

## Review

# A Legal Framework for Energy-Conscious Urban Planning in Poland and Germany

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**Abstract:** This work seeks to answer the question as to whether the legal orders of Poland and Germany provide an effective framework for energy-efficient and climate-resilient urban space management. To this end, it verifies what similarities and differences exist between certain areas and whether they need reform. The starting point is the belief that legal instruments for environmentally friendly space management are a cross-border issue. Comparative studies are important because effective environmental protection knows no borders, and a lower level of protection in one country or geographic region can affect neighbouring countries and regions. The analysis of legal norms affecting such issues as passive energy construction; prevention of soil sealing and adequate ventilation; reduction of CO<sub>2</sub> emissions; promotion of green areas; proper water management; reduction of so-called “grey energy” associated with new construction; the compact city; and a reduction of light pollution has enabled us to synthesise findings into specific conclusions and to propose postulates and directions for further research. However, this does not change the overall assessment that the legal systems of Poland and Germany enable environmentally friendly space management at a similar level, while at the same time, certain additions to the regulations and a further discussion of possible improvements are most welcome and needed.

**Keywords:** spatial planning law; climate change; environmental protection; urban government; sustainable cities



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## 1. Introduction

As the IPCC has pointed out, only urgent action to protect the climate can ensure adequate living conditions in the future. The window of opportunity to ensure a sustainable future for all is closing fast. It is necessary to ensure climate-resilient development, which implies adaptation and mitigation actions. Choices and actions implemented in this decade will affect the next millennia [1]. In order to combat climate change, intensive strategic actions are being taken in the international arena. Among them are the solutions adopted by the United Nations, such as the Paris Agreement [2] and the 2030 Agenda for Sustainable Development [3], as well as European Union (EU) documents, including the European Green Deal [4], the Climate Change Adaptation Strategy—Forging a Climate Resilient Europe [5] and the EU Biodiversity Strategy—Bringing Nature Back to Our Lives [6]. Effective environmental protection at the national, European and global levels, however, comprises the sum of effective actions taken at all levels of the state structure, starting with the local level.

Climate protection and energy efficiency in cities can be achieved through a variety of instruments, both programmatic and legally binding in nature. This fits into the concept of urban governance, understood as the sum of the many ways in which individuals and institutions, both public and private, plan and manage the common affairs of a city in a continuous process in which conflicting or diverse interests can be taken into account and collective action taken [7]. For the purposes of the paper, regulations that have a common scope of application were compared. Taking into account the constitutional peculiarities

of the two countries, consisting of the fact that the Republic of Poland is a country with a unitary structure and the Federal Republic of Germany has a federal one, provisions of legal acts with a nationwide (federal) scope were selected for comparison. As a result, the provisions provided for in the legal acts of individual German states (state law) remained outside the study. The subject of analysis is the regulations governing the content of local development plans. The criteria according to which the compared legal institutions were selected are their binding legal force and the scope of their specific provisions, which determine the possibility of exerting a direct, and subject to judicial control, influence on environmentally friendly planning and spatial management. The names of both countries will be abbreviated as follows: The Republic of Poland will be referred to as “Poland”, and The Federal Republic of Germany will be referred to as “Germany”.

As for the structure of this study, it consists of two parts—a characterisation of general issues, followed by specific ones. The first examines issues such as environmental and climate protection at the level of the Constitution and laws on land-use management, local legal instruments for land-use management, municipal planning freedom and its limits, and environmental impact forecasting. The second part exposes the detailed legal basis for the introduction of energy-conscious solutions in terms of the features and parameters of planned development, the intensity of development, fuels used for heating and energy production, the installation of renewable energy sources, green spaces, rainwater management, limiting new development, and the economical use of land, as well as the promotion of public transportation and the concept of the compact city. In each of the sections, sub-conclusions are introduced, with the first section having a descriptive form and the second section being included in tables.

For the comfort of reading, since the work includes references to different legislation from two countries, below are presented the most commonly used abbreviations.

Spatial Planning and Development Act (Poland)—SPDA;

Environmental Protection Act (Poland)—EPA;

Act on Providing Information on the Environment and its Protection (Poland)—API;

Federal Building Act (Germany)—FBA;

Federal Land Use Ordinance (Germany)—FLUO.

## 2. Materials and Methods

The work is in the nature of a review, in which existing legal norms, the literature on the subject, and case law in Poland and Germany were analysed; issues were categorised; and particular theoretical themes were selected. For research purposes, legal comparativism and the dogmatic-legal method, which are tools for studying modern legal systems, were used. The general goal of comparative research is the unification of law, especially in the EU area, as well as the possible reform of national law. Legal systems and their institutions are comparable with each other if they are united by the scope of normalisation and application, have analogous purposes for their establishment, or fulfil comparable functions within their respective legal systems. For the formulation of conclusions, methods of logical analysis and synthesis were used, and these made it possible to formulate general statements on the basis of recognised partial statements.

## 3. General Legal Framework for Urban Space Management

### 3.1. Protection from Climate Change in the Basic Laws

There should be no doubt that environmental protection, including climate protection, is an integral part of sustainable development. This requirement is accentuated in the primary law of the EU itself, i.e., in Art. 3(3) of the Treaty on the European Union [8].

In both Poland and Germany, sustainable development and environmental protection have their basis in the legal act standing highest in the hierarchy.

As for the Polish legislation, according to Art. 5 of the Polish Constitution, state authorities must ensure environmental protection, guided by the principle of sustainable development [9]. This provision defines the basic goals of the state and principles of a pro-

grammatic nature, but it does not stipulate the means and ways of their implementation [10]. In addition, public authorities must combat epidemic diseases and prevent the negative health effects of environmental degradation (Art. 68(4)), pursue policies to ensure ecological security for present and future generations (Article 74(1)), and support citizens for the protection and improvement of the environment (Art. 74(4)). Protection of the environment is a duty of public authorities (Art. 74(2)) and may justify a limitation by the legislature on the exercise of constitutional freedoms and rights (Art. 31(3)) [11].

It should be noted that the Polish Supreme Court has recognised that the right to live in a clean environment is not a personal good. At the same time, it added that health, freedom, and privacy—which are all subject to civil law protection—could be threatened or violated as a result of the breach of legally set air quality standards [12]. In the doctrine, it was noted that the adopted ruling did not dispel doubts as to what scope of violation of a personal good could entitle a person to compensation due to incorrect environmental standards, and whether it is possible to speak of a claim of a mass nature in this case [13]. The Polish Constitution does not explicitly provide for climate protection. Nor does it contain definitions of sustainable development and the environment, which are provided for in the Environmental Protection Act (EPA). The definition of the term “environment” implies that it includes the climate [14]. Sustainable development, on the other hand, involves social and economic development, in which there is a process of integrating political, economic and social activities with the preservation of natural balance and the sustainability of basic natural processes, in order to ensure the possibility of satisfying the basic needs of individual communities or citizens of both the present generation and future generations [15]. In the jurisprudence of the Polish Constitutional Tribunal, it has been accepted that the principles of sustainable development include not only the protection of nature or the shaping of spatial order but also due concern for social and civilisational development, associated with the need to build appropriate infrastructure, necessary for—taking into account civilisational needs—the life of man and individual communities. The idea of sustainable development, therefore, includes the need to take into account various constitutional values and balance them appropriately [16].

The provision of Art. 20a of the German Basic Law stipulates that the state, as part of its responsibility for future generations, shall protect the natural basis of life and animals within the framework of the constitutional order [17]. It is a provision that defines the state’s objectives for protecting the environment. As such, it formulates a binding order to protect the natural basis of life, while providing flexibility as to the manner and methods of its implementation [18]. It requires that the state not only protect the environment from excessive interference but it also makes state power active by introducing instruments for this purpose. However, this provision is not the basis for formulating civil law claims against the state related to environmental protection. It does not take precedence over other fundamental rights expressed in the Basic Law, so it is necessary to weigh the equivalent goods in each specific case. It also provides a directive to help interpret the law [19]. It is addressed to the executive, legislative and judicial branches of government, but the primary addressee of the obligation to protect the natural basis of life is the legislature, and the secondary addressee is the administrative and judicial bodies that apply the law [20]. The German Basic Law does not explicitly refer to the concept of climate, but there is no doubt that the provision in question also provides a constitutional basis for climate protection. As the Federal Constitutional Court pointed out in its resolution of 24 March 2021, the provision of Art. 20a requires that the state must protect the climate and aim to achieve climate neutrality. The importance of the climate protection imperative in the balancing of interests increases once climate change progresses. The climate protection imperative requires the state to take international action for global climate protection. The Basic Law further provides for the proportional distribution of opportunities between generations [21]. This resolution is considered historic and has a binding effect on law enforcement bodies [22].

