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Spatial Externalities – a Contribution to Identifying a Network of Relationships. Insights from Poland and Romania

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ABSTRACT

Regardless of the aim, all man-made actions within a given space and using the available resources have a positive or negative impact on the anthropogenic and natural environment, both individually and in relation to one another. To a certain extent, spatial planning regulations and policies aim to regulate the amplitude of this impact and diminish the prospective positive and negative externalities. A categorisation of externalities was proposed in relation to spatial planning and spatial policy, real estate management, natural, environmental and agricultural conditions, and technical infrastructure. The assessment of particular externalities was based on integrated governance consisting of partial governance frameworks: economic governance, institutional and political governance, spatial governance, social governance, and environmental governance. The Delphi method was employed to evaluate externalities, by putting together a team of 12 spatial management experts. The methodological assumptions required adopting a definition of externalities and their features. Also, an in-depth analysis was conducted on the relationships and effects of activities carried out by entities operating in specific conditions and within the framework of social, economic and spatial policies. We considered the necessary assumptions aimed to explicitly define positive and negative externalities in spatial management, which was a difficult undertaking because of the particularities of cost-related and external benefits. A comprehensive list was created, relevant to the adopted classification of externalities. The conclusions provide recommendations for sectoral policies and advance further research directions.

1. INTRODUCTION

Debates over the identification and role of the market and non-market externalities in spatial management have grown significantly. Undoubtedly, much effort is required to mitigate the negative effects of human activity on both people and natural environment. We have noted a variety of climate-

related problems in the world that impose considerable restrictions on the users of space, which result in diverse socioeconomic costs, subsequently constituting a universal barrier to development. The externalities of spatial management are accompanied by the impact of human activities on the natural environment. Sustainability is affected by negative externalities and, in the long term, they create negative multiplier effects

in the case of economic and spatial policies. Generally, regardless of systemic spatial and economic policy solutions, externalities (Ex) penetrate the market, the spatial and social systems. There are many reasons for the occurrence of this phenomenon, but it is originally caused by an unavoidable presence, universality and the multiplying feature of both positive externalities (PosEx) and negative externalities (NegEx). They link effects, social costs, as well as various implications for public policies. Because of the dynamics and diversity of market processes directly related to spatial management, the correct identification of externalities is a task that requires knowledge related to the planning systems and local conditions and their deficiencies. It is also necessary to have the ability to identify the significant parties involved in a transaction, which is a source of PosEx and NegEx exchange. They are observed when an entity's activities affect a third party, which does not incur any costs or does not receive any compensation (Mankiw, 2009, Mankiw et al., 1992). Externalities occur when an entity creates costs or benefits for a third party, which is not given economic (financial) incentives to accept such costs or benefits (Krugman and Wells, 2009). Literature on the subject mainly includes debates and analyses concerning the effects of the exchange between the participants in this process.

We believe that attention should be given both to those directly involved in externalities and to the third parties. Third parties are understood as groups of people, e.g., inhabitants of a housing estate, neighbours, or members of society affected by Ex. Externalities include various costs or benefits resulting from spatial management activities carried out by a given entity. Assigning costs and benefits to the entire society, even at a local level, can be difficult or even impossible (Kapp, 1969; Verhoef and Nijkamp, 2003). We are well aware of the PosEx and NegEx that occur in the process of consumption (particularly negative externalities). Debates also focus on externalities generated by the available spaces that are already managed or have undergone a certain process of management. Consequently, such effects vary in terms of their impact. The indicated impact of the above externalities can be construed as an integrative answer to the following questions: (1) how do they affect space, and (2) what is their sensitivity level to internalization (the fact that decision-makers consider the external costs and benefits as an entity which, in most cases, is not involved)? Another crucial issue is the modification of local conditions in the context of local communities' behaviour in response to externalities.

The form and scope of the local and regional spatial policies are strongly correlated with externalities. The literature on the subject usually points to the operational economic instruments: taxes, fees, subsidies, and various exemptions resulting from

legal regulations. Externalities are affected by loans and credit guarantees, diversified property taxes and subsidies. Subsidies include investments in social and technical infrastructures that would meet the needs of space users. It can be concluded that solutions aimed to materially shape space are effective instruments for space management including local spatial policies (Parysek, 2006; Noworól and Hołuj, 2016). Therefore, approaches on the relationships between externalities and the effectiveness of economic activities should consider the material and non-material products transferred to entities functioning in a given spatial structure. In this case, there is no compensation for the related costs. Most importantly, the recipients of externalities cannot affect the scope and form of activities carried out by entities functioning in this spatial structure (Markowski, 2010a; 2010b). An assessment of externalities should focus on the form of usage and benefits resulting from the use of goods available in a given space.

