introduced by the Regulation of the Minister of Infrastructure on the methodology for calculating the energy performance of a building and residential unit or part of the building constituting an independent technical-operational entity and the method of drawing up energy performance certificates - 6 November 2008.
- Currently in force: Regulation of the Minister of Infrastructure and Development of 27 February 2015 on the methodology for determining the energy performance of a building or part of a building and energy performance certificates.
- The rules for the preparation of energy performance certificates are defined by the Act of 29 August 2014 on the energy performance of buildings.



source: <https://pixabay.com/pl/photos/gavel-aukcja-prawa-m%C5%82otek-symbolu-2492011/>

Who can issue an energy performance certificate?

The certification may only be performed by **experts** who:

- have a relevant degree:
 - higher education studies attested by the professional title of Engineer, Architect Engineer, Landscape Architect Engineer, Fire Safety Engineer, Master of Architecture, Master of Landscape Architecture, Master of Science in Fire Safety Engineering, Master of Engineering, or
 - Completed higher education studies other than those mentioned above and postgraduate studies that included in their programme the subject of energy performance of buildings, performance of energy audits of buildings, energy-efficient construction and renewable energy sources,
- or have the appropriate building license.



Photo source: <https://pixabay.com/pl/illustrations/reduced-homes-for-sale-wyszukiwanie-2955057/>

The most important information

- The certificate shall specify the energy performance of the building and may be used to **compare it with other buildings**, since each certificate shall contain the same set of information about the building.
- The energy performance of a building or part of a building may be determined by **calculation** or by **energy consumption measurement**.
- **The obligation to draw up certificates** applies to the building or part of a building being sold or rented.
- The certificate may be issued only by a **qualified expert**.
- . In Poland there is a **central register of the energy performance of buildings**
- **The Energy Performance Certificate is valid for 10 years from the date of issue.**



Photo source: <https://publicdomainvectors.org/en/free-clipart/Recap-post-it/70921.html>

Thank you for your attention!

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Windows

the weakest link in a building's thermal insulation

What to pay attention to when selecting them?



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Windows

What makes them the weakest element of the building's envelope?

The basic role of windows is to separate the external environment from the internal environment with a partition that allows sunlight to enter the building. Therefore, windows usually consist of a glazing package embedded in a frame. In the past it was the transparent element that was the weakest link in terms of energy efficiency (especially with single glazed windows), but nowadays, thanks to the use of triple glazed windows, more and more often the frame has poorer thermal insulation parameters than the glazing unit.

An additional issue related to windows, which is increasingly highlighted by manufacturers or included in design studies, is their airtightness. In the past, in addition to "letting in" daylight, the role of windows was also to supply ventilation air to the rooms (also when they were closed). It was possible "thanks to" their low airtightness. Nowadays this situation is treated as a design error - windows in buildings not equipped with mechanical supply and exhaust ventilation systems should have air inlets selected to meet the needs of a particular room, and the frame itself and the way it is set should ensure maximum airtightness.

Windows

What are the results of poor quality window joinery?

Outdated, low quality window joinery can cause:

- Excessive energy consumption for heating (*and/or cooling*) *due to both poor thermal insulation and increased ventilation airflow.*
- Decrease of thermal comfort *due to draughts or lower temperature near the window.*
- Freezing of the frame and/or glazing unit *which may lead to dampening of the adjacent elements and consequently damage them or cause mould.*

Windows

Basic types of window and door joinery

- *Single glazed windows in residential buildings are usually windows or doors in a wooden frame (rarely in a steel frame). Their glazing unit has one layer of glass set in the frame without advanced sealing. Replacing this solution is always recommended.*

Windows

Basic types of window and door joinery

- Single glazed windows
- Double glazed windows *often found in buildings from the 1970s, 1980s and the beginning of the 1990s. Unlike single glazed sets, they have two layers of glazing separated by a layer of gas (air), but the way they are fixed in the frame does not ensure high standards of airtightness. Replacing this solution is always recommended.*

Windows

Basic types of window and door joinery

- Single glazed windows
- Double glazed windows
- **Box windows** *a typical solution in historical buildings, used mainly before World War II. They can be considered as a potential cause of energy poverty (one of many), if single glazed packages are used (then modernization is recommended). NOTE!!! in renovated historic buildings it is often the case that due to preservationist requirements, solutions imitating historic windows are used, but with composite glass (not to be confused with double glazed windows), about which more on the next slide. In such case, the replacement will not be very effective.*

Windows

Basic types of window and door joinery

- Single glazed windows
- Double glazed windows
- Box windows
- **Composite glass windows** *should not be confused with double glazed windows! These are windows typically used in Poland since the mid-1990s. Their glazing package is a separate element from the frame, consists of two or three layers of glazing between which there is a gas (often noble gas improving the thermal insulation), the panes are distanced by a frame (usually steel) and the whole package has a seal on the entire length of the joint between the frame and the glazing package. They are often referred to as "PVC windows", but they can also be found in wooden and aluminium frames. This solution should be regarded as the best available technology in the context of energy poverty. Nowadays, in residential buildings mainly triple glazed windows are used, but in the case of double glazed windows from the 1990s, modernization is worth considering.*

Windows

Air inlets – do they help or spoil the ventilation system?

Air inlets are responsible for supplying the rooms with fresh ventilation air in a controlled manner (approximately in accordance with the design assumptions). The alternative (commonly used before their introduction) is the exchange of air with the external environment through opening / tilting / unsealing windows or the use of low-tight joinery. Such practices result in excessive energy consumption for heating purposes.

Unfortunately, it often happens that users are dissatisfied with the fact that air inlets cause permanent draughts. This means that the air inlets have been inappropriately selected or manufactured and they need to be modernized. Taping over the vents can worsen indoor air quality and consequently pose a risk to the hygiene and health of the occupants.

Windows

Air inlets – do they help or spoil the ventilation system?

In terms of air inlets for windows, the best currently available technology are **automatic humidity sensitive air inlets that can be manually adjusted**. They have an automatic flow control system regulated by the humidity of the indoor air, thanks to which during the absence of users the flow is reduced. Consumers exposed to energy poverty should be encouraged to use window air inlets, and if they already have them and are not using them, they should be trained in their proper use.

In cases where air inlets for windows have not been properly selected / manufactured, resulting in e.g. draughts, in addition to training it is worth considering their modernization, as thermal comfort should be a priority over the search for savings.

NOTE!!! It is often possible to install air inlets in existing windows, which is important in the case of buildings that have undergone thermomodernization but the audit did not recommend them.

Windows

What to consider when evaluating window joinery?

When assessing the quality of joinery, you should pay attention to:

- *Technology – what type of window is it (single glazed, double glazed, etc.), what material is the frame made of, is the window tilttable, etc.*
- *Parameters – it is worth checking if any documentation has been preserved concerning the technical parameters of the window (e.g. a declaration from the manufacturer or a specification in the project stating the requirements for the window joinery). In the case of composite glass windows, for many years manufacturers have been obliged to indicate the heat transfer coefficient of the glazing package on the frame between the panes.*
- *Its role in the building – and whether its use is currently justified. For example, one of the actions proposed as part of thermo-modernization may be to reduce the glazed area, if it is technically justified, e.g. by replacing windows with a wall.*

With this set of data you can ask a specialist for advice.

Windows

What type to replace them with?

As far as glazing packages are concerned, the best commonly available technology is the **triple glazing** set (composite glass). Their heat transfer coefficient U may achieve values lower than **0.6 W/m²K**.

The matter is somewhat more complicated with the frames, as the standards are different depending on the material used (wood, PVC, aluminium). For the purposes of this training, we can assume that the best frames currently available have a U-value of less than **1.0 W/m²K**.

If the building does not have mechanical supply and exhaust ventilation, it is recommended to use automatic humidity sensitive air inlets for windows that can be manually adjusted.

Windows

What are the limitations of the window joinery modernization?

- **Financial** *unfortunately, windows are one of the most expensive elements of the building envelope. Users exposed to energy poverty may not be able to bear the expenses associated with their modernization, so the role of the advisor should be also to help obtain subsidies. Currently in Poland, they are available i.a. from the Clean Air Programme.*
- **Legal** *the worst solutions in terms of thermal insulation are often found in buildings which are under the supervision of a historic preservationist. Modernization of joinery may be difficult or even impossible, and additionally, it is common practice for preservationists to require the use of solutions "imitating" historical ones, including architectural details, which can multiply investment costs.*
- **Technical** *in some buildings the window joinery also plays a functional or architectural role (entrance door, terrace door, roof, an important architectural element, etc.) so that their modernization in accordance with the original assumptions can be very expensive, and any economically reasonable action may cause a change in the function of rooms / zones of the building.*

Windows

Are they worth replacing?

It is generally assumed that windows are responsible for heat losses (and thus heating costs) of **approx. 15%** in single-family houses and up to max. **40%** in multiple dwellings with the lowest technical standards.

This may not seem like a key area, but **modernization** can reduce these losses by approx. 30% in the case of old windows with double glazing (e.g., from the late 1990s), and to **as much as 80%** in the case of single glazed windows. In addition, the use of air inlets for windows can reduce heat losses associated with ventilation (which account for about 30% - 40% of all heat losses) by about 15%.

All this means that in most buildings where no thermo-modernization work has ever been carried out (thermal insulation of walls, replacement of windows, etc.), the replacement of window joinery is often one of the most cost-effective modernization measures.

Thank you for your attention!

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Thermal insulation of the building envelope

Introduction to the topic of modernizing thermal insulation of the building envelope



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Types of building partitions

A basic distinction can be made on the basis of the partition's role in the building:

- Roof (*pitched, flat, with a timber structure, monolithic, etc.*)
- Wall (*wall above/below ground level, etc.*)
- Floor slab on the ground (*at ground level, in a basement, etc.*)
- Window and door joinery (*including garage doors, skylights, etc.*)
- Internal partitions (*walls, ceilings, doors, windows, etc.*)

Thermal insulation

Over the years, the definition of thermal insulation in building envelopes has been very similar - a material that increases thermal performance. On the other hand, the criteria that such material should meet have changed many times with the emergence of new technologies and increased awareness of users.

One example is asbestos which, despite its excellent technical parameters, has nowadays been completely eliminated from use for health reasons. Also straw, which in the past was often used to insulate walls and roofs, is no longer applied today due to the common availability of materials with much better technical parameters.

Thermal insulation

For the purpose of this presentation, we consider the following materials as thermal insulation:

- Mineral wool
- Polystyrene, styrodur, styrofoam, polyurethane boards, etc.
- Modern technologies such as aerogels or vacuum panels.
- Special granulates (e.g., leca, cellulose, wool, etc.).

Thermal insulation does not include fibreboard, OSB, asbestos, roofing felt, straw, etc.

Most popular solutions

It is difficult to cover all technologies used in Europe over the years in a short presentation, so we will focus on external walls (above ground level) and roofs, which together generate the greatest heat losses in buildings, apart from windows (to be discussed separately).

Most popular solutions

External walls

External walls can be divided into two basic categories:

Lightweight walls

- Wooden constructions
- Sandwich panels

Heavy walls

- Masonry
- Reinforced concrete

Most popular solutions

External walls

In Poland heavy walls are the most common - in single-family houses and smaller multifamily buildings masonry walls; in tall multifamily buildings reinforced concrete walls.

In single-family houses you can also relatively often find lightweight walls - in most cases wooden.

Most popular solutions

Roofs

A basic classification of roofs can be made according to their geometry:

- Pitched
- Flat

A further division could be made according to the construction technology (wooden, monolithic reinforced concrete, prefabricated reinforced concrete, metal, etc.), but from an energy efficiency point of view, it is important whether the roof is insulated or not.

The insulation technology is usually chosen according to the roof construction. For example, wooden structure roofs are usually insulated with mineral wool and flat roofs with polystyrene, styrofoam or styrodur.

Before commencing modernisation work, it is essential to remember that roof insulation **must always be conducted after analyzing the placement of the water insulation layers.**

Heat transfer coefficient

The primary measure to improve the energy performance of a building envelope is to increase its thermal insulation.

The thermal insulation of partitions is measured with:
heat transfer coefficient U [W/m²K]

Heat transfer coefficient

The basic principle: **the lower u-value, the better!!!**

Examples of the overall heat transfer coefficient values:

Typical exterior wall without thermal insulation:

U = from 0.7 to 1.5 W/m²K

Typical exterior wall after modernization:

U = from 0.2 to 0.5 W/m²K

Typical roof without thermal insulation:

U = from 1.0 to 3.0 W/m²K

Typical roof after modernization:

U = from 0.1 to 0.3 W/m²K

Key areas in terms of energy performance

Envelope structure

- The construction materials used in the partition determine the insulation technology (e.g. in wooden walls an additional vapour barrier layer is required).
- Ideally, the envelope should be insulated "from the outside". Sometimes it is not possible (e.g. in historic buildings). Insulation "from the inside" **must be preceded by a heat and moisture analysis** and performed in accordance with professional standards. Incorrectly installed insulation "on the inside" may cause condensation in the envelope.