## Interim Conclusions

The legal orders under analysis demonstrate similarities in terms of environmental protection and the consideration of sustainable development already at the level of basic laws. The Polish Basic Law contains more provisions referring explicitly to environmental protection. The Polish Basic Law, unlike the German law, uses the concept of sustainable development explicitly. The German Basic Law, on the other hand, asserts a responsibility towards future generations, which has the same practical effect. The Polish EPA formulates a universal definition of sustainable development, referring to various areas of law, including land use management. German legislation provides a more focused definition of “spatial sustainability”. Both definitions emphasise ecological as well as economic and social aspects. It seems reasonable to conclude that the differences that occur are not decisive for the level of environmental protection, including climate. Neither the Polish nor the German Basic Law, on the other hand, explicitly refers to the climate as a common good, or to its protection. Given the importance of the ongoing climate change, it may be reasonable to introduce a reform in this regard. When considering the merits of such a solution, one can point to the strengthening of the rank of climate protection and giving it a constitutional basis, which would be indicated explicitly, rather than developed through the interpretation of law. Given the current rapid climate change and the disasters caused by it, it should not be considered an exaggeration to say that climate protection appears as one of the key dimensions of environmental protection. What is more, in the event of any legal disputes or doubts about the content of legal acts, both the courts and the tribunals tend to support their arguments with a reference to the highest-ranking legal act and could do so directly if such a change were to be made.

### 3.2. Legal Instruments of Spatial Planning at the Local Level

The Polish instrument of spatial management at the local level, containing binding legal norms, is the local spatial development plan (abbreviated as: local plan), which is an act of local law regulated by the provisions of the Spatial Planning and Development Act (SPDA). It is adopted by the municipal council, and its draft is prepared by the municipal executive body. An integral part of such a resolution is a graphic annexe showing the boundaries of the area covered by the draft plan. The function of the local plan is to determine the use of land and the conditions for the development of land, together with other provisions, as well as the manner of exercising the right of ownership of real estate. Its adoption is preceded by the preparation of a study of the conditions and directions of spatial development for the entire area of the municipality, which is an obligatory document, although it is not legally binding [23]. It is worth mentioning that, at the time of writing, this has recently been published in the *Journal of Laws*, so the current non-legally binding study will be replaced by a legally binding so-called general plan. In this paper, only provisions relating to local plans are discussed, so the amendment will not affect the considerations made. Local plans should not violate the findings of the study—this should be understood as a continuation of the principles of land use established in general in the study and subject to clarification in the local plan. The local plan clarifies these principles in such a way as not to lead to their change or modification [24]. It may apply to the entire area of the municipality as well as only part of it [25]. The SPDA contains a closed catalogue (numerus clausus) of issues that may be included in the local plan [26]. The adoption of the local plan, as a rule, is not mandatory; this is done by the municipality, depending on the needs. There is no claim for both the enactment of the plan itself and the inclusion of specific provisions in it [27]. However, interested parties may submit proposals in this regard.

In Germany, pursuant to §§ 1(2), 5 and 8 of the Federal Building Act (FBA), local development plans are divided into a preparatory development plan and a binding development plan [28]. Municipalities should draw up development plans when it is necessary for urban development and order. There is no claim to enact these plans (§ 1(3) FBA). The tasks and objectives of spatial planning are carried out in a legally binding manner in a binding development plan containing regulations for building and other land uses. This

should contain arrangements that optimally implement the municipality's intended urban planning or regulatory goal within the meaning of §§ 1(5) and 1a of the FBA [29]. The binding development plan is established by the municipality in the form of a statute and contains the legally binding regulations for the urban development order (§§ 8(1) and 10(1) FBA). The competent authority is determined by the municipal laws of the states, with the most common body enacting the statute being the municipal council, although authority in this regard may be delegated to special decision-making committees [30]. The content of the development plan is set forth in § 9(1) of the FBA, which contains a closed catalogue of provisions [31]. This means that the municipality does not have the ability to create additional content for the development plan that would go beyond its basic function. However, the provision of § 9(4) of the FBA provides for the possibility of additional regulation at the federal-state level. In this way, the provisions of state law are incorporated into the development plan. However, the provisions of state law must also be substantively related to the basic function of the local plan stipulated in the FBA [32]. Binding development plans should be prepared on the basis of preparatory development plans. However, this does not mean that the binding development plan can be understood solely as an act that implements or supplements the preparatory one. This principle implies a transition from more general to more specific regulations, allowing for the establishment of conditions for specific plots of land and taking into account their current specificities. At the same time, in drawing up the binding development plan, the essence of the preparatory development plan for the area in question must not be violated [33].

### Interim Conclusions

In both Poland and Germany, spatial management by means of regulations with a legally binding force is carried out at the municipal level. In both Poland and Germany, the spatial planning system is two-tiered, with solutions provided to ensure that the provisions of the two acts are consistent with each other, although they do not have to be identical. The issue is the functional relationship and the continuation of the assumptions made. In both countries, the enactment of local development plans can apply to the entire municipality or a part of it, and they are introduced by the municipal body as needed, which means that there is no claim to establish them. Some differences arise from the fact that Poland is a unitary state and Germany is a federal state. In Poland, there is no provision similar to § 9(4) of the FBA, which would allow local authorities to specify in the federal law and to introduce into the development plan additional arrangements not provided for in the law (although in accordance with the directions indicated therein) since there are no partially autonomous federal states. This is also reflected in the determination of the body that enacts the local development plan, since in Poland, by law, it is always the municipal council, while in Germany, the individual states can decide whether it will be the municipal council or a separate commission.

### 3.3. Climate Protection in Local Development Plans

Polish legal regulations prescribing the consideration of environment and climate in spatial management have been included, in principle, in three legal acts: the SDPA, the EPA, and the Act on Providing Information on the Environment and its Protection (API) [34]. Within these regulations, there are also references to the Nature Protection Act [35]. Making a reliable assessment of environmental impacts and working out the balance of environmental protection and the development of civilisation are among the most important duties incumbent on public administration bodies [36].

According to the SPDA, municipalities must be guided by both spatial order and the principle of sustainable development (Art. 1(1)), and take into account the requirements of environmental protection, including water management (Art. 1(2) No.3), as well as nature and landscape (Art. 15(2) No.3). There is an obligation to apply for an opinion on the draft local plan to the regional director of environmental protection (Art. 17 No.6(a)), and the manner of implementation of environmental protection requirements must be



presented in the justification of the draft local plan (Art. 15(1) No.1). The above provisions are supplemented by the provisions of the EPA, which prescribe, among other things, that the local plan must ensure the protection of climatic conditions and also take into account other needs for the protection of, among others, air, water, soil and land (Art. 72(1) No. 5 and 6). When allocating land for particular purposes and determining the tasks associated with its development, proportions should be established that allow for the preservation or restoration of natural balance and proper living conditions on it (Art. 72(2)). The practical application of the above requirements does not raise any doubts in the Polish administrative courts, which assert that the determination in the local plan of the principles of the protection of the environment, nature and cultural landscape is the duty of the body developing this act of local law. The planning authority must be guided not only by the principle of spatial order but also it must take into account the principle of sustainable development [37]. It is worth mentioning that a government bill is currently being developed, making it mandatory to prepare a Municipal Adaptation Plan (MAP) in cities with a population of more than 20,000. According to the planned legislation, it will be necessary to take into account urban planning aspects of reducing vulnerability to climate change and considerations arising from climate risk analysis. In addition, conclusions and recommendations from the developed MAPs will have to be taken into account in local plans, among others [38].