The behaviour of space users can be "steerable" through implemented local and partially regional policies and, in a broader context, through public administration entities. A widely used instrument is the organization of necessary space infrastructure. Benefits resulting from location, especially those multiplied by the accessibility of indispensable social and technical infrastructure, are unquestionably solid arguments in decision-making processes, e.g., those aimed to implement territorial housing investment projects. Other benefits include the economies of scale, as well as various multiplier positive effects resulting from the concept of agglomeration. This concept also comprises the process of concentrating various economic activities (along with households) and dedicated public services. Usually, the functioning of a well-organised urbanised (city) structure has a positive impact on all its users (Verhoef and Nijkamp, 2003).

2. EXTERNALITIES AND THEIR CLASSIFICATION. A THEORETICAL BACKGROUND

For further consideration, we can accept a general definition of externalities. In a practical approach, PosEx and NegEx are referred to as the effects of the activities of individual entities that change the level of utility of other space users. However, other space users cannot change the direction and impact of such activities. Therefore, the identification and assessment of externalities can only be possible and complete if the character of goods is fully identified in terms of their complementarity and substitutability. Simultaneously, attention should be given to the structure of ownership (public, private or mixed ownership, e.g., co-owned goods or club goods). It

should be noted that the consumption of public goods usually implies high costs, unlike in the case of private goods. It is much easier to set a relevant fee for, or to identify the costs of the use of private goods. The lack of a user's compensation for the benefit of owners usually leads to restrictions on the use of a given good (Stiglitz, 2004). Also, it is necessary to identify the features of the consumption of goods (rivalrous and non-rivalrous). This differentiation is crucial in the context of PosEx and NegEx.

In the case of rivalrous consumption, the accessibility of goods is limited if there is a user of goods and other potential users do not have direct access to goods. In the case of non-rivalrous consumption, there can be many users of goods and, theoretically, the consumption of each of them does not affect the level of satisfaction of other users or consumers. Undoubtedly, this classification can be supplemented by the differentiation between facultative and non-facultative public goods (Markowski, 2010b). In the case of the former, users can choose the scope and form of the use of a given good. They determine the extent of their interest in the use of a specific space. In the case of the latter, obligatory (non-facultative) public goods are attributed to all space users regardless of their current preferences.

Literature most frequently refers to externalities as follows: positive and negative externalities, monetary externalities along with non-monetary externalities usually identified with technological effects, as well as unilateral and multilateral externalities, and private and public (exhaustible and inexhaustible) (Żylicz, 2004). The division into exhaustible and inexhaustible externalities, also referred to as private and public, requires a more detailed definition. Private externalities relate to the situation in which an externality can be received by a specific number of users, e.g., users of a given space. In other words, there is a group experiencing an externality that is not accessible to any subsequent person. On the other hand, public externalities are accessible to the general public, and, on principle, an increase in the number of their recipients does not affect the size/number of generated externalities.

PosEx and NegEx can occur in connection with some planned activities carried out by individuals, authorities etc. (see Markowski, 2009). PosEx and NegEx are commonly viewed as the effects of activities carried out by individual entities, which change the level of utility of other users of space. An important aspect is their "immobility" – the lack of relevant decisions, which affect their direction and impact. Having the particularity of public goods and the complexity of related relationships, it can be assumed that externalities occur only when activities carried out by one party improve or worsen the circumstances of

another party and on the condition that it takes place only until the party generating externalities incurs the costs of such activities (Gruber, 2010).

This terminology should also apply to the essence of mixed public goods. A set of shared resources provides a potential opportunity for use by all interested parties. Exclusions can be experienced by subsequent users. The use of space by subsequent parties is accompanied by changes in the marginal utility of space (Hołuj, 2018). It tends towards zero, which is directly related to its increasing depreciation, ultimately leading to the occurrence of NegEx. This situation can be rectified by appropriate policies aimed to reduce the maximisation of the individual utility of common goods, which leads to introducing solutions to reducing emissions, mining output, concentration, height and number of architectural facilities, sprawl etc. Mixed public goods also include club goods, the use of which does not affect their marginal utility. Their use can be restricted or eliminated for a specified group of users (see Jakubowski, 2005).

Therefore, space already managed by, or in the process of being managed by space policy entities, can cause the occurrence of PosEx and NegEx until an appropriate compensation is paid (Nowak, 2017; Hołuj, 2018a). These entities are responsible for activities affecting functionality, productivity, composition and natural and cultural conditions. It is justified to claim that externalities observed in space do not necessarily indicate public authority interventions. Externalities resulting in socially acceptable transaction costs lose their significance (externalities as such do occur). From an economic point of view, it is crucial, because all public authority interventions generate costs.

