

# Spatial planning in the Baltic States, affected by depopulation

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**Abstract:** Three Northern European countries over the last century have had similar political experiences, in 1990–1991 they have re-established independence and developed an individual political and administrative system. From 2004, when all Baltic countries became members of the European Union, the land use and spatial planning systems were developed with many similarities, as well as differences. The topic of this study is a survey of the national land policies and spatial planning systems in Latvia, Lithuania and Estonia in the context of sustainable development, needs of society and depopulation. The aim of the article is to examine the problems, needs of society and tendencies in land usage, as well as systemic features of spatial planning in the Baltic countries. It is very important to analyse how countries realize the implementation of sustainable development strategies in land use planning and in the context of depopulation. It was found that the Baltic countries are facing similar problems in land use and spatial planning documents but there are also differences regarding planning procedures of documents, their hierarchy and types of planned measures. The study has shown that people in these countries want more natural environment and eco-industrial development. Also, it was approved as necessary to create an index (engineering method) of sustainability in spatial planning.

**Keywords:** sustainable development, land use, spatial planning, land management, the Baltic States

## 1. Introduction

### 1.1. History and problems

The most recent changes in the use of land in the three Baltic States began after restoration of their independence because land reforms were initiated aiming to reform the land use relationships. This political tool was designed to reform internal economy structures in accordance with the needs of that time. However, as revealed by international scientific research (Baumane and Pasko, 2014), such a reform of land use was implemented



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aiming not for economic growth but for the demonstration of political independence and independent stability, but elsewhere the land reform was implemented taking into account the recommendations and methodologies of the World Bank, for example in Russia.

Urban sprawl has become one of the main challenges in the use of land which legitimately occurs on the grounds of territorial planning. Urban residents pay less attention at other changes in the use of land. It is usually believed that building up of land and increase in the number of residents in an administrative location is urbanization. Vyšniūnas (2013) and Ivanauskaitė (2015) mention that the term of urbanization must be distinguished from territorial planning in Lithuania because territorial planning is currently based more on management and this process takes place both in urban and agricultural territories whereas, theoretically, urbanization is implemented in urban areas only.

Today, land usage is changed by declining population and this process must be taken into account by spatial planners, whom should to meet the needs of the population.

### 1.1.1. Lithuania

Lithuanian cities and towns underwent great urban transformations which took place in the absence of any clear strategy after restoration of independence. It is not clear from observations of general territorial planning process of Lithuanian whose interests – those of the society or of economically and politically influential persons – are represented. Such an irresponsible planning of the use of land is harmful in environmental, social and economic sense (Bardauskienė, 2007; Gaudėšius, 2015).

Since 1990, Lithuanians believed that housing prices are increasing due to the lack of land plots suitable for construction. Registration of small farms was started actively as residential houses could be built on agricultural land in this way; however, such urbanization, possibly, was the cause of urban sprawl. Drafting of new general plans of cities, towns and counties began after the enactment of the new laws of the Republic of Lithuania. The intensity of drafting them reached its peak in 2007–2009 as the Government of the Republic of Lithuania approved the action plan on the measures for implementation of the general plan of the Republic of Lithuania. Nor could detailed plans on the grounds of which land plots are formed for construction of houses could be drafted neither the purpose of a land plot could be changed before approval of the general plans (Butkus, 2013; Miškinis, 1991).

### 1.1.2. Latvia

Smaller farm structures were formed due to the land reform in the Baltic States and such a phenomenon is not helpful for the development of stable agricultural structures which would be managed effectively because there are additional economic costs (Platonova

et al., 2011; Platonova, 2014). Not only in the Baltic States but also the whole of Europe faces this issue (Parsova et al., 2014). Having reviewed the research conducted in Europe, Latvian scientist Pilvere (2013) states that no unified unit of an agricultural structure which would denote a small structure is determined. This varies depending on the attitude of each country; however, farms area of which is up to 12 ha are considered small agricultural structures in the European Union. Apparently, it is the transfer of small land plots that activated the real estate market and thus stimulated economic development of the country (Baumane, 2011).

