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The Urban Plan of Adaptation to Climate Changes as a Component of Contemporary Environmental Policy in Poland at the Municipality Level

Abstract

Many Polish cities and towns have been recently struggling with various effects of natural events (such as sea and river floodings, droughts, heat – and frost – waves, gales and torrential downpours). It is anticipated that climate change is going to cause serious barriers to the development of these cities and towns due to the scale and frequency of individual natural events. Thereby, the effects of climate change not only constitute a real problem in our environment, but are also increasingly perceived as objectives of environmental policy carried out at the municipality level. In the article, having analysed current Polish local environmental policy, the authors discussed the role and significance of the strategic document of Urban Plans of Adaptation to climate change adopted by most large cities in Poland in the context of the determination and structure of policy objectives. The universalness of that document was also underlined as well as its long-term character in light of climate change and shaping the conditions for future functioning of cities.

Key words: natural environment, environmental policy, Urban Adaptation Plan, climate change; nature hazardse

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Miejski Plan Adaptacji do zmian klimatu składową współczesnej polityki środowiskowej realizowanej w Polsce na poziomie gminy

Streszczenie

Współcześnie wiele polskich miast zmaga się z różnymi skutkami zdarzeń naturalnych (takich jak: powodzie od morza i rzek, susze, fale upałów i mrozów, huraganowe wiatry oraz gwałtowne ulewy). Przewiduje się, iż zmiany klimatu spowodują poważne ograniczenia w rozwoju tych miasta ze względu na skalę i częstotliwość występowania poszczególnych zdarzeń naturalnych. Tym samym skutki zmian klimatu stanowią rzeczywisty problem występujący w otaczającym nas środowisku i coraz częściej stają się celem działań realizowanych na poziomie gminy w ramach polityki środowiskowej. W artykule, poprzez omówienie istoty realizowanej obecnie polityki środowiskowej w Polsce na szczeblu lokalnym, wskazano na rolę i znaczenie dokumentu, jakim są przyjęte przez większość dużych miast w Polsce Miejskie Plany Adaptacji do zmian klimatu, w kształtowaniu i wyznaczaniu celów tejże polityki. Zwrócono również uwagę na uniwersalność tego dokumentu, podkreślając w tym jego strategiczny i perspektywiczny charakter w kontekście zmian klimatu i kształtowania przyszłych warunków funkcjonowania miast.

Słowa kluczowe: środowisko przyrodnicze, polityka środowiskowa, gmina, Miejski Plan Adaptacji, zmiany klimatu, zagrożenia naturalne

Introduction

Despite being increasingly more independent from the environment as a result of the level of civilizational and cultural development man originates from it and continues to be its immanent element. At the same time, the environment itself provides man with the necessary living conditions and constitutes an area of his diverse activities. At present – and that must be emphasised – man's activity in the environment much more frequently is against harmonious existence and development of the environment than concordant therewith.[1] Negative consequences of irresponsible human influence on the environment consist in the more and more frequent occurrence of many problems, including global environmental problems resulting from either destruction of the environment or deterioration of its condition. One of the examples of such problems are climate changes.

Contemporary climate changes manifest themselves in the growing frequency of numerous extreme natural phenomena, the intensity and extent, and in particular negative consequences, of which adversely affect the functioning of society not only in individual regions or states, but the entire planet.[2] The occurrence of ever more precarious natural phenomena with more and more painful consequences force out elaboration of management tool to minimise negative consequences of such events and offer help in making decisions under the conditions of uncertainty arising from the randomness of natural hazards.[3] Therefore, an increasing number of entities, including states, institutions, regions or

1 Lisowska (2005): 15.
2 Specjalny raport IPCC (2018).
3 Tokarczuk i in. (2017): 6

international organisations, begin conducting environmental policies which takes into account the actual problems that occur in the surrounding environment.