Thermal bridges

- A thermal bridge is an area of the building envelope where heat transfer is impaired due to a local (linear/point) change in thermal insulation.
- Examples of thermal bridges are: wall corners, window and door joinery, ceiling and roof to wall junctions, slab to wall junctions.
- All thermal insulation should be carried out in accordance with the state of the art, taking care to **eliminate** thermal bridges.

When building envelope should be insulated?

- **When the external partition does not have any thermal insulation layer** *Modernization will improve the thermal comfort of the users, bringing economic and ecological benefits*
- **When the existing insulation layer does not meet current technical standards** *For example, when the void inside a wall is filled with blast furnace slag, or a wooden wall is insulated with straw mixed with lime*
- **When the building envelope is being modernized** *For example, when plasters are renewed on the surface of external walls, it is worth to consider increasing the thickness of the thermal insulation layer. This measure may be cost-effective, even if the wall is already insulated, but the insulation layer is thin, e.g. 5 cm.*
- **When the users experience discomfort related to increased heat loss** *For example: cold floor, freezing windows or doors, humidity caused by intermittent freezing of walls, etc.*

How to modernize the building envelope?

- By increasing thermal insulation (*Thermal insulation of an envelope element results in a reduction of the U-value*).
- Taking into account the current technical condition of the envelope element (*if the wall is for example damp or cracked, it is necessary to find the cause, eliminate it if possible, bring the wall to the design state, and then insulate it at the end. Adding insulation to a damp wall may result in its destruction*).
- In accordance with legal requirements (*Heat transfer coefficient limit values are specified by the relevant legislation in each country or region*).

Thank you for your attention!

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Selection of a heat source

Economic and ecological consequences



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Scope of the presentation

- What do we mean by a heat source?
- What are the most commonly used heat sources in Poland?
- What is the impact of the heat source on the costs incurred by the user?
- What is the impact of the heat source on the environment?
- Good practices in the context of heat sources.

What do we mean by a heat source?

A **heat source** is a device that **converts the energy contained in the carrier** (e.g. coal, wood, electricity, natural gas, heating network, etc.) **into heat** used for space heating or preparation of domestic hot water.



Photo source: Comfreak via Pixabay.com

What do we mean by a heat source?

At the beginning of the presentation, it is worth to distinguish the definitions of a boiler, a furnace, and a district heating substation that are often confused even by retailers and installers.

Boiler - located between an energy carrier (e.g. coal) and a receiver (e.g. radiator), an intermediary carrier (e.g. water) is used. *It is a solution commonly used in Poland (heating water that flows to the radiator and gives away heat there).*

Furnace - in the combustion chamber, the energy of the carrier is transferred directly to the target medium (e.g. room heating via a tiled FURNACE)

District heating substation - In principle, works in the same way as a boiler, but heat is not generated in the district heating substation. It exchanges heat between the water system (and through it the room) and the district heating network.

What are the most common heat sources in Poland?

Before we present the types of heat sources, let's focus for a moment on **fuels**. It should be noted that **not every heat source is powered by a fuel** (e.g. a district heating substation connected to a district heating network, or an electric heater), but **each one needs an energy carrier** (district heating network, electricity, coal, wood, etc.). Therefore, we can distinguish the following basic types of heat sources:

- Solid fuel boilers (*e.g. hard coal, wood, pellets, eco-pea coal, etc.*)
- Gas/Liquefied Fuel Boilers (*e.g. natural gas, fuel oil, LPG, etc.*)
- District heating substations
- Electrical sources (*furnaces, heat pumps*)

On the following slides the most common solutions are discussed in more detail.

What are the most common heat sources in Poland?

Another issue that needs to be addressed when discussing various heat sources is their **efficiency**. A distinction is made between **nominal efficiency**, for operating at a nominal load, and **seasonal efficiency**.

From the user's point of view, the nominal efficiency allows comparing similar devices but does not give a complete picture from the point of view of **energy efficiency**. For this purpose, the **seasonal efficiency of the device** (which does not have to go hand in hand with the nominal efficiency) is compared.

This is important because in residential buildings, heat sources rarely work at nominal load (heating systems are designed for outdoor temperature $-20\text{ }^{\circ}\text{C}$, which is extremely rare, and the heating system operates for most of the year).

What are the most common heat sources in Poland?

- **Manually fed solid fuel boilers** - these are boilers which do not have any or have a very limited control system, and the fuel is fed manually by the operator (user).
 - Unfortunately, until recently, manually fed units with low efficiency have been available on the market and **are still commonly used in Poland**.
 - The problem with manually fed boilers is their low seasonal efficiency of heat generation and very high CO₂ emission indices. **In the case of users at risk of energy poverty, it is recommended to replace manually fed boilers**. The recommended source should be indicated by an expert, e.g. in an energy audit.
 - **Manually fed boilers for solid fuel with low parameters are one of the biggest causes of smog in Poland!** This is also due to the possibility of using low-quality fuels in these boilers.
 - **Replacement** of a manually fed boiler with an automatic boiler (presented on the next slide) may **reduce fuel costs by as much as 25%**.

What are the most common heat sources in Poland?

- Manually fed solid fuel boilers
- **Automatic solid fuel boilers** - these are boilers with automatic control of the process of feeding fuel to the furnace, adjusted to the indoor temperature. These are solutions that meet modern technical standards.
 - Automatic boilers have up to **10 times lower pollution emissions** than old, commonly used manually fed boilers.
 - When replacing a manual boiler with an automatic one, one should check whether the modernization will not necessitate modernizing the chimney system and using **high quality fuel**, which may **deepen the problem of energy poverty!**

What are the most common heat sources in Poland?

- Manually fed solid fuel boilers
- Automatic solid fuel boilers
- **Gas boilers with open combustion chamber**
 - Due to the simplicity of their construction and reliability, there are units that are even 30 years old, and still operate.
 - The efficiency of such devices is lower than that of newer gas combustion technologies (presented on subsequent slides), but replacement without co-financing is not profitable. In case of availability of co-financing, it is recommended to replace the boiler with a condensing boiler, which can **reduce fuel costs by up to 10%**.

What are the most common heat sources in Poland?

- Solid fuel backfilling boilers
- Automatic solid fuel boilers
- Gas boilers with open combustion chamber
- **Gas boilers with closed combustion chamber**
 - Until recently, these were boilers used in most new facilities with gas connections.
 - Unless they show operational problems (frequent failures), it is not recommended to replace them.
 - From 1 January 2020, they will disappear from the market due to eco-design requirements.

What are the most common heat sources in Poland?

- Solid fuel backfilling boilers
- Automatic solid fuel boilers
- Gas boilers with open combustion chamber
- Gas boilers with closed combustion chamber
- **Gas condensing boilers**
 - These modern solutions have been installed in new buildings for several years now. They should be treated as the best currently available technology for gas combustion in residential buildings.
 - Most of the users at risk of energy poverty do not have this technology.

What are the most common heat sources in Poland?

- Solid fuel backfilling boilers
- Automatic solid fuel boilers
- Gas boilers with open combustion chamber
- Gas boilers with closed combustion chamber
- Gas condensing boilers
- **District heating substations**
 - Substations connect the heating system to the district heating network. A distinction can be made between stations without (older) and **with housing** (newer). Their efficiency is similar and if the units do not show corrosion, are not failing, etc. it is not recommended to replace them. The economic effect would be very small.

What are the most common heat sources in Poland?

- ...
- **Tiled stove**
 - Historical solution, although it has recently returned to "grace".
 - It shows low efficiency, but modernization is difficult, because in buildings heated by tile stoves there is usually no central heating system, so in addition to the purchase of the boiler, it is necessary to build an installation. In the case of users facing energy-poverty, an upgrade covering the **entire heating system** is recommended.
 - Tiled stoves have high emission rates, so **financing** can also be sought in the context of pro-ecological programmes!

What are the most common heat sources in Poland?

- ...
- Tiled stove
- **Electric furnace**
 - These are wall mounted or freestanding radiators used for space heating or domestic water heating. Their efficiency is very high, but in the context of energy poverty it should be kept in mind that the price of electricity is much higher than that of other fuels.
 - As with tiled stoves, electric heaters are usually used where there is no central heating system. Then a partial solution to the problem may be to **use RES** for electricity production, which will result in some of the heating energy being produced within the same household.
 - Electric furnaces are also often used to heat domestic hot water. This is a solution with many advantages, but the problem remains the price of electricity.

What are the most common heat sources in Poland?

- ...
- Tiled stove
- Electric furnace
- **Heat pump**
 - Heat pumps use energy from, for example, atmospheric air, ground or watercourse and transfer it to the heating system of a building by means of a compressor system.
 - Most heat pumps use electricity as an energy carrier, but in their case its price is not as important as in the case of electric furnaces, because their seasonal efficiency can be close to 300% , which means that they consume about three times less electricity than they produce heat .
 - It is a solution treated as "ecological" so in many support programs it is possible to obtain co-financing for its application.
 - The disadvantage of heat pumps are the investment costs, which can even several times exceed the costs of, for example, a condensing gas boiler.

What are the most common heat sources in Poland?

- ...
- Tiled stove
- Electric furnace
- Heat pump
- **Portable room furnaces (e.g. for LPG)**
 - These are solutions used primarily by users at risk of energy poverty.
 - This type of solution is associated with certain inconveniences, such as low regulation possibilities, point heat production or high fuel prices.
 - Due to the fact that these furnaces are usually applied in households without a heating system, the solution would be a deep thermo-modernization, including the installation of a heating system.

What is the impact of the heat source on the costs incurred by the user?

The heat source has a **DIRECT INFLUENCE** on the costs of purchasing an energy carrier (e.g. coal). The lower the efficiency of a heat source, the more energy (e.g. coal) we have to buy to ensure the same conditions inside the building.

It is recommended that **in the case of users facing energy poverty**, replacement of the heat source **should be preceded by an expert analysis**. This is due to the fact that usually an operation that brings greater benefits than just replacing the source **is full thermo-modernization, in which the expert will propose the optimal source for the energy performance of the building after thermo-modernization**.

The key parameter when assessing the impact of a heat source on the costs incurred by the user is **seasonal efficiency**. The following slides expand on this topic.

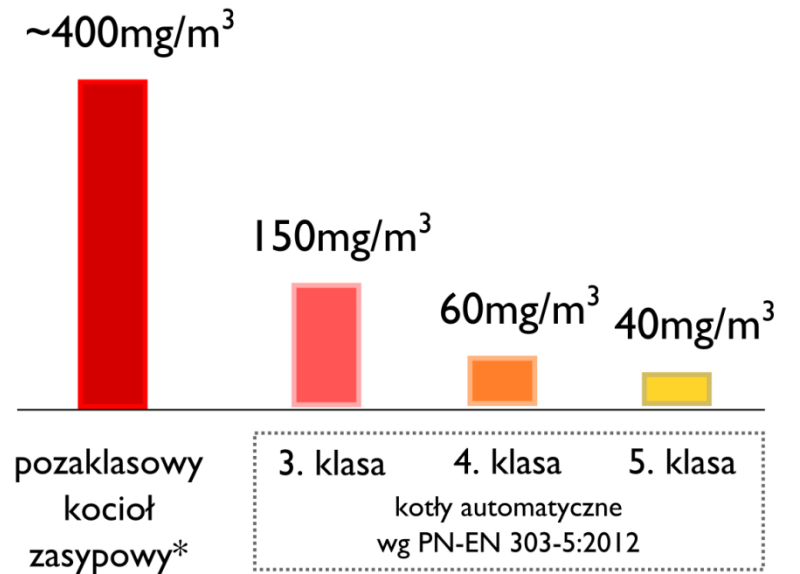
What is the impact of the heat source on the environment?

In Polish conditions, the problem of CO₂ emissions in the context of heat sources is basically the problem of manually operated boilers and solid fuel stoves.

From 2014, solid fuel boilers were labelled in accordance with the PN-EN 303-5:2012 standard according to classes 3 - 5 (previously there were classes 1 and 2). Assuming that the old manually fed boilers did not even meet the requirements of Class 1 (which is a standard), it may be assumed that the emission of pollutants generated by them is almost **10 times higher** than the emission of Class 5 boilers, which is presented in the diagram.

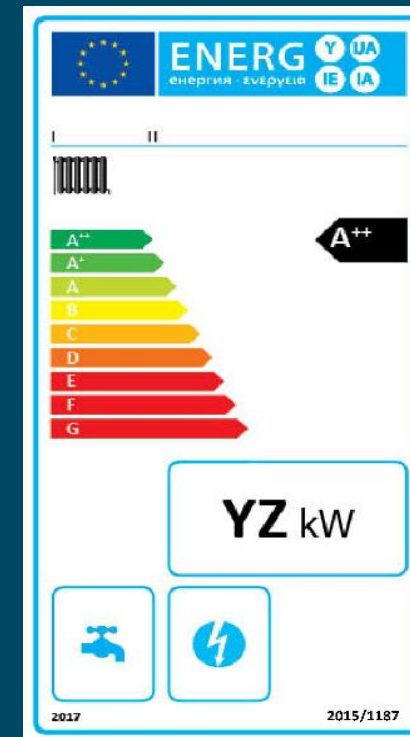
Currently, solid fuel boilers also have energy labels, but manufacturers still provide information about their class.