One of the many land management issues in the Baltic States, just as in the whole Europe, is the fact that not all land is used for economic activities. Vesperis (2015) states that 88% of the agricultural land of Latvia is used for active economic activities whereas the remaining land could be attributed to unused and bush-covered land; unmanaged land spaces which have not been transferred to anyone and which are located between the land plots which have already been formed and privatized is also a pressing issue (Baumane, 2013; Jankava and Jankava, 2015).

### *1.1.3. Estonia*

Irrational planning of the use of land in 1990–2000 caused many drastic changes in Estonia as well. Misbalanced and scattered suburban areas were formed during that period of time; former agricultural land, natural meadows and forests were occupied while forming them. Such uneven spread of residential territories in suburbia is considered to be a factor of ineffective use of land. The number of areas which are not densely populated and are located close to cities is increasing in throughout Europe and this process was induced by privatization of land in suburbs, difference of land prices in urban and rural territories as well as too liberal and inexperienced regulation of territorial planning in Estonia. Western European countries had faced such a re-urbanization process before; therefore, it is believed that it can be regulated through stricter and more effective planning only although the legislation of the European countries does not regulate and protect the state from uneven urbanization (Roose et al., 2013).

According to Roose et al. (2013), land fragmentation which began during the land reform had a strong negative influence on the agriculture of Estonia as well. The land reform itself was based on the objectives to restore ownership rights, allow privatizing land under buildings and grant ownership to self-government. The reform which was implemented activated the real estate market there as well as thus stimulated the economy of the state.

Jürgenson (2016) mention that a transition from collective agricultural structures to family farms occurred both in Central and Eastern Europe while implementing land reforms. In his opinion, all Baltic States experienced strong economic growth until 2007; however, they also felt simultaneously how unstable they are in respect of sudden economic crises.

## ***1.2. Needs and concept***

Land meets people's main needs: supply of food, accommodation, energy, recreation and production materials. However, too active anthropogenic activities have a negative impact on the environment; therefore, protected territories where human activities are restricted are established in order to protect biodiversity and other important elements of nature for the present and future generations (Defries et al., 2007). Cohesive territorial planning must combine these quite different elements of nature, i.e. meet people's main needs and protect nature. Continuous unregulated consumption of natural resources leads the society to social, economic and environmental issues; it is proposed to draw up territorial planning documents taking into account the existing issues and needs of a specific country or region in order to avoid that (Lantitsou, 2017; Wiryasa and Dwijendra, 2017). There is no unified method developed to achieve this goal because the trends of the use of land and meeting human needs depend on the society and personal values (Defries et al., 2004). For example, functional planning has been made stricter in agricultural territories (Kublačovs, 2012).

Many studies were developed taking into account the famous scientist Maslow's hierarchy of human needs (Meirong et al., 2013). The aforementioned hierarchy consists of physiological, safety, social, esteem and self-actualization needs from the lowest to the highest level respectively. All these large groups are divided by more specific needs: food, shelter, rest, protection from dangers, belonging to a group, reputation and striving to improve.

There have been various urbanistic policies, concepts and management models, e.g. officer planning, functional zoning (it lasted for 25 years and was acknowledged to be the cause of the urban crisis in 1985), optimum cities and towns, functional integration, lawyer planning, cohesive development, fit-to-live city, free-choice and smart cities. It is being attempted to discover the best concept internationally; however, unanimous opinion was not achieved because this is even related to traditions and, of course, economic power. It is also becoming clear that rational spontaneous development is impossible in any case (Juškevičius, 2013).

Tasks of the study: determine the issues of the use of land by analyzing scientific literature; determine the trend of the use of land by generalizing statistical data; present territorial planning systems, i.e. hierarchies of territorial planning documents by generalizing legislation and scientific literature; conduct a questionnaire survey in the Baltic States in order to determine the needs of the population.