In Germany, the provisions of the FBA stipulate that local development plans ensure the sustainable development of urban areas, reconciling social, economic and environmental requirements, including within the framework of responsibility to future generations, and the socially just development of land for the public good, taking into account the housing needs of the population (§ 1(5) sentence 1). The German federal legislature also uses the concept of sustainable spatial development in § 1(2) of the Federal Regional Planning Act [39]. It should be noted that this definition includes a “triad” in the form of economic, ecological and social considerations, which are of equal importance. Thus, the legislator advocates further spatial development, while giving it a specific direction indicated by sustainable development [40]. When drawing up land-use plans, special consideration should be given to, among other things, the interests of environmental protection, including nature conservation and landscaping, including the avoidance of emissions (§ 1(6) No. 7(e) FBA). On 30 July 2011, a law came into force that added to the FBA the provisions of § 1(5) sentence 2 and § 1a(5) sentence 1, providing for a distinction between climate protection and climate adaptation. The new provisions on renewable energy facilities were also included (§ 5(2) No. 2(b)–(c)) [41]. The requirements of climate protection should therefore be taken into account by both the introduction of measures that counteract climate change and those that serve to adapt to climate change. This principle should be considered when weighing public and private interests on the basis of § 1(7) of the FBA [42]. Also worth mentioning is § 1(6) No. 7(f) of the FBA, which stipulates the economical use of energy and the use of renewable sources.

### Interim Conclusions

Both Polish and German laws contain explicit orders to take into account environmental requirements in local land management. The two forms of climate protection are more prominently displayed in German legislation. The SPDA does not explicitly provide for a distinction between climate protection (combating climate change) and adapting to existing conditions. Also, while referring to environmental protection and to its definition in the EPA, it does not explicitly refer to climate. This should not significantly affect the level of protection; however, in order to emphasise the importance of this phenomenon in spatial planning, it is worth considering the introduction into the SPDA of an explicit order to take measures to counteract climate change and to adapt to the occurring climate change, following the example of German § 1a(5) sentence 1 of the FBA. In addition, the FBA in § 1(6) No. 7(f) highlights the economical use of energy and obtaining energy from renewable sources, which may also be a contribution to the discussion on the modification

of Polish regulations in this regard. This postulate stems from the conviction that climate change adaptation and climate change prevention are two inextricably linked aspects of climate protection and, in a broader context, environmental protection. The introduction of such a solution is in line with the aforementioned provisions of both the Polish Constitution and statutes. Thus, it can be stated that there is already a legal basis for both of these obligations. Explicitly formulating them, however, along the text of the German FBA, will serve three functions. The first is an informational (educational) function. The very distinction between legal instruments for adapting to climate change and those that counteract it indicates to the authors of local plans the fact that there are two types of climate protection problem and thus the need to seek often diverse solutions tailored to each of them. Secondly, this serves an organising function, as it implies taking targeted action on each of these action objectives. Thirdly, it is a control function, as those who control the correctness of local plans (provincial governors, administrative courts) will be encouraged to check whether municipalities have taken measures that include both forms of climate protection. In addition, combating climate change is consistent with the EU policy mentioned in Section 4.9 of this paper and can be sponsored in significant part with EU funds. Finally, it is worth noting that, as pointed out in the following Section 3.4 of this manuscript, the environment is one of the interests that is considered under the obligation to weigh the public interest and private interests, and the distinction made does not change anything in this regard. Therefore, municipalities—within the framework of planning authority—will still have a margin of discretion in the choice of scope and type of measures introduced.

### *3.4. The Planning Authority of the Municipality and Its Limits*

As for Polish regulation, according to Art. 16 in conjunction with Art. 164 and 165 of the Polish Constitution, local government units, including the municipality, participate in the exercise of public authority, have legal personality, and their independence is subject to judicial protection. In this regard, the doctrine and jurisprudence have developed the concept of the so-called planning authority (also: planning freedom) of a municipality. At the same time, it is emphasised that the municipality's planning freedom is not unlimited and arbitrary but has a strictly defined framework. It is stipulated by the legislator indicating, among other things, the requirement to respect property rights or environment [43]. In determining the use and development of land, the authority weighs public and private interests and takes into account economic, environmental and social analyses (Art. 1(3) SPDA). These considerations should find expression in planning documents [44]. The primacy of general (public) interest over individual (private) interest and vice versa is excluded [45]. However, the importance of the environment and its protection, by the fact that it is of a relatively general, difficult-to-grasp nature, cannot be depreciated. The inclusion in the local plan of restrictions arising from the needs of environmental protection is mandatory [46]. The creation and application of local plans should be carried out in a manner that promotes the effect of consistency and lack of an internal contradiction of the legal system and the complementarity of legal regulations in a given area [47]. Highlighted also is the requirement of proportionality, which means the need to maintain a proportion between the restriction of a given constitutional right or freedom and the intended purpose of a given legal regulation [48].

Turning to German law, it is worth noting that according to the regulation of Art. 28(2) sentence 2 of the German Basic Law, municipalities are guaranteed the right to regulate all issues affecting the local community on their own behalf, but this must be done within the framework of the applicable laws. An elementary expression of municipal self-government is the so-called planning authority. This is understood as the mandate to decide independently, based on discretion, on the allocation and use of land and soil in the municipal area and to develop the directives necessary to realise its own vision of land use, without the binding influence of other state bodies. The constitutionally guaranteed authority is specified in § 2(1) sentence 1 of the FBA, according to which the municipality enacts land-use

plans on its own behalf and under its own responsibility [49]. At the same time, climate protection issues do not take precedence over other interests listed in § 1(6) and § 1a of the FBA [50]. It is pointed out that the municipality should examine whether the intended measure for climate protection requirements or climate change adaptation is necessary from the point of view of spatial planning, whether it has a reference to the land, whether there are adequate statutory instruments for the implementation of the measure, and whether the solution to be introduced is proportionate, taking into account the property owners concerned [51]. The main function of the order to weigh interests provided for in § 1(7) of the FBA is thus to emphasise the legal framework for spatial planning. When drawing up plans, issues that are relevant to the weighing process must be identified and evaluated. This is the responsibility of the municipality whenever the municipality decides to enact, amend supplement or repeal a development plan [52].

### Interim Conclusions

In both legal orders, municipalities, as units of local self-government, enjoy autonomy in shaping spatial order on their territory, limited by the provisions of law. The planning authority of the municipality is therefore not absolute. Both legal orders provide for provisions that impose an obligation to appropriately balance public interests, which include environment and climate, with private interests, taking into account the legitimate interests of property owners, with neither interest being given priority.

### 3.5. Environmental Impact Forecast

In Poland, the executive body of a municipality prepares a draft local plan together with an environmental impact forecast (Art. 17 No. 4 SPDA), which is one of the steps of a strategic environmental impact assessment. This requirement does not apply to all situations and refers to projects likely to have a significant impact on the environment. It is pointed out that the current, narrowed wording remains consistent with the requirements of Directive 2001/42/EC [53]. The abandonment of a strategic environmental impact assessment cannot be arbitrary and must be preceded by an obligatory agreement with the competent authorities (Art. 53 API). The environmental impact forecast shall include, among other things, anticipated significant impacts on the environment, including climate. These may be direct, indirect, secondary, cumulative, short-term, medium-term or long-term and could be permanent or temporary (Art. 51(2) No. 1(e) API). In determining the legal nature of the environmental impact forecast, it was assumed that it is a document separate from the local plan, which is not normative in nature, so it is not binding for either municipal authorities or citizens. It is a document of an informative nature, constituting an appendix to the draft local plan, which is intended to illustrate, in terms of eco-development, the effects that may arise in the future from the findings of the plan and serve to minimise the negative impact of investments on the environment [54]. At the same time, however, it is emphasised that despite the lack of a legally binding force, the forecast can significantly affect both the shape of the plan and its subsequent implementation. At the drafting stage, the forecast becomes an early warning measure, and at the stage of application of the plan's provisions, the forecast can and should contribute to the selection of options that are beneficial to the natural environment [55].