The determination of ownership rights and the absence of transaction costs will allow for achieving an economic optimum without the engagement of public authorities. It is possible under specific circumstances when, apart from negative externalities, social return on investment exceeds private rates of return. In such a situation it seems necessary to implement public administration intervention policies at various levels. This necessity is stressed by Coase (1960), who states that a serious problem faced by courts of law is not what should be done and by whom, but who is formally entitled to do it.

State interventionism in a free-market economy can also indicate favouring selected entities. Interventions are directly related to the provision of public goods. Preferential solutions supersede market mechanisms through the administrative impact on the costs of production factors, prices and how some goods are distributed (Bourne, 1975; Markowski, 2010). In addition to that, the resulting interdependencies between individual users of space are accompanied by the external effects of spatial management, related to local and, indirectly, regional space policies.

In the case of private entities, externalities occur when the location of buildings, urbanization processes, the development of technical infrastructure etc. improve or worsen the situation of the other party, but only until the moment when the party responsible for externalities does not incur the costs of its activities. More precisely, the external costs of spatial management are social costs resulting from implemented policies (spatial, economic, ecological policies etc.), with the reservation that in the case of NegEx social costs exceed private costs, and in the case of PosEx the situation is reversed – social benefits exceed private benefits (Lityński, 2019). Regardless of the effectiveness of currently implemented spatial policies, a crucial role is played by a direct correlation between Ex and the effects of activities carried out by private and public entities in a given spatial structure. Spatial policies can have negative effects, or they can be ineffective in pressuring space users to achieve spatial governance. Public entities face various Ex related to a broadly understood condition of entities operating in space. The level of their development can be determined by the scope of local self-governments' supervision (Lityński et al., 2015). Legal documents are a widely used tool - they enforce desirable activities or provide appropriate incentives. Their impact on space users, economic entities and investors can be direct or indirect, depending on specific circumstances (Nowak, 2017).

Therefore, spatial policies must comply with authorities' legal and administrative requirements and the relevant plans adjusted to the current socioeconomic needs (operational and action plans, structural, development, sectoral and pilot plans, development plans of various scope and infrastructure development plans). This regulatory approach is useful in developing legal and organizational frameworks meant to regulate spatial management.

The following instruments in this process include acts and directives, standards, land use plans, surveyor classifications, zoning, construction and urbanization norms, as well as other administrative decisions namely, permits, orders, prohibitions and penalties. It should be noted that the functioning of public entities is not always rational, systematic and adjusted to effective management procedures.

In addition, there are several "soft" instruments affecting spatial management processes. They include a set of various activities directly related to economic entities, development agencies, corporations, development banks etc. Their functioning is based on delegating public authority in the area of spatial management issues. An important role in influencing the behaviour of space users is played by urban marketing, different information materials, promotions, location-based advertising, field meetings, social media campaigns etc. (Lityński and Hołuj 2018; 2021). The

effectiveness of soft impact instruments cannot always be predicted, so they are only used to support basic instruments.

We believe that PosEx and NegEx in spatial management can result from spatial processes, such as composition- and aesthetics-related reorganization and modification of functional, environmental or cultural values (Nowak, 2017). However, it is difficult to identify Ex generators in a precise and clear-cut way. Ex are defined as significant space-related losses and benefits, which also have an economic impact. Therefore, it can be assumed that spatial losses are reduced (incurred losses) or not achieved (lost opportunities) as social benefits resulting from the use of resources and spatial values. A universally acknowledged example of such phenomena is the protection of spatial governance.

In this context, a key role can be played by a classification proposed by A. Jewtuchowicz (1987) from the perspective of the transmission of externalities. The author identifies two basic groups: vertical Ex and horizontal Ex. In spatial management, vertical Ex refer to the process of the specific management (e.g., buildings, development projects) implemented by an entity, in which PosEx and NegEx are identified at different particular stages of the process. Therefore, the analysis and assessment of externalities (indicating potential benefits/costs) are more accessible and universal to study. On the other hand, horizontal Ex occur when the process of a managed space (a space in the course of being managed) generates costs or benefits for other entities/users related to the entity that initiates the process. Under such circumstances, it can be difficult to identify and assess their impact. Undoubtedly, this difficulty results from a set of various relations created by space users and the overlapping and diffusion of the effects of these entities' activities.