Spatial planning increasingly emphasizes sustainability, human needs, and engineering approaches (Reyes-Bueno et al., 2016; Estrada and Park, 2019; Giudice et al., 2019; Komisarov et al., 2016; Kulakov, 2018; Marrero et al., 2017; Pujiati et al., 2018; Roshanfekr et al., 2016; Said et al., 2016; Tang et al., 2019), therefore, the results of this study are relevant for future land use planning. Engineering methods must be used in this process. Based on these results, in the future, it will be possible to develop criteria for the sustainable development index for the Baltic States. Use the criteria and their respective weights in the index, taking into account the responses of the population.

## 2. Data and methods

Systematic analysis, generalization, deduction, induction, questionnaire survey and statistical research methods were used in the scientific article. Scientific articles, statistical information and legislation related to the issues analyzed were reviewed and generalized. Statistical data obtained from departments of statistics, national cadaster registers, national land agencies and ministries were analyzed. A questionnaire survey (255 participants – land owners) was also conducted in the Baltic States in order to find out the needs of the society regarding further use of land; data was processed using the SPSS program. Participants were of various ages (groups: < 20; 21 – 35; 36 – 50; > 51), education (secondary, professional, higher) which living in different places (different towns and villages); the paper questionnaire were distributed by hand.

The objective of the research: land funds of the territories of the Baltic States. The objects are similar due to the political events and the features of the land reform. The countries investigated (Lithuania area: 65 200 km<sup>2</sup>; Latvia 64 589 km<sup>2</sup>; Estonia 45 227 km<sup>2</sup>) are located in Northern Europe, at the Eastern shore of the Baltic Sea (Fig. 1). The biggest cities: Riga (the capital of Latvia, 644 thousand residents), Vilnius (the capital of Lithuania, 535 thousand residents), Tallinn (the capital of Estonia, 408 thousand residents), Kaunas (Lithuania), Klaipėda (Lithuania). The Baltic States faced economic issues after restoration of independence. Demographic indicators plummeted, birthrate decreased and mortality increased. Population growth became negative. The economy of the Baltic States has been growing slowly during recent years; however, birthrate remains small.

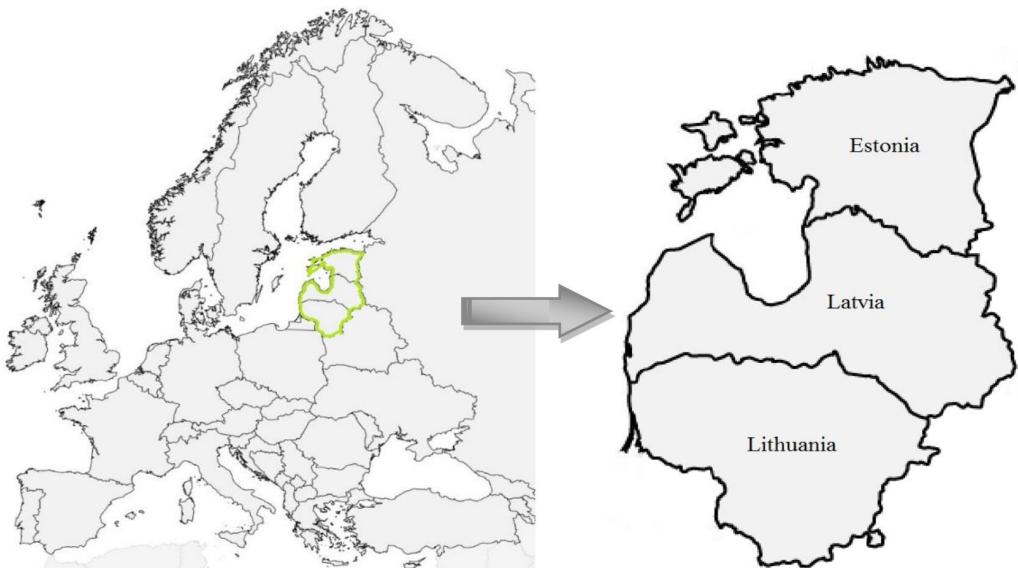


Fig. 1. Arrangement of investigated countries

### 3. Results

#### 3.1. General trends

All respondents who participated in the research (255) can be divided into 3 groups by age, place of residence and social status. The participant's age, place of residence and his/her occupation in life are believed to influence the meaning of the answers.