In 2013, the Polish government adopted the "Strategic Adaptation Plan for Sectors and Areas sensitive to Climate Change by 2020 with a Vision to 2030." This document stipulated that shaping the resistance of Polish cities to recognised climatic hazards was one of the key tasks. In this connection, the Ministry of the Environment established a broad partnership of 44 cities, and then experts and stakeholders under the project: *The development of Urban Plans for Adaptation to climate change for cities with more than 100,000 inhabitants* (Project). Thus, Urban Plans for Adaptation to climate change (MPAs) have been developed for 44 cities in Poland.[4]

Therefore, with a view to the above circumstances, the article is aimed at analysing the methodology of developing a document of an Urban Plan for Adaptation to climate change, which document may become an element of the current environmental policy at the level of selected municipalities in Poland. What is more, the article focuses on indicating specific elements of an Urban Plan for Adaptation to climate change as a document helping to improve the resistance of Polish cities to the foreseen future natural hazards caused by dangerous meteorological and hydrological phenomena.

Environmental policy – definitions

An environmental policy is a sequence of decisions and then actions (or omissions) undertaken by specific entities (actors)

[4] *Plany adaptacji do zmian klimatu 44 miast Polski* (2018): 3.

of that policy,[5] which leads to improving, preserving or deteriorating the conditions and functions of the environment vis-à-vis the broadly conceived social system and its participants.[6] Those decisions should be developed and then implemented by stages, beginning with the identification of a problem and ending with the determination and enforcement of necessary measures. Nowadays, subjects of this policy include individual (persons) and collective entities, such as international organisations, pressure groups, political organisations, as well as state itself, including state authorities and institutions.[7] On the other hand, its object is the environment. The notion of "environment" means not only the surrounding natural elements determined by physical, biological, chemical and geographical conditions, but also those which are a result of human social development as well as all things manufactured or processed by people which have become permanent parts of the cultural heritage of generations[8] and influence human lives.[9]

Natural elements of the environment include:

- biosphere (is the layer of the Earth populated by living organisms), which is made up of lithosphere, hydrosphere and atmosphere, which offers conditions for the development of life and that is why it is populated;
- nature in a narrower meaning of the term, i.e. all the species of plants and animals living within their specific ecosystems and biotopes;

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5 Antoszewski (1999): 12.
6 Lisowska (2005): 27.
7 Lisowska (2017): 50.
8 Bukowska – Gorgoni i in. (1974) :115.
9 Odum (1977).

- elements of nature in a broader meaning of the term, other than those mentioned above, which satisfy material needs of people, including those that may be exploited, e.g. minerals or landcapes;
- "cultures" (aquaculture, forestry, agriculture) satisfying the nutrition requirements, account being taken of economic needs.[10]

Artificially manufactured elements of the environment, that is creations of human activities, are all the material aspects contributing to the well-being of contemporary people, who are living at a specific – current level of civilizational development determined by: development of human settlements, working conditions, means of transport and communications, waste disposal and treatment.[11]

Measures employed under so understood environmental policy should consist in:

- rational shaping of the environment and management of natural resources according to the principle of sustainable development;
- preventing pollution and contamination; and
- restoring natural elements to their original state.[12]

The nature of environmental policy at the municipality level

Environmental policy is carried out by various entities at the international, regional as well as local levels. In Poland, entities responsible for the implementation of this policy at the local level are, among others, voivodship, poviat or municipal

[10] Łustacz (1981) :28–36.

[11] Ibidem.

[12] Art. 3 ust. 13 p.o.ś (Ustawa z 27.04.2001 r. – Prawo ochrony środowiska tekst jedn.: Dz. U. z 2018 r.).

authorities,[13] where municipalities are treated as a separate level of the administrative division of the state.

Since 1990, the tasks relating to the broadly conceived environmental issues have been carried out at the municipality level by municipal councils, heads of municipalities, mayors or city presidents.[14] It should be emphasized, however, that a municipality is also a self-0governing community inhabited by a certain number of people. This means that subjects of environmental policy include not only itself (municipality as an institution), but also its inhabitants. Each inhabitant of a municipality may make several environment protection decisions and then adopt measures, which arise from their specific axiological and normative system.