Depending on the conditions of a given space, we observe various correlations resulting from socioeconomic processes. Apart from production (spatial management) processes and the exchange of goods and services, Scitovsky (1954) identifies the following interdependencies: 1. producer-producer; 2. producer-consumer; 3. consumer-producer; 4. consumer-consumer. He was the first researcher to show that externalities can also occur in the process of consumption. In earlier research, PosEx and NegEx were exclusively referred to as production processes.

The functioning of individuals in space generates transaction costs, which are directly related to planning procedures (planning policies). They are accompanied by specific interdependencies of mixed features and intensity. Apart from land-use processes (new buildings), they have an impact on the heterogeneous components of the natural environment. The transfer of these rights takes into account the generated costs. It is assumed that a given entity has the legal capacity to manage space, while another entity,

affected by the process, is entitled to repurchase the right to use space from a space managing entity. Reducing the occurrence of externalities in space involves an increased scope of market processes and a free transfer of the above-mentioned right. Therefore, Scitovsky's "interdependencies" should be defined more precisely based on a more detailed description of spatial management externalities [see: Hołuj, 2021]:

- simple investment externalities – generated by spatial management and directly affecting spatial management processes;

- complex investment externalities – generated by spatial management and affecting space users;

- simple organizational and functional externalities – generated and absorbed by land-use processes;

- complex organizational and functional externalities affecting space users;

- simple formal and institutional externalities generated and absorbed by the institutional sphere;

- complex formal and institutional externalities generated by the state apparatus and affecting spatial management.

The defined Ex of spatial management constitute a significant part of externalities generated in connection with meeting social and economic needs. It should be noted that an evaluation of PosEx and NegEx is dependent on individual marginal utility. It results from the fact that individual benefits do not always lead to positive social externalities. By analogy, within a local community, PosEx can generate NegEx for individual users.

The complexity of this process is increased by the diversity of factors that generate PosEx and NegEx. Market deficiencies related to defining ownership rights and unjustified allocations of resources can result in multidimensional Ex, having a major impact on all market participants. They also affect currently implemented spatial management programmes. Therefore, to compensate for the incurred costs, it is necessary to establish property rights. The lack of clearly established rights can lead to uncontrolled spatial management processes and the lack of awareness of generating externalities for other users (Batabyal and Nijkamp 2014; Baumol and Oates, 1993). Establishing and granting ownership rights to entities functioning within the framework of adopted principles and regulations in force will prevent the internalization of external costs. Therefore, injured parties can eliminate or mitigate the negative effects of unwelcome activity by exerting the direct influence of perpetrators. Through its effective legislation, a free market economy grants legal rights to parties to state their preferences. The spatial management process is not exclusively determined by currently binding ownership titles. However, granting ownership rights to injured parties leads to internalization – an entity's loss is

compensated in full through another entity's benefits. Therefore, spatial policies can be regarded as effective when negative externalities are attributed to their perpetrators (Żylicz, 2004).

3. ADOPTED METHODOLOGY AND CHARACTERISTICS OF EXTERNALITIES IN SPATIAL MANAGEMENT

To present a more detailed distinction between PosEx and NegEx, we devised our own classification of externalities in the following areas: spatial planning and spatial policy; real estate management; natural, environmental and agricultural conditions, and technical infrastructure. The assessment of particular externalities is based on integrated governance, which comprises partial governance systems: economic governance, institutional and economic governance, spatial governance, social governance, and environmental governance (Borys, 2011; Markowski, 2019). This approach is based on the assumption that integrated governance can be regarded as the future stage of final development changes, while sustainable development should be classified as a process (Borys, 2011). Most importantly, the formal principle of spatial governance should be accepted in the context of the fundamental principle of programming spatial policies. Undoubtedly, this process is supported by spatial planning, which should perform the function of the unquestioned regulator of urbanization, investment and settlement activities (Nowak, 2017; Zawilińska and Hołuj, 2014).

The analysis is based on the Delphi method, and our team of researchers was composed of 12 experts from the Centre for Research of Settlements and Urbanism, Babeş-Bolyai University, Cluj-Napoca Romania, and the Institute of Spatial Management and Urban Studies, Cracow University of Economics, Poland. Primarily, the methodological assumptions required defining the concept of externalities and their characteristics (the first part of the work). Next, it was necessary to adopt assumptions for a detailed description of PosEx and NegEx.

The difficulty of this task was given by the specificity of external costs and benefits. A list of such factors was drawn up based on the assumption that not all the indicated criteria had to be met relative to those initially proposed for assessing Ex. Finally, Tables 1-4 present PosEx and NegEx that meet at least two of the following requirements:

- 1). A generating and affected entity must be identified.

- 2). Interdependencies (their attribute) resulting from the activities of an entity generating a recipient's PosEx and NegEx must be precisely defined.

