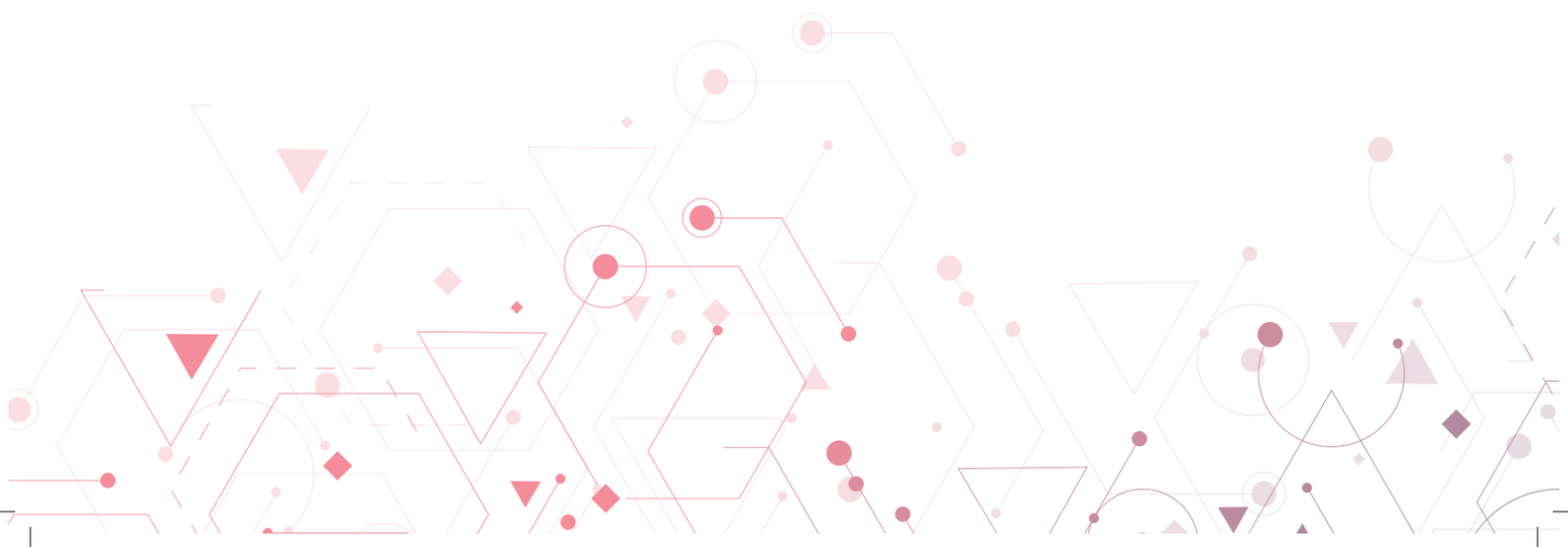
REPORT 2018

POWER SECTOR
FOR AIR QUALITY

PKEE
Polish Electricity
Association



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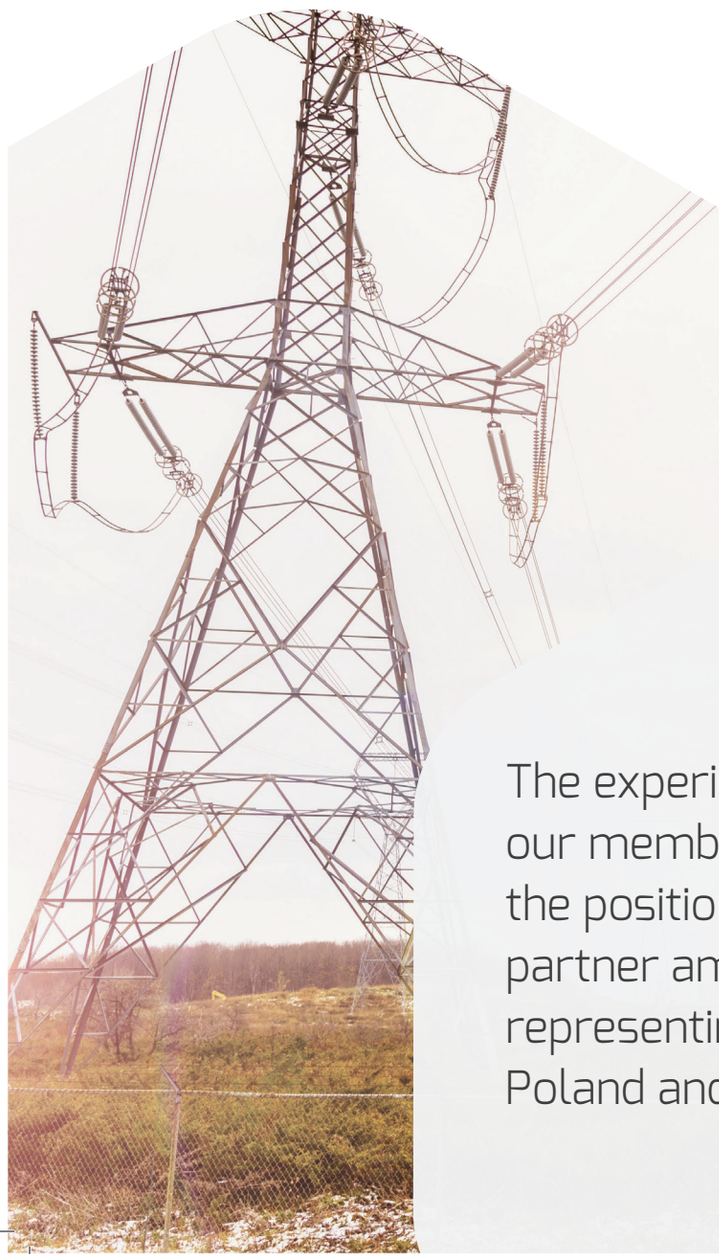
1.1 Polish Electricity Association

The Polish Electricity Association (PKEE) is an electricity industry association focusing its activities on issues of operation of the industry in modern market based economy. Thanks to PKEE's engagement both in Poland and in the European Union, the Polish energy sector may better respond to challenges relating to the European integration, assure security of electricity supply, competitive market, environment protection and development of state of the art technologies.

Opinion influencing activities of the PKEE and its collaboration with the public administration allows formation of a rational and sector friendly regulatory environment. The Association also provides an important forum for discussions about the energy industry. Consultations of legal acts and initiatives concerning the functioning of the Polish energy sector contribute towards its development.

PKEE is the only organisation representing the interests of the Polish energy sector in the Eurelectric - Union of the Electricity Industry – the biggest industry association in Europe. Representatives of PKEE actively participate in the proceedings of EURELECTRIC working groups in Brussels, developing positions and collaborating with foreign partners for the benefit of the European electricity sector.

Supporting members of the PKEE include both the biggest Polish electricity utilities and leading industry organisations. The experience and commitment of our members has allowed us to achieve the position of a trusted and proven partner among the organisations representing the electricity sector in Poland.



The experience and commitment of our members has allowed us to achieve the position of a trusted and proven partner among the organisations representing the electricity sector in Poland and in the EU.

Power Sector For Air Quality

1.2

Poland, a country with exceptionally rich and diverse environment, more and more often is seen as a country with very polluted, outright unbreathable air, a country on top positions of infamous "smog rankings".