Own tasks of a local government in the area of environment protection are of a directly executive character and consist in executing measures which have a direct impact on the environment. They consist in both protecting the environment as well as eliminating or minimising certain hazards caused by the functioning of local communities (e.g. water pollution, production of municipal solid waste, devastation of green areas). These tasks are own tasks of municipalities as they arise from the activities of self-governing communities which bear specific hazards. Implementation of those tasks is not only in the interest of a municipality itself, but also of the society at large. As regards their contents, dates and priority those tasks should be formulated by municipal councils and implemented by the executive bodies.[15]

The responsibilities of the municipal bodies which execute environment protection tasks are laid down in the Environment

13 Trzcińska (2016):50–74;Lisowska (2017): 51.
14 Lisowska (2017): 51.
15 Górski (2009): 82, 86–87.

Protection Law,[16] the Nature Conservation Act,[17] the Waste Act,[18] and the Act on providing information on the environment and its protection, public participation in environmental protection and environmental impact assessments.[19] The fact that those regulations are treated as particularly significant with a view to the specificity of contemporary policies in the area of environmental protection arises from two aspects. First, those legislative acts provide for and regulate the tasks and responsibilities of municipalities in the area discussed, and, secondly, they pertain in detail to environmental issues. Apart from the regulations mentioned above worth mentioning is also the Act on Maintaining Cleanliness and Order in Municipalities,[20] which has no direct reference to environmental issues, but equips municipal bodies with powers that indirectly determine what municipalities do in the area of environment protection.

Thus, municipal executive bodies, i.e. heads of municipalities, mayors or city presidents are responsible for the activities both with respect to environment protection as well as conservation of nature.[21] Those bodies can develop and issue various types of acts of local law as well as perform tasks under other types of documents pertaining to environment protection, including municipal environment protection programmes.

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[16] Ustawa z dnia 27 kwietnia 2001 r. Prawo ochrony środowiska (Dz. U. nr 62, poz.627 ze zm.).

[17] Ustawa z dnia 16 kwietnia 2004 r. o ochronie przyrody (Dz. U. nr 92, poz. 880 ze zm.).

[18] Ustawa z dnia 14 grudnia 2012 r. o odpadach.

[19] Ustawa z 3.10.2008 r. o udostępnianiu informacji o środowisku i jego ochronie, udziale społeczeństwa w ochronie środowiska oraz o ocenach oddziaływania na środowisko (Dz. U. z 2016 r. poz. 353 ze zm.).

[20] Ustawa z dnia 13 września 1996 r. o utrzymaniu czystości i porządku w gminach (Dz. U. Nr 132, poz. 622 ze zm.).

[21] Lisowska (2017): 52.

Environment protection programmes are adopted by municipal councils,[22] while beforehand heads of municipalities, mayors or city presidents are obliged to ensure public participation in the proceedings, which is aimed at developing an environment protection programme. They are developed every four years, while the measures provided therein should cover the successive years. Progress in programme implementation is to be reported every two years to the municipal council.

Those programme are not legally binding documents, which means that they do not arouse direct legal consequences are regards the rights and duties of entities external to the administration.[23]

In Poland, environment protection programming at the municipal level takes place in the overwhelming majority of municipalities in Poland. It is particularly evident as regards municipalities situated in the areas of environmental hazards.

Taking into account various degrees of complexity of environmental problems in individual municipalities, the urgency of their resolution as well as the financial potential of municipalities, an environment protection programme should outline, among other things:

- valorisation of natural environment;
- description of major environmental loads and hazards;
- assessment of the capacity of ecosystems from the viewpoint of fundamental loads together with assessment of the degree of regeneration capabilities of ecosystems;

[22] Art. 18 ust. 1 p.o.ś 2001 (Ustawa z 27.04.2001 r. – Prawo ochrony środowiska tekst jedn.: Dz. U. z 2018 r.).

[23] Bar (2008): 223.

