CHALLENGES RELATED TO LOCAL GOVERNMENTAL CLIMATE POLICY BY THE EXAMPLE OF MUNICIPALITIES OF THE *POVIAT* OF JĘDRZEJÓW

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Abstract

The climate policy is currently one of the most discussed issues in Central and Eastern Europe. Carbon neutrality, declared by European Union countries to be achieved until 2050, is going to be particularly difficult for such large countries as Poland in the said region. In this paper we focus on the issues related to investments in air and climate protection with particular consideration of the Polish conditions on the level of local government and underline importance of the local government unit of Polish *poviat* as a convenient area for investment-related cooperation of municipalities, aiming at energy transition of these units into areas friendly for both inhabitants and climate. The research problem is to define most important changes faced by local authorities to implementing in local climate policy. This paper also presents thoughts on development of the idea how to plan local investments to be used in order to achieve energy transition in Poland, it also includes an empirical analysis of investment activity of local authorities in the years 2010–18 in terms of air and climate protection in the poviat of Jędrzejów situated in the Świętokrzyskie Voivodeship. The considerations included in the research part of the paper were based on results of analyses of local documents, financial reports of local governments being analyzed and information contained in publicly available statistical data

Keywords

environment, climate policy, local authorities, air protection, local expenses, energy transition, low-carbon economy

Introduction

Activities in the field of environment and climate protection are the crucial part of public services. They are also generate great costs, in reference to both economic and social aspects, however research (Wolska, 2010, p. 60) shows that benefits resulting from climate protection investments turn to be profitable in the longer perspective, regardless of costs being borne. *Constitution of the Republic of Poland* directly refers to environmental

protection in the art. 86 and 74. According to the art. 86, everyone is obligated to take care of environment and bears responsibility for its deterioration caused by them, while in the art. 74 the lawmakers defined the obligations of public authorities in the field of environmental protection. The regulations include the term of ecological security that is strictly related to the rule of sustainable development. (Provińska 2012, p. 303). Its legal definition in the Polish law is included in the *Environmental Protection Act*[1], of April 27, 2001, according to which (art. 3 sect. 50) sustainable development is social and economic development involving the process of integration of political, economic and social activities, while maintaining natural balance and stability of basic natural processes, in order to guarantee the capability to meet basic needs of certain communities or citizens from the currently living and future generations.

The issue of global warming became the subject of international discussion already in the late 1970s. Then the United Nations held the world-wide climate-related conference in Geneva that initiated subsequent events focused on this matter. In 1988 the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) in order to regularly provide political decision makers with results of scientific research on climate changes, their effects and future threats, as well as possible variants of adaptation and mitigation of these effects.[2]

The first report prepared by IPCC had become a reason to hold the United Nations Conference on Environment and Development in June 1992 in Rio de Janeiro, called "Earth Summit". In turn, these events resulted in changes of lines of action regarding international climate policy, including adoption of *Action Programme – Agenda 21* (Grabowska, 2001, p. 31–40), being the document representing the method of development and implementation of sustainable development programmes as parts of local policies. Unfortunately, subsequent accession of Poland to the United Nations Framework Convention on Climate Change[3] in the early 1990s and the Kyoto Protocol (Ramowa konwencja Narodów Zjednoczonych w sprawie zmian klimatu, sporządzona w Nowym Jorku dnia 8. Maja 1992 r.). (Protokół z Kioto do Ramowej Konwencji Narodów Zjednoczonych w sprawie zmian klimatu, sporządzony w Kioto dnia 11 grudnia 1997 r.)[4] in 2005 has not caused revolutionary changes, when it comes to management of environment and climate protection, neither at national level, nor locally. Even the stipulations of the Paris Agreement (Porozumienie paryskie do Ramowej Konwencji Narodów Zjednoczonych w sprawie zmian klimatu, sporządzonej w Nowym Yorku dnia 9 maja 1992 r., przyjęte w Paryżu dnia 12 grudnia 2015 r.),[5] adopted in December 2015, or the climate summit held in Katowice have not resulted in such changes. Although in recent years we have witnessed intensified awareness regarding this global problem, both among public decision makers and the society, the activities initiated by the Polish government have only minor impact on local policies and investments. Lack of strategic intersectoral cooperation and long-term effect-oriented plans results in poor

1 See more: Polish Journal of Laws of 2019, pos. 1396 as amended.

2 See more: https://www.ipcc.ch/about/, accessible on January 18, 2021.

3 See more: Polish Journal of Laws of 1996, no. 53, pos. 238.

4 See more: Journal of Laws of 2005, no. 203, pos. 1684.

5 See more: Journal of Laws of 2017, pos. 36.

correlation between certain elements of this interlinking system.

