



## Research paper

# Spatial planning policy towards floodplains and environmental protection as obstacles to the development of settlements on the Lower Bug

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**Abstract:** A little over a decade ago, a number of legislative changes were made in Polish law dealing with spatial planning in relation to floodplains and water management. More specifically, the amendments were a consequence of the adoption of the relevant Floods Directive by the European Parliament and the European Council in 2007, which was introduced as a countermeasure to the allegedly increasing flood risks associated with the ongoing urbanisation of floodplains. It was recognised that the risks of material and non-material damage associated with increasing urbanisation are so great that appropriate legal provisions must be introduced to reduce them. More than a decade has passed since the introduction of these provisions (the Floods Directive was adopted in Poland in March 2011). Over time, it has become apparent that the implementation of many legislative changes in Poland related to spatial planning in floodplains has been impractical and has had a very negative impact on the spatial and economic development of these areas. In this article we focus on the Lower Bug Valley and show how these new laws have led to a deterioration of the living situation in the floodplains. Indeed, the problem of economic decline in the floodplains and Natura 2000 sites is very serious and affects people who have lived for years in a 2–5 km wide strip in quiet surroundings flood-prone areas and along the river bend. Restrictions on livestock and the decline of agriculture are compounded by the lack of interest in acquiring habitats and land. These areas are becoming an open-air museum with residents living on social benefits and pensions.

**Keywords:** floodplains, spatial development, sustainable development, Floods Directive, spatial planning, water management, flood protection

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## 1. Introduction

Historically, river valleys and floodplains have always been perceived as attractive places for human settlement [1]. There were many reasons for this, but the most important was, of course, access to water, which was used not only for consumption but also for agriculture, production and even energy generation. The water was also used to irrigate the land, which provided attractive conditions for agricultural cultivation. In addition, the river provided opportunities for transport and trade. Defensive qualities were also considered. T. Jarzębińska notes that although floods occurred repeatedly in the floodplains, causing noticeable losses to the local population, access to water was a source of far greater gains compared to losses [2]. R. Lechowska argues that it was only the intensive development of floodplains and the resulting significant increase in flood losses and damages that led to more attention being paid to flood protection in these areas [3].

When visiting villages near Warsaw on the Bug River, one can be enchanted by the river, the seasonal changes in the floristic landscapes and the avifauna associated with the river. However, it is worth taking a look at the investment processes of the municipalities in water and sewage infrastructure and the network of local bus connections linking the rural areas with Wyszaków, Radzymin and Warsaw. It can be noted that in the area of the villages from Wyszaków to Serock the construction of houses is stagnating, investments in agriculture are completely absent and there is a lack of new recreational buildings. Interestingly, there was much more investment in this region before the legislative changes described in this article and immediately after the local floods of 2001 and 2010 (when roads were repaired and waterworks were built). According to local government representatives, this state of affairs is a consequence of the restrictive limitations introduced by the water management administration and the limitations introduced by nature conservation in Natura 2000 areas. The restrictions laid down in laws and relevant regulations are interpreted by the state administration without analyzing the local conditions and without considering the consequences of the decisions taken.

This article attempts a reality check based on a systematic assessment of the available evidence on spatial planning for floodplain development and its impacts, now that several years have passed since the relevant legislative amendments came into force. An important element of the study is to examine (1) the state of the economy in the villages in the Lower Bug valley between Wyszaków and Serock, and (2) the causes of the apparent economic regression and the effects of depopulation in these areas. In order to activate the development of the floodplains in the Lower Bug Valley in the immediate vicinity of Warsaw, certain changes would undoubtedly have to be made in the spatial planning of these areas, as well as in the administration of water management and nature conservation, in the light of current law. The article is theoretical in nature and provides a comprehensive overview of the implications of implementing new laws and principles of sustainable development in flood-prone areas. The article deals with the management of spatial planning in floodplains and the implementation of sustainable development in floodplains (especially in relation to Natura 2000 sites) in recent years; in particular, approaches to integrated flood protection are presented. The study focuses on the diagnosis of barriers in floodplains and assesses

the existing barriers in Natura 2000 sites to show the diversity of spatial planning issues and emerging problems related to floodplains. Furthermore, it refers to the case study of the Polish settlement of Kuligów. Finally, a discussion section is included and some conclusions are drawn.

## 2. Background

First of all, it should be emphasised that there has been a fundamental change in the general approach to legal issues of spatial planning in relation to floodplains and water management, namely away from the exclusive use of technical methods and measures to ensure flood protection and towards a focus on the protection of the environment, which ensures greater safety for people. Z. Gaşowski and A. Dobrowolski refer to this as the adoption of the principle of organising people's lives by accepting the occurrence of floods [4]. J. Schanze refers to the move away from terms such as "flood protection" and the increasing use of terms such as "flood risk management and flood control" [5]. E. Głosińska discusses the popularity of terms such as "restoration of natural areas" for rivers in the context of most European government policies and legislation (e.g. Floods Directive) [6]. More importantly, E. Głosińska points out that the terminology of floodplain species has changed significantly in the course of the legislative changes [6]. The most important change is that the term "areas of special flood hazard" has been replaced by "areas of immediate/direct flood hazard". In turn, the term "areas at potential risk of flooding" is no longer used. Such areas are now referred to and described as areas where "there is a risk of flooding because the water overflows the dike". The purpose of the drafting and introduction of the above-mentioned Floods Directive was to address a number of issues related to increased flood risk and to provide a framework for managing this risk [7,8]. The intention was to do this in a comprehensive manner that would enable holistic management of flood risk and sustainable development in flood-prone areas, and therefore a policy was drafted and enacted. This was to try to minimise the potential negative impacts of flooding in terms of human safety, environmental protection, preservation of cultural heritage and promotion of economic activity in these areas [6,9]. The new law provided for the possibility of a number of initiatives to reduce the likelihood of flooding, including those of a non-structural nature, to emerge and continue [6]. The basis for the drafting and adoption of the Floods Directive by the European Parliament and the Council of Europe was the assumption that progressive and uncontrolled urbanisation in floodplains exposes river basins to increasingly frequent flooding. It is true that the number of severe floods has increased in recent years, often resulting in a direct threat to human life, major material damage and even loss of life [6,10]. The causes are attributed partly to climate change and partly to land use in the floodplains themselves [6]. One of the forms of flood prevention and mitigation is undoubtedly appropriate spatial planning, as has been demonstrated in many scientific studies [3,11–19]. Broadly speaking, the new water management regulations define how floodplain classes are determined. The aim is to assign them an appropriate probability of flood occurrence. In general, such an approach should facilitate spatial