Under German law, an environmental impact assessment is carried out to address the environmental protection issues provided for in § 1(6) No. 7 and § 1a of the FBA. The detailed content of the environmental impact report is contained in Appendix 1 of the FBA (§ 2(4) FBA). The result of the environmental assessment shall be taken into account in the process of weighing private and public interests. The environmental report is a separate, independent part of the justification of the draft development plan (§ 2a No. 2 FBA). The content of the environmental report enables municipalities to meet their obligation to monitor significant environmental effects that occur in connection with the implementation of land-use plans, in particular in order to identify unforeseen negative effects at an early stage and enable appropriate remedial measures to be taken. It is also understood that the forecast



should also include such environmental impacts that may occur in connection with climate change [56]. The German Building Code provides for the institution of a so-called accelerated procedure, which can be introduced in built-up areas of less than 20,000 m<sup>2</sup>, and—under certain conditions—in areas between 20,000 and 70,000 m<sup>2</sup>. Within the framework of such a procedure, in principle, an environmental impact assessment may be waived, among other things (§ 13a FBA). This solution raises doubts in the doctrine, especially in the context of the need to preserve open spaces in cities and protect land and soil [57].

### Interim Conclusions

Both Polish and German law require the preparation of an environmental impact forecast (report). In both legal orders, such a forecast does not have to be drawn up for every spatial development plan. In Poland, the restriction is linked to a significant impact on the environment, once agreed with the relevant authorities, while in Germany it is possible to dispense with an environmental analysis linked to the development of areas inside the built-up parts of cities and the area of the local plan under the so-called accelerated procedure. Municipal authorities should take into consideration that even when the legislation does not impose an obligation to prepare such a forecast, this does not relieve them from applying other regulations mandating the consideration of environmental factors, including climate, in spatial management. Any form of simplified procedure for the adoption of a development plan for urban areas, limiting the impact assessment on the environment, most likely has the effect of reducing the level of environmental protection. In practice, it favours a priori some interests (social and economic) at the expense of the environment, and thus does not deserve approval. Speed and cost-efficiency cannot be values that override the quality of sustainable urban management. While it is understandable that there are important considerations in favour of faster residential, commercial and industrial development, attention should be paid, in addition to the goal itself, to the means that lead to it. It is also necessary to look deeply for the source of the problem, not stopping at a general statement that the planning procedure is too long, complicated or expensive. In such a situation, it is worth looking at what specific elements are causing these difficulties and streamlining them rather than reducing the level of environmental protection. For example, equipping local authorities with more funds and providing them with financial support so that they can finance the process to be carried out by a group of suitably qualified specialists could come into play. It appears essential to adopt an approach in which environmental protection and dynamic development are not mutually exclusive but are complementary with mutual benefits.

### 4. Specific Urban Planning Laws—An Overview

As rightly pointed out, the concept of developing climate-resilient cities is based on the basic strategic assumption that urban planning law is a contribution to climate protection. This notion can be implemented in legislation in two ways—on the one hand, through provisions that specifically protect the climate, and on the other hand, through a pro-climate interpretation of general provisions [58]. In the following, specific provisions will be presented that allow for the introduction of provisions supporting energy-efficient and sustainable cities into local development plans in Poland and Germany. It was noted that from the perspective of specific land-use measures, the call for green, flexible, circular, and environmentally friendly spaces, as well as a decisive change in architecture toward space-saving housing and reduced density, stands out [59]. The following analysis refers to both the aforementioned aspects, as well as other still issues in the field of energy-conscious urban space management. In this regard, worth mentioning is the concept of “municipal climate protection management”, understood as a systematic handling of energy, with the aim of reducing the emission of climate-relevant gases, above all from all sources in the city, and increasing the sink function for these gases, also outside the urban area. This is to be achieved through the three central objectives of climate protection: energy saving, increase of energy efficiency, and substitution of fossil-nuclear by renewable energy sources [60].

At this point, it is worth recalling the abbreviations of the legal acts that will be used below:

Spatial Planning and Development Act (Poland)—SPDA;

Federal Building Act (Germany)—FBA;

Federal Land Use Ordinance (Germany)—FLUO.

#### 4.1. Features, Parameters and Indicators of Planned Development

The energy quality of a building is assessed through the prism of energy consumption, in particular the required heating and cooling. This is influenced, among other things, by the direct heating of the building by solar radiation in winter, the prevention of overheating by shading in summer, the minimisation of transmission heat losses through the building envelope (surface-to-volume ratio, insulation, ventilation), and the energy requirements of the building technology (ventilation technology, pumps, lifts, lighting, etc.) [61]. The construction of compact building masses is one of the largest direct factors affecting the subsequent energy demand of buildings. The heat loss of a building is directly proportional to the area of its envelope. Therefore, one should strive to make the building's A/V aspect ratio (the ratio of the surface area of the building envelope to the volume) as small as possible. This means that the building mass must be as compact as possible, similar in shape to a sphere or cube, which have the smallest A/V ratios. Multi-pitched roofs, bay windows, and dormers should be avoided. These are the requirements of so-called energy-efficient, passive construction. In addition, the greatest amount of energy from solar radiation falls in the southern direction, so passive construction uses southern facades with large areas of glazing to maximise solar heat gain (open south facade), while avoiding the use of glazing on the other facades of the building, especially on the north side, obviously providing the minimum necessary sunlight. The orientation of the building along the east–west axis is favourable [62]. In planning terms, this entails the consequences of analysing the relationship between the appropriate orientation of the building, the direction of its roof ridge, and the direction of the street to which the object's plot is adjacent, as well as the relevant appropriate arrangements in the text of the plan. The problem of possible overshadowing affecting southern windows and collectors can be addressed by the orientation of adjacent buildings, as primarily determined by building lines specified in the plans [63].

In the Polish local plan, the type of planned development (single-family, multi-family, semi-detached, terraced) is determined on the basis of Art. 15(2) No. 1 of the SPDA and the specific parameters of the development are determined primarily on the basis of Art. 15(2) No. 6 of the SPDA. Accordingly, the local plan may specify, for example, the geometry of the roof of the buildings [64] (e.g., flat gabled, multi-gabled, hipped), the height of the planned development [65], and the number of stories [66].

In the German binding development plan, the type of development is determined on the basis of § 9(1) No. 1 and 2 of the FBA, while § 9(1) No. 3 in connection with § 1a(2) sentence 1 of the FBA regulates the maximum height, width and depth of buildings. Furthermore, minimum heights can be established on the basis of § 18 of the Federal Land Use Ordinance (FLUO) [67], and the minimum number of full stories on the basis of z § 20 of the FLUO. On the other hand, the exclusion of energy-disadvantageous convexities and recesses of buildings may be permitted on the basis of § 23(3) sentence 2 of the FLUO. It is assumed that it is not possible to establish energy-advantageous roof forms in the development plan unless this is stipulated in land laws, in accordance with § 9(4) of the FBA [68].

See Table 1 below.

**Table 1.** Features, parameters and indicators of planned development.

	Type of Development	Height, Width, Depth, Cubic Capacity of the Building; Number of Floors	Shape of the Building and Its Parts, Compact Body of the Building	Shape and Geometry of the Roof
Poland	Art. 15 (2) Nos. 1 and 6 SPDA	Art. 15(2) No. 6 SPDA	Art. 15(2) No. 6 SPDA	Art. 15(2) No. 6 SPDA
Germany	§ 9(1) Nos. 1 and 2 FBA	§ 9(1) No. 3 FBA in conjunction with §§ 18, 20, 23 FLUO	§ 9(1) Nos. 1 and 2 FBA in conjunction with § 23(3) sentence 2 FLUO	No possibility under FBA; reference to state laws in § 9(4) FLUO

#### 4.2. Limitation of Building Intensity and Location of Buildings on the Plot

Built-up areas affect the absorption and reflection of solar radiation, the ability to store heat, the absorption and emission of long-wave radiation, winds, and evapotranspiration (the discharge of liquid water from the earth's surface for conversion to water vapour in the atmosphere). This causes the urban "heat island effect," which is the result of heat absorption in cities and refers to the difference in temperatures measured inside and outside the city. Elevated temperatures can increase heat waves and cause additional electricity consumption by air conditioners [69].

As far as Polish law is concerned, the intensity and area of development are determined on the basis of Art. 15(2) No. 6 of the SPDA, the minimum area of newly separated building plots on the basis of Art. 15(3) No. 10 of the SPDA, and the areas free of development on the basis of Art. 15(2) No. 9 of the SPDA. It is noted that the ratio of the area of development and the ratio of the intensity of development are concepts defining separate parameters of development, in the calculation of which other considerations should be taken into account. With the built-up area ratio, it will only be the area of the building in the horizontal projection, while with the building intensity ratio, it will be the sum of all floors of the building [70].