Though local government authorities identify needs in the field of air and climate protection more and more frequently as a part of their investment policies, inclusion of these type of objectives and priorities in strategic documents alone (for example, development strategies) does not result in actual affects. The scope of these documents, especially diagnoses contained therein, generally does not include more detailed analyses of air pollution, emissions of greenhouse gases, energy balance of local infrastructure and public utility buildings or state and perspectives of development of energy technologies based on natural gas or renewable energy sources, as this is mostly a result of lack of respective regulations and systemic nation-wide solution in this matter. In turn, these deficiencies result in omission of the issue of climate in local policies, leading to its underestimation by local government authorities.

This situation is also significantly influenced by the fact that environment-related investments, co-funded from EU funds, in municipalities are strongly focused on sewage systems. Considering such starting conditions, only few local government units[6] decide to take radical steps in the field of energy transition and undertake activities towards cooperation with adjacent units (for example, within the *poviat* structure), that would seem not just good, but, indeed, the desired orientation.

We already know that the European Climate Change Programme (ECCP) initiated in 2020 and based on voluntary activities, good practices and market mechanisms has turned out to be a tool with too less influence of authorities of European Union member states. Also, the first EU climate and energy package, planned until 2020 and adopted in Brussels on December 11, 2008, has not caused systemic changes of the approach of Polish public authorities towards investments in this field.[7] At the local government level the intended effect was reached only in the light of the perspective of no possibility to acquire EU funds for the period 2014–20 for such investments like thermal modernization of buildings, replacement of high-carbon heating sources or implementation of renewable energy sources. In order to fulfill the conditions to be met by beneficiaries of EU funds, since 2015 municipalities have started to develop the so called low-carbon economy plans, coherent with municipal financial balances and other planning and strategic documents at the level of municipalities, poviats and voivodeships in terms of investments. The process of development of these documents has played a crucial role in disclosure of an extent of the investment loophole in the area of air and climate protection, whose efficient reduction will surely be a challenge in the years or even decades to come. Low-carbon economy plans passed by more Polish municipalities allowed for determination of objectives, tools and methods to be used by local authorities in order to limit CO2 emissions, increase efficient energy use and enhance use of energy coming from renewable sources. They have also become the documents supportive in implementation of the rule of sustainable

6 A good model example is Kraków. Upon its mayor's initiative the air protection programe includes the provision on implementation of limits regarding use of solid fuels in Kraków, imposed on the regional assembly of the Małopolskie Voivodeship. On January 15, 2016 members of this assembly passed the resolution no. XVIII/243/16 on implementation of limits regarding operation of installations using solid fuels in the City of Kraków. Since September 1, 2019 using solid fuels has been banned.

7 The assumptions that were then adopted for EU states projected their reduction of greenhouse gases emission by 20%, increase of efficient energy use in economy by 20% and increase of share of energy coming from renewable sources by 20% (for Poland by 15 %).

development, adopted in the art. 5 of the *Constitution of the Republic of Poland*, as well as objectives of EU's climate policy (Szafrański, 2014, p. 215).
The considerations included in this paper focus on the issue of investments related to air and climate protection, with particular attention paid to Polish local government conditions. They also try to define most important challenges faced by local authorities when it comes to implementing climate protection policy. In the first part of the paper we underline the role of *poviat* local government as a convenient sphere for investment-related cooperation of municipalities, aiming at transformation of certain units and their surroundings into areas friendly for both inhabitants and climate. In the second part of the paper we present information on development of planning of local investments used in order to achieve energy transition, strictly and inseparably connected with air and climate protection. The third part refers to the problems being presented, by analyzing investment-related activities of local authorities in terms of air and climate protection in the area of the *poviat* of Jędrzejów in the years 2010–18. The selected period is not a coincidence, as it covers the two already completed terms of local authorities (2010–14 and 2014–18). We assume that lack of integrated and strategic cooperation between municipalities of the *poviat* of Jędrzejów regarding expenses on air and climate protection resulted during the years of 2014–18 in poor investment effectiveness in this matter. We assessed that one of the foundations of the reluctantly performed energy transition in municipalities of the p*oviat* of Jędrzejów were deficiencies in access to gas systems for inhabitants, hampering their efforts to withdraw from burning solid fuels that are detrimental for air and climate.
The considerations included in paper's research part were based on the results of analysis of the documents passed by poviat's authorities, including the *Development Programme for the Poviat of Jędrzejów for the years 2021–2020* and the resolutions of the nine municipality councils selected for research. Financial reports for the local governments being subject to the analysis also turned out to be helpful, as well as information obtained at the Statistics Poland office in Kielce and the Local Data Bank.