Taking the objectives and tasks of cohesive development into account, land must be managed so that the future needs are met; therefore, we may maintain that the most influential opinion in this research is that of younger participants. Based on the results divided in detail, the participants who are under 35 will receive the most attention. This will help to form an opinion about the needs of the society regarding further use of land.

When reviewing the first part of the questionnaire survey, it was determined that the majority of participants wish to see urban landscape around them excluding older participants and those who reside in rural territories: such participants expressed their wish to reside in an agricultural environment. Persons whose occupation is related to politics, science and public service desire recreational environment. There is no unanimous opinion concerning the direction of urban development (to vertical or to horizontal) because the results are distributed similarly. However, the results of the survey clearly show that most participants wish to own a building only excluding politicians and businessmen; the wish to own more buildings is evidenced in the latter social groups. The participants were of nearly the same opinion concerning further economic activities because the majority of them want industry and renewable energy to be developed in the country; only persons who reside in rural areas and engage in agriculture wish for development of agriculture.

#### 3.2. Issues of land use

One of the main tasks of the article: the issues of the use of land. Having generalized scientific literature presented by scholars of different countries, the following common issues of the use of land can be distinguished in Lithuania, Latvia and Estonia:

- fragmentation of land plots;
- unused land plots;
- agricultural land is controlled by people who are not farmers;
- uneven urbanization;
- remaining unformed territories which are not managed on any legal grounds.

The participants see the same issues of the use of land irrespective of their age group (Table 1). They name chaotic urbanization as the greatest issue and also distinguish abandonment of land and small land plots. It is to be concluded that the society sees the same issues of the use of land as scholars. Considering these results, land management specialists need to be able to solve the issues which are the most pressing today on the basis documents because architects are currently planning development only and their solutions are usually corrected by drawing up additional documents again.

Table 1. The greatest issue of the use of land

	Abandonment of land	Small land plots	Chaotic urbanization	Expensive land in between	General plans do not meet the needs	No access road	General plan restricts activities
Number of participants	All age groups						
	121	83	141	55	20	25	36
	Age group under 35						
	59	25	63	12	5	15	4

### 3.3. Land use in Lithuania

The next task: the change and trends of the land fund. Accounting of the land fund is conducted in different ways in the Baltic States and even data is accessible for different periods.

The area of arable land has been decreasing slightly in Lithuania from 1985 whereas quite a strong decrease of meadows and pastures has been felt from 1947. Forest area has been constantly increasing from 1947 and this process is sufficiently rapid. The area of urbanized area has been increasing gradually (Table 2).

Table 2. The change of use of land in Lithuania

	1947	1985	2001	2010	2015
Meadows and pastures (thousands ha)	1 262.2	560.0	498.0	475.2	320.1
Arable land and gardens (thousands ha)	2 757.4	3 113.3	2 989.2	2 988.1	2 983.2
Forest (thousands ha)	1 234.1	1 955.4	1 997.0	2 126.4	2 198.5
Bushes and swamps (thousands ha)	338.1	222.9	231.9	200.3	229.5
Roads, settlements (thousands ha)	287.1	272.0	319.5	312.6	342.5
Other land, water (thousands ha)	591.1	406.5	494.4	427.1	413.8

### 3.4. Land use in Latvia

According to the data of 2005, 98% of the territory of Latvia was considered agricultural area where 31% of the residents of the country resided. According to the author, 46% of the territory of Latvia is covered by forests, 38% – agricultural land, swamps and water – 4% each, roads and bushes – 2% each, 1% – built up, 3% – other land.