Thus the question to be asked is – what are the causes of bad air quality in Poland? The first that comes to mind of an average Pole is the adverse influence of industry and utility energy sector mainly based on fossil fuels. Paradoxically it is hard to blame anyone for such perception of causes of smog and air pollution in general. Most of us, in fact, do not know the complexity of the processes of creation of hazardous compounds emitted to the atmosphere and do not know the main sources of creation of such substances.

Therefore, it's high time to start challenging certain myths and stereotypes with appropriate information and education. This is the objective of, among others, the "Power Sector for air quality" project and of this report that pinpoints the actual sources of polluting emissions causing smog and presents the initiatives of the energy sector aimed at prevention and reduction of this health threatening phenomenon.

Since over a dozen years, the energy sector in Poland has been undergoing a transition driven by environment and climate protection and care for human health. Polish energy industry groups have been undertaking and are continuing numerous initiatives intended to prevent and to reduce the adverse influence of the sector on natural environment.

The Polish Electricity Association, being aware of the need to boost information and education efforts concerning the general issue of smog, commences its "Power Sector for air quality" project. Its goal is to change the public mindset, develop appropriate citizenship attitudes and raise energy and environmental awareness of the Polish population.

This report and its presentation mark the beginning of the "Power Sector for air quality" project. The project provides for both information efforts and collaboration with the mass media, as well as educational activities aimed directly at the general population of everyday electricity users.

Air quality and smog problem in Poland

2.1 Pollutions and their sources

Emissions of atmospheric pollutants have direct adverse effect on our health, wellbeing, increase incidence of very serious diseases and significantly shorten life expectancy. Complicated, sometimes even a bit evil sounding names of chemical compounds, although hard to remember, are worth knowing, as their atmospheric concentration is decisive to our health condition and life expectancy.

So, how are the main air pollutants defined?

These are substances that have adverse impact on humans and the ecosystem, and their release into the atmosphere results in changes to chemical composition of air. The main pollutants directly adversely affecting human health are:

- particulate matter ("dust") (PM 10, PM 2.5),
- polycyclic aromatic hydrocarbons (PAH), including benzo[a]pyrene,
- nitrogen oxides,
- sulphur oxides,
- heavy metals.

Emission sources may be divided into, due to their spatial characteristics:

- point sources (e.g. power plant flue gas stack or industrial plant flue gas stack),
- line sources (e.g. vehicle traffic on roads),
- area sources (e.g. garbage dump),
- volume sources (e.g. single block of flats).

They may also be divided according to human activities sectors – e.g. industrial sources, transportation, agricultural, municipal sectors.

What are low stack emissions? 2.2

Lows stack emissions are ones released from sources located less 40 metres above ground level. They mainly originate from heating of the houses using coal and other solid fuels, often of low quality, additionally in stoves not meeting any of today's emissions standards (estimates indicate that only 15% of fossil fuel household stoves, with appropriate burning process observed, may emit harmful compounds within the allowable limits).

Additional negative aspect affecting the air quality is the low environmental awareness of the general public, high level of energy poverty and the fact that household stoves allow burning not only waste coal (culm and dust) but also ordinary household waste, including plastics. Culm and coal-dust have high sulphur, chlorine and ash content. Above-standard pollution levels with low stack emissions are particularly damaging, as the pollutants emitted into the air concentrate mainly around their place of origin, thus creating local hazard (typically these are densely populated housing areas), creating smog in unfavourable atmospheric conditions.

It should be stressed once again that the notion of low stack emissions is not directly equivalent to household emissions, but has a broader meaning including also emissions from other sources located at less than 40 metres (e.g. transportation, agriculture). It is this kind of emissions that mostly contribute to smog formation. Low stack emissions should not be confused – as often is the case – with low emissions economy (the Polish name for low stack emissions is just "low emissions", leading to ambiguities).

Smog 2.3

Smog is a phenomenon resulting from human activities, occurring in case of high concentration of pollutants and atmospheric conditions that limit or block their dispersion, such as lack of wind or fog. Historically two types of smog are distinguished:

- **London Smog –** results from high concentration of pollutants such as particulate matter, sulphur, carbon and nitrogen oxides in the air. The name comes from the Great London Smog of December 1952, which among others resulted in deaths of thousands of Londoners.
- **Los Angeles Smog –** also referred to as the photochemical smog, formed when a mixture of NOx and hydrocarbons is exposed to sunlight and as result of photochemical reactions produces oxidising agents such as ozone, aldehydes, etc. This type of smog occurs in cities with high transportation emissions. The name comes from the city where this phenomenon is frequent and is well documented.

In Poland the media in their reports often use bad air quality and smog interchangeably. It should however be noted that **the situation when air quality is bad may not always be referred to as smog.** Often, despite weather conditions favouring dispersion of pollutants (strong winds, no inversion, no fog), we can also measure (and feel) a high concentration of pollutants in the atmosphere.

2.4 Health effects of air pollution

Health effects of exposition of humans to air pollution since many years have been a subject of numerous studies conducted throughout the world. The results obtained confirm that exposing humans to high air pollution levels, particularly the children, sick and seniors, results in a series of adverse health effects. The most recognised adverse influence of air pollution concerns:

- the respiratory system: including respiratory tract infections (pneumonia), bronchial asthma, chronic obstructive pulmonary disease;
- cardiovascular diseases: including hypertension, increased risk of heart attack;
- nervous system: including impaired development of the nervous system resulting in lower IQ.

Moreover, air contamination is also blamed for elevated risk of lung cancer and bladder cancer. The above mentioned health effects result in higher mortality and reduce life expectancy.

Among all the "typical" air contaminants, i.e. sulphur dioxide, nitrogen dioxide, tropospheric ozone and suspended particulate matter, the particularly harmful substance is the particulate matter. From the point of view of influence on humans the most dangerous are its smallest particles of diameters of 2-3 micrometres and smaller, called PM2.5 (thickness of human hair is ca. 50 micrometres, for comparison). While the larger particulate fractions are stopped by the upper respiratory tract (pharynx. larynx, trachea), the small fractions may be deposited on alveoli and from there can make their way to the bloodstream and various body organs and tissues. Besides the dimensions and shape, the chemical composition of particulate matter is extremely important. For example, negative health effects of exposure of humans to mineral dust, for example, desert dust, are not as certain to occur as in case of exposure to dust containing high quantities of toxic polycyclic aromatic hydrocarbons or dioxin and dioxin-like compounds. And exactly these most hazardous particulates are associated with low stack emissions in Poland coming from heating appliances with incomplete combustion caused by not enough oxygen or low temperature, and often used for burning communal waste. For this reason the particulate matter coming from low stack emissions is considered much more toxic than dust emitted from utility power station sources with full control over the combustion process, and the flue gasses released to the atmosphere cleaned to meet the strict emissions standards. Due to the need to protect health and the environment, the European Parliament has adopted the Directive on ambient air quality and cleaner air for Europe, which defines the admissible particulate matter concentration levels in the air (daily concentration of PM10: 50 µg/ m^3, annual mean concentration of PM10: 40 µg/m^3), whereas the daily concentration may be exceeded 35 times in a calendar year [1]. High level of emissions of particulate matter is of particular importance especially in winter, coinciding with the heating season, when particulate matter limits are unfortunately exceeded practically on daily basis.

Air quality monitoring 2.5

The main air quality index is composed of the air pollutants concentration levels. Poland has limit values and target values of air pollutants concentrations that should not be exceeded, and if they are, remedial actions should be taken to bring them back below the defined levels.