- 3). A recipient can identify the generated PosEx and NegEx.

4). PosEx and NegEx are real – not assumed by a recipient.

5). Transparency of the identification of PosEx and NegEx in spatial management.

6). A generating entity's activities affect an injured party.

7). Simultaneous and unambiguous character of relations (action-cost/benefit) between a generating and affected party.

8). A recipient does not contribute to PosEx and NegEx generated by a perpetrator.

The study does not present the formal features of relations between generating and affected entities (which are to be undertaken in further research). The authors believe that despite the possibility of identifying a formal function for presenting and calculating the identified Ex in spatial management, the assumption about the existence of PosEx and NegEx is justified. Externalities occur when affected parties (e.g., injured parties) suffer loss (it is sufficient to confirm the direction, intensity and form of action). Graczyk (2005) notes that when a recipient is affected by Ex, it is possible – based on other cases and comparative analyses – to attribute specific effects to a perpetrator's specific actions. However, we should bear in mind that the identified effects in a given case (the actions of a generating party) can differ from standard effects. Therefore, research procedures should comprise control mechanisms that allow for removing expected (understated/overstated) values of PosEx and NegEx.

Next, we focused on identifying the basic characteristics of PosEx and NegEx which occur in a broadly understood spatial management (Ex presented in Tables 1-4). The identified externalities are visible in individual analyses of ecological and social issues, those related to external costs/benefits etc. It is important to attempt to describe Ex in spatial management from a broader perspective, giving attention to the specific way in which they are created (the above-adopted assumptions concerning PosEx and NegEx.)

The localization of various sectors, professions, people, companies and institutions in a precisely defined and relatively small space (a given environment) generates multiple relations, as well as costs and benefits (Bairoch, 1988; Jacobs, 1969; Semczuk, 2018). The resulting interactions allow for improved operations and increased productivity and life quality. Externalities, similarly to most innovations, are created in urbanised areas. People are inclined to incur higher living expenses in city spaces (also in urbanised areas) because of their ubiquitous benefits. We should not forget about the existence of ExNeg, but an entity's decision process depends on an individual's assessment of costs and benefits. In our efforts to identify externalities, we must be sure, from the very beginning of the process, if expected relations (costs/benefits) occur. It is a difficult task especially when we do not

have sufficient knowledge about potential benefits or threats (Hołuj, 2018b). It happens that PosEx and NegEx can be recognised after an identification based on the assessment of interdependencies between affected/generating parties, e.g., producers, users, local communities etc. Our judgment can be biased because of the existing interactions we have simply become accustomed to; for instance, the externalities related to road traffic (exhaust fumes, noise, congestion). Similarly, we often recall the beauty of the landscape even when we cannot enjoy it (because of buildings or fences blocking the view).

The phenomenon of relocation of externalities, particularly positive ones, is frequently referred to in research on economic growth (Romer, 1986; Lucas, 1988). The universal availability of benefits encourages people to remain in a given system and attracts new space users regardless of relatively high costs. PosEx can have a major contribution to an entity's development, and a relatively short distance (geographical proximity) encourages the spillover effect. Many theoretical studies emphasize the significance of improvements in a broadly understood functioning of entities for the benefit of other users. For example, an entity's technological Ex increase the productivity of other entities without any compensation (Dasgupta and Stiglitz, 1980). Therefore, the identification of PosEx and NegEx can be supported by the opinions of people/entities not engaged in creating Ex. Such opinions are very likely to be unbiased.

In simple terms, urbanised spaces specialise in selected areas of activity. Specialization results from the needs of users and business entities. Moreover, specific areas (specializations, land-use methods) are frequently located in the neighbourhood (hence the term "location/neighbourhood externalities) (Lityński and Hołuj, 2017). It allows for sharing costs (outlays) or access to spatial structures, public goods etc. Interesting studies of work productivity dependent on the mutual location of businesses have been conducted by several researchers (Arthur, 1989; Henderson, 1986; Lichtenberg, 1960; Rotemberg and Saloner, 1989). This fact was given special attention by Marshall (1890), who stressed the significance of entrepreneurs' access to specialised groups of professionals. Then, it can be stated that there are several static positive Ex related to location. However, there are also negative static NegEx. In the short run, local specialization creates specific benefits for cities (urbanised areas). However, in the long run, NegEx may dominate, hindering the development of a spatial entity. Location-related Ex are frequently referred to as urbanization-related Ex, resulting from space users' behaviour. The achievement of a specific level of development is accompanied by increased local demand for various goods that are easily available in a given place. Originally, urbanization-related Ex were referred to as companies' interest in

specific spaces because of their higher than average demand (Henderson, 1986).