The statistics of the use of Latvian land is available from 1913. The data (Table 3) shows that the area of agricultural land has been decreasing from 1913 and the greatest change concerns arable land and gardens. Meadows and pastures have been decreasing not so intensively.

Table 3. The change of use of agricultural land in Latvia

	1913	1935	1989	2000	2005	2013
Agricultural land (thousands ha)	3 663.8	3 770.5	2 568.7	2 486.0	2 458.3	2 376.7
Including:						
Arable land and gardens (thousands ha)	1 729.6	2 113.7	1 721.0	1 880.3	1 822.2	1 726.6
Meadows (thousands ha)	910.2	905.3	236.0	233.8	226.5	231.8
Pastures (thousands ha)	994.0	751.5	611.7	371.9	409.6	418.3

### 3.5. Land use in Estonia

The least amount of data regarding the use of land in Estonia was found. The available statistical data shows that the area of agricultural land has been decreasing in this country as well (Table 4). Comparing different areas is difficult due to the changed procedure of data accounting.

Table 4. The change of use of agricultural land in Estonia

	1939	2001*	2010*
Agricultural land (ha)	2 744 466	1 157 905	1 017 853
Arable land, gardens, etc. (ha)	683 373	720 284	690 781
Meadows and pastures (ha)	2 061 093	265 200	301 072
Unused land (ha)	—**	172 421	26 000

\*Accounting methodology has changed.

\*\*No data.

### 3.6. Impact of the decrease of population

It is interesting to note for additional analysis that the reduction of population is typical for all three Baltic States since the restoration of independence according to the data of the departments of statistics (Fig. 2–4).

Long-term statistical data which was generalized not only during the research shows that the number of residents has been decreasing constantly in Baltic States; 30 percent of the interviewed residents are also planning to leave to another country in the nearest future (49 percent of the participants from the participant group under 35).

As emigration is a pressing topic in Baltic States, the participants were inquired not only about their plans to leave the country but also about the plans of their family members. A staggering 71 percent stated that their family members are also planning to leave to another country whereas 5 percent have purchased real estate abroad.

The observation of global trends shows that the areas of agricultural land are decreasing all over the world because of a rapid increase of population. The area of agricultural territories is decreasing in the case of the Baltic States as well although their population is not increasing.