- **Limit value –** the level of a substance (concentration) that should be achieved within a defined date and after this date should not be exceeded.
- **Target value –** the level of a substance (concentration) that should be achieved within a defined time with the use of justified technical and technology measures.

Air quality assessment for protection of the public is defined in accordance with **the Regulation of the Minister of Environment of 24 August 2012 – for 12 pollutants presented in the table below (2).**

Table 1. Permissible and target levels of pollution in Poland in view of human health protection [2].

Pollutant	Measurement results averaging period	Limit value	Unit	Permissible frequency of limit value exceedances in a calendar year
SO_2	1 hour	350	µg/m³	24 times
	24 hours	125	µg/m³	3 times
NO_2	1 hour	200	µg/m³	18 times
	year	40	µg/m³	
CO	8 hours	10000	µg/m³	
C_6H_6	year	5	µg/m³	
PM10	24 hours	50	µg/m³	35
	year	40	µg/m³	
PM2.5	year	25	µg/m³	
Pb	year	0.5	µg/m³	
Pollutant	**Measurement results averaging period**	**Target value**	**Unit**	**Permissible frequency of target value exceedances in a calendar year**
As	year	6	ng/m³	
Cd	year	5	ng/m³	
Ni	year	20	ng/m³	
B(a)P	year	1	ng/m³	
O_3	8 hours	120	µg/m³	25 days

In Poland the air quality is monitored in 45 zones covering:

1. agglomerations with **over 250 thousand inhabitants**

2. cities with **over 100 thousand inhabitants**

3. other parts of the voivoidships (administrative regions) not being part of towns with **over 100 thousand inhabitants and agglomerations.**

Zones are categorised into two groups, i.e. Class A – when no exceedences of permissible or target values occur and Class C – where such exceedences occur.

In case the level of even one of the substances exceeds the limit or target value, an air quality protection programme is defined for the zone, intended to achieve the limit and target values of the substance in the air.

Air quality in Poland in 2015

2.6

According to air quality evaluation performed in 2015, in majority of the 45 zones the limit levels of PM10 and PM2.5 particulates and the target level of benzo(a)pyrene (B(a)P) are exceeded. The evaluation was developed based on measurements and in very rare cases for individual zones and pollutants – based on modelling [3].

The limit value for nitrogen dioxide (NO_2) was exceeded in urban agglomerations, i.e.: of Katowice, Kraków, Warsaw and Wrocław. This was mainly related to vehicle emissions. The target value for ozone (O_3) was exceeded in southern voivoidships and was related to inflow of cross-border pollutions.

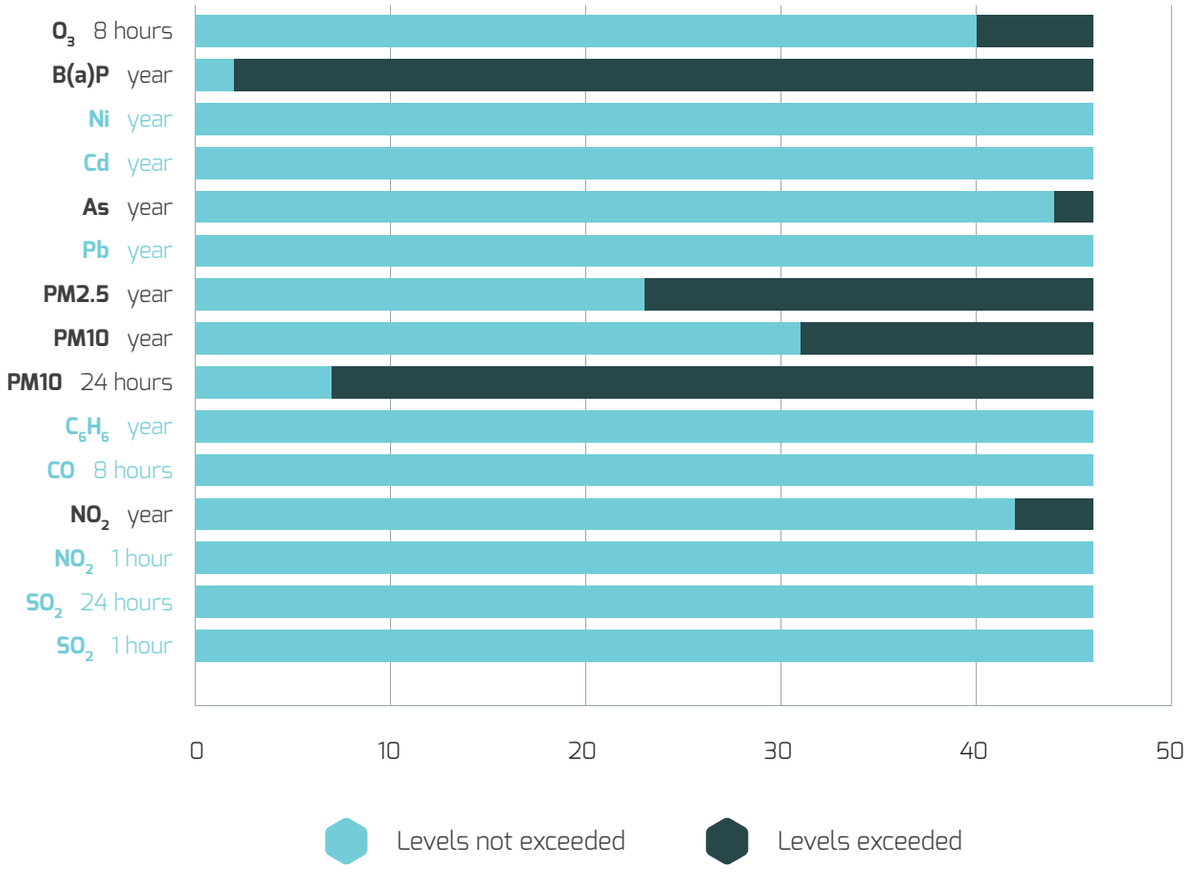
The table below presents the numbers of zones included in specific classes for particular pollutants and averaging periods.

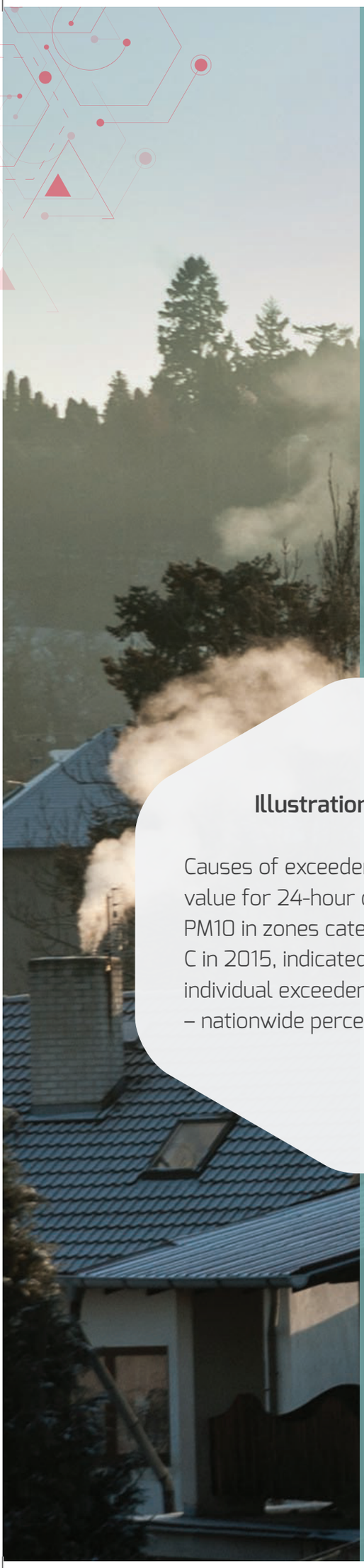
Table 2. Numbers of zones included in specific classes for particular pollutants and averaging periods in 2015 [3].