In German law, a limitation of building intensity is possible on the basis of § 9(1) Nos. 1 and 2 of the FBA in conjunction with § 16 et seq. of the FLUO. Pursuant to § 9(1) No. 2 of the FBA in conjunction with § 22 of the FLUO, a so-called open development method can be introduced. In open development, buildings are erected as detached houses, semi-detached houses or groups of houses with lateral boundary spacing. The length of these groups of buildings must not exceed 50 m (§ 22(2) FLUO). The appropriate arrangement of buildings, including their distances from other buildings, can be achieved by determining the building area in accordance with § 9(1) No. 2 of the FBA in conjunction with § 23 of the FLUO. In addition, based on § 9(1) No. 2a of the FBA, requirements may be introduced in the development plan for minimum distances between buildings that deviate from the construction laws of the federal states, which may prevent the excessive shading of buildings. The orientation of buildings may be affected by provisions regarding the direction of the ridge or the position of buildings in accordance with § 9(1) No. 2 of the FBA [71,72]. By stipulating the minimum dimensions of building plots in accordance with § 9(1) No. 3 of the FBA, undesirable building density and thus soil sealing can be prevented, and the proper ventilation of the area can be promoted. In addition, based on § 9(1) Nos. 10 and 24 of the FBA, it is possible to determine areas to remain free of development, which will thus serve as cold air corridors during hot weather and areas for protection against harmful environmental impacts [73].

See Table 2 below.

**Table 2.** Limitation of building intensity and location of buildings on the plot.

	Building Boundaries and Building Line	Method of Location of Objects on the Plot, Orientation of Buildings	Building Intensity and Building Area	Minimum Area of New Plots	Areas Free from Development
Poland	Art. 15(2) No. 6 SPDA	Art. 15(2) Nos. 6 and 8 SPDA	Art. 15 (2) No. 6 SPDA	Art. 15(3) No. 10 SPDA	Art. 15(2) No. 9 SPDA
Germany	§ 9(1) Nos. 1 and 2 FBA, § 23 FLUO	§ 9(1) No. 2 FBA, § 23 FLUO	§ 9(1) No. 1 i 2 FBA, §§ 16, 22 FLUO, § 9(1) No. 2a FBA	§ 9(1) No. 3 FBA	§ 9(1) Nos. 10 and 24 FBA

#### 4.3. Restrictions on Burning Solid Fuels, Their Installations and Laws on Renewable Energy Sources

Under German law, pursuant to § 9(1) No. 23(a) of the FBA, it is possible, in principle, to specify areas where certain carbon-emitting fuels may not be used or may only be used to a limited extent in a binding development plan. This reduces or eliminates the use of climate-damaging fossil fuels. It is assumed that on this basis only arrangements for prohibited substances, not for the equipment used, are possible [74]. It is worth pointing out that, in order to introduce a consistent system of protection against the burning of solid fuels, it would be recommended to introduce a provision into the FBA explicitly, which would allow for the prohibition of solid fuel installations. This would dispel doubts arising in the doctrine and strengthen the level of environmental protection. An argument can also be made referring to the construction of a coherent system of protection against the use of solid fuels. After all, since a particular type of fuel may not be burned in a given area, it is quite rational to link to this (without much harm to the interests of the owners) the prohibition of the construction of such installations, which in practice could not be used anyway. As indicated, the arrangement introduced must be feasible according to the state of the art, economically justified, and be as specific as possible with regard to the substances of which the use is to be prohibited or restricted. Pursuant to § 9(1) No. 23(b) of the FBA, areas may be specified where, in the construction of buildings or other structures, it will be necessary to introduce certain structural and technical measures for the generation, use or storage of electricity, heating or cooling from renewable energy sources, or cogeneration. As signalled in the doctrine, existing buildings that cause additional, non-negligible energy demand are not included in its scope [75].

Considering the Polish regulations, it should be noted that the municipality does not have the authority to determine in the local plan the areas where air pollutants may not be used, since this is the competence of the regional assembly, i.e., another body of self-government (Art. 96(1) EPA). However, as far as installations are concerned, it has already been accepted in several judgments of the Supreme Administrative Court that it is permissible to introduce a ban on solid fuel installations in buildings into the local plan. It is assumed that even the powers for the municipality not explicitly provided for in the provisions of the SPDA may be derived from the provisions ordering the protection of the environment, including air, from pollution [76]. Unlike in German law, there is no basis for specifying in the local plan the areas where it would be mandatory to introduce facilities for the generation, use and storage of energy from renewable sources and cogeneration. It is worth noting, however, that in accordance with Art. 15(4) of the SPDA, the local plan providing for the possibility of locating buildings provides at the same time for the possibility of locating micro-installations and other installations of renewable energy sources generating electricity from solar energy, which are devices other than free-standing. The exception is when the provisions of a given plan explicitly provide for the absence of such a possibility. As for the micro-installation, this applies to those using both wind technology and, for example, photovoltaic technology [77].

See Table 3 below.

**Table 3.** Restrictions on burning solid fuels, their installations and laws on renewable energy sources.

	Prohibition of Specific Fuels	Prohibition of Solid Fuel Installations	Obligation to Use Renewable Energy Installations
Poland	No possibility, competence of another local authority	Possible, on the basis of environmental regulations in conjunction with the SPDA	No legal basis
Germany	§ 9(1) No. 23(a) FBA	No legal basis	§ 9(1) No. 23(b) FBA

#### 4.4. Green Areas

It is widely accepted that green areas, as components of urban spaces, play a significant role and determine the quality of life and health conditions of residents. Their increasing importance of a climatic and hydrological nature, driven by progressive climate change, is determining the need to take appropriate measures [78]. Provisions for the indication of green areas in local plans can be of a diverse nature. These may be separate land divisions intended exclusively for greenery development; greenery may be incorporated as a supplementary use in areas with other uses, or vice versa—other supplementary uses may be allowed in green areas. It is also possible to adopt a so-called “mixed” designation, that is, to determine equivalent permitted uses. Finally, greenery can be indicated as an element included in other functions (even exclusively residential or service). A separate solution is to designate specific linear (avenues) or point objects (individual trees) as being subject to protection under the provisions of the development plan [79]. It is also worth noting that green areas can reduce cooling requirements for buildings, thereby decreasing the need for air conditioning systems. This is especially true when facades are greened up with the use of planted and climbing plants. Deciduous vegetation has the advantage of allowing solar gains in winter and reducing heating in summer through shading and evaporative cooling. Green roofs, in turn, have a cooling effect on the upper floors, which can be particularly affected by summer heat load [80]. Above all, trees play an extremely important role in urban greenery. They reduce the temperature of the surrounding air by altering wind speed, shading surfaces and blocking solar radiation, and they transpire water vapour into the air, thereby cooling it. Providing shade has social, economic and environmental benefits. It also has a positive effect on human health, blocking ultraviolet radiation and reducing the risk of skin cancer. This is especially important in urban areas for children. Shaded parking lots are also much more beneficial, as cars parked in full sunlight emit hydrocarbons into the air from the fuel in their tanks [81].