Emisja pyłów z kotłów węglowych



Good practices in the context of heat sources

When exchanging heat sources, **energy labels for heat sources** are a great help. They have been compulsory for units using liquid and gaseous fuels and heat pumps since 2015, and for boilers using solid fuels from 2017. Labels have also been introduced for solar collectors, auxiliary devices such as storage tanks, and entire sets of devices (e.g. boiler + solar collectors + storage tank).

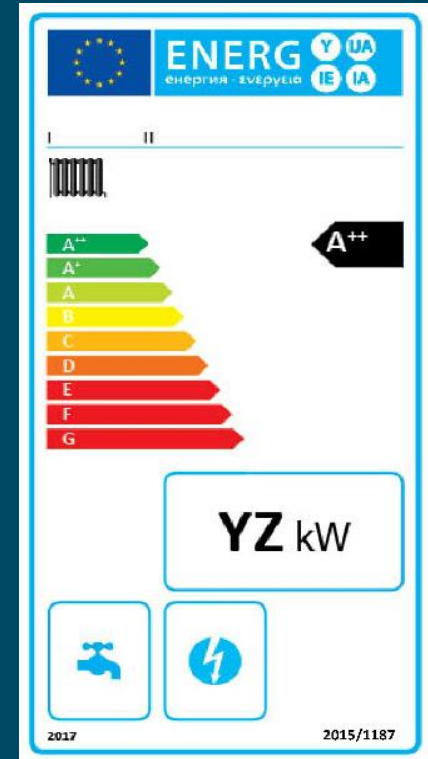


<https://eur-lex.europa.eu/legal-content/PL/TXT/PDF/?uri=CELEX:32015R1187&from=PL>

Good practices in the context of heat sources

The basic information on the label is the **energy efficiency index (EEI) of the device**, which captures the total efficiency of the device including:

- Seasonal heat generation efficiency
- Energy consumption of the auxiliary equipment
- The impact of automatic control on the fuel consumption

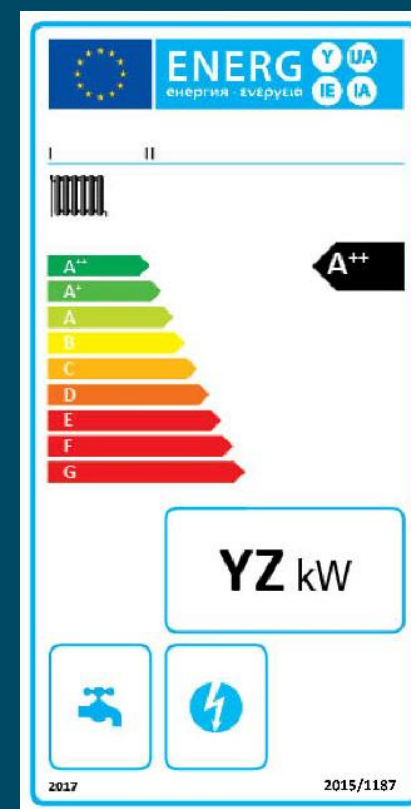


<https://eur-lex.europa.eu/legal-content/PL/TXT/PDF/?uri=CELEX:32015R1187&from=PL>

Good practices in the context of heat sources

Due to the fact that the index covers various energy carriers (fuel and electricity used by auxiliary devices, such as a fan) and various criteria, it is difficult to use it to estimate savings.

The EEI may reach values greater than 100% as a result of comparison with the reference level.



<https://eur-lex.europa.eu/legal-content/PL/TXT/PDF/?uri=CELEX:32015R1187&from=PL>

Good practices in the context of heat sources

Good practices can provide some basic principles in the context of users at risk of energy poverty:

1. Replacing old **manually fed boilers** with modern automatic boilers for solid fuel can reduce fuel costs by up to 25%.
 - When implementing such modernisation, pay attention to whether the substitute's manufacturer does not require the use of **high-quality fuel**, which is more expensive than the fuel used so far, and could **deepen the problem of energy poverty**.
 - Choose the best available substitute based on the **energy label**.
 - Check if there is any funding **available for the replacement of old boilers** causing high emission of harmful gases. For households struggling with poverty, co-financing of more than 80% is possible.
 - Before replacing a boiler, it is always worth checking whether **comprehensive thermo-modernization** will not bring better results from the point of view of energy efficiency. In Poland, the nationwide "Clean Air" programme has been launched, which enables obtaining high co-financing for comprehensive modernization of buildings (including e.g. insulation, replacement of windows and replacement of old boilers).

Good practices in the context of heat sources

2. Replacement of **gas boilers** with open combustion chamber:

- Gas boilers with open combustion chambers are much less efficient than modern **condensing boilers**. Unfortunately, it is not profitable to replace them without co-financing.
- Gas-fired boilers cause much lower emissions of harmful compounds than solid fuel boilers, so it is rarely possible to obtain subsidies for their replacement from "pro-ecological" programs. In such case, it is worth suggesting to the user exposed to energy poverty that the building should be **thermally upgraded**.

Good practices in the context of heat sources

3. Change of fuel in electrically heated buildings

- Heating a building with electric energy in Polish conditions may be the main cause of energy poverty.
- In the case of such buildings, it is necessary to consider the possibility of changing the heat carrier in a cost-effective way, which depends on, for example, how far away from the building the gas or district heating network is located.
- If other media are not available, it is worth looking for co-financing to enable comprehensive thermo-modernisation, taking into account the change of heat sources, e.g. to an electric heat pump.
- The solution to the problem may also be the use of renewable energy sources for the production of electricity.

Thank you for your attention!

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Lighting

What to consider when choosing new light sources?



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Lighting - basic concepts

We often hear "you need to change the **light bulb**". However, the term does not refer only to **incandescent light bulbs** - which are no longer available for purchase.

Most of us, when saying "light bulb" mean the **light source**, which is usually fixed in a luminaire. Sometimes it is impossible to change the light source, without replacing the fixture.

In this presentation we will focus on what parameters one should pay attention to, when replacing **light sources**.

Lighting - basic concepts

On every new light source available on the market we will find an energy label that informs us about the energy class of the product. However, when choosing a new light source, it is recommended to use not only the label, but also the two parameters:

- Power [W] - *electric power will have a direct effect on energy consumption.*
- Luminous flux [lm] - *sometimes sources are described by analogy to traditional light bulbs (e.g. the equivalent of a 100W bulb) which boils down to the luminous flux, a more precise term to use.*

Light sources

How to choose a replacement step by step?

1. Verification of the type of source - the so-called **shaft** type
2. Checking the **luminous flux** of the existing light source
3. Finding a source that has a comparable luminous flux with the lowest power (unless low power affects the "**color of light**", then you should choose the source of a corresponding color, with the lowest power; usually in stores there is a possibility to check the quality of light, which allows the user to select a color)
4. If several sources have similar parameters, you can additionally compare the **estimated lifespan of the unit** (often manufacturers provide such data expressed in working hours).

Light sources - Good practices

Currently, the best practice in the context of light sources is the use of "LEDs". An example of the effect of their use as replacements for older solutions is given below.

In the case of lighting, it can be assumed with great accuracy that the reduction of installed lighting power will translate directly into a reduction in energy consumption.

Incandescent bulbs - the use of a LED replacement can reduce power output by up to 85%.



http://el-dabex.pl/24-thickbox_default/zarowka-100we27-pila.jpg

Halogen sources - LED replacement can reduce power output by up to 70%.



https://www.zapalswiatlo.com/11116-large_default/dura-halogen-20w-gu53-12v-01275.jpg

Fluorescent light sources - the use of a LED replacement can reduce the power by approx. 25%.

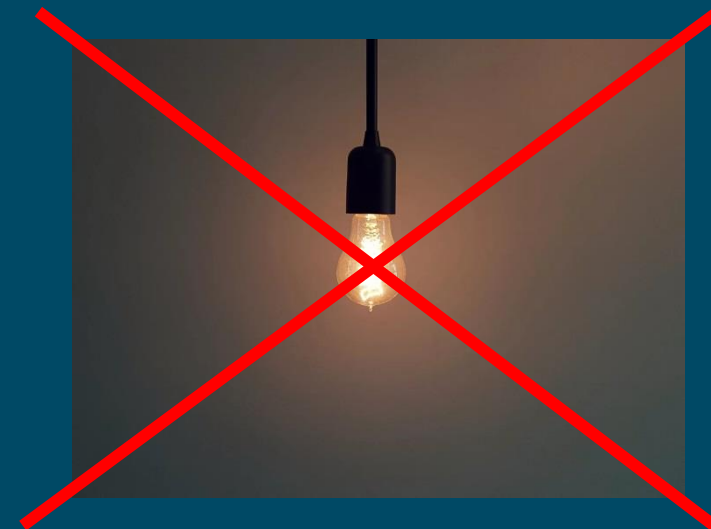


https://upload.wikimedia.org/wikipedia/commons/thumb/4/42/Fluorescent_Lamp.jpg/1200px-Fluorescent_Lamp.jpg

Light sources - Good practices

It is often the case that users exposed to energy poverty use sources without any luminaires (e.g. lamps hanging from ceiling cables). Then instead of directing the light beam, it is spread in all directions, illuminating also the ceiling.

In such cases, the use of a simple luminaire in the form of a lamp shade may allow to replace the source with a unit of lower power (also with a smaller luminous flux).



Thank you for your attention!

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Most energy-consuming appliances in households

What to consider when buying new ones, and how to use them so as not to overpay?



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

The most energy-consuming appliances in households - share in the energy balance

- The average consumption in the G11 group is assumed by the Energy Regulatory Office to be 1,780 kWh - a small household.
- The average energy price in the G11 group is about 0.60 PLN/kWh.
- The following balance sheet was created on the basis of average values for several energy balances of real dwellings.

| Energy receiver | Energy consumption in the balance of the apartment [%] | Energy consumption [kWh/year] | Annual cost [PLN/year] |
|------------------------|--|-------------------------------|------------------------|
| Refrigerator - freezer | 29 | 516,2 | 309,72 |
| Electric stove | 19 | 338,2 | 202,92 |
| Lighting | 17 | 302,6 | 181,56 |
| Washing machine | 10 | 178,0 | 106,80 |
| TV | 6 | 106,8 | 64,08 |
| Kettle | 5 | 89,00 | 53,40 |
| Other | 14 | 249,2 | 149,52 |
| Total | 100 | 1780,0 | 1068,00 |

How to estimate the electricity consumption and the operating cost of the equipment?

You should:

- Check the power of the equipment - the value is on the equipment and it is expressed in watts [W].
- Estimate the operating time of the device - number of hours [h], e.g. per year.
- Take the price of electricity - **currently about 0.60 PLN/kWh** (in the future this price will probably increase, and thus the profitability of purchasing energy-efficient equipment).
- The power of the device should be multiplied by the operating time per year and divided by 1000. The resulting value is expressed in kilowatt hours [kWh] per year. The average energy consumption indicated on the appliance's energy label (less accurate method) may also be used.
- Multiply the resulting value by the electricity price. The result is the annual operating cost of the equipment.

Example: power of the device is 500 W, operating time per year is 20 hours, energy price is **0.60 PLN:**

$500 * 20 / 1000) * 0.60 = 6 \text{ PLN/year.}$

Example - replacement of a refrigerator

Three refrigerators with similar parameters and capacities, differing in energy efficiency class, were selected: A+, A++ and A+++.

- When we decide to replace an old fridge with a new one, it is worth paying attention not only to the cost of purchase, but also to the operating costs.
- In this case, the payback times of these appliances are similar and in such case it is recommended to purchase A+++ equipment.
- However, it often happens that the analysis shows that the most optimal solution is to buy A+ or A++ equipment.
- For each purchase it is worth to carry out a similar analysis.

| | D | A+ | A++ | A+++ |
|---|------|------|------|------|
| Annual energy consumption declared by the manufacturer [kWh/year] | 600 | 285 | 250 | 175 |
| Energy cost [PLN/kWh] | 0,60 | 0,60 | 0,60 | 0,60 |
| Annual energy cost [PLN/year] | 360 | 171 | 150 | 105 |
| Difference in cost compared to Class D [PLN/year] | 0 | 189 | 210 | 255 |
| Cost of the fridge [PLN] | - | 1400 | 1600 | 2000 |
| Payback time [years]* | - | 7,4 | 7,6 | 7,8 |

* Payback time is calculated by dividing the cost of the appliance by the difference in operating cost between the new and the current appliance.

Key household electricity-using devices - purchase of a washing machine

The most important operating parameters of a washing machine:

- Capacity - how often we will do our laundry depends on it. More and more washing machines weight the load and choose the energy and water consumption that fits the load. This means that with more capacity, we have more possibilities, and we can do both "big" and "small" laundry.
- Energy consumption - the average energy consumption indicated on the energy label allows us to estimate how much energy we will use during the year, and thus what will be the cost of operating the device.
- Water consumption - average consumption calculated for a specified number of cycles on a specified programme. This information does not represent the actual water consumption but allows comparison with other available models for which water consumption is calculated for the same operating conditions.
- Noise level - may be one of the parameters that will be decisive for a customer.
- Energy efficiency class - presents the most important parameters of the washing machine and allows comparison with other models available on the market and choosing the most energy-efficient, cost-effective solution for the user.
- Additional functions - it is worth checking whether the washing machine has any additional functions such as a closed water circuit system, WiFi control or others that can save time, money and improve user's comfort.