Low-carbon economy plan as a tool of the local government climate policy in Poland

Passing a resolution implementing a low-carbon economy plan is not obligatory for any municipality, however, it does not mean that it is rarely worked on and enacted, as adoption of a low-carbon economy plan has become one of tools used to acquire EU financial assets during the financial perspective for the years of 2014–20. It was not before mid-2017, i.e. quite recently, when this issue became popular and previous local government investments focused on energy transition, so strongly related to air and climate protection, had been performed without complete and reliable investigation of a scale of this problem.
According to the guidelines of Regional Funds for Environmental Protection and Water Management,[8] a low-carbon economy plan should be developed in a complex way for a certain field of administration. Its main objective is arrangement and organization of activities undertaken by municipalities, helping to limit CO2 emissions by assessing actual

8 See: Cf.: https://www.wfosigw.katowice.pl/pgn/wytyczne-do-opracowania-pgn.html, accessible on January 18, 2021.

conditions in terms of emissions of greenhouse gases. The document should describe specific undertakings that could be performed in future and indicate sources of funds. Each low-carbon economy plan should be based on assessing emissions of greenhouse gases in a given municipality, using information on its energy balance. All these factors are supposed to limit CO2 emissions, increase efficient energy use and increase use of energy coming from renewable sources.

It is worth noting that passing a low-carbon economy plan in a municipality and specification of certain objectives and funding sources therein are not enough to guarantee that the declarations contained therein will be fulfilled. Acts of planning, i.e. various types of strategies, plans and programmes, constitute the specific category of legal instruments, because their legal character cannot be determined definitely. Some of them are generally applicable, while other are not (Ochendowski, 2006, p. 141–142). Plans developed by municipal institutions generally do not constitute instruments of local law, as they are addressed to the same units that issue them and not external entities (Żuchowski, 2007, p. 70). On the other hand, they are crucial for defining certain types of activities, though they do not provide details on any authorizations or obligations for entities beyond the administration system. As documents, they become instruments by means of which it is possible to meet the requirement to determine reasons, content and results of decisions before they are made, therefore they are used for thoughtful operations of public administration, considering all technical, organizational and financial capabilities and supporting the organizational process, i.e. harmonization of actions and assets (Kożuch, 2004, p. 61).

Climate-related objectives often lose to other priorities of local government investment policies. Authorities of small units, often with moderate own incomes and enormous investment needs, are not even able to file motions for funds for larger projects in the area of energy transition, not to mention supporting inhabitants in their independent activities. Therefore, it seems critical to make effort to create space of climate-related cooperation in each municipality, that should consist in planning coordination and execution of common investments, including the ability to file joint motions for external support, when realizing projects beneficial for energy transition.

Poviat of Jędrzejów – terrain characteristics

Being subject to this analysis, the *poviat* of Jędrzejów is located in the south-western part of the Świętokrzyskie Voivodeship and it borders with the poviats of Pińczów, Kielce and Włoszczowa (Świętokrzyskie Voivodeship), Miechów (Małopolskie Voivodeship) and Zawiercie (Śląskie Voivodeship). There are uplands in the southern part of the region, while its northern part is surrounded by ranges of old mountains separated from each other by Nida Basin. All this area is drained by the drainage system towards Vistula via the river of Nida after which the region of Ponidzie took its name. (Program rozwoju powiatu Jędrzejowskiego na lata 2016–2020) Lands of the *poviat* of Jędrzejów are one of the oldest human settlement areas in Poland, where multiple archaeological sites are located, even from the Lusatian culture (Kaczanowski, Kozłowski, 2014, p. 46). During the January

Uprising multiple clashes took place at this area and, as retaliation, Russian authorities deprived local towns of their charters. The *poviat* of Jędrzejów, established in the early 19th century, was then a part of the Kielce Governorate transformed into the Kielce Voivodeship in 1919 (Program rozwoju powiatu Jędrzejowskiego na lata 2016–2020). Currently, the said *poviat* has the area of 1,257 km2. (Statystyczne vademecum samorządowca – Powiat jędrzejowski 2019) and consists of the nine following municipalities: Imielno, Jędrzejów, Małogoszcz, Nagłowice, Oksa, Sędziszów, Słupia, Sobków and Wodzisław. The largest of them is the urban-rural municipality of Jędrzejów being the administrative centre of the *poviat*. Other towns in the subregion are Małogoszcz and Sędziszów. Their economic and demographic diversification was presented in the table 1.

Tab. 1. Municipalities of the poviat of Jędrzejów – demography and economic activity

Municipality	Area in km^2	Population according to address of residence		Private sector entities	
		2010	2018	2010	2018
Imielno	101	4,501	4,404	149	212
Jędrzejów	227	29,143	28,095	2,420	2,648
Małogoszcz	146	11,821	11,621	774	848
Nagłowice	117	5,289	4,956	232	287
Oksa	91	4,802	4,598	230	243
Sędziszów	146	13,008	12,555	784	809
Słupia	108	4,425	4,336	178	226
Sobków	144	8,429	8,491	463	529
Wodzisław	177	7,499	7,020	410	468
POVIAT	1,257	88,867	86,076	5,640	6,270

Source: Own analysis performed on the basis of the Statistics Poland office in Kielce.