As far as Polish regulations are concerned, the local plan specifies the principles of protection of the natural environment and landscape, as well as the principles of landscaping and the requirements arising from the needs of shaping public spaces (see Art. 1(2) No. 3, Art. 15(2) Nos. 3, 3a, 5 SPDA). The importance of green areas is emphasised in Article 72(1) No. 3 of the EPA, according to which it is necessary for local plans to provide a comprehensive solution to the problems of development, with particular emphasis on, among other things, the arrangement and shaping of green areas. Finally, under Article 15(2) No. 9 of the SPDA, special conditions for the development of areas and restrictions on their use, including a ban on development, may be established due to the need to preserve or create green areas. However, there is no provision that authorises the municipality to specify in the local plan the type and extent of plantings on private plots or to obligate the preservation of specific vegetation and the introduction of appropriate proportions between plant species on plots. As for the removal of trees, the issue of obtaining a permit for their removal is regulated in the Nature Protection Act [82]. Under the current legal framework, there is also no legal basis—at least expressed explicitly—that mandates the order in the local plan to use so-called “green facades” on a specified type of building. As far as so-called “green roofs” are concerned, potentially the basis for such a solution could be provided by Article 15(3) No. 8 of the SPDA, which mentions the determination of the roof covering. However, the costs of such a solution, burdening property owners (concerning both the introduction and maintenance of such a roof), should be kept in mind



and taken into account in the process of weighing interests. It is recommended that the provisions of the SPDA clarify the issue of green areas by introducing their legal definition, which may also include an exemplary list of the most common and desirable forms of them, as well as specify that the local plan may provide for an order to preserve or plant certain types of greenery, especially in areas particularly in need of attention due to climate change, such as densely built-up city centres and their downtown areas or areas at risk of flooding or landslides. Such provisions of the local plan will then bind the licensed architect when drafting a construction project for a building permit.

In Germany, according to § 9(1) No. 25(a) of the FBA, an obligation to plant trees, shrubs and other vegetation, as well as an obligation to preserve trees, shrubs and other plantings and water bodies may be stipulated for individual sites or for the area covered by the development plan or parts thereof. It is understood that an obligation to plant specific types of vegetation, the proportion in terms of various plantings and the density of plantings, including on the roof and façade, may also be provided for [83]. In addition, the provisions of § 9(1) Nos. 10, 15, and 18 of the FBA provide for the possibility of designating open, green or wooded areas. For example, according to § 9(1) No. 15 of the FBA, green areas, such as parks, allotment gardens, nature experience spaces or camping areas may be designated, while it must also be specified whether it is a public or private green area unless it is clear from the context or justification of the draft plan [84]. Moreover, § 9(1) No. 20 of the FBA states that land-use plans should specify areas or propose measures for the protection, maintenance and development of soil, nature and landscape. However, in the case of areas intended for nature compensation purposes, the basis for their designation is given in § 9(1a) of the FBA [85].

See Table 4 below.

**Table 4.** Green areas.

	Determination of Green Areas	Obligation of Specific Plantings	Obligation to Preserve Certain Types of Plants	Obligation to Introduce Green Roofs or Facades
Poland	Art. 1(2) Nos. 3, 9 Art. 15(2) Nos. 3, 3a, 5, 9 SPDA	No legal basis	No legal basis; in the case of trees, this is regulated in the Nature Protection Act	As for the façade, there are no statutory grounds; as for the roof -potentially on the basis of Art. 15(3) No. 8 SPDA
Germany	§ 9(1) Nos. 10, 15, 18, 20, 25 FBA	§ 9(1) No. 25(a) FBA	§ 9(1)No. 25(b) FBA	§ 9(1) No. 25(a) FBA

#### 4.5. Water Management

In an era of climate change and accompanying violent weather events causing periodic flooding and floods or droughts, it is important to change the approach to the issue of rainwater and strive to reduce its surface runoff, through, among other things, increasing land retention, as well as its pre-treatment for use in municipal management, industry and individual households. Changes in urban infrastructure and green areas, involving the proper management of rainwater and snowmelt, also result in a reduction in the thermal risk faced by urban residents during periods of summer heat and improve housing and investment conditions and the comfort of urban life [86].

The method of draining rainwater from a plot and collecting it falls under the category of land use and therefore may be regulated in the Polish local plan under Art. 15(2) No. 9 of the SPDA. In addition, the basis for the introduction of appropriate technical infrastructure may be Art. 15(2) No. 10 of the SPDA. It is also possible to introduce certain arrangements on the basis of Art. 15(2) No. 3 of the SPDA, providing for the requirement to take into account the protection of the environment, nature and landscape. It is also worth noting that the obligation, provided for in Art. 15(2) No. 6 of the SPDA, to specify in the local plan the minimum percentage of biologically active area in relation to the area of the building plot, is of great importance for ensuring a proper microclimate and preventing flooding, by affecting the absorptive capacity of the land [87]. According to the definition in the

regulation, which is used alternatively in the interpretation of this concept, a biologically active area is an area with a surface arranged in such a way as to ensure the natural vegetation of plants and retention of rainwater. Additionally, 50% of the surface of terraces and flat roofs with such a surface and other surfaces should provide natural vegetation of plants, with an area of not less than 10 m<sup>2</sup>, and surface water in this area [88].

As for the risk of flooding, according to Article 15(2) No. 7 of the SPDA, the local plan shall mandatorily specify the boundaries and uses of areas of special flood hazards. This provision should be read in conjunction with the provisions of the Water Law Act. In areas of special flood hazard, determinations are made concerning, among other things, the height of the structure, the number of floors, the method of usage, as well as the architectural, construction and material solutions to be used in the construction of the building [89]. The possible development of areas of special flood hazard is therefore not impossible but is subject to intensive legal rationing. At the forefront is undoubtedly the exclusion of any flood risk.

In German law, the provisions of § 9(1) Nos. 10, 14, 16 and 20 of the FBA can be used to ensure proper drainage in cities. The binding development plan specifies the areas excluded from development and how they are to be used (§ 9(1) No. 10). On the basis of § (1) Nos. 14 and 20 of the FBA, provisions may be implemented relating to the retention and infiltration of collected rainwater. Pursuant to § 9(1) No. 16 of the FBA, areas may be designated where flood protection and drainage regulation facilities are introduced. When erecting buildings, certain structural or technical measures should be taken to prevent or limit the extent of flood damage, including damage caused by heavy rainfall. It is also possible to specify areas of building plots that must be free from construction in order to ensure the natural infiltration of water from precipitation. It is also worth noting that this purpose is also served by keeping green areas free from development [90]. On the basis of § 9(1) No. 24 of the FBA, protective areas may be established to be free of development, including special areas for facilities to prevent negative environmental impact.

See Table 5 below.

**Table 5.** Water management.

	Method of Draining and Collecting Rainwater	Equipment and Installations	Management of Areas Due to Flood Risk
Poland	Art. 15(2) Nos. 6, 9 SPDA	Art. 15(2) Nos. 3, 9, 10 SPDA	Art. 15(2) Nos. 7, 9 SPDA
Germany	§ 9(1) Nos. 10, 16, 24 FBA	§ 9(1) Nos. 14, 16, 20, 24 FBA	§ 9 (1) No. 16 FBA

#### 4.6. New Development and Use of Existing Development

The use of existing development promotes the reduction of so-called “grey energy” emissions. This includes the energy required to extract raw materials from nature, as well as the energy used in manufacturing activities. Grey energy is the amount of energy required for the construction, maintenance, renovation and possibly necessary deconstruction of a building. In addition to the share of energy used to operate a building, it makes a significant contribution to a building’s total emissions for its entire life cycle [91].

There is no provision in German law that explicitly allows the preservation of existing buildings to be mandated. However, it is stressed that provisions can be introduced in the development plan to encourage the preservation of existing buildings. These can be provisions regarding, for example, height, number of stories, and building area. If these parameters are set at the level of existing buildings, it creates an economic incentive to preserve the existing development. It is worth mentioning in this connection the so-called Bodenschutzklausel, regulated in § 1a(2) of the FBA, according to which land should be used sparingly and prudently, e.g., through the reuse of land, the use of vacant spaces within existing buildings. Soil sealing should be kept to a minimum. This is often referred to in the literature as the “optimisation imperative” in the sense that it is a matter of taking soil conservation considerations into account, within the framework of what is achievable

under the circumstances. This clause does not preclude construction projects on previously undeveloped land but requires for new development adequate justification and a balancing of interests [92]. It is necessary to take into account that it should mean the respective use of land, but not its consumption. Overbuilding and soil sealing make it unusable for other purposes in the longer term [93].

As far as Polish regulations are concerned, as in German law, there is no provision that explicitly allows the preservation of existing buildings to be mandated. However, investors can be encouraged to do so by specifying similar architectural parameters and indicators for new development to those of existing buildings. A provision similar to the German “Bodenschutzklausel”, according to which the principle is to plan and locate new development in urbanised areas, and primarily by supplementing existing development, and exceptionally only to plan and locate new development in non-urbanised areas—only in the absence of sufficient urbanised areas, with priority given to areas in the highest degree of preparation for development in terms of communication and access to utilities (Art. 1(4) No. 4 SPDA)—may also be of assistance. This is related to the necessity of efficient space management and taking into account the economic values of space (Art. 1(2) No. 6 SPDA) [94]. From the above provisions, on the basis of functional interpretation, it is possible to derive an obligation for municipalities to carry out such spatial planning that will encourage investors to leave existing development.