planning, especially in the context of the numerous flood lines identified in ‘previous’ flood protection studies [6]. As a result of the new legislation, lists of development prohibitions in floodplains that existed prior to the new law have been retained. This refers to the areas that were called “areas of potential flood risk” before the law was changed and later renamed (areas where there is a risk of flooding because the water flows over the top of the dike). As for the new prohibitions on building and development in floodplains, other areas have been included for which the degree of flood risk has not been determined. It can be concluded that the territorial extent of the areas classified as particularly vulnerable has been significantly expanded. It is important to note that the deadlines for new flood hazard and flood risk maps have been precisely defined by the Floods Directive and new regulations in Polish law. Today, such maps already exist and can be viewed via the Hydroportal. Fig. 1 shows the flood risk map for Deskurów, which is located near Wyszaków.



Fig. 1. An example flood risk map (flood damage) of the Lower Bug in Deskurów n. Wyszaków  
(Source: own elaboration based on hydroportal: <http://mapy.isok.gov.pl>)

In the context of spatial development plans, it should be clarified that before the Floods Directive came into force, it was not obligatory to prepare and include flood protection studies in these plans. With the new Directive, the inclusion of such studies in spatial development plans became mandatory. The new regulations introduced restrictions and limitations on the spatial development of floodplains, such as in the Lower Bug Valley near Warsaw. Since the new law came into force, flood risk maps such as the one shown in Fig. 1 above have to be taken into account in spatial planning. Prior to this new law (before the Floods Directive came into force), planning permission was granted for areas directly adjacent to watercourses and there was no obligation to consider flood risk in local spatial plans, especially on the basis of a 10-, 50- or 100-year probabilities. However, there is now an obligation to include floodplain boundaries in local spatial plans (especially indicating a certain level of risk). It is also worth noting that even before these new regulations came into force, municipalities were relatively reluctant to include floodplains in their spatial plans [9, 20]. There were at least several reasons for this. For one thing, the municipalities could justify their decisions with the flood risk. As a rule, such explanations ultimately solved the problem and justified the municipalities’ decisions. From the investor’s point of view, it was difficult to argue against the justifications. K. Kitowski [21] and E. Głosińska [6]

also point to other reasons, namely that the municipalities usually did not want to block the development of attractive areas and limit their possibilities for local development. But even if the right to build was restricted as a result of a municipal decision, the investor was entitled to compensation from the municipality on the basis of the 2003 Spatial Planning and Development Act [Article 36 of the 'Act on spatial planning and development' of 27 March 2003 – Journal of Laws No. 80, item 717]. There were also situations where the restriction was due to a decision by the Regional Water Management Board (RWMB). In such cases, the RWMB was responsible for paying compensation [12, 21]. Before the new Flood Directive came into force, local authorities did not adopt local floodplain plans, but issued decisions on development conditions, and only sometimes RWMB approval was required in such situations [20].

K. Kitowski [21] points out that the new law allows for preventive spatial planning, which means that planning does not allow for situations of increased flood risk in floodplains. E. Głosinska [6] points out that when the new legislation was introduced, it was possible to work out appropriate procedures for exceptions to the building bans. This applied to floodplains that were not included in local spatial plans. Such permits could be granted for a single project. According to Głosinska [6], the new Flood Act, in conjunction with the Act on the Regulation of Land Use in Floodplains, enables rational management of floodplains and ensures compliance with restrictions and construction bans. The changes in flood risk management restrict urban development in river floodplains by giving back much more space to rivers than in the days of the old regulations (they are, incidentally, in line with the trend in other European countries) [6]. In our view, the amended regulations have not ensured rational use of floodplains and it is difficult to assess their impact on flood risk reduction. The new law has already been in force for a few years and the effects are already visible. Ultimately, the changes in the law should not only enable preventive floodplain management, but also proper flood risk management, especially by increasing public awareness of such risks, including the provision of flood hazard maps and flood risk maps to interested parties. In addition, local communities should be activated by giving them the opportunity to participate in the development of such flood risk management plans.

## 2.1. Diagnosis of barriers in floodplains

The wet weather at the end of the 20th century and the repeated floods in Europe prompted the EU to adopt the Water Framework Directive [Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy] and the so-called Floods Directive [Directive 2007/60/WE of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks]. The transposition of the aforementioned directives into water law led to systematic state action by mapping so-called floodplains with the probability of an event occurring once every 10, every 100 and every 500 years. The maps were published in 2016 based on interpolations of the predicted flood wave, which are based on numerical models of topographic maps - without on-site verification. In these areas, the main influence on the development of the economy and the standard of

living of the inhabitants is now in the hands of the central water authorities from Warsaw. The role of local authorities is limited to the construction of waterworks and the repair of roads. On 1 January 2018, the Water Act [Water Law Act of 18 July 2001. 115, pos. 1229] introduced a formal ban on construction in areas designated on maps as floodplains. As a result, previously issued open-ended spatial development and land use decisions, with the exception of decisions on linear structures, are also no longer valid in these areas. By invalidating the previously issued decisions, the legislator has disregarded one of the basic principles of Roman law *Lex retro non agit*, which states that the law does not apply retroactively. In Polish law, this principle is binding under Article 3 of the Civil Code in the form of the so-called “prohibition of retroactivity”, which reads: “A law may not apply retroactively unless this follows from its wording or purpose”. Deviation from this principle violated fundamental elements of the legal system, including in particular the protection of acquired rights. The legal paradox is that the state, out of concern for the safety of people and their property, has reduced the real value of their real estate and deprived them of the opportunity to make further investments in their places of residence. The extent of this problem in the Narew and Bug river basins is shown on the following map in Fig. 2.