Key household electricity - using devices - purchase of a refrigerator

The most important operating parameters of a refrigerator:

- Refrigerator/freezer capacity - how much food fits into the appliance. The higher the capacity, the higher the energy consumption, so it's important to consider what size do we need.
- Energy consumption - the average energy consumption indicated on the energy label allows us to estimate how much energy we will use during the year, and thus what will be the cost of operating the device.
- Noise level – increasingly often, refrigerators are located in kitchenettes, so the noise level can be an important criterion for choosing new equipment.
- Energy efficiency class - presents the most important parameters of a refrigerator and allows comparison with other models available on the market and choosing the most energy-efficient, cost-effective solution for the user.
- Additional functions - a refrigerator can have additional functions that can bring energy and financial benefits. This could be, for example, an “open door” warning that signals when the door is not closed for a longer time, or a "vacation" mode, which allows you to reduce the power consumption and temperature of the refrigerator during a longer absence.

Key household electricity-using devices - purchase of lighting

When buying new lighting for your household, it is recommended to buy LED lighting:

- The latest and most energy-efficient light sources use LED technology. They consume several times less energy than traditional incandescent bulbs, halogen sources or even fluorescent (so-called energy-saving) sources.
- Consumes approximately 85% less energy than a traditional (incandescent) bulb.
- Consumes approximately 70 - 80% less energy than a halogen source.
- Consumes approximately 20 - 30% less energy than a fluorescent (so-called energy-saving) source.

Additionally, LED sources have many advantages:

- durability (several thousand hours),
- higher light intensity possible to obtain from the same power - lower operating costs,
- high colour rendering index,
- no harmful UV radiation (as opposed to compact fluorescent lamps),
- short light-up time to brightness (<1s).

How should I use my devices to avoid overpaying?

Once we have purchased new household appliances and audio/video devices, we can optimise our energy consumption and operating costs:

- The new equipment should be installed in accordance with the manufacturer's instructions and recommendations (especially built-in appliances, they need adequate distances between furniture and heat dissipation).
- Read the operating instructions and follow the manufacturer's recommendations.
- Some receivers can be switched off when not in use (TV, lighting, radio).
- Some devices have the ability to turn on the energy-saving mode, tailored to current needs (TV, washing machine) or have a holiday mode, when the apartment is not occupied for a longer time, and the device must operate (fridge).



zdjęcie – źródło: <https://pixabay.com/images/id-3289367/>

The most important information

- **Most household** electricity receivers **have an energy label and a product sheet.**
- The energy label allows you to **compare the parameters of a device** with other similar devices available on the market.
- Energy labelling allows customers to make a **conscious choice when purchasing equipment**, informs about the energy consumption of a product, contributes to **saving energy** and reducing customer bills, and **promotes innovation** and investment in the production of energy-efficient products.
- In the electricity balance of the household, the **largest share** is represented by the **refrigerator** (about 30%), electric stove and lighting (both of about 20%), washing machine (about 10%).
- **Use the equipment in accordance with the manufacturer's recommendations** and, if possible, **switch it off** when not in use.



zdjęcie – źródło:
<https://publicdomainvectors.org/en/free-clipart/Recap-post-it/70921.html>

Thank you for your attention!

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Renewable Energy Sources

Can they help mitigate energy poverty?



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

What are Renewable Energy Sources?

Renewable Energy Sources (RES) are resources whose use for energy purposes is not associated with generating their deficit - they are naturally replenished in a short time, such as sunlight, wind, water movement, forest growth, etc.

You can generate electricity or heat using an energy supply that does not run out, or else can be renewed naturally.



<https://s.redefine.pl/file/o2/redefine/cp/92/92dsvjhf54u-xyanmpr9ecb44tgtw4xnq.jpg>



<https://i.iplsc.com/zdjecie-ilustracyjne/0009CLAL9Y2H610G-C123-F4.png>



https://www.tapeciarnia.pl/tapety/normalne/185472_rzeka_las_krajobraz.jpg

What are Renewable Energy Sources?

The examples of RES:

- Photovoltaics - *they convert solar energy into electricity.*



<http://regiodom.pl/portal/sites/regiodom/files/imagecache/755x/images/regiodompl/81/panele-fotowoltaiczne.jpg?pnj82i>

What are Renewable Energy Sources?

The examples of RES:

- Photovoltaics
- Solar collectors - *they convert solar energy into heating.*



<http://regiodom.pl/portal/sites/regiodom/files/imagecache/755x/images/regiodompl/81/panele-fotowoltaiczne.jpg?pnj82i>

What are Renewable Energy Sources?

The examples of RES:

- Photovoltaics
- Solar panels
- Wind turbines - *they convert the energy of air movement (wind) into electricity*



<https://i.wpimg.pl/730x0/m.gadzetomania.pl/turbiny-21e1758dc5a927525584236f.jpg>



<http://centrumdruku3d.pl/wp-content/uploads/2015/12/2015.12.07-3D-Printed-Micro-Wind-Turbine-2.jpg>



What are Renewable Energy Sources?

The examples of RES:

- Photovoltaics
- Solar collectors
- Wind turbines
- Hydroelectric power plants - *they convert the energy of water movement into electricity.*



https://d-nm.ppstatic.pl/kadr/k/r/9f/98/5ae9958009d7a_o_size,933x0,q,70,h,979d9a.jpg



What are Renewable Energy Sources?

The examples of RES:

- Photovoltaics
- Solar collectors
- Wind turbines
- Hydroelectric power plants
- Biomass - *burning plants or grains to produce electricity or heat.*



<https://anmag.pl/wp-content/uploads/2018/04/drew-no-opa%c5%82owe-buk-wymiar-1-400x400.jpg>



<https://c.allegroimg.com/original/0c978c/c4d051004649af298ea21388dbbc>

What are Renewable Energy Sources?

The examples of RES:

- Photovoltaics
- Solar collectors
- Wind turbines
- Hydroelectric power plants
- Biomass
- Many other (e.g. tidal energy, rain energy, geothermal energy, etc.)



Is it profitable to invest in RES?

In order to assess the profitability of RES investments, it is necessary to analyse the factors influencing them:

- **Availability of the renewable energy carrier** (*e.g. energy of solar radiation, wind, geothermal energy, etc.*)
- **Energy price** (*the higher the energy price, the greater the savings resulting from the reduction of the quantity purchased*)
- **Legal conditions** (*it is usually necessary to consult with experts on these issues*)
- **Durability of the investment** (*some renewable energy installations may require costly renovations that will absorb a large portion of the savings*)

- You can carry out your own initial assessment of RES application:
- Check which energy carrier is the largest cause of energy poverty (*costs the most or causes the greatest discomfort*)
- Check what type of RES is available in your location (*whether the object is not shaded, sheltered from the wind, and in the case of photovoltaics, does it have southern exposure, etc.*)
- Check if in your municipality / voivodeship / country / social group there are any subsidies available for RES installations and what conditions need to be met. Find out if you can get free professional advice (*for example, in Poland, support programs for farmers are regularly organized in rural areas*)

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Energy counseling

Where to get advice and information



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What type of advice or help do I need?

- The invoice is incomprehensible. I do not know what I am paying for.
- I want to file a payment complaint.
- I want to change my energy seller, how do I do that?
- I think I am a victim of unfair market practices.
- I would like to change the tariff. How do I do that?

WHERE CAN I GET HELP OR ADVICE?

- Most of the above questions and doubts should be answered by the electricity seller with whom we have a contract.
- It is worthwhile to visit the company's website and read the information intended for individual energy users.

Do you have a problem with the proper implementation of the contract, would you like to amicably settle a dispute with an energy company?

Ask the coordinator for negotiations to the President of the ERO (URE) for help. More about this institution focused on the energy market, its competences and scope of operation will be presented in a separate training module.

On the website of the Energy Regulatory Office you will find extensive informational materials intended for consumers – A guide for energy and gaseous fuels consumers. ERO also has a helpdesk for consumers.

YOU CAN ALSO TURN TO CONSUMER - DEDICATED INSTITUTIONS AND ORGANISATIONS:

- Municipal consumer advocate - local government employee.
- Federacja Konsumentów - a public benefit organization whose primary statutory objective is to provide information and legal assistance to consumers.

ENERGY MARKET - HOW CAN A CONSUMER ORGANIZATION (FEDERACJA KONSUMENTÓW) HELP INDIVIDUAL CONSUMERS?

With all the problems mentioned so far.

But also in matters relating to:

- rationalisation of energy use;
- advice on how to improve the energy efficiency of an apartment/house;
- how to change your habits, replace appliances with energy-efficient ones;
- find appropriate sources of co-financing, related not only to paying energy bills, but also to thermo-modernization or RES.

WE HAVE THE TOOLS, OUR ADVISORS ARE TRAINED IN ENERGY AND GAS MARKET ISSUES

Some of the advisors/legal advisors in branch offices of Federacja Konsumentów are certified Domestic Energy Advisors. They can carry out, together with the consumer and free of charge, a basic energy audit of an apartment - a detailed analysis not only of the bills, but also of the technical condition of the apartment, the energy consumption of the household appliances, not only lighting.

What for?

TO SAVE ENERGY AND MONEY

Do a lot for your household, but also for the environment.

Thank you for your attention!

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Tariffs and tariff groups

Electricity tariffs are "price plans" on the basis of which electricity sellers settle their bills with customers.



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ELECTRICITY PRICES VARY WIDELY ACROSS THE EUROPEAN UNION.

The differences result from a number of factors, the most important of which are: the type of fuel used, government subsidies and the legal regulations of the power sector.

In many countries, progressive electricity tariffs are being introduced. You consume less electricity - you pay less per kWh.

Some examples are available in Belgium ([Brussels](#)) and in Italy, Japan and California (1)

(1) http://climatepolicyinitiative.org/wp-content/uploads/2011/12/Tews_Progressive-Tariffs-for-Residential-Electricity-Consumption.pdf

THE DIVISION INTO TARIFF GROUPS AND TARIFFS

"Tariff group" means a group of customers purchasing electricity or benefiting from a transmission or distribution service or a comprehensive service, for which one set of prices or tariffs and their conditions of use apply.

The electricity tariff is the price plan according to which we pay for the consumption of electricity. Each tariff shall specify the price rate per kWh applicable at the specified hour of the day.

WHICH TARIFF FOR WHOM?

The type of tariff depends on the electricity demand of a given customer. Mines or large factories pay at tariff A, other entities benefit from tariff B or C.

We are interested in the G tariff for **households**. Specifically, G tariff categories: G11 and G12.



WHAT ARE THE DIFFERENCES BETWEEN THE MOST POPULAR TARIFFS FOR HOUSEHOLDS?

G11 - means that the price of electricity is fixed 24 hours a day.

G12 - means that there are two rates for electricity, in off-peak hours consumers pay less, that is between 13.00 and 15.00 and 22.00 and 6.00 in the morning.

IS IT POSSIBLE TO CHANGE THE TARIFF?

It is possible and sometimes it's worth it.

Depending on the consumer lifestyle, habits and decisions, it is worth looking at all household tariffs.

Choose the tariff that bring measurable energy savings and, as a result, reduces the energy bills.

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Agreements (traps, penalties, additional services)

In the practice of business trading, concluding contracts with large companies is about entering into a contract - a contract that cannot be negotiated. The consumer receives a ready-made template or terms and conditions.

The law protects the consumer against the traps of such a contractual system.



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European law prohibits unfair market practices and the use of unfair contractual clauses

Member States have relevant national regulations based on these directives:

- 2005/29 / EC of 11 May 2005 on unfair practices
- 93/13 / EEC of 5 April 1993 on unfair terms in consumer contracts
- 2011/83 / EU of 25 October 2011 on consumer rights

Who sets traps?

Usually, unreliable market behaviour is observed by new entrepreneurs entering the electricity or gas sales market. These are entrepreneurs focused on quick profit, without the need to build a market position for a long time.

To attract customers, these entrepreneurs use unfair practices, often misleading consumers systematically or using their ignorance to induce a change of seller.

Often the reason is the salesman bonus system, which assumes low basic salary, but high margins for acquiring new customers.

Unfortunately, we also notice undesirable behaviour on the part of current sellers, offering, for example, forward contracts with contractual penalties.

Who gets trapped?

The most vulnerable are people from so-called sensitive groups. Older people, less market-oriented, less resourceful and poor.

These people do not have sufficient knowledge about the functioning of the market, aggressive practices. They can be more wide-eyed and less assertive. They are also unable to cope with contracts that have already been concluded, though unwanted.

What do these consumer traps look like?