It is worth advocating that in both countries, legal solutions have been introduced in the FBA as well as the SPDA, which will more specifically favour leaving existing development in place, including allowing local plans—in most appropriate cases—to prohibit the demolition of buildings in certain areas. Of course, the introduction of such a ban would be subject, like any restriction of property rights, to a procedure for weighing public and private interests. At the same time, the introduction of such a ban should be offset by leaving the possibility of the appropriate reconstruction or expansion of the object in question in a way that adapts to current needs. It is a well-known argument that it is most often faster and cheaper to demolish a given building than to reconstruct it and adapt it accordingly. In such cases, however, economic arguments alone should not be the deciding factor, but at the same time public authorities should consider possible subsidy programs for such projects.

It should be noted that the above comments do not apply to specific legal provisions ensuring the preservation and protection of historic buildings.

See Table 6 below.

**Table 6.** New development and use of existing development.

	<b>An order to Preserve the Existing Development</b>	<b>Economical Management of Space and Promotion of the Use of Existing Buildings</b>
Poland	No legal basis	Art. 1(2) No. 6, Art. 1(4) No. 4, Art. 15(2) No. 6 SPDA
Germany	No legal basis	§ 16 et seq., § 23 FLUO § 1a(2) FBA

#### *4.7. Supporting Public Transportation and the Concept of a City of Small Distances*

The concept of the “short-distance city” assumes that through compact development and optimised public transportation use, reduced energy demand and a change in traffic congestion, mainly a reduction in car traffic, will be achieved. To implement the principle, a number of measures can be applied, including: limiting the expansion of settlement and transportation areas; designating new building sites only in conjunction with secured access to public transportation; preserving and protecting green and open areas; creating or securing existing catering, cultural, sports and recreational facilities close to residences; or concentrating large traffic generators, e.g., large-format stores or industrial and commercial parks, large public facilities and workplaces close to stops of efficient public transportation routes [95]. The spatial structure should therefore be shaped in such a way as to ensure the

shortest possible travel distances between residences and destinations (work, shopping or entertainment venues) and encourage the use of public transportation. The need to create sub-centres in particular parts of the city is highlighted [96]. This is related to the urban concept of the so-called “mixed-use city”, in which there is a distribution of mixed functions. This will help to avoid situations in which some neighbourhoods are almost empty for most of the day and others are used very intensively, and it would help solve the problem of traffic congestion [97]. It is also important to adopt a rational parking policy, the guiding principle of which would be to make the allowable number of parking spaces dependent on the location of the car park, the type and intensity of land use, accessibility by public transportation, and traffic restrictions. In addition, efforts should be made to make it possible, for example, to make shopping trips on the way home from work [98].

In addition to the provisions on the economic management of space in cities set out in the previous section, German law provides for the provisions of § 9(1) Nos. 11 and 22 of the FBA, according to which traffic areas such as areas for pedestrians, vehicle parking, charging infrastructure for electrically-powered vehicles, bicycle parking, as well as the connection of other areas with traffic areas are specified in the development plan [99].

As for the Polish legislation, measures conducive to the appropriate siting of development and the economical use of land were outlined above. As for the possibility of combining different land uses and functions, on the other hand, the provisions of 15(2) No. 1 and § 9(1) No. 1 of the SPDA are of primary importance. Moreover, according to Art. 1(4) Nos. 1–3 of the SPDA, when siting new development, it is necessary to shape spatial structures while striving to minimise the transportation-intensiveness of the spatial system, locate new residential development in a way that allows residents to maximise the use of public mass transit as the primary means of transportation, and provide spatial solutions that facilitate the movement of pedestrians and cyclists. In addition, according to Article 15(2) No. 10 of the SPDA, the local plan specifies the principles of the modernisation, expansion and construction of communication and technical infrastructure systems. Although this provision does not explicitly mention electric vehicle charging stations, it is worded generally enough to also specify such infrastructure.

See Table 7 below.

**Table 7.** Supporting public transportation and the concept of a city of small distances.

Measures to Implement the Idea of a Short-Distance City	
Poland	Art. 1(4) Nos. 1–4 SPDA Art. 15(2) Nos. 1, 3, 6, 10 SPDA
Germany	§ 9(1) Nos. 1, 11, 12, 20, 23(b) FBA

#### 4.8. Reducing Light Pollution

At the outset of this paragraph, it is worth noting that this study is limited to the legal instruments of local plans adopted by municipalities and the following considerations will be made in this defined context.

It is generally accepted that the components of light pollution include glare (excessive brightness that causes visual discomfort), sky glow (brightening of the night sky over inhabited areas), light trespass (light falling where it is not intended or needed) and clutter (bright, confusing and excessive grouping of light sources) [100]. Three groups of aspects related to overexposure to artificial lighting at night are highlighted: socio-economic, physiological and ecological, which cumulatively cause effects such as sleep disruption, increased stress response, health risks, increased health costs, reduced productivity, reduced fitness, mortality, altered population structure, reduced local populations, reduced ecosystem resilience, increased risk of invasion, and loss of biodiversity and human well-being [101]. Artificial lighting, therefore, has a negative impact on not only people but the entire urban ecosystem. The duration of light exposure disrupts the spatial and temporal division between diurnal and nocturnal organisms and their circadian clock and negatively affects reproduction,

habitat selection, immunity, orientation and communication [102]. Tools that can reduce these negative impacts include increasing the extent of unlit natural and semi-natural areas and reducing lighting ‘intrusion’ into unnecessary areas. Planners should consider the ‘nocturnal network’ of patches and corridors formed by relatively dark areas to best support urban flora and fauna [103]. Another negative outcome of light pollution is the artificial glare of the night sky. The research on the change in global sky brightness between 2011 and 2022 indicates that the number of visible stars decreased by an amount that can be explained by an increase in sky brightness of 7 to 10 per cent per year in the human-visible band [104].

Among the measures that can effectively counteract overexposure to artificial light in urban spaces are the following: general analysis of light demand and identification of lighting zones; optimisation of lighting levels; shielding and appropriate lighting geometry; reduction (grading) of lighting according to current demand with, for example, time switches and motion sensors that dim the lighting when there are few pedestrians or little traffic; and appropriate light colour (generally warm colours, avoidance of blue light) [105]. This can be facilitated by modern street luminaires with LED lamps, which can be connected to an advanced remote management system. Light intensity can also be adjusted to the weather conditions prevailing on a given day, depending on the season, or reduced in the least-frequented sections. Undoubtedly, a modern, rationally planned, safe, energy-efficient and cost-effective street lighting network is part of smart cities [106]. However, it is also worth noting that although LED lighting is promoted as aiming to reduce energy consumption, on a national or regional scale, energy emissions have increased. The reason for this may be, on the one hand, the adoption of the European standard, which has led to brighter lighting, or on the other hand, the occurrence of the ‘rebound effect’ or ‘Jevon’s paradox’ in outdoor lighting, in which the increase in energy efficiency and the associated perceived decrease in economic costs has resulted in an increased demand for lighting so that any efficiency gains have been offset by increased light consumption [107]. Hence, simply replacing outdoor lighting with LEDs does not solve the problem at hand. The guiding principle for outdoor lighting should be: “as much as necessary and as little as possible”. Limiting lighting to the necessary level not only avoids negative effects but also leads to energy and cost savings [108].

As far as German law is concerned, possibilities to limit light pollution are provided, firstly, by the provision of § 9(1) No. 20 of the FBA, according to which the development plan may determine areas or measures for the protection, maintenance and development of soil, nature and landscape [109]. In addition, according to § 9(1) No. 24 of the FBA, areas may be established for special installations and precautions to protect against harmful effects on the environment and other hazards within the meaning of the Federal Emission Control Act [110]. Moreover, according to § 15(1) of the FLUO, buildings and other installations are unacceptable if they cause a nuisance or disturbance that is unacceptable in the building area itself or its surroundings. Therefore, excessive light emission may lead to a finding of the unacceptability of a particular installation [111].