Pollutant	Measurement results averaging period	Number of classes A (levels not exceeded)	Number of classes C (levels exceeded)
SO_2	1 hour	46	0
	24 hours	46	0
NO_2	1 hour	46	0
	year	42	4
CO	8 hours	46	0
C_6H_6	year	46	0
PM10	24 hours	7	39
	year	31	15
PM2.5	year	23	23
Pb	year	46	0
As	year	44	2
Cd	year	46	0
Ni	year	46	0
B(a)P	year	2	44
O_3	8 hours	40	6

Illustration 1.

The illustration below presents the numbers of zones included in specific classes for particular pollutants and averaging periods in 2015 (3).





Causes of bad air quality in Poland

2.7

The report "Evaluation of air quality for Poland in 2015", (Summary national report developed by WIOŚ) indicated exceedence of limit values of PM10 in 39 zones and of PM2.5 in 23 zones, as well as exceedence of target values for benzo(a)pyrene B(a)P in as many as 44 zones! According to the Report the main cause of exceedence of limit values of PM10 and PM2.5 was the effect of emissions resulting from individual housing heating (3).

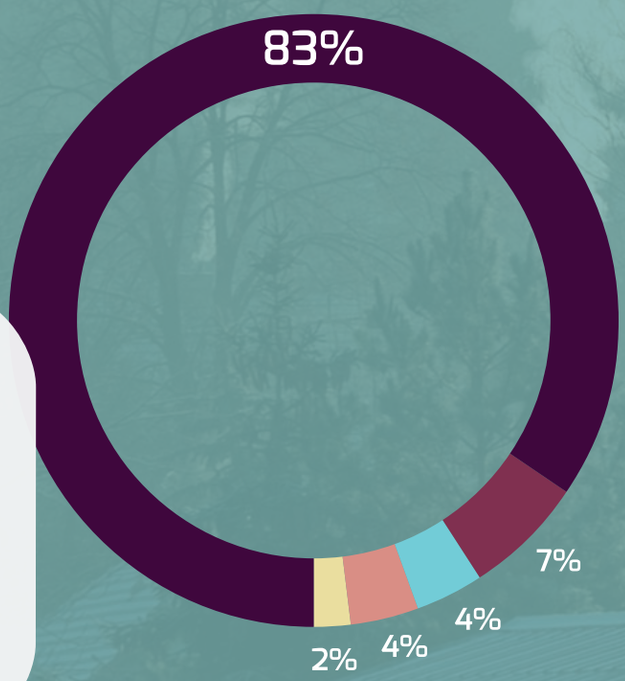


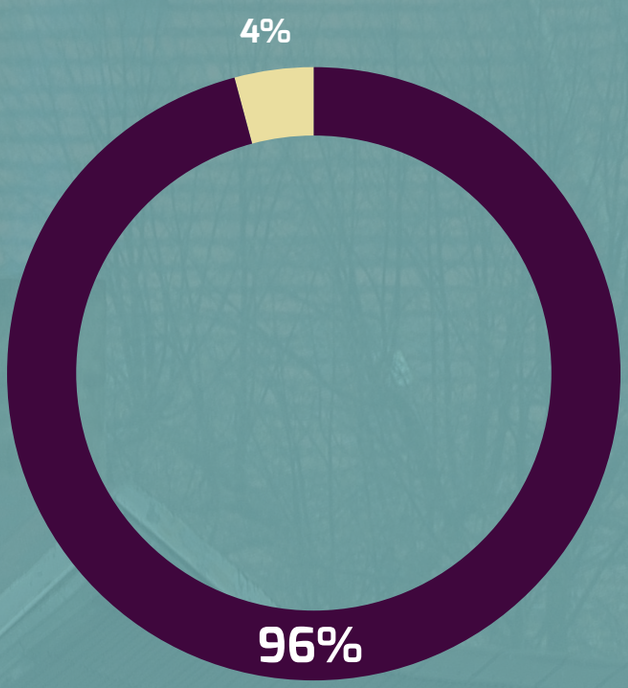
Illustration 2.

Causes of exceedences of limit value for 24-hour concentrations of PM10 in zones categorised as Class C in 2015, indicated as main ones for individual exceedence instances – nationwide percentage share (3).

- The impact of emissions related to individual heating of buildings
- The impact of emissions related to the intensive traffic of vehicles in the city centre
- Emission of dust pollution from dusting surfaces, e.g. fields or unpaved roads, playgrounds, etc.
- The impact of emissions from mines or quarries located near the measuring station
- Emissions of pollutants from heaps etc.

Illustration 3.

Reasons for exceedence of limit value of PM2.5 nationwide percentage share (3).

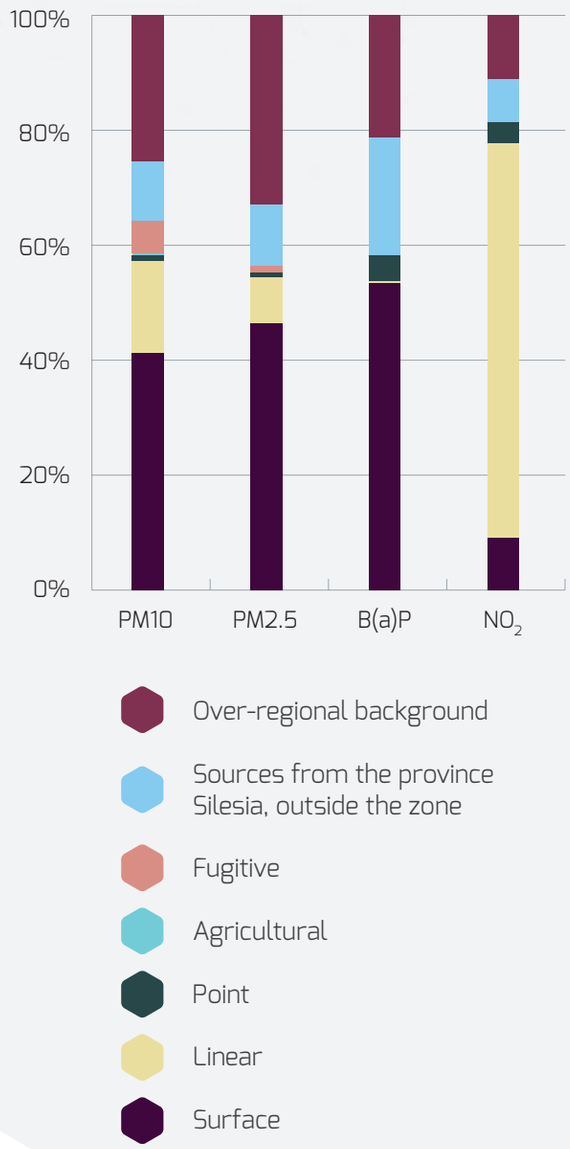


Moreover, the air quality protection programmes developed for each of the zones also indicate that the area emission sources (most often being the individual home heating) have the highest share in exceedences in each zone.