- Unexpected change of the seller (misleading by the trader or his salesman as to his identity - the consumer thinks he signs an annex and in fact changes the seller).
- Apparent price reduction - the consumer is not informed that other components of the bill are increasing at the same time or the reduction is linked to the conclusion of a fixed-term contract with a penalty for termination of the contract.
- Agreement for a definite period of time - the agreement stipulates disproportionately high penalties or otherwise makes it difficult to terminate the agreement.
- Additional services - in the contract, the consumer, often unconsciously, orders additional services, such as insurance, but the contract prohibits the cancellation of these additional services under penalty.

How to defend yourself?

Right of withdrawal

- A consumer who has concluded a distance or off-premises contract may withdraw from the contract by making a declaration to that effect within 14 days.
- Withdrawal shall not have any negative financial consequences for the consumer. The consumer shall only be required to pay for the energy or gas actually consumed.
- The seller is obliged to inform the consumer about this right - lack of information means an extension of the withdrawal period by up to 12 months.
- The right of withdrawal cannot be limited or excluded by the seller.

How to defend yourself? Unfair market practices

According to Directive 2005/29/EC, a practice is unfair if it conflicts with the requirements of professional diligence and materially distorts or is likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, or of the average member of a group of consumers if the commercial practice is directed at a particular group.

It is also unfair to mislead or conceal information.

SUCH PRACTICES ARE PROHIBITED!

A consumer affected or threatened by a practice may require the cessation of the practice and the withdrawal of its effects, which may, for example, result in the cancellation of the contract or the payment of damages.

How to defend yourself? Prohibited contract terms

According to Directive 93/13/EEC, contract terms which have not been individually negotiated may be considered unfair if they conflict with the requirements of good faith, create a significant imbalance in the contractual relationship, the rights and obligations of the parties to the detriment of the consumer.

Unfair terms in contracts shall not bind the consumer. The remainder of the contract shall continue to apply if possible after the unfair terms have been excluded from it. This means that a contract containing prohibited terms may in some cases be void in its entirety.

According to EU case-law, a court should ex officio examine whether an agreement contains prohibited terms, if they affect the outcome of a given proceeding.

Thank you for your attention!

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How to read an electricity bill

Energy bills from each energy supplier must contain the same data, so bills differ only in the way the information is presented.



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This is what a typical electricity bill looks like.

Sprzedawca:

Miejsce dostarczenia energii:
Warszawa,
Grupa taryfowa: G11
Produkt: Najprostsza dla Ciebie

Rozliczenie sprzedaży i dystrybucji energii elektrycznej w okresie od 06.03.2019 do 02.09.2019

| Lp. Pozycja | Netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Brutto [zł] |
|--|--------------|----------------|------------------|---------------|
| 1. Wartość prognozowana | 683,10 | 23 | 157,14 | 840,24 |
| 2. Należność za faktyczne zużycie | 599,88 | 23 | 137,97 | 737,85 |
| Wartość prognozowana minus należność za faktyczne zużycie | 83,22 | | 19,17 | 102,39 |

Nadpłata 102,39 zł jest uwzględniona w kwocie do zapłaty na kolejny okres

Prognozy na okres rozliczeniowy od 01.10.2019 do 31.03.2020

| Lp. | Nr dokumentu | Okres | Netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Brutto [zł] | Nadpłata [zł] | Kolejne płatności | |
|--------------|--------------|-------------------|---------------|----------------|------------------|---------------|---------------|-----------------------|------------------|
| | | | | | | | | Kwota do zapłaty [zł] | Termin płatności |
| 1. | 222012858831 | 01.10.19-30.11.19 | 263,88 | 23 | 60,70 | 324,58 | 102,39 | 222,19 | 12.11.19 |
| 2. | 242000217840 | 01.12.19-31.01.20 | 263,88 | 23 | 60,70 | 324,58 | | 324,58 | 10.01.20 |
| 3. | 223011849969 | 01.02.20-31.03.20 | 263,88 | 23 | 60,70 | 324,58 | | 324,58 | 10.03.20 |
| Razem | | | 791,64 | | 182,10 | 973,74 | 102,39 | 871,35 | |

Szczegółowe rozliczenie zużycia znajduje się na kolejnej stronie.

Bank Pekao SA numer konta:

W tytule przelewu proszę podać numer faktury.

Szczegóły rozliczenia za okres od 06.03.2019 do 02.09.2019

Miejsce dostarczenia energii elektrycznej: Warszawa,
Lokal:
Punkt poboru energii:

Wskazania układu pomiarowego

| Numer licznika | Strefa | Okres zużycia | Poprzednie wskazanie licznika | Obecne wskazanie licznika | Rodzaj odczytu* | Zużycie [kWh] |
|----------------|------------|-------------------|-------------------------------|---------------------------|-----------------|-----------------|
| | całodobowa | 06.03.19-05.04.19 | 2 161,00 | 2 363,43 | S** | 202,43 |
| | całodobowa | 06.04.19-02.09.19 | 2 363,43 | 3 355,00 | R | 991,57 |
| Razem | | | | | | 1 194,00 |

Sprzedaż energii elektrycznej

| | Strefa | Okres zużycia | Ilość | Cena netto [zł] | Wartość netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Wartość brutto [zł] |
|-----------------|------------|-------------------|-----------|-----------------|--------------------|----------------|------------------|---------------------|
| Energia czynna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,2762 | 329,78 | 23 | 75,85 | 405,63 |
| Oplata handlowa | | 06.03.19-02.09.19 | 6 mc | 4,29 | 25,74 | 23 | 5,92 | 31,66 |
| Razem | | | | | 355,52 | | 81,77 | 437,29 |

Dystrybucja energii elektrycznej

| | Strefa | Okres zużycia | Ilość | Cena netto [zł] | Wartość netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Wartość brutto [zł] |
|-------------------------|------------|-------------------|-----------|-----------------|--------------------|----------------|------------------|---------------------|
| Oplata jakościowa | | 06.03.19-05.04.19 | 202 kWh | 0,0125 | 2,53 | 23 | 0,58 | 3,11 |
| Oplata jakościowa | | 06.04.19-02.09.19 | 992 kWh | 0,0130 | 12,90 | 23 | 2,97 | 15,87 |
| Oplata sieciowa zmienna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,1349 | 161,07 | 23 | 37,05 | 198,12 |
| Oplata OZE | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,00000 | 0,00 | 23 | 0,00 | 0,00 |
| Oplata kogeneracyjna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,00158 | 1,89 | 23 | 0,43 | 2,32 |
| Oplata sieciowa stała | | 06.03.19-05.04.19 | 0,1667 mc | 9,29 | 1,55 | 23 | 0,36 | 1,91 |
| Oplata sieciowa stała | | 06.04.19-02.09.19 | 5,8333 mc | 10,29 | 60,02 | 23 | 13,80 | 73,82 |
| Oplata przejściowa | | 06.03.19-02.09.19 | 6 mc | 0,33 | 1,98 | 23 | 0,46 | 2,44 |
| Oplata abonamentowa | | 06.03.19-05.04.19 | 0,1667 mc | 0,5200 | 0,09 | 23 | 0,02 | 0,11 |
| Oplata abonamentowa | | 06.04.19-02.09.19 | 5,8333 mc | 0,4000 | 2,33 | 23 | 0,54 | 2,87 |
| Razem | | | | | 244,36 | | 56,20 | 300,56 |

Sprzedaż i dystrybucja energii elektrycznej

| | | | | | | | | |
|--------------|--|--|--|--|---------------|--|---------------|---------------|
| Razem | | | | | 599,88 | | 137,97 | 737,85 |
|--------------|--|--|--|--|---------------|--|---------------|---------------|

* Rodzaj odczytu:

R - odczyt rzeczywisty dokonany przez kontrolera; Z - odczyt zdalny; S** - odczyt szacowany (prosimy o weryfikację stanu licznika); K - odczyt zgłoszony przez Klienta

This is a real bill - it looks dirty, but the seller simply uses recycled paper.

Sprzedawca: _____

Miejsce dostarczania energii:
Warszawa,
Grupa taryfowa: G11
Produkt: Najprostsza dla Ciebie

Rozliczenie sprzedaży i dystrybucji energii elektrycznej w okresie od 06.03.2019 do 02.09.2019

| Lp. Pozycja | Netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Brutto [zł] |
|--|--------------|----------------|------------------|---------------|
| 1. Wartość prognozowana | 683,10 | 23 | 157,14 | 840,24 |
| 2. Należność za faktyczne zużycie | 599,88 | 23 | 137,97 | 737,85 |
| Wartość prognozowana minus należność za faktyczne zużycie | 83,22 | | 19,17 | 102,39 |

Nadpłata 102,39 zł jest uwzględniona w kwocie do zapłaty na kolejny okres

Prognozy na okres rozliczeniowy od 01.10.2019 do 31.03.2020

| Lp. | Nr dokumentu | Okres | Netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Brutto [zł] | Nadpłata [zł] | Kolejne płatności | |
|--------------|--------------|-------------------|---------------|----------------|------------------|---------------|---------------|-----------------------|------------------|
| | | | | | | | | Kwota do zapłaty [zł] | Termin płatności |
| 1. | 222012858831 | 01.10.19-30.11.19 | 263,88 | 23 | 60,70 | 324,58 | 102,39 | 222,19 | 12.11.19 |
| 2. | 242000217840 | 01.12.19-31.01.20 | 263,88 | 23 | 60,70 | 324,58 | | 324,58 | 10.01.20 |
| 3. | 223011849969 | 01.02.20-31.03.20 | 263,88 | 23 | 60,70 | 324,58 | | 324,58 | 10.03.20 |
| Razem | | | 791,64 | | 182,10 | 973,74 | 102,39 | 871,35 | |

Szczegółowe rozliczenie zużycia znajduje się na kolejnej stronie.

Bank Pekao SA numer konta: _____

W tytule przelewu proszę podać numer faktury.

1/2

On the first page we will usually find information about:

- the recipient
- the seller
- the place of energy supply
- settlement period, date of issuing an invoice
- a tariff group
- the account number of the deposit account

If the account number changes, you should confirm this directly with the seller, so that you do not become a victim of criminals.

The settlement contains information about the predicted consumption (for which the customer has already paid) and information about the actual consumption in the period covered by the bill.

Rozliczenie sprzedaży i dystrybucji energii elektrycznej w okresie od 06.03.2019 do 02.09.2019

| Lp. Pozycja | Netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Brutto [zł] |
|--|--------------|----------------|------------------|---------------|
| 1. Wartość prognozowana | 683,10 | 23 | 157,14 | 840,24 |
| 2. Należność za faktyczne zużycie | 599,88 | 23 | 137,97 | 737,85 |
| Wartość prognozowana minus należność za faktyczne zużycie | 83,22 | | 19,17 | 102,39 |

Nadpłata 102,39 zł jest uwzględniona w kwocie do zapłaty na kolejny okres

Prognozy na okres rozliczeniowy od 01.10.2019 do 31.03.2020

| Lp. | Nr dokumentu | Okres | Netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Brutto [zł] | Nadpłata [zł] | Kolejne płatności | |
|--------------|--------------|-------------------|---------------|----------------|------------------|---------------|---------------|-----------------------|------------------|
| | | | | | | | | Kwota do zapłaty [zł] | Termin płatności |
| 1. | 222012858831 | 01.10.19-30.11.19 | 263,88 | 23 | 60,70 | 324,58 | 102,39 | 222,19 | 12.11.19 |
| 2. | 242000217840 | 01.12.19-31.01.20 | 263,88 | 23 | 60,70 | 324,58 | | 324,58 | 10.01.20 |
| 3. | 223011849969 | 01.02.20-31.03.20 | 263,88 | 23 | 60,70 | 324,58 | | 324,58 | 10.03.20 |
| Razem | | | 791,64 | | 182,10 | 973,74 | 102,39 | 871,35 | |

Here you will find information on the projected electricity consumption for the next 6-month period.

Depending on the contract, the settlement periods may vary.

Part of the reading was estimated, but the second reading was made by an employee of the energy seller.

Here you will find information on the charges for the sale of electricity.