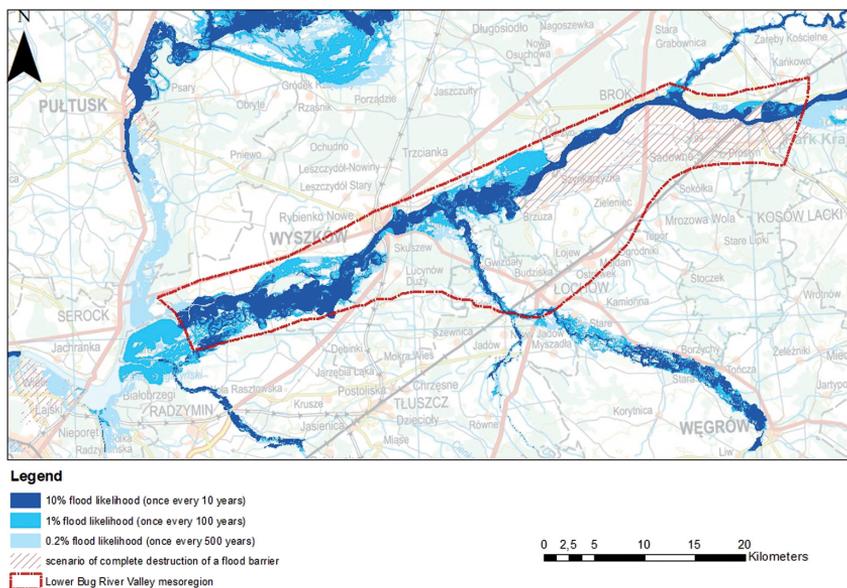


Fig. 2. Mesoregion of the Lower Bug River Valley indicating areas at risk of flooding (p10%, p1% and p0.2%) (source: own elaboration in ArcGIS 2.9)

The decline in the market value of farms and building land is due to the prohibitions that apply to these types of land. These include (1) prohibiting the erection of buildings, except for the construction of cycle paths, (2) prohibiting the planting of trees or shrubs, except for willow plants and other plants used for water regulation, (3) making changes to the shape of the land, (4) carrying out other works, such as levelling the land. The change in the economic

classification of the land was not realistically linked to the possibility of compensation for the material damage caused. The cunning of the legislator was expressed in the provisions on the possibility of claiming compensation in Article 471 (4) and (5) [Journal of Laws 2022.0.2625 i.e. – Act of 20 July 2017 – Water Law], which stated that an agricultural enterprise could claim compensation if the introduced law restricted the economic activity resulting from the land use determined on the basis of the land and building cadastre or the development of the land according to the designation determined in the local land use plan, thereby excluding all land that did not have the status of an agricultural enterprise. Claims for compensation thus required that the damage was documented in the form of an expert report and that the case was brought before the court. Furthermore, the deadline for filing claims was 2 years after the introduction of the law. This can be formulated as follows: – There are no known cases on the territory of Lower Bug municipalities where compensation was obtained for the introduced water right. The construction of an agricultural building (even up to 35 m<sup>2</sup>) or the construction of a house on this kind of land is only possible if the director of the Regional Water Management Office issues a cancellation notice based on the current water law – but such notices are practically not issued. The second instance is the Minister of Climate. Local authorities responded to the provisions of the Water Act as follows: (1) Amendments to plans in floodplains were not made because Article 36 (1) of the Law of 27 March 2003 on Planning and Spatial Development allows claims by the land owner or beneficiary if the adoption or amendment of the local spatial development plan has negative consequences for that land. (2) Provisions have been included in adopted local spatial development plans stating that the municipality is not liable for the consequences of a change in the value of land under the Water Act. As a result of these provisions, villages in Lower Bug are depopulating and building restrictions are leading to a lack of interest in acquiring recreational land. Abandoned buildings, such as those seen in Fig. 3, are unpleasant evidence of ‘sustainable development’ taking place at the expense of people in certain places designated as floodplains.



Fig. 3. Abandoned settlement in the village of Grądy in the municipality of Wyszaków

There is much to suggest that the problem, which affects hundreds of people along the Lower Bug River and affects 20% of Poland's territory, should be solved. The development of the floodplains should be restored, giving priority to agricultural production, but at the same time including recreational constructions. This is what should be done to effectively activate these areas:

- Floodplains should be precisely delineated in the Water Act. Areas prone to periodic flooding, where buildings must be at a certain ground level due to their location, where livestock farms with slurry ponds (manure pads) and drainless basins are located in residential and recreational areas should also be precisely identified.
- In existing villages, in the vicinity of existing buildings, the requirement for water rights approval for the construction of new buildings should be waived.
- Municipal offices should be allowed to issue notices of development conditions with reference to the requirements for the foundation of buildings – without separate notices of water law requirements.
- Bans on agricultural production should be lifted to the exclusion of industrial activities.
- The scope of necessary agreements in the preparation of a municipal development plan should be simplified.

## 2.2. Assessment of existing barriers in Natura 2000 sites

In the European Union, which is characterised by a high degree of industrialisation and a dense communication network, the Natura 2000 network was introduced in 1992. As we know, the degree of industrialisation and the density of the transport network are factors that increase human pressure on the natural environment. Under these conditions, the designation of protected areas was initiated to halt the extinction of animal and plant species and the disappearance of important natural habitats and to protect biodiversity [Act of 16 April 2004 on nature protection (consolidated text: Journal of Laws 2021, item 1098, as amended)]. Against this background, the territory of Poland (with the exception of Silesia and the areas of open-cast coal mines) was and still is an area characterised by uncultivated and undeveloped land, agricultural land and forests.

The EU regulations that form the basis for the establishment of the Natura 2000 network were transposed into Polish law by the Act of 16 April 2004 on Nature Protection. It must be emphasised that the process of designating Natura 2000 sites was carried out by the Ministry of Environment and Water Management on a wave of optimism resulting from the mere fact of belonging to the EU – without any consultations with local authorities. In the light of the further negotiation phases, some negotiation deficits of the Polish side become apparent, which did not receive separate conditions for the programme in view of the large differences in infrastructure investments (roads, railways, river regulation, etc.).

In the dialogue with local authorities, the concept of sustainable development often comes up [23]. It is supposed to be used to improve the quality of life while preserving social equality, biodiversity and the wealth of natural resources. Very often, however, these are just empty words used by local government representatives to pursue their own interests,

which do not always coincide with the right goals. In some cases, sustainable development is just an illusion, and in reality it is about a different agenda, e.g. finding ways to create new jobs related to natural goods and resources. After the negotiation process with the EU that lasted until 2012, it was finally agreed that the Natura 2000 area in Poland is larger than in neighbouring countries, covering about 6.2 million hectares or 19.7% of the country's land area.