- directions of most urgent actions arising from the assessment, taking into account the assumptions of regional and state policies;
- type of proposed protective measures from the viewpoint of technology, space, time, etc.;
- estimation of necessary outlays;
- assessment of losses as a result of waiving protective measures;
- assessment of ecological and economic effectiveness of proposed protective measures;
- a concept of the implementation plan indicating where the funds for the implementation of programme tasks will come from.[24]

Since the programming in Poland covers environment protection strategies at the national level and strategic local objectives (contained in programmes, strategies and programme documents), environment protection strategies may be considered generally – as an element of the policy of central or local government, as well as specifically – as documents outlining long-term objectives of specific protective measures.[25] In the former case, municipal environment protection programmes should offer more details supplementing the environmental policy of the state, and in the latter they should take into account the local character of field problems.[26]

In connection with the above, worth mentioning are Urban Adaptation Plans (abbr. MPA) developed in 44 Polish cities, which may become both a component of environmental

[24] Podolak (2004): 148–149.
[25] Poskrobko i Poskrobko (2012): 187.
[26] Górski (2009): 85.

policies carried out at the municipality level in Poland and may be also treated as a basis for updating and/or developing municipal environment protection programmes.

The urban plan of adaptation to climate change as a component of environmental policy at municipality level

Urban Plans of Adaptation to climate change (MPAs)[27] is a project implemented in the years 2017–2019 with the participation of the following cities: Białystok, Bielsko-Biała, Bydgoszcz, Bytom, Chorzów, Czeladź, Częstochowa, Dąbrowa Górnicza, Elbląg, Gdańsk, Gdynia, Gliwice, Gorzów Wielkopolski, Grudziądz, Jaworzno, Kalisz, Katowice, Kielce, Kraków, Legnica, Lublin, Łódź, Mysłowice, Olsztyn, Opole, Płock, Poznań, Radom, Ruda Śląska, Rybnik, Rzeszów, Siemianowice Śląskie, Słupsk, Sopot, Sosnowiec, Szczecin, Tarnów, Toruń, Tychy, Wałbrzych, Włocławek, Wrocław, Zabrze, Zielona Góra. Moreover, among 44 participants in the Project there were also 7 towns with the number of inhabitants lesser than 100,000, namely: Czeladź, Grudziądz, Jaworzno, Mysłowice, Siemianowice Śląskie, Słupsk and Sopot. The capital city of Warsaw did not take part in the project, for which at the time a project initiated in 2014 was underway, entitled *Preparation of a strategy for adaptation to climate change of the city of Warsaw with the use of city climate mapping and with public participation* (abbr. ADAPTCITY).[28]

An Urban Plan of adaptation to climate change is a document which had been prepared for each city participating in the Project separately, and in the years 2018–2019

[27] *Plany adaptacji do zmian klimatu 44 miast Polski* (2018).

[28] *Strategia adaptacji do zmian klimatu dla m.st. Warszawy do roku 2030 z perspektywą do roku 2050* (2019).

the majority of large cities in Poland participating in the Project adopted their own MPAs.

An Urban Plan of Adaptation to climate change has several distinctive features, which allow to treat it as a component of environmental policies carried out in Polish municipalities. The first attribute is without doubts the objective of the project, namely to ensure cities' resistance to currently identified meteorological and hydrological hazards, as well as predicted medium – and long term hazards and thus attaining favourable living conditions for inhabitants in a diverse, friendly environment. Therefore, the specificity of an MPA's objective requires a detailed analysis of concrete areas in order to ensure urban resistance to natural hazards. The main areas of analyses carried out under the preparation of an MPA include: identification of major urban hazards related to climate change; identification of sectors and areas in individual cities, which are most susceptible to change; as well as selection of the most effective adaptation measures minimising unfavourable climate change consequences.