This section provides information on the charges for the distribution of electricity. These are transmission system related charges.

| Wskazania układu pomiarowego | | | | | | | Rodzaj odczytu* | Zużycie [kWh] |
|------------------------------|------------|-------------------|-------------------------------|---------------------------|--|-----|-----------------|---------------|
| Numer licznika | Strefa | Okres zużycia | Poprzednie wskazanie licznika | Obecne wskazanie licznika | | | | |
| | całodobowa | 06.03.19-05.04.19 | 2 161,00 | 2 363,43 | | S** | 202,43 | |
| | całodobowa | 06.04.19-02.09.19 | 2 363,43 | 3 355,00 | | R | 991,57 | |
| Razem | | | | | | | 1 194,00 | |

| Sprzedaż energii elektrycznej | | | | | | | | | |
|-------------------------------|------------|-------------------|-----------|-----------------|--------------------|----------------|------------------|---------------------|--|
| | Strefa | Okres zużycia | Ilość | Cena netto [zł] | Wartość netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Wartość brutto [zł] | |
| Energia czynna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,2762 | 329,78 | 23 | 75,85 | 405,63 | |
| Oплата handlowa | | 06.03.19-02.09.19 | 6 mc | 4,29 | 25,74 | 23 | 5,92 | 31,66 | |
| Razem | | | | | 355,52 | | 81,77 | 437,29 | |

| Dystrybucja energii elektrycznej | | | | | | | | | |
|----------------------------------|------------|-------------------|-----------|-----------------|--------------------|----------------|------------------|---------------------|--|
| | Strefa | Okres zużycia | Ilość | Cena netto [zł] | Wartość netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Wartość brutto [zł] | |
| Oплата jakościowa | | 06.03.19-05.04.19 | 202 kWh | 0,0125 | 2,53 | 23 | 0,58 | 3,11 | |
| Oплата jakościowa | | 06.04.19-02.09.19 | 992 kWh | 0,0130 | 12,90 | 23 | 2,97 | 15,87 | |
| Oплата sieciowa zmienna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,1349 | 161,07 | 23 | 37,05 | 198,12 | |
| Oплата OZE | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,00000 | 0,00 | 23 | 0,00 | 0,00 | |
| Oплата kogeneracyjna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,00158 | 1,89 | 23 | 0,43 | 2,32 | |
| Oплата sieciowa stała | | 06.03.19-05.04.19 | 0,1667 mc | 9,29 | 1,55 | 23 | 0,36 | 1,91 | |
| Oплата sieciowa stała | | 06.04.19-02.09.19 | 5,8333 mc | 10,29 | 60,02 | 23 | 13,80 | 73,82 | |
| Oплата przejściowa | | 06.03.19-02.09.19 | 6 mc | 0,33 | 1,98 | 23 | 0,46 | 2,44 | |
| Oплата abonamentowa | | 06.03.19-05.04.19 | 0,1667 mc | 0,5200 | 0,09 | 23 | 0,02 | 0,11 | |
| Oплата abonamentowa | | 06.04.19-02.09.19 | 5,8333 mc | 0,4000 | 2,33 | 23 | 0,54 | 2,87 | |
| Razem | | | | | 244,36 | | 56,20 | 300,56 | |

| Sprzedaż i dystrybucja energii elektrycznej | | | |
|---|--|---------------|---------------|
| Razem | | | |
| | | 599,88 | 137,97 |
| | | | 737,85 |

* Rodzaj odczytu:
R - odczyt rzeczywisty dokonany przez kontrolera; Z - odczyt zdalny; S** - odczyt szacowany (prosimy o weryfikację stanu licznika);
K - odczyt zgłoszony przez Klienta

Dystrybucja energii elektrycznej

| | Strefa | Okres zużycia | Ilość | Cena netto [zł] | Wartość netto [zł] | Stawka VAT [%] | Podatek VAT [zł] | Wartość brutto [zł] |
|-------------------------|------------|-------------------|-----------|-----------------|--------------------|----------------|------------------|---------------------|
| Opłata jakościowa | | 06.03.19-05.04.19 | 202 kWh | 0,0125 | 2,53 | 23 | 0,58 | 3,11 |
| Opłata jakościowa | | 06.04.19-02.09.19 | 992 kWh | 0,0130 | 12,90 | 23 | 2,97 | 15,87 |
| Opłata sieciowa zmienna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,1349 | 161,07 | 23 | 37,05 | 198,12 |
| Opłata OZE | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,00000 | 0,00 | 23 | 0,00 | 0,00 |
| Opłata kogeneracyjna | całodobowa | 06.03.19-02.09.19 | 1 194 kWh | 0,00158 | 1,89 | 23 | 0,43 | 2,32 |
| Opłata sieciowa stała | | 06.03.19-05.04.19 | 0,1667 mc | 9,29 | 1,55 | 23 | 0,36 | 1,91 |
| Opłata sieciowa stała | | 06.04.19-02.09.19 | 5,8333 mc | 10,29 | 60,02 | 23 | 13,80 | 73,82 |
| Opłata przejściowa | | 06.03.19-02.09.19 | 6 mc | 0,33 | 1,98 | 23 | 0,46 | 2,44 |
| Opłata abonamentowa | | 06.03.19-05.04.19 | 0,1667 mc | 0,5200 | 0,09 | 23 | 0,02 | 0,11 |
| Opłata abonamentowa | | 06.04.19-02.09.19 | 5,8333 mc | 0,4000 | 2,33 | 23 | 0,54 | 2,87 |
| Razem | | | | | 244,36 | | 56,20 | 300,56 |

- **quality fee** - is related to the costs of maintaining appropriate electricity parameters; the fee depends on the amount of energy consumed;
- **variable network charge** - is related to the costs of electricity distribution; the charge depends on the amount of energy consumed;
- **RES fee** - results from mechanisms and instruments supporting generation of electricity from renewable sources
- **CHP fee** - support for units producing electricity and heat simultaneously;
- **fixed network fee** - related to fixed costs of maintenance and operation of power grids;
- **transitional fee** - related to the costs of liquidation of long-term contracts; for households it depends on annual electricity consumption
- **subscription fee** - calculated on the basis of justified costs incurred in connection with reading meters and settlement systems and their control;

Thank you for your attention!

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Energy consumption management

Real consumption and estimated bills



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

WHAT DO WE FREQUENTLY CHECK IN THE INVOICE?

- The invoice consists of many elements, but we usually stop at checking the basic information - the billing period the invoice relates to and how much we have to pay.
- The issue of the billing period is definitely worth checking, because it is still most often associated with the **forecast energy consumption system**. The forecast is based on current energy consumption in a similar period, e.g. last winter. And the situation could have been completely different - the winter was very cold, and we were heating the apartment with an electric stove, which is no longer the case.

THE FORECAST MAY BE UNDERESTIMATED OR OVERESTIMATED

We will pay more or less than we actually should. If an overpayment occurs, it can be refunded to us or credited to future invoices if we do not request the payback of the overpayment.

Therefore, it is good to keep track of the forecasted energy consumption and the actual consumption - from the meter reading. Not only by comparing bills from several settlement periods, but also, every now and then, writing down the meter status with the date by yourself, and compare it with the invoice data.

The actual reading from the meter by a collector can be every 12 months, 6, 2 or every month - the choice is up to us, but the shorter the period, the more we will pay the subscription fee for the service, visits of the collector, etc.

FORECASTED ENERGY CONSUMPTION SHALL CONSIST OF TWO COMPONENTS

- How much energy will be sold to us and how much we will pay for it.
- How much will we pay in this period for its distribution to us, i.e. delivering it through the power grid.

FROM TIME TO TIME WE WILL GET THE SETTLEMENT OF THE SALE AND DISTRIBUTION OF ELECTRICITY

The settlement will be a pledge of the fees incurred by us, as indicated in the forecasts, with the amount due for actual consumption, calculated on the basis of a reading of the collector.

It is definitely not a satisfactory system and certainly makes it difficult to control not only the household budget but also the effective management of energy consumption in the household.

Thank you for your attention!

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Change of energy seller

European consumers are free to change their energy supplier. The provisions of European and national law regulate this procedure in detail.



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

The consumer has the right to:

- Change of seller free of charge
- Equal treatment
- Fair commercial practices

The basis for national regulations is:

- Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity
- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas

In both directives - in Article 3 - we will find the following principle: Member States shall ensure that, where a customer, while respecting contractual conditions, wishes to change supplier, the change is effected by the operator(s) concerned within three weeks.

The supplier shall not impose any unreasonable restrictions that would cause any hindrance to the change.

Within six weeks of switching, the consumer should receive a final settlement from the previous seller.

The Directives require the designation of a national regulator to oversee the market, including the right to switch suppliers freely.



Urząd Regulacji
Energetyki

National regulations: Poland

(Source: ure.gov.pl)

1. The recipient selects the supplier and concludes the sales contract.

The new sales contract should enter into force on the date of the expiry of the sales contract with the current supplier - this solution guarantees continuity of sales. The recipient may ask the new seller about the possibility of concluding a comprehensive contract (instead of two contracts - sales contracts and contracts for the provision of distribution services)

2. The recipient terminates the existing sales contract.

In the case of the first change, the customer usually terminates the so-called comprehensive agreement, i.e. covering both conditions for the sale of electricity and provision of the distribution service.

3. The customer concludes a distribution service contract.

After terminating the comprehensive contract, in addition to the new sales contract with the selected supplier, the recipient concludes a distribution service contract with the distribution system operator. This contract enters into force on the date of termination of the comprehensive contract. It is important that the recipient may enter into a new distribution service agreement for an indefinite period. In this case, it is not necessary to change it with subsequent supplier changes.

National regulations: Poland

(Source: ure.gov.pl)

4. The recipient informs the distribution system operator about the conclusion of the sales contract with the new supplier.

The notification is made using the form provided by the distribution system operator (available on the operator's website).

5. Possible adaptation of measuring and billing systems (meters).

A change of supplier may require an adjustment of the measuring and billing systems. The costs of adjusting the configuration are borne by the owner, which in the case of household customers is the distribution system operator.

6. Meter reading and final settlement with the current supplier.

In the case of meters without data transmission, such reading may be delayed, but it should not take place later than within 5 business days after changing the supplier. The meter provides the current and the new supplier with the reading as of the day of switching the seller - the final settlement is made on this basis.

National regulations: Poland

(Source: ure.gov.pl)

The consumer may grant a power of attorney to the new seller to carry out the activities necessary to carry out the change. Then the process is as follows:

1. The recipient selects the seller and concludes the sales contract.

In this step, the recipient authorizes the new seller to represent him before the distribution system operator and before the current seller. In this case, the new seller - on behalf of the recipient - performs the necessary formalities, i.e. terminates the agreement of the current seller, concludes (if necessary) a contract for the provision of distribution services with the distribution system operator.

2. Meter reading and final settlement with the current seller.

Thank you for your attention!

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Smart metering

The implementation of smart metering is a prerequisite for sustainable energy use. Such tools allow consumers to manage their energy use in real-time.



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Smart metering - a European issue

In accordance with:

- Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity (repealed with effect from 1 January 2021 and replaced by Directive 2019/944) and
- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas



Member States shall ensure the implementation of smart metering systems that enable consumers to participate actively in the market for the supply of electricity and in the market for the supply of gas.

The implementation of these metering systems may be subject to an economic assessment of all the long-term costs and benefits to the market and to the individual consumer. Also choosing the cost-effective form of smart metering, distribution system, and the period of metering should be assessed.

What is Smart Metering?

A smart metering system is an electronic system that can measure the amount of electricity entering the grid and the consumption of electricity, providing more data than a conventional meter, and can transmit and receive data for the purpose of informing, monitoring, and controlling.

A similar definition may be adopted for gas.

In the case of electricity, it is assumed that a meter should have the following functions:

- remote transmission of data, without the need for visits from a company employee,
- allows paying for the electricity actually used, not on the basis of forecasts,
- current data shown on the display and remotely accessed (e.g. through an application or a website),
- notification about supply failures.

Data can be encrypted for privacy concerns!

Status of implementation

As of July 2018, all but two Member States have conducted at least one CBA for a large-scale rollout of electricity smart meters to at least 80% by 2020, with the results for most of these being positive. This can be seen in Figure 1. Regarding gas smart meters, the majority of Member States either did not conduct a CBA or did not specify whether the CBA conducted was for gas as well as electricity. But for those Member States that did perform a CBA for the roll-out of gas smart meters, the results were most of the time positive.

(https://www.buildup.eu/sites/default/files/content/mj0220176enn.en_.pdf)

(space for information on the level of smart metering implementation in the country of the project partner)

Other proposals for solutions

Smart meters will usually be installed at the expense of the trader - the system operator and the recipient are unlikely to have any influence on the meter type.

However, when planning to renovate or build a house, the consumer can design his own energy or gas management system.

- There are also devices available on the market that can simply be connected to a specific point (socket) in order to measure or manage a point and thus the devices connected to that point.
- NOTE: On the market there are a lot of advertisements praising the devices, which, for example, after connecting to the socket "straighten" the current and allegedly contribute to huge savings.

Thank you for your attention!

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Complaints

The right to complain is a fundamental consumer right.

The trader is obliged to accept any complaint and to respond to it. The trader must not inhibit complaints. He is also obliged to accept justified complaints.



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Where do I find out what my rights are?

In accordance with:

- Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2009/72/EC
- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas



Member States shall ensure the provision of **single points of contact** to provide consumers with all necessary information concerning their rights, current legislation and the means of dispute settlement available to them in the event of a dispute. Such contact points may be part of general consumer information points.

In Poland, a contact point has been established at the Energy Regulatory Office (Information Point for Energy and Gas Fuels Consumers, ure.gov.pl).

According to the Directives (Annex 1 to both Directives), consumer protection measures must ensure that customers receive information on:



- the service quality level,
- any compensation and the refund arrangements which apply if contracted service quality levels are not met, including inaccurate and delayed billing,
- consumer rights, including the handling of complaints,
- the possibility to benefit from transparent, simple and inexpensive procedures for dealing with complaints.

All consumers shall have the right to good quality services and to have their complaint handled by their energy service provider.

Such out-of-court dispute resolution procedures shall enable disputes to be settled fairly and promptly, preferably within three months, and shall include, where warranted, a system of reimbursement and/or compensation.