The following protected areas are located within the Lower and Middle Bug (the study area):

- Lower Bug River Valley Special Protection Area PLB140001 – 280.9 km<sup>2</sup>;
- Special Protection Area of birds – the Bug Refuge (Ostoja Nadbużańska) PLH140011 – 743.1 km<sup>2</sup>.

The above-mentioned Natura 2000 protected areas are overlaid by:

- Landscape Park – Podlaski Gorge of the Bug River on the territory of the Lubelskie and Mazowieckie Voivodeships,
- Warsaw Area of Protected Landscape (a.k.a. Warsaw Landscape Reserve) – Lower Bug Valley.

The above Natura 2000 sites in the section from Serock to Wyszaków overlap with the floodplains, but the landscape parks cover a much larger area (see Fig. 4). More detailed maps of protected areas in Poland, including Natura 2000 sites and floodplains, can be found on the official website of the General Directorate for Environmental Protection (GDOŚ)

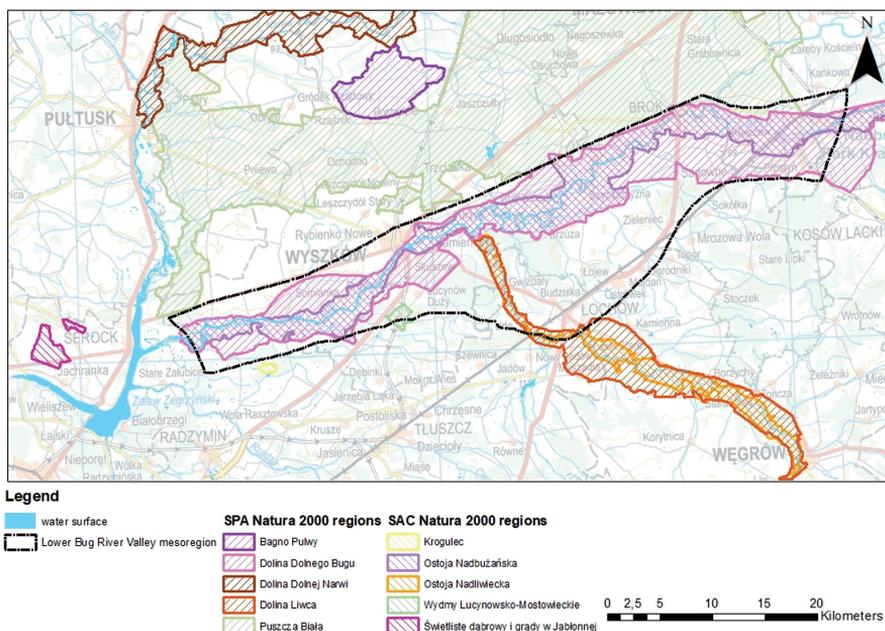


Fig. 4. Mesoregion of “Lower Bug” with indication of the special protection areas (SPA) Natura 2000 sites and special areas of conservation (SAC) Natura 2000 sites (source: own elaboration in ArcGis 2.9)

in Poland. The website provides access to interactive maps and data on various aspects of the environment, including protected areas [the maps can be found at [www.gdos.gov.pl](http://www.gdos.gov.pl), under the Environmental Information System (SIOŚ) tab. The Map Viewer option, which can be accessed there, allows to view and interact with different layers of environmental data, including protected areas, floodplains and other relevant information].

The forms of nature conservation that have been introduced have significantly restricted the way in which this area can be used for economic purposes.

According to Article 33 of the Nature Conservation Act [Article 33 of the Act on Nature Protection, Journal of Laws 2021, item 1098, 1718], Natura 2000 prohibits the implementation of measures that may have a significant negative impact on the conservation objectives of the Natura 2000 site, including in particular:

- deterioration of the status of the natural habitats or habitats of plant and animal species for whose protection the Natura 2000 site was designated,
- adverse effects on the species for whose protection the Natura 2000 site was designated,
- adverse effects on the integrity of a Natura 2000 site or its connectivity with other sites.

How can the above provisions be implemented in administrative procedures?

- permission for the construction of new detached houses and holiday homes requires a site-specific wildlife assessment and a decision by the Voivodeship Conservator of Wildlife;
- local land use plans are not implemented in these areas for fear of lawsuits;
- in the case of infrastructure facilities such as roads or sewage treatment plants, the relevant decision to lift restrictions is taken by the Regional Director of Environmental Protection in Warsaw.

What compensation could an ordinary citizen owning a plot of land in such an area expect if property restrictions were introduced? The law allows for compensation in court proceedings, but this applied to owners of agricultural, fish and forestry holdings. It did not apply to owners of agricultural land up to 1.0 hectare who planned a single-family home or recreational facility [Act of 20 December 1990 on the Social Insurance of Farmers, Dz.U. 2021 item 266]. Furthermore, the Environmental Act limited the right to make claims to two years after the introduction of Natura 2000 in a given area. Therefore, there are no known cases where compensation was claimed due to the introduction of Natura 2000. Economic activity in the protected areas today allows for the cultivation of agricultural land with restrictions imposed by the Fertiliser Act (including the timing of fertiliser application), the possession of fertiliser (storage) pads (i.e. manure pads), the prohibition of soil raising and the planting of trees and shrubs. Expansion of farms is virtually impossible due to the required agreements on development conditions and building permits, which are reviewed in separate procedures by the provincial conservation officer. Farmers are also not supported by the Ministry of Agriculture and Rural Development. In the programmes for subsidising agricultural investments by the Agricultural Restructuring and Modernisation Agency, for example, the renovation and construction of pigsties are excluded. All in all, there is an economic regression in these areas and a life with no prospect of a change in living conditions.

### 3. Case study

#### 3.1. Case study – Natura 2000 – a public good, a private problem

Our observations regarding the economic stagnation in protected areas are confirmed by some studies that have been carried out.