Since the B[a]P, just like the other PAHs, is mainly emitted from burning solid fuels in home stoves, this source is the main cause of exceedence of the target values for this pollution.

Illustration 4.

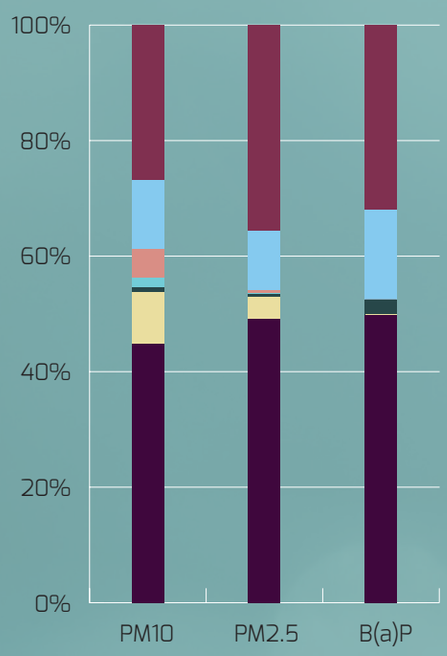
Share of individual emission source types in concentration levels of the analysed pollutants in the area of exceedences in the Upper Silesian agglomeration zone in 2015 [4].



Based on the air quality protection programmes in force in Poland and evaluations of volumes of emissions from individual sectors the main source affecting the air quality and exceedence of limit and target values is the low stack emissions i.e. the area emissions mainly including emissions from household stoves and line emissions from road transport.

Table 3. Emission of pollution in 2015 with determination of the percentage of emissions from energy industry, households, road transport (the contribution of emissions from other sectors is a complement to 100%) [5].

Pollutant	Unit	Total emissions	Percentage share of emissions by:		
			Utility energy sector	Households	Road transport
TSP	th. tonnes	317.7	9%	37%	5%
PM10	th. tonnes	221.1	11%	40%	5%
PM2.5	th. tonnes	124.6	11%	43%	8%
WWA	tonnes	139.4	0%	87%	1%
B(a)P	tonnes	40.4	0%	80%	0%
Cd	tonnes	13.5	8%	13%	1%
Pb	tonnes	507.8	5%	24%	2%



Over-regional background

Sources from the province Silesia, outside the zone

Fugitive

Agricultural

Point

Linear

Surface

Illustration 5.

Share of individual emission source types in concentration levels of the analysed pollutants in the area of exceedences in the Silesian zone in 2015 (4).

In Poland, emissions in every year are determined by the National Centre for Emissions Balancing and Management (KOBIZE). These emissions are validated and assessed by international scientists and experts, e.g. under the European Monitoring and Evaluation Programme – EMEP (6). The main source of particulate matter, both PM2.5, PM10 and all other fractions (TSP) are households. Solid fuels burning by households is responsible for almost 90% of polycyclic aromatic hydrocarbons (PAH) emissions, as well as in 80% for benzo[a]pyrene emissions. The pollutant having its main source in the utility energy sector is sulphur dioxide – however its air concentration limit values are not exceeded.

Emissions volume trends

2.8

Pollutant emissions in Poland are decreasing. However, it is worth noting that the biggest reduction of emissions was achieved in the utility energy sector. Between 1990 and 2015 this sector has reduced the emissions of Total Suspended Particles by 95%, SO_2 by 82%, B[a]P by 77%, PM10 and PM2.5 by over 70%, PAHs by 65% and NO_2 by 60%. During the same time emissions from transport increased, for example in the case of SO_2 the increase is over threefold, while household emissions in 2015, depending on the pollutant, did not differ by more than +/-35% (reduction or increase of emissions) from the ones in 1990.

Illustration 6.

Relative pollutant emissions reduction in 2015 compared to 1990 in selected sectors. Negative value signifies increase of emissions [5,6].

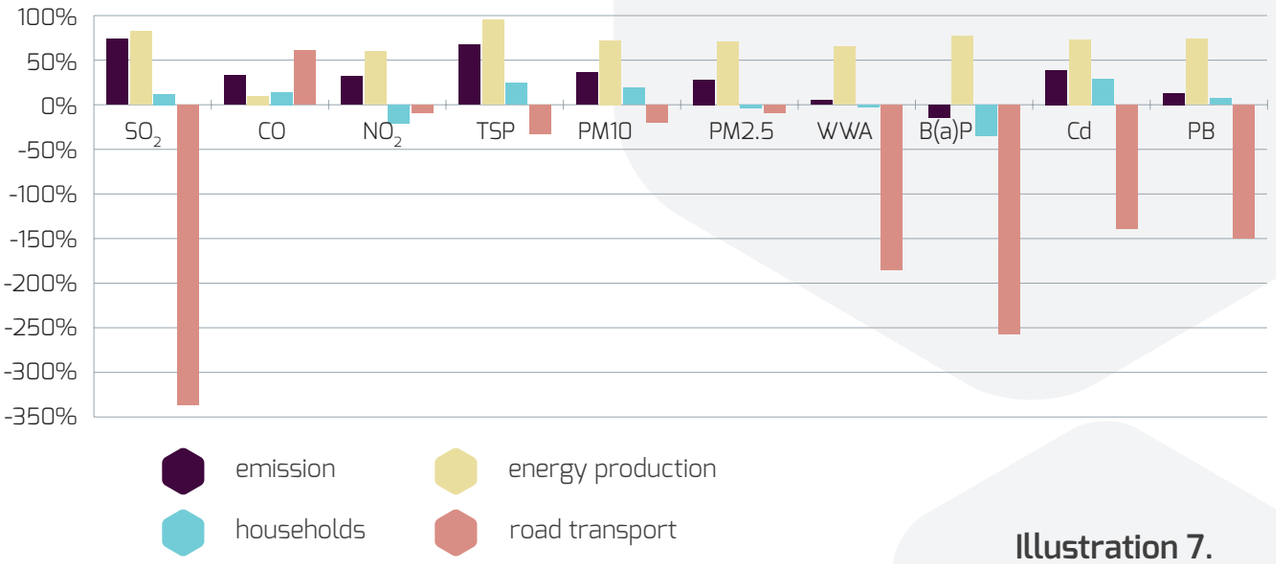
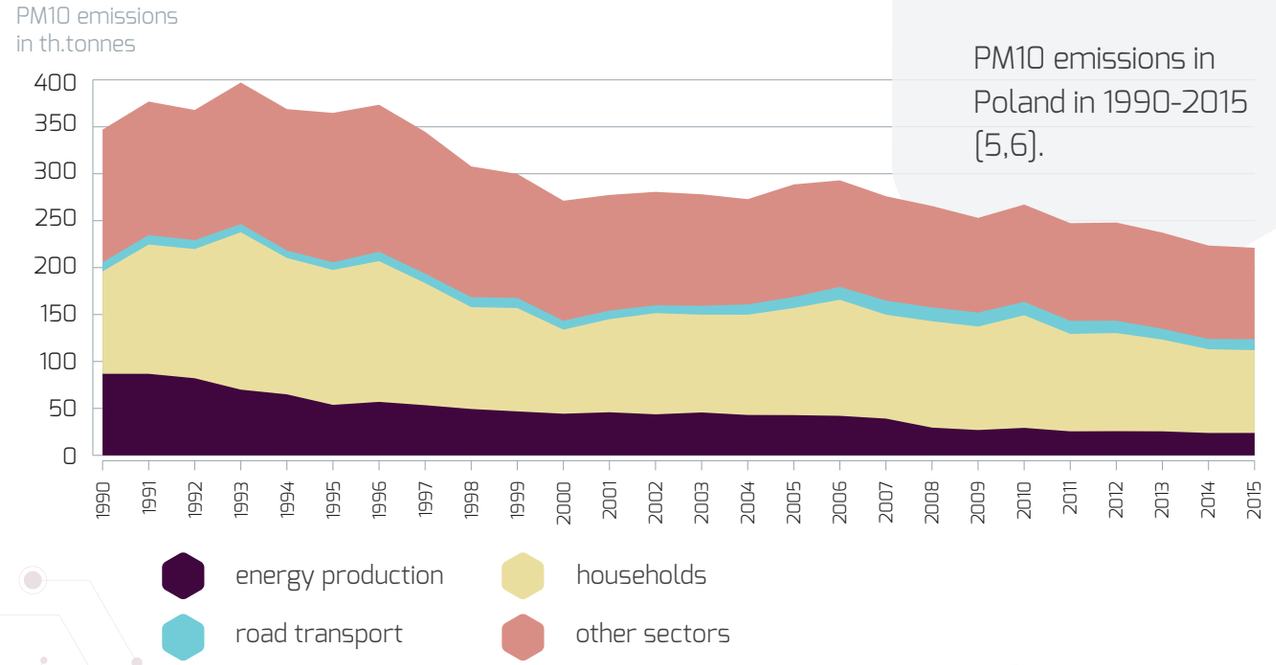