It should be reminded that, according to Directive 2013/11/EU of the European Parliament and of the Council of 21 May 2013 on alternative dispute resolution for consumer disputes - Article 13 - a trader who does not settle a complaint must inform the consumer of the possibility of referring the matter to the appropriate ADR institution (alternative dispute resolution).

Detailed information on national regulations:

(this slide can describe the national procedure)



Thank you for your attention!

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ADR in disputes with energy sellers

Complaints and disputes are part of the consumer's functioning on the market. As a rule, it is up to the court to decide whether a party is right or wrong. Unfortunately, court proceedings are often lengthy and costly.

It is worth using alternative methods (ADR)



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Each EU country - on the basis of Directive 2013/11/EU of the European Parliament and of the Council of 21 May 2013 on alternative dispute resolution for consumer disputes - was obliged to introduce an ADR (*Alternative Dispute Resolution*) system for consumers.



<https://koordynator.ure.gov.pl>

Each ADR institution must comply with the principles set out in the Directive:

- Expertise, independence and impartiality (Article 6)
- Transparency (Article 7)
- Effectiveness (Article 8)
- Fair treatment (Article 9)
- Voluntary activities (Article 10)
- Legality (Article 11)

The coordinator shall act when a dispute arises under an agreement concerning:

- connection to the power, gas or heat distribution network, including the connection of a micro installation,
- provision of electricity or natural gas transmission or distribution services,
- provision of heat transmission and distribution services,
- sales,
- comprehensive services,
- if the value of the object of dispute is not lower than PLN 50 and not higher than PLN 50 000.

This process is intended to assist the conflicted parties in reaching an agreement. The coordinator does not issue a binding decision. This means that if the parties fail to reach an agreement in this proceeding, it will be necessary to refer the matter to a court.

The proceedings are voluntary for the parties and the outcome depends on the will and cooperation of the consumer and the enterprise.

Reaching an amicable settlement to a dispute may require concessions. An amicable settlement means that the parties will have to waive some of their claims in order to reach an amicable settlement. However, the reward for this will be a quick resolution of a dispute, which may be difficult to resolve in an ordinary court.

Thank you for your attention!

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Debt and recovery

Debt may occur if the consumer does not pay the due amount on time.
However, the seller's request will not always be justified.

Where the demand for payment results from a contract where prohibited terms are found or where unfair market practices have occurred, the consumer may effectively contest the debt. Unfair practices may also occur in the recovery process.



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

One of the basic principles of Civil Law is the obligation to honour obligations.

If the charge results from a fair contract and the actual energy consumption, the supplier must receive payment.

The supply company - in the absence of payment - may, for example:

- call on the consumer to pay statutory interest
- sue the consumer in court for payment and then, on the basis of a final judgment, enforce payment by a competent authority (e.g. a bailiff)
- sell the debt to another entity

Demand for payment

- Where a debt exists and there are no grounds for contesting it, the debt must be paid in order to avoid higher costs - e.g. interest or adequate and lawful penalties.
- In the event of a consumer's difficult financial situation, it is best to enter into negotiations with the trader, e.g. to pay in instalments or to go to a support body; contact with the seller should not be avoided.
- The seller may request payment but must do so in a proportionate and morally correct manner. Threatening, harassing at home, at work or otherwise exerting psychological pressure is unacceptable.

NOTE: a creditor (whoever owes the debt) may sell the debt by informing the debtor. Then the buyer becomes the creditor.

Shutdown of electricity or gas supply

In addition to a request for payment, the seller may cut off the supply of electricity or gas. This procedure should be governed by national rules.

In Poland, this can happen when:

- under certain conditions, the recipient will not agree to install a prepayment device for him/her
- it has been established after inspection that the installation of the recipient poses a risk to life, health or the environment,
- it was found after the inspection that there was illegal off-take of gaseous fuels or energy,
- the customer is in default of payment for at least 30 days after the expiry of the payment period.

The supplier company must give prior notice of the intention to cut off supply and allow recipient to settle the payment.

The cut-off cannot be made when a complaint is pending or the case is being considered by the Negotiation Coordinator of the President of the Energy Regulatory Office.

Is there any debt at all?

If you are in doubt about the conduct of the seller, it is advisable to consult a consumer protection institution before you pay.

It may turn out that there is no debt at all because the trader has used unfair market practices, or the contract prohibits clauses.

The claim may also result from the meter reading questioned by the claimant, in which case the court will decide whether the claim is justified or not.

You can also contact Alternative dispute resolution (ADR) institutions for help.

The statute of limitations is an important element in determining whether a claim for payment can be made. Every debt is subject to a statute of limitations. Depending on the country, the expiry of the statute of limitations may, for example, result in the debt being extinguished or in an inability to claim payment before a court.

In Poland, the statute of limitations for the sale of electricity expires after 2 years, and for the distribution of electricity and the sale of gas expires after 3 years.

Thank you for your attention!

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Suspension of energy supply

When can an energy company suspend the supply of gas or electricity?



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Suspension of Energy supply can occur if:

- a customer who has delayed payment for gas or electricity consumption or provided services for at least one month twice in the consecutive 12 months, does not agree to installation of a prepaid metering and a settlement system for the delivered gaseous fuel or electricity;
- it is established as a result of an inspection, that the installation at the recipient's site poses an immediate risk to life, health or the environment;
- it has been found as a result of an inspection, that there has been an illegal gas or energy extraction;
- the recipient is in default of payment for delivered services for at least 30 days after the term of payment.

Before the suspension

A customer who is in default of payment for services rendered or for gaseous fuel or energy received, shall be notified in writing by the energy company of the intention to suspend the supply of gaseous fuels, electricity or heat. In the event that the customer fails to pay his/her outstanding and current liabilities within 14 days of receiving that notification.

If the reasons justifying the suspension of the supply of gaseous fuels or energy cease to exist

- The energy company shall immediately resume supply.
- The resumption of electricity or gas supply will require an additional resumption fee. The fee results from the tariff for the distribution of electricity or gaseous fuels of the enterprise to whose network the customer's installation is connected to.

In the event of a delay in payment for the services rendered or for electricity or gas consumed, supply shall not be suspended

- Before the consideration of the complaint submitted by the recipient, no later than within 14 days from the date of receipt from the energy company with the notification of the intention to suspend supplies.
- The enterprise is obliged to consider a complaint submitted in this manner within 14 days from the date of its submission. If the complaint has not been considered within this period, it shall be deemed to have been accepted.
- Until the dispute is resolved by the Negotiation Coordinator attached to the President of the Energy Regulatory Office, to whom, within 14 days from the date of receipt of the notification from the energy company that the complaint has not been accepted, the household customer submitted a request for resolution of the dispute.

What to do if you have problems with paying bills on time?

- When we have delayed the payment for gas, electricity or heating, or services rendered at least twice in consecutive 12 months - it is worth to agree for the installation of a prepaid meter and ask the energy company for detailed explanations of how this type of meter works and how to use the card for it.
- If you have trouble paying your bills on time, please contact your energy company immediately.
- Many energy companies have introduced programs to help customers who have difficulties with paying bills regularly.

Resumption of supply of gaseous fuels or electricity

If the energy company has suspended the supply of gaseous fuels or energy to the household, and the recipient has submitted a complaint, the energy company shall be obliged to resume the supply of gaseous fuels or energy within 3 days from the date of receipt of the complaint and continue to supply gaseous fuels or energy until its consideration.

- We cannot ignore the notification of an energy company about its intention to suspend the supply of electricity or gaseous fuels. The bill must be paid within the time limit set additionally by the energy company.
- If energy or gas supplies have already been suspended - you should immediately pay the overdue bill and inform the energy company, which will resume delivery immediately.

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Basic knowledge about the social system and energy poverty



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

The rules of social assistance

- Social assistance is an institution of the state social policy, aimed at enabling individuals and families to overcome difficult life situations which they are unable to overcome using their own powers, resources, and means.
- Social assistance supports individuals and families in their efforts to meet their essential needs and enables them to live in conditions compatible with human dignity. It is also the task of social assistance to prevent difficult life situations by actively supporting individuals and families in the process of becoming self-sufficient and integrated with the society.

(The presentation is based on materials from the website of the Polish Ministry of Family, Labour and Social Policy.)

Main objectives of social assistance

- Supporting individuals and families in overcoming difficult life situations, leading them to become as self-sufficient as possible, and enabling them to live in conditions compatible with human dignity,
- Providing income at the level of social intervention - for people with no income or low income, in post-working age and people with disabilities,
- Providing an income up to the level of social intervention for individuals and families with low incomes who require periodic support,
- Providing professional assistance to families affected by social pathologies, including domestic violence,
- Integration of socially excluded people with the social environment,
- Creation of a network of social services that is adequate to the needs in this area.

What is social assistance?

Social assistance consists primarily of:

- granting and paying social benefits,
- social work,
- maintaining and developing the necessary social infrastructure,
- analysing and evaluating the causes of demand for social benefits,
- implementation of tasks resulting from recognized social needs,
- developing new forms of social assistance and self-help within the framework of identified needs.



What are the rules of providing social assistance?

- A person or a family seeking social assistance can apply to the social assistance centre in their place of residence - the centres are located in each municipality.
- Decision to grant or refuse aid must be preceded by a field interview on the family conducted by a social worker.
- Decisions concerning social assistance benefits are issued in writing.
- Persons and families benefiting from social assistance are obliged to cooperate in solving their difficult life situation.

At whose request is social assistance provided and who is entitled to it?

At whose request is social assistance provided?

- The person concerned
- His/her legal representative
- Another person, with the consent of the person concerned or his/her legal representative.
- Social assistance may also be provided ex officio.

The right to cash benefits shall be granted to persons and families whose income does not exceed the income criteria established on the basis of the social intervention threshold. The income criteria and, accordingly, the amounts of cash benefits shall be updated and published in a relevant regulation.

(Presentation prepared on the basis of information from the website of the Polish Ministry of Family, Labour and Social Policy.)

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Consumers exposed to energy poverty

Who are they?



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Energy poverty is a complex and multidimensional problem

At the moment we do not have a statutory definition of energy poverty in Poland.

- It cannot be said that energy poverty = economic poverty
- In the absence of a statutory definition, the following indicators are most often adopted:
 - low income
 - high energy costs
 - living in a building with low energy efficiency

The first two indicators refer to traditional definitions - Low Income High Costs (LIHC) - and indicate the importance of these elements, but do not fully reflect the existence or risk of energy poverty. High costs, low-income result in a large share of energy expenditure in the household budget.

What generates energy poverty?

Energy poverty is multidimensional, concerning the following issues:

- economic - poverty, low income in relation to high costs;
- social - social exclusion, low level of education, unemployment, difficult life situations such as disability;
- health - the relationship between the very broadly defined "climate for living" and health;
- housing – or buildings and their technical condition, resulting in low energy efficiency.

These issues most often coexist or even result from one another.

Low energy efficiency of buildings and the occurrence of energy poverty

- High share of energy costs in the household budget, necessary to maintain thermal comfort or a healthy indoor climate, can result from humidity in the building, leaking roofs, leaking windows, lack of insulation of walls and ceilings and many other issues related to the technical condition of the building or apartment, but also to the way it is used.
- This applies to many single-family buildings erected before 1946 in rural areas, but also to old multi-family municipal or social buildings in cities.
- Without improving the energy efficiency of buildings - in the cost-optimal range, i.e. without thermomodernization (expensive but providing the best results) or renovation, replacement of heat sources, etc. - in many cases, it will not be possible to adequately address energy poverty.

Who are consumers exposed to or at risk of energy poverty?

- According to the data of the Central Statistical Office from 2017 collected in the Household Budget Survey, 10% of households in Poland were affected by energy poverty.
- Approximately half of these households were also low-income. Apparently, energy poverty is not directly derived from poverty. (1)

(1) Information and data quoted after: "Measurement of energy poverty in Poland using a multidimensional energy poverty indicator", 18 July 2019, Institute for Structural Research



Facts and figures on energy poverty

- 12.2% of the Polish population, i.e. 4.6 million people (1.3 million households), experience energy poverty.
- 5.6% of Poland's population, i.e. 2.1 million people, experience energy poverty but are not low-income.
- 6.6% of the population of Poland, i.e. 2.5 million people, experience poverty both in terms of income and energy.
- 20% of the inhabitants of rural areas experience energy poverty; altogether, they constitute 2/3 of all energy-poor people in Poland.
- 25% of people experiencing energy poverty are pensioners.

(Data from a study by the Institute for Structural Research: "How to reduce energy poverty in Poland" 27 January 2018)



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Energy poverty - where and when to seek advice and help



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Financial assistance

When energy poverty results directly from economic poverty, the help of specialised aid institutions - social welfare centres - is necessary.

Social welfare centres are located in every municipality. The decision to grant cash benefits is made on the basis of an analysis of the financial situation of the household, but not only.

The benefits are:

- temporary allowance (housing + energy)
- special purpose allowance (e.g. for the purchase of fuel)
- in-kind support

Such social interventions alleviate the symptoms of energy poverty, but do not solve the problem in a permanent way, especially when it is a complex problem.