Another distinctive feature of an MPA is the fact that many entities contribute to the development of final solutions. It is worth emphasizing that the Project and then the development of the final form of the document was the collective effort not only 450 experts from state research institutes and a consulting firm,[29] but also many representatives of the executive bodies of individual cities/ municipalities (city vice

[29] Wykonawcą Projektu było konsorcjum składające się z następujących podmiotów: Instytutu Ochrony Środowiska – Państwowy Instytut Badawczy (lider Konsorcjum), Instytutu Meteorologii i Gospodarki Wodnej – Państwowy Instytut Badawczy, Instytutu Ekologii Terenów Uprzemysłowionych oraz międzynarodowa firma konsultingowo-inżynierska ARCADIS.

presidents as well as heads and key employees of many strategic departments of municipal offices within a group of around 700 urban experts 700), and also very numerous representatives of local communities and non-governmental organisations. Both MPAs' authors and beneficiaries did their utmost to include as many stakeholders as possible, both at the stage of preparing the document as well as at the stage of the strategical assessment of its environmental impact. All in all, 132 workshops were held under the Project, which were attended by 2400 participants.[30]

MPAs are also characterised by that when planning adaptation measure uncertainties of projected climate change are taken into account. This means that measures to improve resistance of 44 cities to environmental hazards taking into account several climate change scenarios were adopted on such scale for the first time in Europe.

It should be emphasised that inhabitant of those 44 cities account for 30% of the entire population of Poland and one half of the population living in all Polish cities. Large urban agglomerations have several common features, which were meaningful when their susceptibility to climate change was assessed. Urban areas are characterised by large population densities and considerable concentration of urban functions and relevant infrastructure. Many common features of Polish cities allowed for elaboration of a uniform methodology for the development of Urban Adaptation Plans. At the same time, an MPA is characterised by its localness, which was taken account of not only in the adopted methodology, but also solutions. MPA,s took into account the specific features of individual cities arising from their location, topography, spatial

[30] *Plany adaptacji do zmian klimatu 44 miast Polski* (2018): 5.

development, building typology and historical contexts well as the dynamics of socio-economic processes in those cities.[31]

The weight of the above components of MPAs allows for stating that the document has a multifaceted character. First of all, MPAs may become an additional instrument for formulating environmental policy at the local level, taking into account climate change scenarios for individual cities and the resultant adverse consequences. An MPA may be adopted by the municipal council as a strategic document of the municipality for the needs of conducting local environmental policy. In this context it is extremely important that the scenarios for individual have been developed jointly by may entities involved in municipal environmental policy, beginning with representatives of municipal institutions, to pro-environmental organisation, to city inhabitants themselves. Therefore, an MPA becomes a document elaborated with the use of participatory methods of a consensual character. The specificity of this document makes one reflect that all entities involved in its development should be interested in the implementation of an MPA. Therefore, it seems warranted to say that implementation of an MPA should be based on cooperation between individual subjects of environmental policy at the local level rather than on rivalry and conflicts.

Apart from the possibility of treating MPAs as an additional instrument for shaping environment policy at the local level, also the strategic character of the document is worth pointing out. This is due to the fact that MPAs specify long-term measures that are not only of a preventive but also a mitigating nature. What is more the contents of each MPA reflect multifaceted analyses of natural hazards that occur in individual

[31] Ibidem: 14.

cities, while the analyses themselves were based on the data from thirty years long observations and records of the Institute of Meteorology and Water Management – National Research Institute, as well as local studies carried out by many independent institutions observing meteorological phenomena in individual Polish cities.

With a view to the above, MPAs may also be used in individual cities as a basis for developing municipal environment protection plans or a subject-matter support for updating the existing municipal environment protection programmes.[32] This aspect of MPAs should be underlines since they take into account not only localness of environmental hazards and expected climate change, but also the the potentials of individual cities. It is of major importance that municipal environment protection programmes provide credible and honest not only diagnoses of the types of environmental hazards, but also real capabilities of a municipality to cope therewith.

Fundamental areas of analysis under a municipal of adaptation to climate change

MPAs' objective is to make cities resistant to hazards arising from climate change. In order to fulfil this objective it is necessary to start an analytical effort the effects of which would lead to:

- identification of the scale of various types of natural hazards in individual cities, as well as city sectors or areas most susceptible to those hazards; and
- planning of effective adaptation measures to mitigate the adverse consequences of climate change.[33]

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[32] Art. 14 ust. 2 p.o.ś. 2001 (Ustawa z 27.04.2001 r. – Prawo ochrony środowiska tekst jedn.: Dz. U. z 2018 r.).