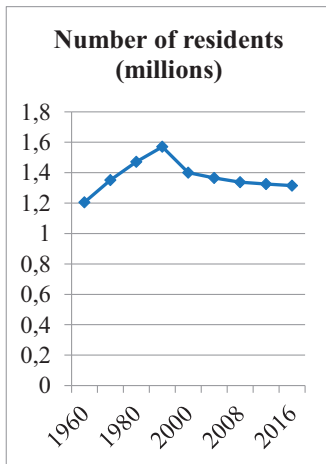


Fig. 2. Change of the number of residents of Lithuania

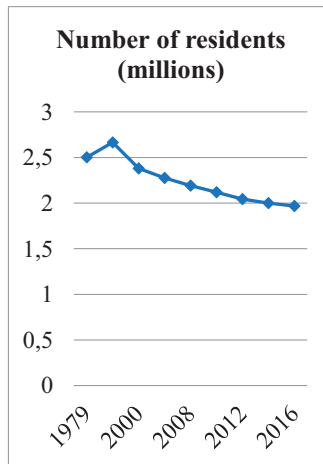


Fig. 3. Change of the number of residents of Latvia

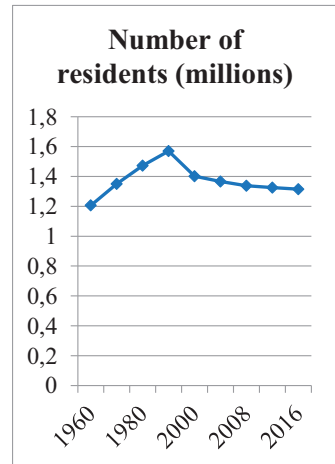


Fig. 4. Change of the number of residents of Estonia

### 3.7. Impact of the territorial planning

As it was already mentioned, the changes in the use of land are caused not only by the land reform or a sudden change in the number of residents but also territorial planning. The territorial planning system of the Republic of Lithuania consists of documents of different levels (Table 5). The main document is the general plan following which principal priorities of the use of land are determined. General plans have been drawn up for the whole territory of Lithuania, counties, cities and towns and their parts. The solutions depict the existing and planned (recommended) engineering infrastructure, zoning of the use of land, forest coverage, height of buildings, etc. Following them, detailed plans are drawn up to determine (detail) the form of a land plot, purpose of use, building up area, etc.

Latvia is divided into 5 regions. All 119 have their territorial plans stating functioning zoning and presenting provisions for the use of buildings and land. The whole system of planning documents is divided into 3 levels (Table 6). National and regional planning decides issues of respective significance as well. For example, zoning, transport infrastructure, restrictions and perspectives are stated in local plans in detail. Thematic plans decide specific issues on a respective level (floods, recreation, etc.) and they do not need public examination. However, territorial planning itself has moved on to the fact that the society must be involved in planning as actively as possible. Mandatory participation of institutions has also been reduced thus giving investors more freedom in order to meet public needs. It is also mentioned that the agglomeration of Riga is increasing but not the central city itself. Residents choose suburban territories because settling close to the city is easier due to bureaucratic procedures. It is to be concluded that development is uneven in Latvia just as in Lithuania.

Table 5. Lithuanian territorial planning system as of 2013

Territorial planning levels	Types of territorial planning documents	
	Complex territorial planning documents	Special territorial planning documents
National (the whole territory of the country or parts thereof are planned)	<ul style="list-style-type: none"> <li>– <b>general plans</b> of the territory of <b>the state</b> and of parts of the territory of the state (drawn up on national level);</li> <li>– <b>general plans of the municipalities</b> or parts thereof (drawn up on local level);</li> <li>– <b>detailed plans</b> (drawn up on local level).</li> </ul>	<ul style="list-style-type: none"> <li>– land management schemes;</li> <li>– forest management schemes;</li> <li>– land management projects for rural development;</li> <li>– management plans for protected territories;</li> <li>– development plans for engineering infrastructure;</li> <li>– usage plans for the depths of land;</li> <li>– planning documents for protection of immovable cultural heritage objects, etc.</li> </ul>
Municipal (territories distinguished by common administration or function are planned)		
Local (parts of the territory of a municipality are planned)		

It is noticeable that planning of marine territory has been included in the territorial planning system of Latvia as of 2011. An information system which improves publication of territorial planning documents has been developed recently as well.

Table 6. Latvian territorial planning system as of 2011

Territorial planning level	Types of territorial planning documents
National	<ul style="list-style-type: none"> <li>– national cohesive development strategy (20 years);</li> <li>– plan of objects or territories of national significance (7 years);</li> <li>– plan of marine part.</li> </ul>
Regional	<ul style="list-style-type: none"> <li>– development strategy (12 years);</li> <li>– development strategy (7 years).</li> </ul>
Municipal / local	<ul style="list-style-type: none"> <li>– cohesive development strategy (thematic plans);</li> <li>– development program (thematic plans);</li> <li>– territorial plan (thematic plans, local plans, detailed plans).</li> </ul>

The Law on Territorial Planning of Estonia stipulates that territorial planning must be a democratic process ensuring environmental protection as well as economic, cultural and social development. Not only the use of land but also water territory or underground resources are planned. All decisions made regarding a respective planning objective must be thoroughly substantiated. Planning must preserve the existing values whereas future actions are adapted to the needs of the society. Everyone has equal rights to participate in territorial planning; however, the author of a planning document of each level must take into account the notes presented for the respective level only. Basically, territorial planning documents are divided into national, thorough, municipal and detailed plans in Estonia (Table 7).