1. The study of the European Village Development Fund Foundation entitled “Natura 2000 – a public good, a private problem” is worth mentioning [24]. The study was conducted in February 2011 by sending an electronic questionnaire with questions to 1,731 leaders/mayors of rural and urban-rural municipalities. According to the study, local governments were concerned that Natura 2000 would hinder the development of their communities. The study confirmed the negative attitude of the self-governments towards the way the Natura 2000 network was designed in Poland, as well as the lack of adequate communication with local authorities and local people. It was pointed out (among other things) that the Polish system is complicated and expensive to manage, as it creates a completely new protection order, which often overlaps in its tasks with other institutions, such as: State Forests or Rural Development Programme. The following statements and conclusions were drawn from the submitted responses of 400 municipalities (the obstacles most frequently mentioned by respondents):

- the extension of the implementation period of investments and their additional costs in connection with the environmental impact assessment;
- the uncertainty of obtaining planning permission;
- the lack of guidelines defining the permissible nature and scope of economic activities;
- difficulties in implementing and developing agricultural production;
- general misinformation and uncertainty about current legislation and specific restrictions related to Natura 2000.

However, despite the obvious conclusions of this study, no concrete related measures were proposed, such as direct subsidies for farms in these areas.

2. The published study entitled “Models of economic development in municipalities with Natura 2000 sites” [25] examined economic activities in floodplains where a standstill in economic development and the abandonment of arable farming and livestock breeding were found, without stating the direct reasons for this phenomenon.

The study mentions as a defined objective “the presentation of models for economic activities in Natura 2000 areas created as a result of a scenario analysis”.

The analysis mentions that the following problems are the cause of these conflicts in Natura 2000 sites:

- Lack of compatibility of nature conservation regulations with local development strategies and the local spatial plan.
- Concerns about restrictions and limitations on economic activities in Natura 2000 areas.
- Restrictions on the construction of many large investments and difficulties in carrying out other investments (construction of roads, railway lines, etc.).
- General restrictions on access to land.

In addition, a number of obstacles have been identified that need to be overcome. These include the need to overcome the financial obstacles that hinder the implementation of change on farms.

The study does not address the impact of the introduction of the Act, but points out that in these areas it is essential to: “create a coherent strategic vision for development by local authorities that takes into account the principles of sustainable development and is shared by the local community”. One should agree with the above thesis, but there is no indication of who should develop such a vision when the role of self-government at the local level has been excluded with regard to the process of setting the conditions for development, as evidenced by the planning inertia of municipalities, e.g. Dąbrówka.

### 3.2. Case study – the village of Kuligów

The village of Kuligów in the municipality of Dąbrówka, located about 15 km from the Zegrzyński reservoir in a meander of the Bug River, can serve as an example of the passivity of the municipal office in land development policy. The wide riverbed creates a wonderful landscape, which (in our opinion) is the greatest value of the settlement, apart from the climatic conditions. The village has 130 permanent residents and about 900 inhabited recreational plots. The development of the settlement has progressed gradually since the 1970s, but is currently at a standstill due to the designation of floodplains and Natura 2000 sites. During floods, the area on the Bug is not particularly at risk of flooding, although it is only about 1.5 m above the normal river level. During a flood in 2010, only the buildings at the southern end of the settlement, where a flood dike was built in 2021, were inundated by up to 0.5 m of water. Swimming in the river is dangerous, but it is an excellent place for kayaking and water cycling as the river here is wide and flows slowly; there is no strong current. In season, a water tram runs between Kuligów and Serock, stopping at a small pier. There is a jetty for mooring yachts on the shore. The limitation for the development of the settlement results from the fact that there is no municipal spatial plan for the area along the river, it is built up with old buildings and there is no space for water facilities: jetties and marinas. To develop the settlements on the Bug, one needs a local development plan and a vision for the development of yacht tourism on the Bug - neither of which exists. The last plan from 2004 lost its validity after the Water Act came into force [Resolution No. XIX/120/2004 of the community council of Dąbrówka of 30 September 2004 on the local spatial development plan “Kuligów” in the commune of Dąbrówka]. Fig. 5. shows the preliminary flood risk assessment (PFRA) for Kuligów and other neighbouring villages. The PFRA involves a detailed analysis of flood risk in a given area, taking into account past and potential future flooding. This assessment is used to identify areas at risk of flooding and to develop measures to reduce the risk. However, it can significantly restrict building in areas considered to be at high risk of flooding. This is because building in these areas can increase the risk of flooding, exacerbate the problem and put people and property at risk. Therefore, the PFRA takes into account the potential impact of flooding on human health, the environment and cultural heritage, but there are many concerns that this will also lead to a lack of interest in acquiring habitats and

land in these areas. It is therefore very likely that these areas, if they are not already, will eventually become an open-air museum whose inhabitants live on welfare and pensions (see Fig. 5).

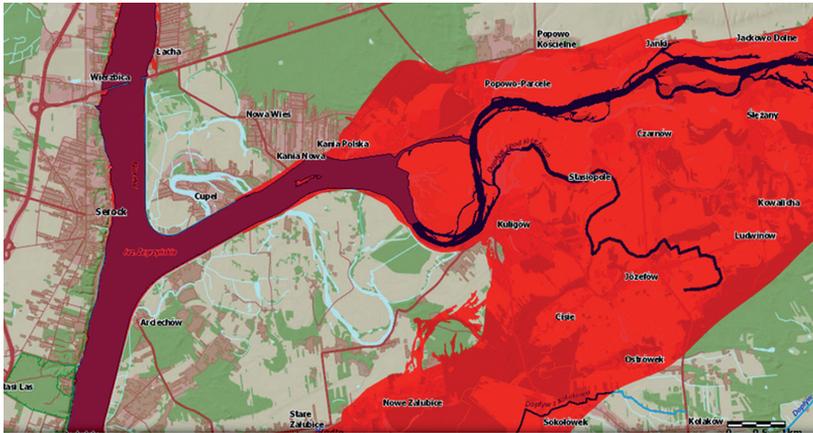


Fig. 5. Preliminary Flood Risk Assessment (PFRA), for Kuligów and other neighbouring villages (Source: own elaboration based on data imported from hydroportal)

In order to develop the settlements on the Bug, a local development plan and a vision for the development of yacht tourism on the Bug are required, which do not exist. The last plan from 2004 lost its validity when the Water Rights Act came into force. The incentive for the preparation of a new spatial plan should be the impoundment of the left bank of the Bug River in the section Arciechów – Kuligów in 2021, which has changed the flood risk of the southern part of Kuligów in the municipality of Dąbrówka and of Załubice in the municipality of Radzymin [26]. The advantages of Kuligów's location on the Bug River are shown in Fig. 6.