A comparison of models presented in the literature, which point to the need of establishing business entities representing various sectors in a given space, leads to the conclusion that spatial monocultures create more ExNeg than diversified spaces (Lichtenberg, 1960; Krugman, 1991; Murphy et al., 1989). Urbanization- and location-related Ex are more linked to location issues than spatial growth itself. However, a clear-cut definition of the occurrence of such externalities can be problematic. Table 1 proposes a classification of commonly occurring externalities in the context of spatial planning and spatial policies. It is crucial to highlight the difficulties met in identifying such Ex. The observed cause-effect relationships between PosEx and NegEx generating and affected parties will be strongly correlated with the self-improvement potential of spaces. Space, being – in a way – a catalyst of Ex, distorts a proper assessment of the impact of PosEx and NegEx, which result from the

functioning of a large number of entities. An unambiguous evaluation of the perpetrator, considering the ubiquity of effects (including location and urbanization), is conditioned by our ability to assess external costs/benefits.

Another issue is the explicit identification of the perpetrator. Which entity is responsible for generating external costs – the dominating entity expanding its activities or perhaps other space users, not visible because of generating low risk in their relations with a broadly understood space? We should bear in mind that the ultimate externality is affected by various actions and that each generating party contributes to costs. In addition, there are difficulties in determining ownership rights. Ex recipients frequently face the problem of determining the price of single Ex and the terms of Ex market trading. The socially unquestionable deficiency is the impact of Ex generating parties on public goods – public entities are much more inclined to claim compensation than private organizations.

Table 1. Selected externalities of spatial planning and spatial policy in the context of integrated governance.

Affected/generating entities		<ul style="list-style-type: none"> - human/human - human/social group; social group/human - economic entity/human; human/economic entity - economic entity/social group; social group/economic entity - human/public entity - public entity/human 			
Range		- local; subregional; regional; national			
Time of impact		- immediate; long-lasting; temporary			
Character of externality		- expected; unexpected; planned			
Externalities					
Positive impact	Private	Public	Negative impact	Private	Public
Organization of residential spaces	+	-	Administrative decisions	-	+
Transparent spatial structure	-	+	Irrational information in planning documentation (injured party's perspective)	-	+
Improved environmental and landscape components	-	+	Special acts	-	+
Functionality	+	-	Planning procedures	-	+
Local/regional competitiveness	+	-	Limited planning standards	-	+
Increased value of land	+	-	Investment risk	+	-
Revenue from zoning fee, adjacent fee and cadastral fee	+	-	Expropriations	+	-
Local/regional development	+	-	Density/over-density	+	-
Dissemination of knowledge	-	+	Spatial availability	+	-
Genius loci	-	+	Compensation costs	+	-
Multiplier effects	+	-	Investment costs	+	-
Lower transaction costs	-	+	Oversupply of building grounds	-	+
Organization of economic sectors	-	+	Limited predictability of spatial management processes	+	-
Health protection	-	+	Urban sprawl	+	-
			Costs of transport	-	+
			Spatial inertia	+	-

Improvements in defence and state security	-	+	Conflict in a space	-	+
			Interference with landscape	-	+
			Public goods	+	-
			Competitiveness of consumption of goods	-	+
			Impact on environment (air, water and soil pollution)	-	+
			Climate change	+	-
			Use of natural resources	-	+
			Defragmentation of spatial structures	-	+

The descriptions of externalities considering market behaviour allow for a more precise identification of PosEx and NegEx. An entity's economic or/and consumption activity has an indirect impact on the economic effectiveness, consumption or utility of other non-associated entities (Laffont, 2017). However, analyses should minutely research the delays between the occurrence of Ex and their effects. The identification of spatial Ex and real estate management Ex (Table 2) must consider the shift in time of PosEx and NegEx and the fact that only in selected cases we can note a situation in which the perpetrator's actions and the recipient's identification of Ex are simultaneous. Debates over the already identified Ex always point to recipients and generators (of costs, particularly recipients' costs/benefits), as well as the characteristics of cause-effect relationships between generating and affected parties (Lityński and Hołuj, 2018). The issue of the identification of real estate

market Ex was undertaken by much earlier research studies. Real estate management was referred to as externalities related to ecology/environment and proximity aesthetics (see: Li and Brown, 1980). Unfortunately, because of the increasing complexity of markets, the issue of a clear-cut identification of external relations remains unsolved. In an arena of changes based on the standards of integrated governance, a space "attracts" and stimulates the PosEx of implemented spatial and socioeconomic policies. Nevertheless, we observe various PosEx and NegEx processes, determined by complex spatial interdependencies, referred to as suburbanization, metropolization, urbanization, decentralization, and reurbanization (Bromley et al., 2007). The above-mentioned phenomena, regarded as Ex generating factors, are strongly correlated with various development stages, and the evolution of anti- and pro-urban actions and views (Colomb, 2007).