On the basis of the table 1 we can witness the gradually decreasing number of population in the *poviat* of Jędrzejów. In the period being analyzed population had increased only in the municipality of Sobków. The most depopulated municipality is Wodzisław that lost 479 people during 9 years (almost 6.38 %). Smaller losses were identified for municipalities of Nagłowice, Oksa, Jędrzejów, Sędziszów, Imielno and Słupia. The municipality of Jędrzejów alone had lost as many as 1,048 inhabitants. On the other hand, economic activity is gradually increasing. Among 630 entities established in the *poviat* of Jędrzejów the most of them were registered in the municipalities of Jędrzejów, Małogoszcz and Wodzisław.

Investments in the field of air and climate protection in the poviat of Jędrzejów in the years 2010–18

For long time investment activities of local authorities in the field of air and climate protection had been performed there on the basis of multiple local development strategies and spatial development plans defining only general objectives of environment-related activities. They have gradually become replaced by low-carbon economy plans which is a positive trend. The authorities of Małogoszcz enacted such a plan as early as in February 2016,[9] however its first version required a quick correction.[10] Similar documents were prepared for other municipalities in the following order: Imielno,[11] Słupia,[12] Sędziszów, Jędrzejów,[13] Wodzisław[14] and Nagłowice.[15] Until mid-2017 they had also been enacted for realization in the municipalities of Oksa[16] and Sobków.[17] Research of the aforesaid plans allows to perform the detailed analysis of local environmental problems. We can notice that objectives and methods of operation, assumed by authors of these plans, were defined with very conservative approach. Additionally, much attention was paid to search for sources of funds for investments strengthening air and climate protection, including the role of EU assets expected to be acquired. Unfortunately, the assumptions included in these documents, including forecast objectives, deviate from configuration and amounts of financial assets acquired and spent by certain municipalities in the field of climate-related investments.

One of factors resulting in investment weakness of municipalities during the period being analyzed turned out to be too low own resources of these units. Many of the analyzed municipalities are dwelt by small local communities, that results in low local budgets and own resources they consist of. This relation was presented in the table 2.

9 *Resolution no. 11/103/16 of the City Council in Małogoszcz of February 2,2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Małogoszcz.*

10 *Resolution no. 17/167/16 of the City Council in Sędziszów of December 29, 2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Sędziszów.*

11 *Resolution no. XVII/101/2016 of the Municipal Council in Imielno of September 9, 2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Imielno for the years of 2016–2022.*

12 *Resolution no. XX/100/2016 of the Municipal Council of Słupia of October 26, 2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Słupia and resolution no. XXXIV/174/2018 of February 22, 2018 on adoption of the Annex no. 1 to the Low-Carbon Economy Plan for the Municipal of Słupia.*

13 *Resolution no. XXXI/257/2016 of December 22, 2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Jędrzejów for execution for the years of 2016–2022.*

14 *Resolution no. XXIV/165/2016 of the Municipal Council of Wodzisław of December 28, 2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Wodzisław for the years of 2016–2020.*

15 *Resolution no. XXXI/168/2016 of the Municipal Council of Nagłowice of December 29, 2016 on adoption of the Low-Carbon Economy Plan for the Municipality of Nagłowice.*

16 *Resolution no. XXIX/152/2017 of the Municipal Council of Oksa of May 31, 2017 on adoption of the Low-Carbon Economy Plan for the Municipality of Oksa for the years of 2017–2020.*

17 *Resolution no. XLIX/239/2017 of the Municipal Council of Sobków of June 30, 2017, on adoption of the Low-Carbon Economy Plan for the Municipality of Sobków.*

Tab. 2 Own income of municipalities in the poviat of Jędrzejów expressed as percentage of general income for the years of 2010–2018

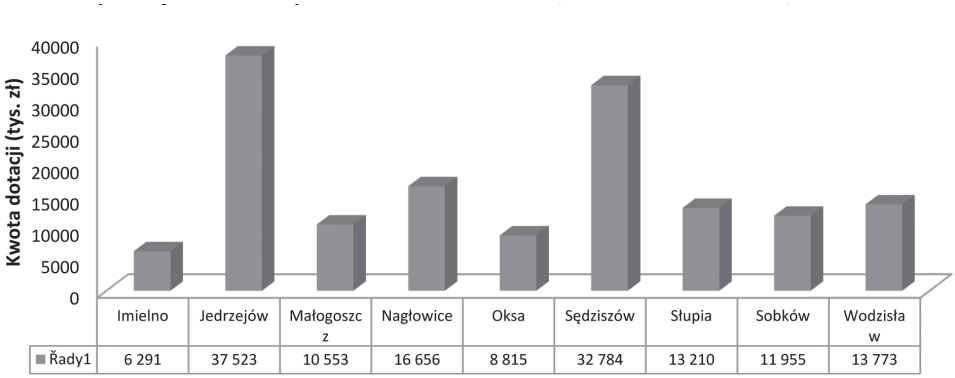
Municipality/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Imielno	19.4	22.1	23.2	31.6	22.6	24.6	21.5	21.0	26.6
Jędrzejów	42.4	41.6	46.6	44.7	45.9	47.7	39.8	38.9	39.8
Małogoszcz	44.2	45.5	45.6	48.6	50.4	49.7	40.6	41.6	40.2
Nagłowice	18.1	21.4	27.6	24.7	28.6	36.1	26.3	25.9	25.1
Oksa	25.6	16.6	17.8	29.1	23.5	24.0	19.9	18.9	20.1
Sędziszów	31.4	40.1	45.3	51.2	49.8	50.6	45.9	42.7	38.5
Słupia	17.5	23.3	24.0	27.1	28.9	30.1	26.9	27.1	23.4
Sobków	19.1	21.2	24.2	23.1	26.0	30.2	26.5	24.8	24.7
Wodzisław	23.7	22.7	26.8	31.1	36.1	34.3	32.4	29.5	29.0
POVIAT	31.9	33.8	36.7	38.6	39.7	41.2	35.4	34.2	33.6