Fig. 6. Bug River in Kuligów in March 2022 (source: own resources)

## 4. Discussion

The Floods Directive is a European Union initiative to protect citizens from flooding. The directive requires EU Member States to take measures to reduce the risk of flooding from rivers, lakes and coastal areas by improving flood protection and drainage systems. It also aims to ensure that flood risk management plans are in place before any development takes place in floodplains and adjacent areas. In the case of Poland, the directive came into force in March 2011. It has brought many changes in the spatial planning legislation related to floodplains. However, the new law has had a very negative impact on the spatial development of these areas, as it either prohibits or obstructs the realisation of construction projects in floodplains [27]. This includes restrictions on land use, removal of residential development and infrastructure, and bans on construction in floodplains [27,28]. According to M. Borowska-Stefańska, S. Kobjek and M. Kowalski [27], Polish law generally prohibits building in areas particularly prone to flooding, which include both areas with a probability of flooding and those with a high risk of flooding. The interaction between the Floods Directive and the Nature Directives also prohibits building in floodplains designated as Natura 2000 sites [29]. Furthermore, the study by B. Baran-Zgłobicka, D. Godziszewska, and W. Zgłobicki [30] found that the risk of flash floods is taken into account when assessing potential construction projects in Poland. There are many provisions of this law that can be questioned and have led to a deterioration of the economic situation of floodplains in the Lower Bug Valley. Of course, the case discussed in this article is only one example (of which there are many others) of a concrete region that has suffered from this new law. The problem is very serious and affects people who have lived for years in a 2–5 km wide strip of quiet land along the Bug River. In addition to the restrictions on livestock and the decline in agriculture, there is no longer any interest in acquiring habitats or land there, because it is becoming an open-air museum whose inhabitants live off social benefits and pensions.

By joining the European Union, Poland has undertaken to comply with certain obligations and regulations. These include, among others, the issue of protecting the natural environment and, in particular, conducting activities in accordance with the premises of harmonious and sustainable development [23]. This in turn gives rise to certain issues that are generally binding in the EU and require compliance with the protection of the most valuable natural resources and the obligation to manage natural space rationally [31]. T. Borys [23] and later W. Chmielewski, M. Głogowska, and K. Wrana [25] emphasise the great ambiguity of the interpretation of this concept of sustainable development at the level of local authorities [23]. It cannot be overlooked that this concept is very often used at the level of local authorities in the context of planned development processes or various types of programmes and strategic documents [23, 25]. These authors emphasise the misconception of local authorities that there is a certain state of mutual exclusion between the growth of socio-economic activity and environmental activity. However, concern for the environment should not be accompanied by a reduction in socio-economic activity. In this understanding, the concept of sustainable development should not be equated with the protection of nature from the ravages of social and economic development, but rather

encompass activities aimed at mutually reinforcing development that takes into account environmental, social, economic and spatial aspects [25]. Both the regulations and their translation into concrete action plans should aim to achieve harmony between the different dimensions of development. In this sense, Boltromiuk [32] points out that environmental protection and sustainable development cannot be implemented without simultaneously addressing development in the economic dimension, so that its beneficiaries become local communities. Therefore, the issues of spatial management of floodplains, which are Natura 2000 sites in the Lower Bug Valley, should be understood and perceived in this context. This understanding of the problem should in turn be accompanied by the elaboration of a completely new approach to planning and development at the local level that not only supports socio-cultural development in coexistence with the natural environment and cultural heritage, but also strengthens socio-economic activities at the local level [33]. To achieve this, it is necessary to develop appropriate analytical and organisational structures, also supported by research centres, so that development planning concepts and concrete spatial planning decisions organically shape harmonious and sustainable development in the long term. From a scientific point of view, some solutions to achieve the desired state may lie in scenario planning, more specifically in predicting trends and developing solutions to shape the future [33–39].

To avoid one-sided criticism, it must be mentioned that these regulations have also brought some positive changes for Europe, including Poland. The Floods Directive has achieved some of its key objectives, such as assessing and reducing flood risks, protecting human health and taking into account the impacts of climate change in its implementation [40–42]. It also obliges EU Member States to set risk management objectives and to prepare appropriate flood risk management plans [43]. In addition, it promotes balanced objectives of flood risk reduction, ecosystem restoration and recovery [44]. In turn, the Natura 2000 network (which in Poland covers about 20% of the country's territory) has helped to preserve important habitats and species [45]. However, as mentioned above, these laws are not without challenges. Implementation of both the Floods Directive and Natura 2000 has been slow and uneven [46, 47]. Both laws conflict with economic and development interests, making it difficult to balance the needs of nature conservation with the needs of local people and the economy in general. This is due to a variety of factors. As mentioned above, the provisions of the Floods Directive and Natura 2000 have a negative impact on the development of riverbanks. The situation in the lower Bug valley is not an isolated case, and other regions in Europe face similar challenges. Examples of this can be seen in different southern European countries, such as Spain, where the government has implemented strategies and measures to mitigate flood risk [42]. In Portugal, a number of non-structural measures have been taken to reduce flood risk, including restrictions on building on floodplains [48]. In Italy, the government has taken a number of measures to reduce flood risk, including restrictions on building in flood-prone areas [48]. Finally, in Germany, the government has taken a number of measures to reduce flood risk, including restrictions on building in flood-prone areas [49].