Table 7. Estonian territorial planning system as of 2015

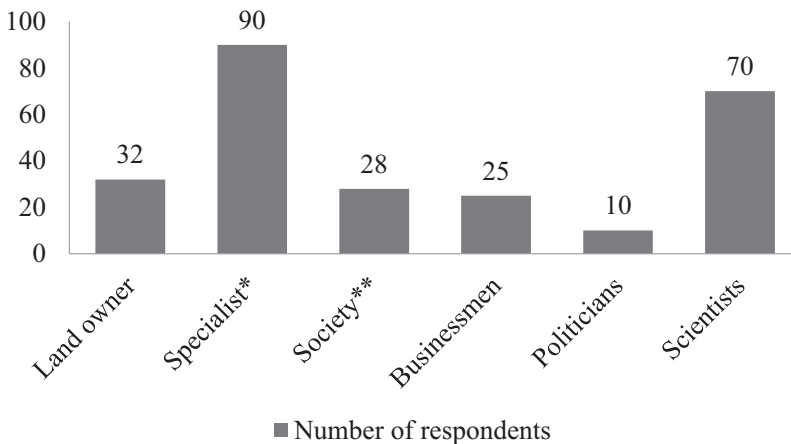
Territorial planning level	Types of territorial planning documents
National	<ul style="list-style-type: none"> <li>– national plan (covers the whole territory of the country up to the sea);</li> <li>– national thematic plan (development of marine part is decided upon);</li> <li>– national purpose plan (construction of especially significant objects).</li> </ul>
National / municipal	<ul style="list-style-type: none"> <li>– county plan (solutions intersect administrative borders).</li> </ul>
Municipal	<ul style="list-style-type: none"> <li>– thorough additional plan</li> <li>– (spatial development of a village, town, city or parts thereof);</li> <li>– municipal purpose plan (construction works which are not planned in higher-level plans are planned);</li> <li>– detailed plan (issues regarding usage of land plots and parts thereof).</li> </ul>

It is noteworthy that Estonian territorial planning provides not only for separate planning of marine part (as a type of documents) but also for the issues solved in the plans of national and municipal significance regarding protection of valuable agricultural land.

The territorial planning system of all these countries is similar because of its levels of documents. However, distribution of the documents by function is different.

Since the territorial planning systems of all Baltic States provide for the opportunity for the society to take part in this process actively, the participants were inquired if they have used this opportunity and what, in their opinion, could influence this important process.

The participants stated that specialists and scientists should be the ones to influence the territorial planning process the most (The question – “whose should have the most to impact the process of spatial planning?”). Politicians and businessmen received the least support although it is these social groups which currently influence territorial planning the most (Fig. 5).



\*land managers, engineers, etc. \*\*ordinary residents of the city.

Fig. 5. Participants opinion regarding the influence on territorial planning.

### 3.8. Future Societal Needs regarding Land Use

Territorial planning documents stipulate proper use of a respective land plot. Not all solutions of territorial planning documents meet the needs of the owners of land plots and some solutions even restrict the use of adjacent land plots. As it turns out, 29 percent of the interviewed participants are not able to use their land plot in accordance with their needs because certain restrictions are applicable to them or their purpose is different from that which they would like it to be.

As stipulated in legislation, all persons concerned may participate in the territorial planning process; however, only 34 percent of the participants use this right. The society may present comments regarding the solutions proposed in territorial planning documents; however, the participants who participated in the survey stated that the author of the documents does not take into account 64 percent of the comments presented. It was also determined that a staggering 70 percent of the persons inquired disagree with new construction initiated close to the real estate managed by them.