Table 2. Selected externalities of real estate management in the context of integrated governance.

Affected/generating entities		<ul style="list-style-type: none"> - human/human - human/social group; social group/human - human/economic entity - economic entity/social group - human/public entity - public entity/human 			
Range		- local; regional; national			
Time of impact		- mid-term; long-term; temporary			
Character of externality		- predicted; planned; probable			
Externalities					
Positive impact	Private	Public	Negative impact	Private	Public
Organization of a place of residence	+	-	Impact on existing built areas (change of quality of life)	+	-
Urbanization	-	+	Efforts aimed at planning and locating newly built areas	+	-
Quality of space	+	-	Significance of private interest	-	+
Durability of real estate	+	-	Impact on technical infrastructure	+	-
Economic development	-	+	Conflicting interests	+	-
Labour market specialization	+	-	Excessive use of resources/building materials	+	-
Ease of taxation	-	+	Speculative bubble	-	+
Location	-	+	Abuse of property rights	-	+

Technological development	-	+	Impact of private investment on public investment	-	+
Dissemination of knowledge	-	+	Limitations in developing territorial self-government entities	-	+
Individual character	-	+	Capital intensity	-	+
			Rarity, resource deficit	+	-
			Fragmentation	+	-
			Location	+	-
			Low liquidity of goods	+	-
			Indivisibility	-	+
			Sensitivity to consumer behaviour	-	+
			Impact on environment (air, water and soil pollution)	-	+
			Climate change	-	+
			Use of natural resources		
			Defragmentation of spatial structures	+	-
Non-aesthetic	+	-			

Spatial management and real estate management incur transaction costs resulting from operations generating real estate costs, negotiation costs, documentation costs etc. The behaviour of real estate market participants and various planning processes, which accompany transaction costs, are correlated with the internalization of spatial management Ex. Transaction costs are affected by social, economic, natural and cultural factors, and spatial management Ex are additionally correlated with planning procedures and zoning approvals, which are subject to administrative decisions.

It can be stated that planning analyses, to some extent, advise space users on the profitability of their activities. Theoretically, they provide information on the possibility of creating NegEx and PosEx in the future. As a result of spatial management, including investment processes (the choice of locations, technologies, the size of a facility etc.), space can be treated as an anthropogenic source of Ex. Appropriate spatial policies can lead to reducing external costs generated by new space users.

Introducing changes in space, resulting from the functioning of Ex affected and generating entities,

should be also referred to as the ubiquitous impact on the natural environment. The general problem lies in reducing the environment’s assimilation potential. The space where humans live is defined by its marginal productivity – its value is not known (Kowalewski et al., 2014). Probably, its clear-cut evaluation (depending on self-improvement abilities) is not possible and, consequently, the suggested estimations can be considerably distorted. Subsequent thresholds are frequently exceeded, affecting the generated external costs. Specific interactions in spatial management lead to the degradation of natural resources.

The reorganization of space based on various forms of land development often results in irrevocable changes in spatial components, decreasing the quality of life. apart from most space-related and real estate management Ex, ecological externalities (natural, environmental and agricultural – Table 3) have a permanent character. NegEx and PosEx have a lasting impact (practice/research most frequently record NegEx). Observations explicitly confirm the repeated character of Ex, although, similarly to other groups of Ex, certain events have a one-time impact on affected entities – ecological, construction and land disasters.

Table 3. Selected natural, environmental and agricultural externalities in the context of integrated governance.

Affected/generating entities	- human/human - human/social group; social group/human - economic entity/human; human/economic entity - economic entity/social group; social group/economic entity - human/public entity				
Range	- local; regional; national; international				
Time of impact	- immediate; temporary; mid-term; long-term; permanent				
Character of externality	- unexpected; expected; planned; probable				
Externalities					
Positive impact	Private	Public	Negative impact	Private	Public

Health	-	+	Climate	-	+
Quality of life and housing conditions	+	-	Location	-	+
Protection of animals, plants, deposits and resources	-	+	Landform	-	+
Restoring natural equilibrium	-	+	Land development	+	-
Availability of green areas	+	-	Air, water and soil pollution	-	+
Sense of aesthetics	-	+	Climate change	-	+
Ecologization of life	+	-	Use of natural resources	-	+
Rational resource management	-	+	Low emission	-	+
Quality of foodstuffs	+	-	Ecological land management for agricultural needs	-	+
Local and regional development	-	+	Use of chemicals in agriculture	+	-
Competitiveness	+	-	Natural disequilibrium	-	+
Availability of agricultural products	+	-	Higher spatial management costs	-	+
Increased profitability (tourism, trade etc.)	+	-			
Multiplier effects	-	+			

The process of identifying PosEx and NegEx of technical infrastructure (Table 4) faces similar

problems to those related to previously characterised, with one reservation.