[33] Plany adaptacji do zmian klimatu 44 miast Polski (2018): 15.

As regards the first area, i.e. identification of hazards arising from climate change for cities – beneficiaries of MPAs, it should be underlined that Poland geographical situation and its land configuration have an impact on the occurrence of extreme weather phenomena which are particularly dangerous for cities. The belt layout of the main regions favours free zone circulation, which is why in Poland clashes of ocean and continental air masses are frequently observed. Land configuration in the southern part of the country is diversified, which contributes to shaping local weather conditions, while the north is a coastline zone where the impact of the Baltic Sea is evident. That is why considerable weather differences are observed throughout the territory of the country.

Natural hazard most frequently occurring in Polish cities include heat waves, frosts, heavy downfalls and storms, urban floodings, river overflows, sea overflows, landslides, droughts, gales and sea level rises. With a view to the abovementioned types of natural hazards, representatives of the municipal authorities of the cities participating the Project, with the support of external experts, made a final selection of major hazards arising from climate change, which may prove to constitute significant barriers to urban development.

It turned out that all Polish cities participating in the Project identified heat waves among major hazards. Almost all (excl. Rybnik and Tarnów) mentioned heavy downfalls and storms. Many cities indicated also sudden and heavy rainfalls, which are the cause of dangerous urban floods. This cause-and-effect relationship arises from the fact that urban land is mostly hard surfaced, while the capacity of the rainwater drainage system is insufficient.

Moreover, Polish cities situated in places where rivers flow into the sea (Elbląg, Gdańsk, Gdynia), apart from the threat

of urban floods, also mentioned river and sea overflows as an equally significant hazard to the functioning of a city (caused by both backwater and an increased sea level). Also representatives of Szczecin and Sopot perceived sea floodings as a major source of hazard. On the other hand, river floodings turned out to be a source of hazard all in all for 13 cities covered by the Project.

Droughts were mentioned as a factor restricting urban development by 26 cities. For the same number of cities gales are a serious natural hazard which requires adaptive measures, while landslides are a hazard for Gdańsk and Płock.

In light of the above discussion it may be acknowledged that the authorities of Polish cities have to face stepped up natural hazards associated with: heat waves (but also frost waves – 11 cities identified this hazard, although in a much greater number that claim much more victims, especially among the homeless, than heat waves), intense downfalls and storms, floods (both from revers and the sea), gales and doughts. That is why an important characteristic of Urban Adaptation Plans is that they identified in the cities participating in the Project sectors and areas most susceptible to climate change. From among the following sectors/areas: public health, transport, energy, water management, tourism, biological diversity, cultural heritage, spatial development, densely built-up housing areas, other infrastructure, almost all cities participating in the project found that public health is the city sector most susceptible to hazards associated with climate change and requires most urgent intervention. Only two cities decided that public health is not included in this category, namely Radom and Zabrze. The vast majority of the cities also identified transport and water management as sectors that are very susceptible to hazards and requiring urgent adaptive measures.

A considerable number of Project participants identified spatial development as a sector requiring urgent adaptive measure (14), whereas energy was mentioned by 17 cities. Also 17 cities found densely built-up housing areas to be very sensitive to natural hazards and requiring urgent intervention to contain their oversensitivity. On the other hand Katowice, as the only one, identified undeveloped areas as requiring specially urgent measures to improve the conditions for the functioning of its inhabitant in connection with climate change.

Few cities identified as a sensitive sector tourism (Olsztyn, Rzeszów i Tarnów), biological diversity (Dąbrowa Górnicza, Gdańsk, Gdynia, Kielce, Lublin, Słupsk, Sopot, Tarnów) and cultural heritage (Płock, Wrocław).[34]

The Plans of Adaptation to climate change reflect urban policy oriented at the city's ability to cope with natural hazards. This policy is reflected in the consisting in minimising or mitigating the consequences of major hazards arising from climate change. Such priority is a response to the identified hazard most frequently occurring in the cities and the defined area of future adaptive measures for each city. Adaptive measures are needed to meet the mapped out objectives. To this end, in each city adaptive measures were planned to increase the city's resistance to climate change by improving its capability to cope with its consequences and by shaping social awareness and civic attitudes. Those measures are usually of an informational, educational, organisational or technical nature.