Illustration 7.

PM10 emissions in Poland in 1990-2015 [5,6].



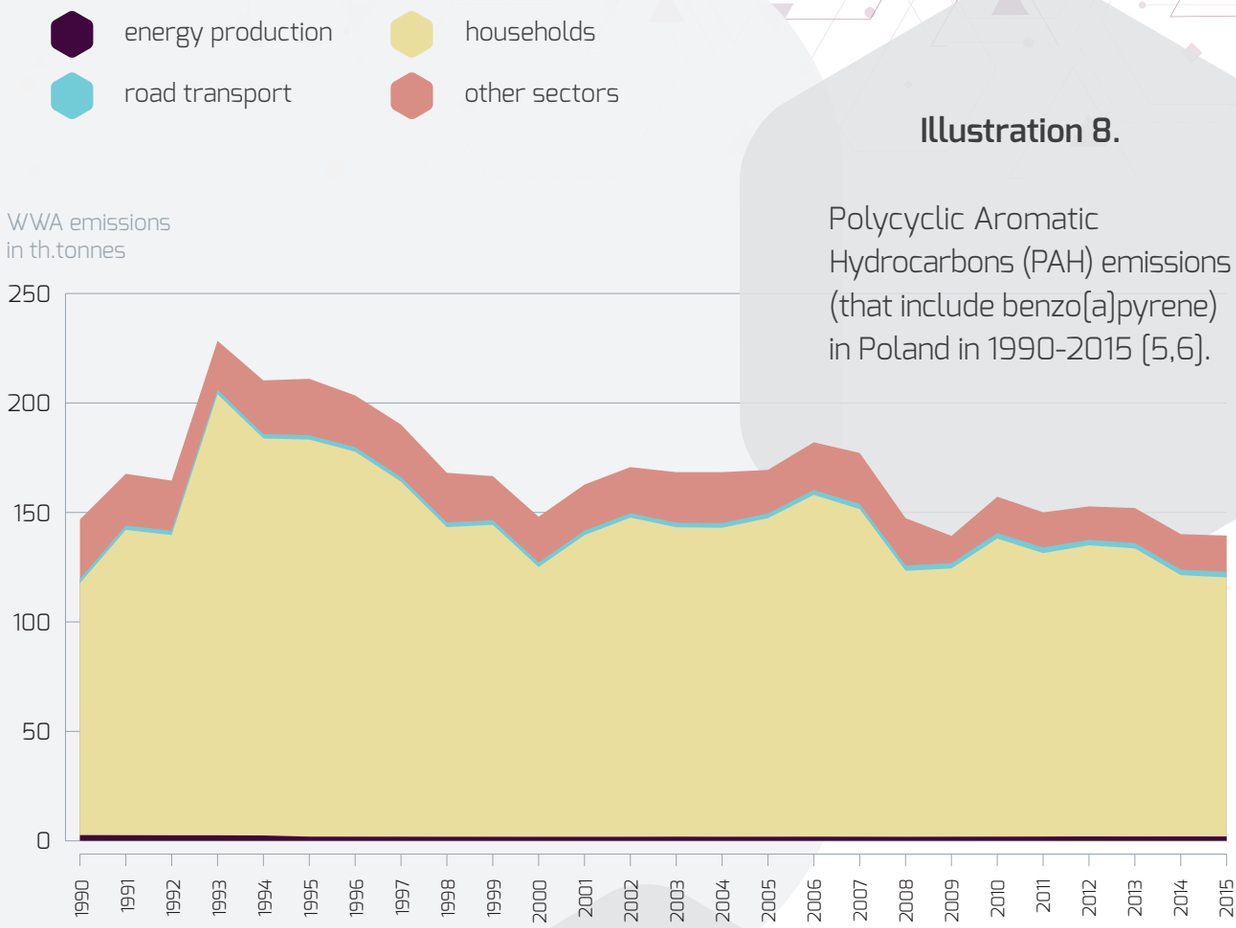


Illustration 8.

Polycyclic Aromatic Hydrocarbons (PAH) emissions (that include benzo(a)pyrene) in Poland in 1990-2015 [5,6].