Source: Own analysis prepared on the basis of the Local Data Bank, https://bdl.stat.govh.pl/BDL/dane/podgrup/teryt (February 2, 2021).

The analysis of the data included in the table 2 indicates that the largest investment capabilities, based on own resources, were in the municipalities of Małogoszcz, Sędziszów and Jędrzejów. Despite the research showing a gradual decline in local governments' own incomes on a national scale, the data in Table 2 make it possible to observe this trend after 2015 (Swianiewicz, Łukomska, p. 10–11). For the first of them the investment level was more than a half of unit's budget in 2014 and 40.6 % at the end of 2016. For Sędziszów own resources happened to be more than a half of local budget twice. Only in the indicated local governments this relation in the years of 2010–18 exceeded the average level for the entire poviat. The municipalities of Sobków, Oksa and Imielno achieved the weakest results.[18] However, limited own resources were not the only index proving existence of conditions unfavourable for development of local investment policies with purpose to increase air and climate protection. Acquisition of external subsidies by municipalities of the *poviat* of Jędrzejów turned out to be on the insufficient level, too. These activities were presented at the chart 1.

18 The average level of relation between own resources of municipalities to their total incomes for the entire poviat in the years of 2010–18 was 36.12 %. Only the municipalities of Małogoszcz, Sędziszów and Jędrzejów exceeded this level with the respective indices of 45.15 %, 43.94 % and 43.04 %. Other municipalities were ranked in the following order: Wodzisław (29.51 %), Nagłowice (25.98 %), Słupia (25.37 %), Sobków (24.42 %), Imielno (23.62 %) and Oksa (21.72 %).

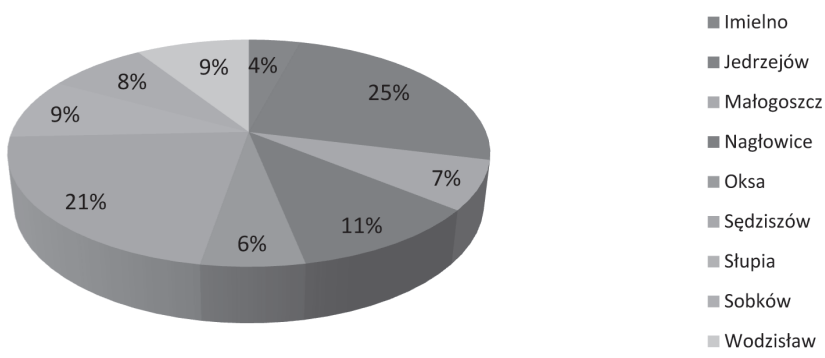
Chart 1. Investment subsidies acquired by municipalities of the poviat of Jędrzejów in the years of 2010 - 2018 (thousands of PLN)



Source: Own analysis prepared on the basis of the Local Data Bank, https://bdl.stat.govh.pl/BDL/dane/podgrup/teryt (February 2, 2021).

The chart 1 shows that the greatest successes in acquisition of investment subsidies in the years of 2010–18 were achieved by Jędrzejów and Sędziszów, while the worst results were in the municipalities of Imielno and Oksa. The percentage distribution of the amount of 151,559.1 thousands PLN of "external" support given to the *poviat* of Jędrzejów was presented in the chart 2.

Chart no. 2. Division of acquired investment subsidies between municipalities of the poviat of Jędrzejów for the years of 2010–2018



Source: Own analysis prepared on the basis of the Local Data Bank, https://bdl.stat.govh.pl/BDL/dane/podgrup/teryt (February 2, 2021).

The chart 2 shows that during 9 years the municipalities of Jędrzejów and Sędziszów had managed to acquire for development of their own local assets almost 46.4% of these type of funds, however, their activity in this field turned out to be correlated with large share of investment-related budgetary expenses only in case of Sędziszów. The respective data were presented in the table 3.