Energy allowance

A vulnerable electricity consumer is entitled to an energy allowance

It is granted by:

- **the decision of the mayor, chairman of the city council, head of the local authority, upon an application of a vulnerable electricity consumer. The payment of the energy allowance is a governmental task. The energy allowance is paid by the municipalities.**

A vulnerable consumer is a person who:

- applies for an energy allowance
- has been granted a housing allowance,
- is a party to a comprehensive agreement or an electricity sales contract concluded with an energy company
- lives in a place where electricity is supplied.

No separate income criteria have been established for granting the energy allowance.

Energy allowance

The criteria concerning the applicant's financial situation that qualify for granting the energy allowance are set out in the legislation on the housing allowance:

- 175% of the lowest pension for a single-person household;
- 125% of the lowest pension per household member.

In addition to the income criterion, there is a limit on the usable floor area of the dwelling, which may not exceed the normative floor area by more than:

- 30% or
- 50%, provided that the share of room and kitchen space in the usable area does not exceed 60%.

The standard usable floor area of a dwelling or a building containing only one dwelling (single-family house), considering the number of members of the household, shall not exceed:

- 35 m² for 1 person;
- 40 m² for 2 persons;
- 45 m² for 3 persons;
- 55 m² for 4 persons;
- 65 m² for 5 persons;
- 70 m² for 6 persons, and if the dwelling is occupied by more people, +5 m² for each person



How much is the energy allowance?

As of 1 May 2019, the energy allowance has changed. The new rates of the allowance were introduced by the Decree of the Minister of Energy of 11 April 2019 on the amount of energy allowance applicable from 1 May 2019 to 30 April 2020.

- for a single-person household - 11.37 PLN/month;
- for a household of 2 to 4 persons - 15.80 PLN/month;
- for a household of at least 5 persons - PLN 18.96 per month.

Source: <https://www.gov.pl/web/aktywa-panstwowe/jak-uzyskac-dodatek-energetyczny->

Guidance, sometimes combined with various aid instruments, but not social protection, is likely to help prevent or address the causes of energy poverty.

Instruments that address the causes of energy poverty are critical to tackling the problem. This objective is achieved through the following measures:

- Counselling (advice, training) on shaping energy-efficient behaviour contributes to removing the behavioural causes of energy poverty resulting from a lack of knowledge about the correct and efficient use of energy.
- Advice (training) on introducing energy efficiency improvements in households by replacing energy inefficient household appliances, which often contribute to problems with meeting energy needs. This group of activities includes e.g.: installing thermostats, replacing lightbulbs, replacing an old refrigerator with an energy-saving one. The costs of these measures differ.

(Based on the publication of the Institute for Structural Research: "How to reduce energy poverty in Poland" 27 January 2018.)

Advice - a tool to eradicate energy poverty

Advice and counseling related to thermo-modernization of residential buildings.

It is a costly but durable and long-term investment improving the poor technical condition of the building. It protects the building against heat loss, reduces energy demand and consumption.

It often has to be preceded by a professional energy audit, especially when the thermo-modernization is financed from preferential credit lines or is connected with tax reliefs.

Advice will probably be necessary if we want to carry out a small renovation or modernization of the apartment, e.g. replacement of windows or a heat source, to increase energy efficiency - incurring costs adequate to the results obtained.

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Social system actors/institutions



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- The ministry structures the social assistance policy.
- It defines directions, prepares solutions, develops standards and monitors their implementation.
- It prepares governmental and ministerial support programmes for persons and families at risk of social exclusion and programmes of active assistance for persons from special risk groups, including in particular persons affected by poverty.
- The ministry creates and improves service standards in social assistance organizational units, social employment entities and community-based services and monitors the process of their implementation.

Social assistance institutions

Social organizations, the Catholic Church, other churches, religious associations, foundations and other organizations are involved in social assistance.

Some organisations active in the area of energy poverty are:

- **Food Banks**

<https://bankizywnosci.pl/o-bankach-zywnosci/informacje-ogolne/>

- **The Polish Committee of EAPN**

<http://www.eapn.org.pl/>

- **The Working Community of Social Organisations (Wrzos)**

<http://www.wrzos.org.pl/>

These are the organisations that have already supported the activities of Federacja Konsumentów in the area of energy poverty and include the subject matter in their activities addressed directly to the recipient.

- **Regional centres of social policy**

At the voivodeship level there are two separate organisational structures - central and local government administration.

The central government tasks at the voivodeship level are performed by the voivode. The voivode's tasks in the field of social assistance are carried out by the social policy departments of voivodeship offices.

The local government tasks are performed by the Marshall of the voivodship with the help of the regional centre for social policy - an organisational unit established to perform social assistance tasks in self-governing voivodships.

Social assistance organizational units - cont.

- **Poviat family support centres**

Poviat family support centres are organisational units performing the tasks of the poviat in the field of social assistance. The tasks of poviat family assistance centres in cities with poviat rights are carried out by municipal social assistance centres (municipal family support centres).

- **Social welfare centres**

Social welfare centres are organisational units performing social welfare tasks in the municipality.

- **Specialised counselling centres**

Specialised counselling, in particular legal, psychological and family counselling, shall be provided to persons and families who have difficulties or need support in solving their life problems, regardless of their income.

- **The register of specialised counselling units is maintained by the voivode.**

Other social assistance organisations

From the point of view of solving problems related to energy poverty these units in the social assistance system are not the main drivers. However, we name them as they are components of the social system:

- Social welfare centres,
- Assistance centres (day care, including shelters and homes for the homeless),
- Crisis intervention centres.

(The presentation is based on materials from the website of the Polish Ministry of Family, Labour and Social Policy)

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Personal Data Protection in STEP

GDPR (2016/679) – specific obligations on the entity that will process the data for the project purposes



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

As part of the STEP project, the organization is obliged to apply the GDPR regulation **when processing personal data of natural persons.**

Processing is any operation on personal data. It is, in particular, collecting data, saving data, organizing, transferring data to third parties (e.g. other organizations), as well as data archiving.

"Personal data" means information relating to an identified or identifiable natural person ("data subject"); an identifiable natural person is a person who can be directly or indirectly identified, in particular on the basis of an identifier such as name and surname, identification number, location data, internet identifier or one or more specific physical, physiological, genetic, mental factors, the economic, cultural or social identity of a natural person;

As defined above, we will collect personal data as part of the project.

The data administrator is the entity that independently or jointly with others determines the purposes and methods of personal data processing. In this approach, the administrator can be any of the organizations participating in the project.

Data collection is limited by the adequacy principle. We collect only the data that is actually necessary for the needs of the project.

The administrator should create a document within the organization in which he will indicate which categories of data will be processed, and who will have access to this data.

How the collected personal data is secured depends on the organization.

Taking into account the state of technical knowledge, the cost of implementation as well as the nature, scope, context and purposes of processing as well as the risk of violating the rights or freedoms of natural persons with different probability and severity of the risk, the controller and the processor implement appropriate technical and organizational measures to ensure the level of security corresponding to this risk (...) – art. 32 ust. 1 GDPR.

However, in case of the **Moodle training platform** Project Partners are personal data administrators and are entrusting the users' data processing to the partner hosting the platform itself – Federacja Konsumentow. This Partner ensures that all entrusted personal data records remains in EU (Poland) and are processed solely for the purposes of online training and not transferred to any third party.

The consumer needs to know:

- who collects the data (name of the organization, its full identification data)
- for what purposes and how we will use the data,
- to whom we will transfer them (including whether the data will be transferred to a third country - e.g. using an IT system with servers outside the EU),
- how long will we use the data,
- information about the right to lodge a complaint with the supervisory authority,
- information on the voluntary nature of providing personal data
- profiling information.

We will also inform the consumer about his rights:

- request access to your personal data,
- request the correction of your personal data,
- request removal of your personal data,
- request to limit the processing of your personal data,
- data transfer requests,
- object to the processing of personal data,
- withdrawal of consent and lodging a complaint to the supervisory authority.

The required information is best provided to the consumer in writing, e.g. on an information form.

The data collector has to prove that he has provided the correct information to the consumer - this applies in particular to the collection of sensitive data.

The data collector will be provided with an information form and a form confirming that the information has been provided - the consumer should be asked to sign.

The information must be in plain language, clear and not misleading.

GDPR implementation in STEP

- When data collection is involved, consumers receive a clear project information sheet explaining how/why their data is being processed and the duration this is kept for
- Consumers have the contact details of the Data Protection Officer within the partner organisation handling their data
- Consumers, when participating in the project's research surveys, must present their consent for data processing, storage or for being re-contacted by the project partner involved
- Data is kept secure by the project partners
- ADE Research who is analysing the data only receives this in pseudomised format
- STEP website has a clear privacy policy translated in all project languages stating how the online users' data is managed

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The Energy Savings Evaluation Model (ESEM)



The STEP project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 847080.

Why an Energy Savings Evaluation Model (ESEM)?

The primary purpose of the Energy Savings Evaluation Model (ESEM) is to process and analyse data received from consumers and front-line workers during the STEP process, in order to evaluate the impacts of the project as a whole.

The aim is to establish which energy and cost-savings measures are most effective, using qualitative and quantitative feedback, and to profile the consumers participating in the scheme against a range of EU and national datasets.

To achieve this, data is gathered through a number of surveys, conducted with participants in the scheme.

The STEP programme involves training of energy advisors and frontline workers to provide advice to consumers and to conduct these surveys. Two types of surveys are conducted with consumers either in one-to-one advice sessions or in consumer workshops:

- Home and energy use survey
- SF12 Health & well-being survey

What is it for? How we use it?

The ESEM uses this data in three primary ways:

- To determine to what extent the sample groups are representative of people in their own countries, or of the EU as a whole
- To understand to what extent they may be at risk of energy poverty
- To calculate their expected energy use according to a range of criteria, measured against their actual measured usage.

Quantifying the savings achieved is complex and requires first to establish a baseline for each user in terms of both their expected energy use, and what they actually use – then to find out which energy saving, or economic measures have been recommended to them.

Participants who give permission are then re-contacted, to check whether they implemented the recommendations, and to understand the extent to which savings of money, energy or carbon dioxide have been made as a result of these.

A two step approach survey

Consumer engagement within the STEP project falls into two broad stages – giving advice, and later on, assessing the success of that advice. Accordingly, the ESEM follows those two stages.

- At the advice stage, Stage 1 of the ESEM uses surveys completed by consumers receiving advice in STEP sessions. These surveys establish the profile of these consumers, examining aspects of their homes, comfort levels, incomes, and the advice given in the sessions. Their energy needs are measured in order to set a baseline against which any improvements can be measured later.
- In Stage 2, the consumers are then followed up, generally around six months later, to assess whether the advice has been taken up, and if so, what benefits have been achieved.

Customer journeys and consent to participate

To receive advice, a consumer is likely to need to provide a significant amount of personal data, and may require follow up casework, permission for the adviser to act on behalf of the client and referrals to another organisation for support. These all require consent from the consumer, and this consent should be part of the advice agency delivery process.

BUT:

there is no obligation for a consumer to take part in research, so we need to be very clear on what consent is required for which part of the project.

PRN and data confidentiality

- The surveys should be completed by or with the consumer at the advice appointment. The client will be assigned a Participant Reference Number (PRN) which will be associated with all their interactions within the STEP project.
- The data from the surveys will then be input into the relevant data entry template for the survey using the PRN as identifier and the forms must be stored securely by the consortium partner.
- Only the consortium partner who makes contact with the consumer will have visibility of the client's personal contact information, and the STEP research and data partners will only have visibility of the PRN and survey responses. These data will not be visible by any other member of the consortium at individual PRN number, but only at aggregated and analysed level.

Consumer surveys during 1 to 1 advice and workshops

Consumers attending 1-1 advice appointments will receive detailed and personal energy advice. This type of contact is expected to have the biggest impact on the consumer and therefore requires the greatest amount of paperwork and data.

Stage 1: during advice

- **Consent to store and share survey data**
- 1-1 Survey
- HWB Survey
- **Consent for follow up**

Stage 2: follow up after 6 months

- 1-1 Follow up Survey
- HWB Follow up Survey

The same two stage approach is also valid for the consumer workshop appointments with a slightly reduced survey dimension due to the group restrictions. The HWB survey stays the same though.



Frontline workers – help needed

In case of frontline workers trained in framework of STEP, we are asking for some help in return. All trained advisors using the knowledge gained to help consumers are asked to have their clients complete the 1-1 survey and submit them to the responsible national project partner.

- We will assign each frontline worker an adviser code in this case and show them how to create the relevant PRN.
- Advisers will need to ensure that the consumers filling in the surveys give their consent to share their data and/or be recontacted for the research undertaken by the project
- Advisers will also be responsible for any follow up work
- Advisers will receive no retribution for their work
- Advisers should submit the consumer data to the consortium partner, who then submits it to ADE Research in pseudomised format
- Project partners will follow up on a regular basis with the frontline workers to catch-up on the consumers advised and surveys available

Ask your national STEP Partner organisation for more information – every help counts!



Thank you for your attention!

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