The last task of the research: the needs of the society regarding further use of land. In order to find out how the society would like the land fund of Baltic States to be used further, the participants were asked which territories there are too many and which – too little in the country (Table 8). The results were different depending on the age group; the general opinion is that there are too many agricultural and abandoned territories and too little forests. The participant group under 35 agrees that there are too many agricultural and abandoned territories but also believes that there are too little forests, industrial and recreational territories.

Table 8. Participants opinion regarding the quantity of territories (1 – too little... 5 – too many)

	Agricultural land	Forest areas	Residential territories	Recreational territories	Industrial territories	Abandoned territories	Protected territories
Participants opinion	All age groups						
	5	1	3	3	3	5	3
	Age group under 35						
	5	1	3	1	1	5	3

It was also aimed to find out the participants satisfaction with the existing situation concerning certain land use and urbanistic formations (Table 9). Dissatisfaction with economic situation, arrangement of objects in the town / city and engineering infrastructure was expressed. Complete satisfaction concerned the landscape only. The participants group under 35 added their dissatisfaction with social situation to the aforementioned dissatisfactions while no field which would cause complete satisfaction was named.

Generalization of the last results of the research shows that the direction of the use of land meets the needs of the society; however, arrangement of urbanistic formations in the space is not satisfactory.

Table 9. Participants satisfaction with the existing situation (1 – weak... 3 – very good)

	Social needs	Economic needs	Environmental protection needs	Protection of cultural heritage	Engineering infrastructure	Arrangement of objects in the town / city	Landscape	Variety of objects
Participants opinion	All age groups							
	2	1	2	2	1	1	3	2
	Age group under 35							
	1	1	2	2	1	1	2	2

#### 4. Conclusions

Rational use of land is one of the requirements for cohesive development because the land market which is managed properly can stimulate economic growth and improve social wellbeing. It is also important to plan the land fund purposefully in respect of the environment because the area of changing forests and natural meadows is relevant globally.

The main issues of the use of land are identical in the Baltic States:

- fragmentation of land plots;
- unused land plots;
- agricultural land is controlled by people who are not farmers;
- uneven urbanization;
- remaining unformed territories which are not managed on any legal grounds;
- the questionnaire survey revealed that the issues regarding unused land plots, small land plots and uneven building up should be focused on currently.

The areas of agricultural land are decreasing all over the world because of rapid increase of population. Both the urbanization process and climate change influence reduction of fertile lands. The area of agricultural territories is decreasing in the case of the Baltic States although their population is not increasing. Though large agglomerations are not formed in these countries, unregulated building up of individual areas is obvious and it has a negative impact on cohesive use of land. The research revealed that the need for residential buildings should decrease in the Baltic States in the nearest future; therefore, expanding the areas of residential land is not expedient.

The territorial planning systems of the Baltic States are similar because of their hierarchy of documents. However, distribution of the documents by function is different. Individual marine planning is not provided for as an individual type of territorial planning documents in Lithuania but this is the case in Latvia and Estonia. Strategic regional development documents are also attributed to the territorial planning system in Latvia whereas this is not the case in Lithuania and Estonia. However, the Estonian planning system is distinguished by the fact that it provides for the zones for protection of soil.

The issues regarding the use of land occur due to improper territorial planning. Unfortunately, the best territorial planning system does not exist; however, it is believed that it must be planned as strictly as possible. It would be purposeful for Lithuania and

Latvia to take into account the experience of Estonia and to solve the issue regarding determination of the zones for protection of fertile soil in territorial planning documents. The results of the questionnaire survey demonstrate that the residents of Baltic States would want more territories intended for forests, recreation, industry and renewable energy. Territory planners are recommended to take these needs into consideration. For this way must be created sustainability index, which could be used in spatial planning process.

### Author contributions

Conceptualization: Methodology development and Writing (design, responsible for data analysis and interpretation).

### Data availability statement

The processed data required to reproduce these findings cannot be shared at this time as the data also forms part of an ongoing study.

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