It is also worth noting that similar challenges in reconciling conservation and development exist in other areas in Europe, such as the Danube Delta in Romania [50], the Rhine

River Basin (in Germany) [51], the River Ouse in England [52], the Doñana National Park in Spain [53] and the Odra River Basin (which in many ways is another example of the problems of water management in Poland) [54]. The Danube Delta, which is a World Heritage Site at UNESCO and one of the largest wetlands in Europe protected by the Natura 2000 network, has many problems with development and economic activities such as agriculture and tourism putting pressure on the natural resources of the Delta. Therefore, balancing the needs of nature conservation and development is a challenge in this area. Regarding the Rhine, which is an important commercial waterway and hosts several Natura 2000 sites, it is important to highlight that the river is heavily used by navigation, but at the same time it is an important habitat for a variety of species, which also causes many problems with balancing the needs of navigation and nature conservation and is a serious challenge in the riparian area. The River Ouse has flooded frequently in the past. Under the Floods Directive, development projects, including new housing, commercial buildings and infrastructure, are not permitted in the floodplain of the river [52]. In turn, the Doñana National Park (543 km<sup>2</sup>) is designated as a Natura 2000 site and is one of the largest wetlands in Europe, hosting a rich diversity of flora and fauna, including several endangered species. Development projects in this area are challenging because of the need to preserve this unique and important habitat. They require careful consideration and planning to minimise negative impacts on the environment and wildlife. By comparison, Spain, like Poland, faces similar challenges in balancing the needs of conservation and development. Spain has numerous protected areas and Natura 2000 sites that pose a challenge to development projects. In some cases, conflicts have arisen between conservation objectives and economic interests, especially in areas where there is pressure to develop tourism or other activities. To address these challenges, Spain has taken a number of measures to better integrate conservation and development objectives, such as the development of integrated territorial plans and the use of financial instruments to support sustainable development in protected areas (and of course good measures applied in other countries can also be transferred to and implemented in Poland). The country also proposed new Natura 2000 network boundaries [55], and requires any projects or plans within these sites or in their vicinity to undergo an appropriate assessment of their implications for the site's conservation objectives [56]. However, similar to other countries, finding the right balance between protection and development remains a challenge in Spain. Continued efforts are needed to ensure that the needs of both sides are met in an effective and sustainable way. Another example is the Odra River, which hosts several Natura 2000 sites and is also an important economic resource, as industries and settlements are located along its banks. The river faces the challenge of balancing the needs of nature conservation and development [54]. There are a number of water rights issues that may have caused the July–August 2022 environmental disaster (and major fish kill) in the region [57]. These are just a few examples of the kinds of challenges that have arisen in other areas in Europe when it comes to balancing the needs of conservation and development.

To address the problem, there are some possible solutions that could be considered to improve the situation and balance the needs of protection and development. They can be related, for example, to 1) spatial planning, 2) integrated river basin management, 3) review

and improvement of regulations, 4) stakeholder involvement and 5) economic incentives, etc. Effective land use planning can help ensure that new development takes place in areas that are not sensitive or critical to conservation, taking into account the protection of the natural environment and the needs of local communities. Regarding integrated river basin management, an integrated approach to this management, combining the implementation of the Floods Directive and Natura 2000, can help to address the problem in a comprehensive and coordinated way. This could include the development of river basin management plans that take into account both nature conservation and economic development needs. In addition, regular review and improvement of both regulations can help to ensure that they fulfil their purpose and are adapted to changing circumstances and needs. An interesting way to improve the situation is to involve stakeholders, including local communities, in the decision-making process to ensure that their needs and interests are taken into account when developing plans and regulations. Last but not least, some economic incentives could also be created. The development of economic incentives, such as grants and subsidies, for the adoption of environmentally friendly practises and technologies can encourage economic activity in areas that are compatible with conservation needs.

There are several ways to positively amend the Floods Directive and Natura 2000 law to remove some of the negative provisions while being consistent with European law: 1) some changes can be made at the national level by enacting national laws or regulations. This may include developing more flexible or adaptive implementation measures that take into account some specific needs and circumstances of each area; 2) changes to the provisions of the Floods Directive and Natura 2000 law can also be made at the European level by revising the laws themselves. This would require the initiation of a revision process by the European Commission or by a significant number of EU member states. The revised laws would then have to be adopted by the European Parliament and the Council of the European Union. A change in legislation could go in the direction of, instead of completely prohibiting or hindering the realisation of certain building projects, focusing on guidelines that serve to improve the flood safety of buildings. To this end, many of the positive solutions used in the United States, a country very often exposed to the struggle against natural elements, could be transferred. For example, the International Codes, Coordinating Building Codes and Floodplain Management Regulations were developed to reduce flood damage [58]. These regulations provide guidance on how to design buildings to be resilient to flooding.

Some of the criticisms, e.g. in relation to the above provisions on the possibility of claiming compensation in Article 471(4) and (5) [Journal of Laws 2022.0.2625, i.e. Law of 20 July 2017 – Water Law] can be addressed by the legislator at the national level through appropriate legislative amendments. The considerations underlying this research article are also addressed to local authorities, individuals, associations and non-governmental organisations, which can also play an important role in improving the situation in river basins faced with the challenges posed by the existence of protected areas (due to the Floods Directive and/or Natura 2000 programmes). Some initiatives they could take are: 1) raising awareness, 2) participating in planning processes, 3) supporting conservation efforts or 4) developing sustainable tourism. Local communities, individuals and organisations

can, for example, raise awareness of the importance of the protected areas concerned and the challenges they face, and help mobilise support for their conservation and protection. They can do this through education campaigns and outreach, e.g. environmental education programmes, public meetings and workshops, and social media campaigns. They can also participate in the planning processes for development projects in these areas, providing input and feedback on the potential impacts of these projects and helping to ensure that they are designed to minimise environmental impacts. They can support conservation efforts in these areas by providing funding and resources for research, monitoring and management activities. This includes supporting local conservation organisations, volunteering for monitoring and survey activities, and advocating for increased government funding for conservation programmes. In addition, sustainable tourism can be an important source of income for local communities in river basins and can also help support conservation efforts by providing an economic incentive to conserve these areas. Local governments, individuals and organisations can help develop sustainable tourism opportunities in these areas and promote environmentally friendly tourism activities. These are just a few examples of the initiatives that local authorities, individuals, associations and NGOs can take to improve the situation in river basins facing challenges due to the existence of protected areas designated under the Floods Directive and/or Natura 2000 sites. The specific initiatives taken will ultimately depend on the particular circumstances of the area concerned and must be developed and implemented in cooperation with all stakeholders, including local communities, government authorities and nature conservation organisations.