As far as Polish law is concerned, it should be pointed out that protection against light pollution may be introduced on the basis of the provisions of Art. 15(2) Nos. 3 and 3a of the SPDA, according to which the principles of environmental, nature and landscape protection, as well as landscape shaping, should be obligatorily specified in the local plan. Additionally, this purpose may be served by Art. 15(2) Nos. 5 and 10 of the SPDA, on the basis of which it is obligatory to specify in the local plan the principles for shaping public spaces, along with the modernisation, expansion and construction of communication and technical infrastructure systems. Therefore, one should agree with the statement that limiting the emission of artificial lighting is one of the aspects that should be obligatorily taken into account when drawing up local plans [112]. It is worth noting that the Polish Ombudsman has for years recognised the problem of light pollution and has applied to the competent ministers in this regard [113]. It has been rightly stated that the lack of legal qualification of “light pollution” as environmental pollution is an undesirable situation [114]. Consequently, the introduction of light pollution as one of the elements



of the legal definition of “pollution” provided for in Art. 3 No. 49 of the EPA should be advocated. This will increase the awareness of local authorities and give a higher, normative status to this form of environmental pollution, which will also have a positive impact on the environmentally friendly content of local plans. An argument could be made against this postulate that the current definition is intentionally so general as to provide it with the desired flexibility, and consequently, any elements meeting the criteria indicated therein could be considered a pollutant. Nevertheless, this legitimate view does not prevent the introduction of an exemplary enumeration into such a definition, including also those less obvious pollutants, leaving the catalogue of potential pollutants open. Such an exemplary enumeration bearing the phrase “in particular”—which has a certain clarifying and guiding function in the path of interpretation—is provided in the provision of Art. 3 No. 39 of the EPA, which contains the definition of “environment”.

See Table 8 below.

**Table 8.** Reducing light pollution.

Measures for Reducing Light Pollution	
Poland	Art. 15(2) Nos. 3, 3a, 5, 10 SPDA
Germany	§ 9(1) Nos. 20, 24 FBA

#### 4.9. Measures of Energy-Conscious Urban Planning in the EU Context

The concept of energy-conscious urban planning fits perfectly into EU legislation, strategies and missions.

Articles 191–193 of the Treaty on the Functioning of the European Union (TFEU) [115] confirm and clarify the EU’s competence in the field of climate change. According to Art. 191 and 192(1) of the TFEU, the European Union shall contribute to the achievement of, inter alia, the following objectives: preserving, protecting and improving the quality of the environment and promoting measures at the international level to deal with regional or worldwide environmental problems, and in particular to combat climate change.

It is worth pointing to the Regulation (EU) 2021/1119 called “European Climate Law” [116], according to which the existential threat posed by climate change requires the Union and Member States to increase their level of ambition and intensify their climate action. The Union has pledged to intensify its efforts to address climate change and to implement the Paris Agreement adopted under the United Nations Framework Convention on Climate Change. Moreover, all sectors of the economy, including construction land use and transportation, should play a role in the Union’s efforts to achieve climate neutrality by 2050. In turn, according to Art. 5(1) of the aforementioned regulation, relevant Union institutions and Member States have an obligation to ensure continued progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change.

Moreover, there are documents (mentioned in the introduction to this manuscript) that are not legally binding but whose content nevertheless influences the content of subsequent legislation, and their implementation is an expression of goodwill and a demonstration of the desire to cooperate at the international level. The European Green Deal, as a strategy aimed, among other things, at protecting, preserving and improving the EU’s natural capital, protecting the health and well-being of citizens from environmental risks and negative impacts, indicated that it is necessary to adopt a new, more ambitious strategy for adapting to climate change. As part of this, it is crucial to intensify action on climate resilience, strengthening resilience, prevention and preparedness, and cities have been identified as one of the stakeholders in this change. It was pointed out that the level of pollution generated by transport, especially in cities, should be drastically reduced. The strategy should also include proposals for green European cities and increase the biodiversity of urban spaces. It also established the Climate Pact [117] as a means of engaging the public, including city residents, in climate action. The new EU Strategy on Adaptation to Climate Change of 2021 includes a statement positing that any new

investment and policy decision should be based on adequate climate information and be resilient to its future changes, including land-use planning in cities. Furthermore, as indicated in the EU Mission: Climate-Neutral and Smart Cities, cities will play a pivotal role in achieving climate neutrality by 2050—the goal of the European Green Deal [118].

The above allows us to conclude that the properly developed legal basis for spatial development plans, as well as their suitably defined content, represents a significant contribution to achieving climate neutrality, which is hard to overestimate.

## 5. Conclusions

### 5.1. General Conclusions

In Both Countries:

- There are similarities in the principles of environmental protection and sustainable development at the level of basic laws, with neither of them explicitly referring to climate and its protection.
- The provisions of national laws contain orders to take into account environmental protection requirements, including climate protection, in spatial management.
- Spatial management by means of legally binding instruments is carried out at the municipal level, with this taking place in two stages, and the planning acts enacted must be consistent with each other, although they do not have to be identical.
- In Poland, no provision allows local authorities to introduce additional regulations regarding the permissible content of the local plan, beyond what is provided in the SPDA, since there are no partially autonomous states.
- Municipalities enjoy autonomy in shaping the space on their territory, limited, however, by the provisions of laws and the constitution and the obligation to weigh public and private interests, and there is no top-down primacy of any of these interests.
- In both Polish and German law, there is an obligation to prepare an environmental impact forecast, but not in every case of preparing a spatial development plan.

Postulates under General Conclusions:

- In order to strengthen climate protection, it is worth considering a reform of the basic laws in the form of including climate directly among the protected goods (values).
- It is worth considering the introduction into the Polish SPDA of a directly expressed order to take measures to counteract climate change and to adapt to the occurring climate change on the model of the German § 1a(5) sentence 1 of the FBA.
- Any form of accelerated, simplified procedure for the adoption of development plans for urban areas, limiting the requirements for environmental protection, should not be introduced/should be abandoned, as they reduce the level of its protection, especially since in cities. Due to the intensity of development, certain types of impact on its various zones or investments in relation to neighbouring areas will always take place.

### 5.2. Specific Conclusions

- In both countries, the provisions of the laws allow the characteristics, parameters and indicators of the planned development to be determined in the spatial development plans, which makes it possible to effectively promote energy-conscious land management.
- In Germany, a ban on burning specific fuels can be determined by the municipality in the spatial development plan; in Poland, this is determined by another local government body—the sejmik of the province.
- In Poland, the prohibition of solid fuel installations in the local plan is permissible, while in Germany it is currently assumed that there is no such possibility.
- In Germany, it is possible in the local plan to mandate the use of certain installations of renewable energy sources, while in Poland the regulations do not provide for this.
- German regulations provide a greater range of tools for municipalities in the management of greenery in cities, which in local plans can also specify orders for the use of

certain plantings, including on roofs and facades, and an order to maintain certain plants on plots, while in Poland there is no such statutory regulation.

- Both Polish and German regulations provide adequate instrumentation to specify water management in local plans.
- Neither of the legal orders allows specifying in the local development plan an order to preserve the existing development, but they contain general provisions that can motivate the use of the existing development and order for the economical management of space and soil.
- Both countries provide legal instruments to implement the idea of a “city of short distances”.

Postulates under Specific Conclusions:

- In Germany, it would be worth considering the introduction of a provision authorising municipalities to ban solid fuel installations in the development plan.
- In Poland, it would be worth considering a more detailed regulation in the law regarding the issue of green areas in local plans, including the introduction of their legal definition in the SPDA.
- In both systems, it would also be reasonable to introduce more detailed regulations, implementing in certain areas, especially the city centre and downtown, provisions that prescribe or promote the preservation of existing buildings (with the possibility of their modernisation or expansion).
- The introduction of artificial light to the Polish definition of “pollution” as one of its exemplary forms.

However, on the basis of the research conducted, it can be concluded that the legal systems of Poland and Germany provide for environmentally friendly urban management at comparable levels. Nevertheless, this does not negate the need for further discussions regarding the solutions introduced in both countries for this purpose.

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