Tab. 3 Share of investment-related budgetary expenses for municipalities of the poviat of Jędrzejów in the years of 2010–2018 (%)

Municipality/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	average
Imielno	17.8	4.7	26.9	16.8	14.3	4.0	3.5	5.5	14.4	11.99
Jędrzejów	23.7	19.6	7.7	16.5	15.1	7.6	8.2	6.1	9.1	12.62
Małogoszcz	15.6	12.8	16.1	7.6	5.4	6.2	10.4	3.7	7.1	9.43
Nagłowice	27.4	25.1	29.0	31.9	25.3	23.3	5.5	9.5	11.6	20.95
Oksa	34.3	32.3	23.3	21.4	14.7	9.1	5.7	6.2	10.0	17.44
Sędziszów	43.0	22.9	6.9	9.6	17.0	13.6	17.5	18.7	27.0	19.58
Słupia	35.5	16.7	31.4	24.1	13.7	11.9	2.9	10.0	20.8	18.56
Sobków	29.1	22.3	11.3	8.7	4.7	11.5	6.1	8.1	16.6	13.16
Wodzisław	42.5	21.8	13.1	16.8	17.3	15.6	9.7	11.3	16.0	18.23
POVIAT	29.5	19.8	15.1	15.7	14.0	10.7	9.1	8.7	14.1	15.19

Source: Own analysis prepared on the basis of the Local Data Bank, https://bdl.stat.govh.pl/BDL/dane/podgrup/teryt (February 2, 2021).

The data included in the table 3 indicate that during the years of 2010–18 the largest expenses on investments in relation to entire budget, had been made in the municipalities of Sędziszów, Nagłowice, Słupia and Wodzisław. After 2014 most of local governments being analyzed spent less money for investments than before. The crisis of local investment policies started even sooner in the municipalities of Małogoszcz and Sobków where less than 10% of public assets were spent on investments as early as in 2013. The largest decrease occurred in 2017.

However, the assessment of the investment policies performed by the municipalities of the *poviat* of Jędrzejów in the field of air and climate protection requires some more analysis of detailed expenses to the extent presented in the table 4.

Tab. 4 Investment-related expenses in municipalities of the poviat of Jędrzejów for air and climate protection for the years of 2010-2018 (thousands of PLN)

Municipality/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Imielno	-	-	-	-	-	-	-	-	8.6
Jędrzejów	-	-	-	-	-	-	-	-	-
Małogoszcz	-	-	-	-	-	-	-	-	-
Nagłowice	-	-	-	-	-	4.9	12.3	11.6	-
Oksa	-	-	-	-	-	-	-	6.0	40.4
Sędziszów	-	-	-	-	-	24.6	4,405.2	1,111.3	22.6
Słupia	-	-	-	-	-	16.8	5.6	-	-
Sobków	-	-	-	-	-	-	-	-	-
Wodzisław	-	-	-	-	-	-	11.9	13.5	-
POVIAT	-	-	-	-	-	46.3	4,435.0	1,142.4	71.6

Source: Own analysis performed on the basis of reports on execution of budgets in municipalities of the poviat of Jędrzejów for the years of 2010–18 and data acquired from Regional Accounting Chamber in Kielce (February 2, 2021).

On the basis of the amounts of expenses specified in the table 4 we can indicate leaders and outsiders regarding realization of investments in the field of air and climate protection. The largest assets during the years of 2010–18 for these types of activities had been spent by the authorities of Sędziszów. No municipality had started this type of activities before 2015 and during the said 9-year period many local governments had not initiated any investment activities at all or they had been of only symbolic importance. The data for the years of 2016–17 prove this perfectly, when 4 of the units being analyzed had undertaken the said type of activities, spending on them more than 5.57 mln PLN. Let us pay attention to 2016, when, in spite of significant limitation of municipal investments in the entire *poviat*, expenses on air and climate protection turned out to be the highest in relation to the general amounts of funds spent in that year on local investments. The most active was the municipality of Sędziszów and the range of this dominance over other units was presented in the table 5.

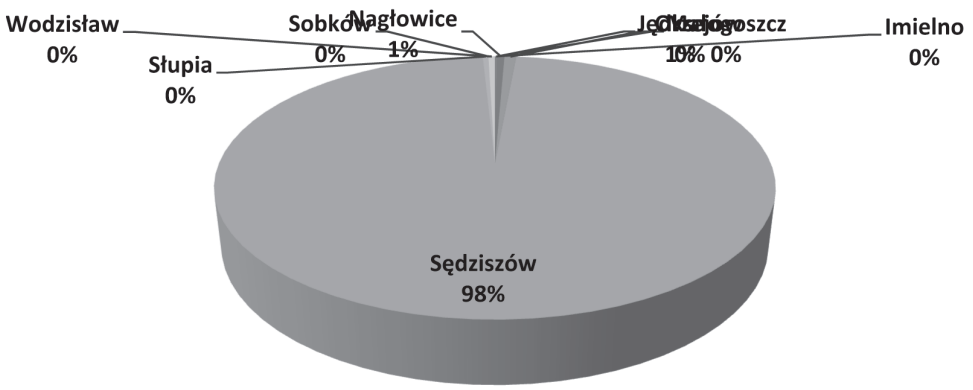
Tab. 5 Distribution of investment-related expenses in municipalities of the whole poviat of Jędrzejów on air and climate protection in the years of 2010–18 (%)