Table 4. Selected externalities of technical infrastructure in the context of integrated governance

Affected/generating entities	<ul style="list-style-type: none"> - human/human - human/social group; social group/human - human/economic entity - economic entity/social group; social group/economic entity - human/public entity 				
Range	- local; regional; national; international; cosmic				
Time of impact	- immediate; long-term				
Character of externality	- unexpected; expected; planned				
Externalities					
Positive impact	Private	Public	Negative impact	Private	Public
Possibility of human activity	-	+	Loss of the "natural" character of environment	-	+
Quality of life	+	-	Air, water and soil pollution	-	+
Creating conditions for socioeconomic development	-	+	Sound waves	-	+
Utility infrastructure	+	-	Electromagnetic waves	-	+
Building market competitiveness	-	+	Climate change	-	+
Dissemination of knowledge	-	+	Accidents	-	+
Increased profitability	+	-	Congestion	-	+
			Depreciation of flora and fauna	-	+
			Space development and management	+	-
			Production of materials	-	+
			Taking over of free spaces	+	-

Determining the character and impact of Ex generating entity on affected entities is much more difficult because of a frequent delay in the occurrence of externalities. Delays can be so long that externalities

(also benefits) are observed by affected parties after stopping the creation of Ex. Moreover, if recipients' observations are seen as a process, attention should be first given to identifying Ex potential recipients and

then to indicating the individual costs/benefits of technical infrastructure externalities.

4. CONCLUSION

The limitations of natural resources, including the accessibility of space, encourage reflection on how we could reduce the impact of our activities on the surrounding natural environment. Obviously, negative externalities are the most unwelcome phenomena. However, future debates over these issues should focus on reducing all externalities. Also, it should be noted that NegEx and PosEx occur in spatial management regardless of the quality of implemented policies. The impact of externalities is usually proportionate to the number of space users; an exception to this rule can occur when one perpetrator (producer, investor etc.) carries out expansionary business activities in a given territory, and the resulting NegEx have a supralocal impact.

This fact should not be attributed exclusively to the spatial management process. In this context, an indirect user (a common and significant one) is an individual who enjoys non-material benefits resulting from the mere fact of belonging to a given space. Ex can be the subject of transactions if ownership or spatial management rights are transparently established and, simultaneously, marginal transaction costs are at a low level. Overall, it can be assumed that the maximization and optimization of the use of existing territorial resources can lead to minimising the costs of functioning in a given space. This correlation is likely to be useful in reducing the impact of generating entities on entities affected by various externalities.

All parties engaged in the Ex exchange process should be aware of the fact that under the current circumstances we are not able to eliminate all the costs and effects of spatial management undertakings. Subsequent generations, on an increasing scale, degrade and impoverish the Earth (we use more resources than those that we can offer, and we must not be blinded by the allegedly effective closed-circuit system – it does not exist as such!). Referring to the Solow Growth Model, we can ask the following question: *how great is our inability to affect the lack of circularity?* (see: Solow, 1970; 1988; 1994).

The major objective to be achieved in this context is the possibility of affecting all Ex generating entities' decisions aimed at reducing and, possibly, eliminating NegEx. Hence the need to create a new set of well-thought-out needs that can be satisfied by all space users.

In connection with the above, it is justified to formulate important conclusions addressed to entities that generate or are affected by externalities. The conclusions listed below can also contribute to future debates over Ex:

1). Human activities generate both positive and negative externalities.

2). Generated positive and negative externalities do not balance each other out.

3). On principle, a perpetrator is responsible for the generated externalities. However, the general passivity of injured parties, accompanied by dysfunctional or flawed administrative procedures, encourages actions that favour only one party.

4). The awareness of generated costs (and their effects) must be significant for both parties.

5). The lack of knowledge by no means justifies being a perpetrator or a passive injured party (an issue to be considered in the future is appointing entities responsible for educating people in this area).

6). Governing bodies are not concerned with reducing Ex, particularly NegEx. The question to be considered is whether this attitude results from their inability to implement effective instruments reducing NegEx or their willful negligence favouring unfair private benefits.

In conclusion, we should pose a short question: what would be the socioeconomic effects of exemption from externalities in 2022?

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