## 5. Conclusions

The Floods Directive was adopted by the EU Council in 2007 and entered into force on 16 February 2009. This means that all member states had to amend their laws and regulations by 31 December 2011. The Directive prohibits development on floodplains in order to reduce the risk of flooding and protect human health and the environment. More specifically, it provides a framework for assessing and managing flood risks in the EU and sets out a series of measures that member states must take to reduce flood risk. While the Directive has brought about positive changes in the field of flood risk management, there have also been some concerns about its impact on river basin development. One concern is that the implementation of the Directive could lead to over-protection of floodplains, which could hinder development in these areas. This can be particularly challenging in areas with high development needs, such as along rivers and coasts. In some cases, restrictions on development are perceived to be too severe, which can have a negative impact on economic development. In the case of the Lower Bug Valley in Poland, there are serious concerns about the impact of the Directive on the development of the area.

More than a decade after the adoption of the directive in Poland, it has become apparent that the implementation of many legal changes related to spatial planning in floodplains has been impractical. This has had a very negative impact on the spatial development of these areas. The problem is very serious and affects people who have lived for years in

a 2–5 km wide strip of land in the tranquil environment of such flood-prone areas. An example of this is the Lower Bug River Valley, which is covered in this article. Wrong provisions of this new law have led to deterioration of the economic situation in the floodplains. Restrictions on livestock and a decline in agriculture are compounded by a lack of interest in acquiring habitats and land. These areas are becoming an open-air museum whose inhabitants live on social benefits and pensions. Economic stagnation does not only affect the floodplains regulated by the Floods Directive, which is a guideline for spatial planning. Similar problems exist in protected areas covered by Natura 2000, a programme to protect birds and habitats of special interest. The article also addresses this problem by presenting it in the form of a case study on the European Village Development Fund Foundation survey entitled “Natura 2000 – a public good - a private problem”. It shows that local government officials have a negative view of the way the Natura 2000 network is designed in Poland. They point to a number of real problems that hinder the development of communities in relation to the mandatory implementation of this directive. These include, among others, (1) longer implementation times for investments and their additional costs related to the environmental impact assessment; (2) uncertainties in obtaining building permits; (3) the lack of guidelines defining the permissible nature and scale of economic activities; (4) difficulties in the implementation and development of agricultural production; (5) general disinformation and uncertainty about the applicable regulations and specific restrictions related to Natura 2000. Overall, it can be summarised that there are a number of commonalities between the implementation of the Floods Directive and Natura 2000. One of the most important is the general reluctance of officials to take decisions, i.e. the so-called administrative decision paralysis. The interaction between the Floods Directive and the Nature Directives prohibits the realisation of construction projects in floodplains designated as Natura 2000 sites. Both laws collide with economic and development interests, making it difficult to reconcile the needs of nature conservation with the needs of the local population and the economy in general. However, similar challenges in reconciling nature conservation and development exist in other areas in Europe. The situation in the Lower Bug Valley is not an isolated case, and other regions in Europe face similar challenges. Spain, for example, like Poland, has numerous protected areas and Natura 2000 sites that pose a challenge for development projects.

The article gives an overview of other studies on the topic of balancing the needs of nature conservation and development and gives examples of similar problems in other countries. The discussion section identifies possible solutions to improve the situation in places like the Lower Bug Valley. The evidence presented in this article shows that the Lower Bug Valley has been suffering from the negative effects of poor spatial planning policies for many years. Restrictions on livestock and the decline of agriculture are compounded by a lack of interest in acquiring habitats and land. These areas are becoming an open-air museum with inhabitants living on social benefits and pensions.

The article highlights the need to clarify nature conservation and water management legislation (in the light of the current Floods Directive), which would facilitate the development of floodplains such as the Lower Bug area. The current law encourages the authorities responsible for water management and nature conservation to take decisions that impede

the path of investors instead of improving it, thus worsening the conditions for the growth of the living and working activities of the inhabitants of these areas and leading to their depopulation.

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## Polityka planowania przestrzennego wobec terenów zalewowych i ochrony środowiska jako przeszkody w rozwoju osadnictwa nad Dolnym Bugiem

**Słowa kluczowe:** Polityka planowania przestrzennego, Natura 2000, tereny zalewowe, zagospodarowanie przestrzenne; zrównoważony rozwój; tereny zalewowe, ochrona przeciwpowodziowa, dyrektywa powodziowa, planowanie przestrzenne, gospodarka wodna, skutki urbanizacji, Polska

### Streszczenie:

Nieco ponad dziesięć lat temu w polskim prawie dokonano szeregu zmian legislacyjnych dotyczących planowania przestrzennego w odniesieniu do terenów zalewowych i gospodarki wodnej. Dokładniej rzecz ujmując, zmiany te były konsekwencją przyjęcia przez Parlament Europejski i Radę Europejską w 2007 r. stosownej dyrektywy powodziowej, która została wprowadzona jako środek zaradczy na rzekomo rosnące ryzyko powodziowe związane z postępującą urbanizacją terenów zalewowych. Uznano, że ryzyko szkód materialnych i niematerialnych związanych z nasilającą się urbanizacją jest tak duże, że należy wprowadzić odpowiednie przepisy prawne w celu jego ograniczenia. Od wprowadzenia tych przepisów minęła już ponad dekada (dyrektywa powodziowa została przyjęta w Polsce w marcu 2011 r.). Z czasem okazało się, że wprowadzenie w Polsce wielu zmian legislacyjnych związanych z planowaniem przestrzennym na terenach zalewowych było niepraktyczne i miało bardzo negatywny wpływ na rozwój przestrzenny i gospodarczy tych obszarów. W niniejszym artykule koncentrujemy się na Dolinie Dolnego Bugu i pokazujemy, jak te nowe przepisy doprowadziły do pogorszenia sytuacji życiowej na terenach zalewowych. Rzeczywiście, problem upadku gospodarczego na terenach zalewowych i obszarach Natura 2000 jest bardzo poważny i dotyka ludzi, którzy od lat żyją w pasie o szerokości 2–5 km w spokojnym otoczeniu terenów zagrożonych powodzią i wzdłuż zakoli rzek. Ograniczenia w hodowli i upadek rolnictwa potęgują brak zainteresowania pozyskiwaniem siedlisk i gruntów. Tereny te stają się skansenem, którego mieszkańcy żyją z zasiłków społecznych i rent.

Received: 2022-12-09, Revised: 2023-03-15