Municipality/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Imielno	-	-	-	-	-	-	-	-	12.01
Jędrzejów	-	-	-	-	-	-	-	-	-
Małogoszcz	-	-	-	-	-	-	-	-	-
Nagłowice	-	-	-	-	-	10.58	0.28	1.02	-
Oksa	-	-	-	-	-	-	-	0.53	56.42
Sędziszów	-	-	-	-	-	53.13	99.33	97.28	31.56
Słupia	-	-	-	-	-	36.29	0.13	-	-
Sobków	-	-	-	-	-	-	-	-	-
Wodzisław	-	-	-	-	-	-	0.27	1.18	-
POVIAT	-	-	-	-	-	100.0	100.0	100.0	100.0

Source: Own analysis performed on the basis of the data from the table 4.

The municipality of Sędziszów was ranked first and followed by Oksa, Nagłowice, Wodzisław, Słupia and Imielno, however, their expenses within investment policies regarding air and climate protection for the years of 2015–18 reached only 2.31 % of all expenses made in the entire *poviat* in that period. Their distribution was presented in detail in the chart 3.

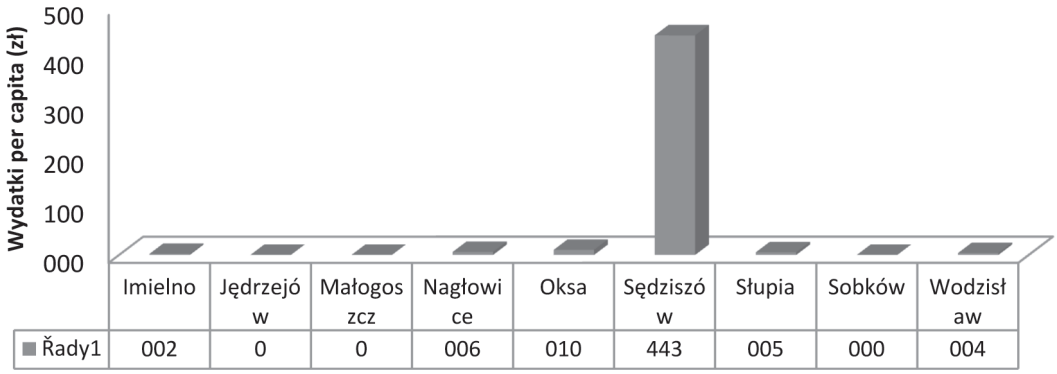
Chart 3. Distribution of investment-related expenses on air and climate protection in the poviat of Jędrzejów in the years of 2010–18 (%)



Source: Own analysis performed on the basis of the table 5

Observed dominance of the municipality of Sędziszów is not only a result of its effectiveness in acquisition of investment subsidies, but also active investment-related policy. Other local governments in the *poviat* were not able to reach the same level of expenses on investment-related goals. The difference of levels of support for investments aimed at air and climate protection was also expressly visible after converting these expenses on the *per capita* basis, see the chart 4.

Chart 4. Investment-related per capita expenses in municipalities of the poviat of Jędrzejów on air and climate protection in the years of 2010–2018 (PLN)



	Imielno	Jędrzejów	Małogoszcz	Nagłowice	Oksa	Sędziszów	Słupia	Sobków	Wodzisław
Řady1	002	0	0	006	010	443	005	000	004

Source: Own analysis performed on the basis of the table 2.

The chart 4 shows that investment-related *per capita* expenses on air and climate protection turned out to be the highest in the municipality of Sędziszów. Its local authorities could have supported energy transition profitable for climate-related objectives by investing in activities leading to improved access to natural gas for inhabitants and companies. Unfortunately, they have not done so, as specified in the table 6.

Tab. 6 Gas distribution network in municipalities of the poviat of Jędrzejów in the years of 2010–18 (km/100km²)

Municipality/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Imielno	-	-	-	-	-	-	-	-	-
Jędrzejów	3.5	3.5	3.6	5.5	5.6	7.4	8.2	8.4	8.7
Małogoszcz	-	-	-	-	-	7.3	7.3	7.7	7.9
Nagłowice	-	-	-	-	-	-	-	-	-
Oksa	-	-	-	-	-	-	-	-	-
Sędziszów	-	-	-	-	-	-	-	-	-
Słupia	-	-	-	-	-	-	-	-	-
Sobków	-	-	-	-	-	3.0	3.0	3.0	3.0
Wodzisław	-	-	-	-	-	-	-	-	-
POVIAT	0.6	0.6	0.6	0.9	1.0	2.5	2.7	2.8	2.8

Source: Own analysis performed on the basis of the Local Data Bank, https://bdl.stat.govh.pl/BDL/dane/podgrup/teryt (February 2, 2021)

The data included in the table clearly point out infrastructural deficiencies related to access to natural gas for inhabitants and companies in the *poviat* of Jędrzejów and practically minimal progress regarding development of the gas distribution network in the years of 2010–18. Its density had increased in that period by just 2.2 km/100 km2, reaching only 2.8 km/100 km2 in 2018. This confirms the necessity to intensify cooperation of local authorities with entities distributing fuel gases, that would result in quicker rate of transformation. Lack of such investments practically excluded use of this type of energy as a replacement for solid fuels, thus making it more difficult for local authorities to realize more ambitious goals in the field of air protection against emission of particulate matter, carbon dioxide or sulphur and nitrogen oxides from household heating systems. The table 7 shows to what serious extent inhabitants of the *poviat* of Jędrzejów had been denied access to natural gas until the end of 2018.