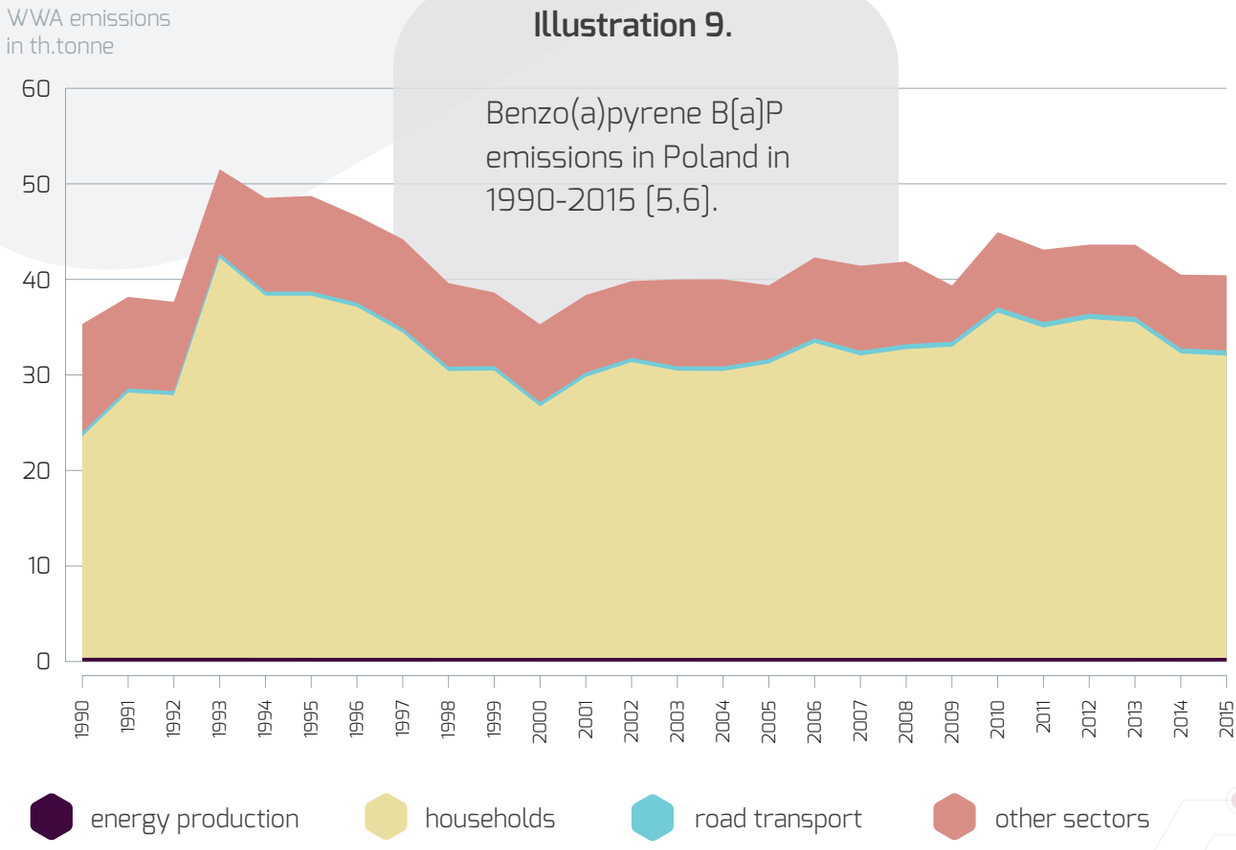


Illustration 9.

Benzo(a)pyrene B[a]P emissions in Poland in 1990-2015 [5,6].

Energy industry pollutant emissions and sector's clean air initiatives

Energy industry pollutant emissions are related to combustion of solid, liquid and gas fuels in thermal power plants. In case of thermal power plants, and this is the dominating type in the Polish national power grid, the emissions of pollutants are strictly controlled, and the flue gases released to the atmosphere must be "clean to the extent" meeting the rigorous emissions standards resulting from the legal regulations! Such standards, also referred to as emission ceilings, define the maximum mass of pollutants such as among others sulphur dioxide, nitrogen dioxide or suspended particulates in every cubic metre of flue gas released to the atmosphere. It is worth noting that in principle they are "tightened" every few years to account for the scientific and technical progress in emissions controls. During the last 15 years the energy sector has made tremendous progress in reducing pollutions. This may be illustrated by presenting the changes in particulate emissions standard for coal-fired power plants.

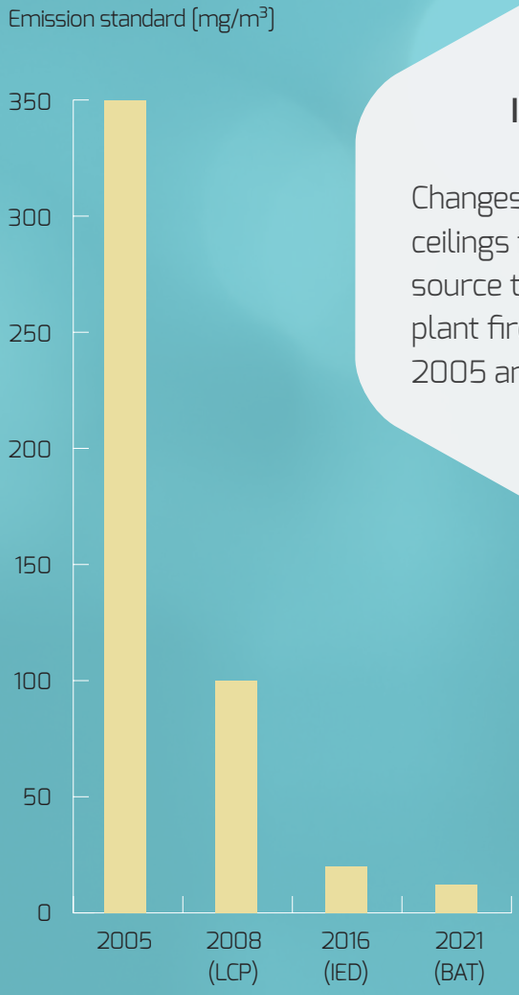


Illustration 10.

Changes in particulate emissions ceilings for a 400 MWt rated source thermal capacity power plant fired by hard coal between 2005 and 2021 [7,8,9].

As may be seen, in the analysed period the particulate emissions of such a power plant have dropped eighteenfold! Situation is similar in case of other pollutants. In case of sulphur dioxide the 2005 emissions standard was 2350 mg/m^3 and at present it is only 200 mg/m^3 (nearly a twelvefold decrease!). The changes to the standards discussed above result from the need to adapt the national legislation to the EU directives.

One of the directives most important to the energy sector is the Large Combustion Plants Directive (LCP, in force as of 2008) and the Industrial Emissions Directive (IED – that superseded the LCP and is in force since 2016). And it is the IED that imposes the obligation of regular reviews of emissions standards, aimed at their adaptation to the Best Available Techniques – BAT not less often than every 8 years [8,9].

Its results are the latest emissions ceilings to enter into force in 2021. Such significant reduction of pollutant emissions in the energy sector was made possible by thorough refurbishment of generating units and investment in primary and secondary emissions reduction methods. Primary methods include all modifications concerning the combustion chamber that assure correct combustion process operation parameters (e.g. the temperature or air quantity) as well as introduction into the combustion chamber of substances that react with the contaminants produced. The use of secondary methods, including the "deep" flue gas cleaning processes in equipment such as high efficiency electrostatic precipitators, FGD wet scrubbers or catalytic NOx reduction installations guarantee achievement of emissions levels dictated by the regulations. At present every single power plant in Poland has such high efficiency flue gas cleaning installations!

The anti smog tariffs are one of the elements of the broad portfolio of measures commenced by Polish energy companies aimed at combating smog.

The utility energy sector actively supports the initiatives aimed at improvement of air quality in Poland. Besides investments in refurbishment of existing generating units and their retrofitting with flue gas cleaning technologies, one may also mention the growing share of energy generated in renewable sources such as wind farms, solar plants and biomass and biogas power plants. Unfortunately all these efforts do not proportionally translate into air quality improvement, as the main culprit responsible for "bad air quality" are the low stack emissions sources. The binding particulate matter standards are exceeded primarily in winter, mainly due to burning of substandard quality fuels in low efficiency heating appliances by households. One of the instruments to counteract low stack emissions are the "anti-smog" tariffs, offering access to "cheap electricity" to consumers who will discontinue burning low quality fuels in their stoves by switching to electric heating. These tariffs have their own special symbol - G12as. They feature very low electricity and distribution rates between 22:00 and 6:00 hours. Such a solution allows the use of electric heaters with thermal accumulation that consume electricity at night when the rates are low, accumulating heat and giving it back when needed. Calculations performed by the Ministry of Energy for annual cost of household heating using various heat sources indicate that as the result of introduction of the anti-smog tariff, electric heating is cheaper than using heating oil and may be competitive to gas and coal fired heating. The important advantage of electric heating is that it is practically maintenance free and safe compared to heat sources with combustion chamber (no risk or explosion or carbon monoxide poisoning) [10].