Harmonised informational and educational measures are characteristic of a culture of common concern about city's security. Educational measures consist in conveying

[34] Ibidem: 10–11.

knowledge about natural hazards and the methods of preventing their adverse consequences. They include also consolidation of the competences of inhabitants and organisations operating in the city as regards acquiring information about the spatial distribution of adverse natural phenomena occurring in the city, as well as the systems of surveillance and alerting about dangerous weather phenomena. Informational measures include presentation of planned and already employed adaptive measures and the benefits to be expected in this connection by the inhabitants, as well as promotion of good practices among city inhabitants in the environmental area. Therefore, educational and informational measures should accompany organisational and technical measures employed by the cities, thus ensuring their understanding and acceptance.[35]

Organisational measures, on the other hand, consist in introducing changes in spatial planning and organisation of public space, amendments of local law leading to increased city resistance to natural hazards, developing guidelines how city inhabitants and also various types of entities should behave in emergency situations.

Technical measures, usually most capital intensive, are those that we expect to yield significant effects as regards preparedness of the city for climate change within a certain (usually very short) timeframe. The following undertakings may be ascribed to this group of measures:

- modernisation or extension of the active and passive anti-flood system protecting cities against floodings;
- setting up systems of alerts and information about approaching dangerous weather or hydrological events;

[35] Ibidem: 14.

- adjustment of the public transport system to the consequences of climate change;
- equipment of rescue services in order to improve the effectiveness of their operations in a situation of responding to extreme natural phenomena.[36]

The aim of the adaptation of cities in Poland to climate change is to protect life and health pf their inhabitants, as well as minimising the costs of repairing damage to the infrastructure and restoring normal functioning of cities after the extreme natural events. Under the Project, the cost of adaptation measure in all 44 cities was estimated at 30 billion zlotys to be spent by 2030.[37]

Conclusion

With a view to the above presented aspects connected with both the specificity and essence of environmental policy, as well as Urban Plans of Adaptation to climate change, the authors of this article recommend that MPAs be treated as a component of environmental policy at the municipality level in Poland. This position arises from the fundamental premise, namely that an MPA is a universal document in the area of environment protection whose objective redefines the assumptions of contemporary environmental policy. In the latter case it should be noted that under an MPA measures are adopted which are aimed not only at protecting elements of the natural environment and mitigation of the adverse effect of man on the environment, but also predicting climate change and shaping future conditions for

[36] Ibidem: 15.
[37] Ibidem: 3.

the functioning of cities. In this way, the novelty in specifying the assumptions of contemporary policy consists in that it has a predictive function which so far has not been one of its attributes.

On the other hand, the universality of the MPA is manifested first of all in how this document was elaborated. The MPA is a resultant of decisions and measures recommended by various entities of environmental policy at the municipality level, while in the area of solutions it is addressed to these entities. Moreover, the document takes into account the natural and anthropogenic character of hazards which occur in 44 Polish cities and the potential of those cities as regards coping with those hazards. It may also be treated as a strategic document for a municipality due to the fact that it meets all requirements for such a document. The MPA lays down not only long-term objectives of protective measures, that is undertaking defining directional programmes, but also specific tasks with respect to environment protection in individual sectors of cities' functioning. What is more, as a strategic document it may be implemented independently from the already existing environment protection programmes. Obviously, treating the MPA a a strategic document does not exclude its potential for creating or updating the existing municipal environment protection programmes.

Thus, regardless of whether the MPA will be used a basis for creating/updating municipal environment protection programmes or it will be adopted as a separate strategic document, in any of those cases it will be an act of local law adjusted to the needs and capabilities of individual municipalities, but also a document taking into account the essence of local environmental policy.

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