Tab. 7 Use of natural gas by inhabitants of the poviat of Jędrzejów in the years of 2010–18 (%)

Municipality/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Imielno	-	-	-	-	-	-	-	-	-
Jędrzejów (t)	-	0.5	0.8	1.5	1.9	2.4	2.8	3.3	3.9
Jędrzejów (ra)	-	-	0.1	0.1	-	0.1	0.2	0.2	0.4
Małogoszcz (t)	-	-	-	-	-	0.2	0.4	1.0	1.5
Małogoszcz (ra)	-	-	-	-	-	0.1	0.1	0.3	0.5
Nagłowice	-	-	-	-	-	-	-	-	-
Oksa	-	-	0.1	0.1	-	-	-	-	-
Sędziszów	-	-	-	-	-	-	-	-	-
Słupia	-	-	-	-	-	-	-	-	-
Sobków	-	-	-	-	-	-	-	-	-
Wodzisław	-	-	-	-	-	-	-	-	-
POVIAT	-	0.1	0.2	0.3	0.3	0.4	0.6	0.7	0.8

(t) - town, (ra) – rural area, source: own analysis performed on the basis of the Local Data Bank, https://bdl.stat.govh.pl/BDL/dane/podgrup/teryt (February 2, 2021).

The table 7 shows that use of natural gas by inhabitants of municipalities in almost entire poviat of Jędrzejów was rare or did not occur at all, therefore at least until the end of 2018 the inhabitants of the said subregion had not been able to use this source of energy for heating purposes. Availability of this fuel was extremely poor even in urban areas, with denser urban development, where risk of accumulation of particulate matter from household heating systems is multiple times higher than in rural areas. Even in Jędrzejów, whose population reached over 28,000 inhabitants in late 2018, less than 4 % of them had access to the gas network. Of course, many questions remain unanswered without more detailed qualitative research aimed at the inhabitants of this area. One of them is relationship between development of the gas network and willingness of the inhabitants to use this fuel. Nevertheless, its poor development of gas network in poviat makes it difficult for the population to use blue fuel now and in the coming years. Even if there are people in this area willing to think about using natural gas to heat their homes, the local authorities have not created an opportunity for him to do so. These data proves existence of the enormous investment loophole during the years of 2010–18 regarding local air and climate protection policies in municipalities of the poviat of Jędrzejów.

Summary

Investments profitable for air and climate protection and subsequent energy transition may be successful, if accompanied by strict and integrated cooperation of municipalities within given *poviats*. This cooperation should even go beyond borders of *poviats*, if they face especially difficult problems and it seems to be so in the case being analyzed, as integration and cooperation give greater opportunities for successful activities regarding air and climate protection than in case of undertakings performed separately by municipalities. The analyzed case of nine municipalities of the *poviat* of Jędrzejów proves that municipal authorities started to be interested in the issue of climate policy no sooner than after 2015. Unfortunately, 2018 saw another decline in the level of local expenditure of this kind. However, it should be appreciated that even then investments of this type were maintained in several communes, while before 2014 they were not recorded in any of them of the entire poviat.

On the basis of the presented data we can concluded that care given by authorities in the municipalities being investigated of clean air and climate has been gradually increasing, though not to the extent sufficient to effectively face still growing global challenges related to climate policy. However, stability of investment of policies is not supported by restrained financial capabilities of the smallest municipalities, poor accessibility to natural gas for inhabitants and rare, inconsequent and often minimal investment dynamics of local municipalities in this matter.

Summing up the analysis of the data included herein, let us, first of all, pay attention to the greatest challenges to be faced by municipal investment policies regarding air and climate protection. On the basis of the tendencies observed in the *poviat* of Jędrzejów we can identify them as follows: firstly, replacement of "symbolic" support of air and climate protection with rapid increase of investment-related expenses by local authorities in this matter; secondly, it is necessary to determine more ambitious goals related to energy transition in municipalities than those previously established as elements of low-carbon economy plans; thirdly, attention should be paid to stabilization of funding levels regarding investments related to air and climate protection in the longer perspective. These goals will not be accomplished without greater involvement of local authorities in the process of acquisition of external funds and without intensification of investment-related activities leading to granting access to natural gas to all inhabitants, especially in the areas with dense urban development.

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