Preferential rates for electric heating make an attractive alternative to environment unfriendly forms of heating. It is an effective tool for combating air pollution. For instance – a substandard manually fed coal fired stove emits around 404 grams of PM per one GJ of heat used in the household. In the case of wood fired fireplace this value is 672 g/GJ. Average heat consumption by residential premises is ca. 0.5GJ per year per one m^2. [11]. In the reports from the implementation of air quality protection programmes, in case of electric heating or district heating, the emissions level for PM10 is 0. However, taking into account the volume of electricity generated in utility power plants and their PM10 emissions, the PM10 emissions index per unit of energy may be estimated at 45 g/GJ!

The new solution also fits in with the electromobility development programme. Electric vehicle users gain the possibility to charge their vehicles cheaper between 22:00 and 6:00 hours.

The goal of implementation of the new tariff was to encourage household owners to replace their obsolete stoves and heat their houses at night using electricity and to commute in electric vehicles. The offering is addressed to:

- residents of small communities and suburbs of large cities, using various types of stove based heating, often in ways adverse to the environment and human health

- consumers using electricity to charge their electric vehicles

The anti-smog tariffs are one of the elements of the broad portfolio of measures commenced by Polish energy companies aimed at combating smog. The goal of these efforts is to support the nationwide plan to improve the condition of the natural environment in Poland. It includes, among others information and education activities, building a rich offering of "green" heating systems, support for persons deciding to replace their obsolete stoves, and collaboration with local government authorities. The Polish energy sector is betting on developing diversified offerings, so that every customer may have a heating system tailored to their needs and purse.

Summary

Highest influence on bad air quality in Poland comes from burning solid fuels for heating residential premises. This sector emits huge amounts of PM10 particulates (over 40% of the total emissions in Poland) as well as 80% of the total emissions of benzo[a] pyrene B[a]P. Emissions from burning solid fuels by households are released from chimney stacks just a few metres high (hence the "low stack emissions"), which are located where people live. Thus the volume of emissions and conditions of their release cause the influence of these sources to most significantly affect the air quality.

Influence of point emissions (including that of utility energy sector) on local air quality is minimal, and for example in the Katowice agglomeration zone does not exceed just a few percent. Improvement of air quality will first and foremost require a reduction of emissions from the area sources, particularly through elimination of low-efficiency appliances burning solid fuels to heat houses and flats, by replacing them with low emissions appliances, such as powered by electricity.

Competitiveness of electric heating has significantly increased after anti-smog tariffs were introduced this year by electricity suppliers.

Unfortunately, in Poland since the 90ties the emissions from the household sector remain at the same level, as opposed to utility energy sector where over 25 years (from 1990 to 2015) the B[a]P emissions were reduced by 77%, and PM10 and PM2.5 particulate emissions by ca. 70%. Such a big reduction of emissions from the utility energy sector was possible to achieve only with huge financial investments in emission reduction technologies and the legal regulations on changes in emissions from this sector.

Due to high air pollution and smog problem, the media willingly cover these topics. Unfortunately, without sound subject matter background, they often rely on erroneous or imprecise information. This resulted in a situation where the general public perceives the power plants, combined heat and electricity plants and the whole energy industry in general as being among the mostly responsible for bad air quality and smog. However, as the data presented in this Report demonstrates, this opinion is not true and is unjust. Smog and bad air quality are caused not by power plants and the industry, but first and foremost by low stack emissions, meaning the obsolete home heating stoves and local coal fired boiler plants. The energy sector over the last 15 years has been taking series of measures aimed at reducing its adverse influence on the natural environment. This is an undisputable fact proven by numerous independent studies and analyses. The Polish Electricity Association wishes to be the source of reliable and credible information about pro-environmental measures taken by the energy sector, therefore with the "Power Sector for air quality" project we are boosting our information and education activities.

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PKEE's plans for today and for tomorrow

Our plans include – among others – the following activities:

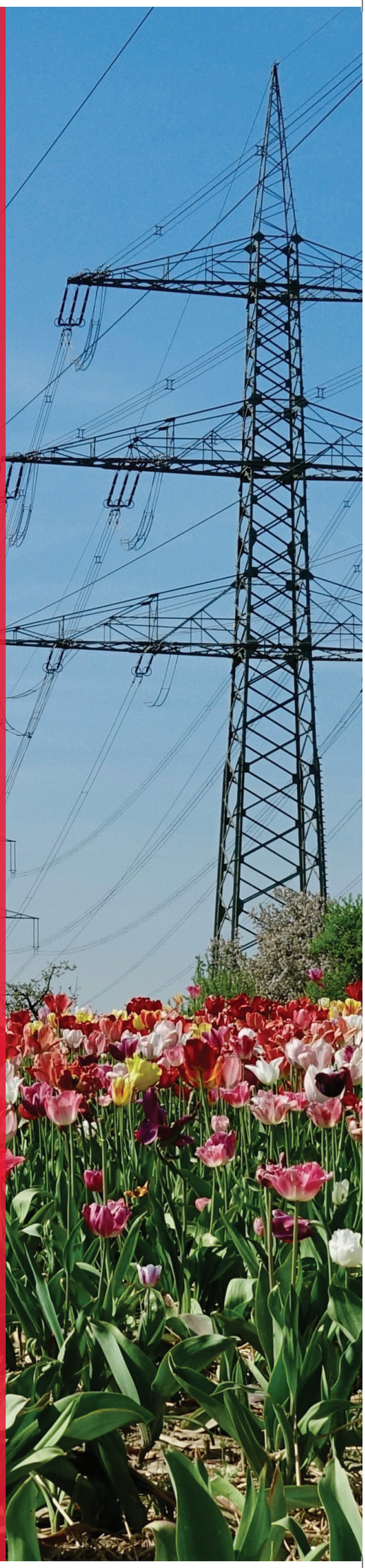
- By the end of the heating season, we want to issue the "Bill for SMOG". We will show who is responsible for smog and we will be encouraging solutions that are beneficial both financially and primarily – environmentally. We wish to convince the maximum possible number of people to switch to less expensive and healthier house heating options than using old stoves.

- In the following months, PKEE shall develop and hold a series of debates addressed to the local communities of Polish cities and townships. We wish to engage the experts, local opinion makers as well as representative of local government authorities in a joint debate about how to care for clean air. We will be encouraging the use of the broad range of offerings developed by the sector, at the same time stressing the importance of district heat – supplied by cogeneration plants and heat-only generating plants – as one of the best pro-environmental solutions. We will be lobbying for the development of electricity and heat generation industry with air quality in mind.

- We will also address schools, to raise the interest of our youngest members of the public in pro-environment education and in the problem of combating smog. We wish to influence their attitudes and convince them that it makes sense to heat houses and flats with heat that is environmentally friendly.

- Upcoming months will also be the time of PKEE's increased efforts to actively enhance its presence in the media space. Representatives of the Association and our collaborating experts will be staying in touch with the journalists.

We think it is a joint role of the PKEE and of the media to convince Poles that caring for the natural environment begins at home, already at the stage of deciding how we will be heating our dwellings.



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