

Arguments for the Common Good in Planning: Comprehensive Analysis of Planning Documents in Latvia

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Abstract

Concerns for the common good in urban planning are relevant in many parts of Europe due to financial crises, lack of public resources, and the impact of climate change. The actualisation of the assessment of the common interests of society is also promoted by processes such as the democratisation of governance and the "right to the city" of residents. The study aimed to evaluate existing municipal master plans in Latvia, reviewing the restrictions on property rights, their proportionality, and the argumentation about the common good of society. This was accomplished through content analysis to evaluate the regulatory enactments and the text of the municipal master plans and their amendments, which are available on the GEOLatvia.LV portal. To compare the content of documents, comparative analysis was used (for example, adoption of historical norms, duplication of content, etc.). For document comparison, term matching analysis and other artificial intelligence tools are used. The results of the study concluded that the practice of local governments in the development and content of municipal master plans is diverse. Municipalities interpret the requirements of regulatory enactments that determine the requirements for developing local government plans in different ways. Generally, it can be concluded that the formal implementation of regulatory requirements does not achieve the goal set in the explanations. To improve the quality of explanations and justifications for municipal master plans and their amendments, it is necessary to popularise and promote the use of additional planning tools, such as research and thematic plans, evaluate development scenarios, and justify interventions in planning documents, especially restrictions set by municipalities.

Introduction

The practice of urban planning reflects liberal democratic values in its urban governance role, which mediates many public and private interests that are often in competition and conflict [1], [2], [3]. The urban planning process is often associated with defining the conditions for the use of privately owned land plots in order to use them for the common good better. The topic of the common good in urban planning is relevant due to financial crises and lack of public resources, and the threatening impact of climate change and the democratisation of governance and citizens' "right to the city" [4], [5], [6]. Planning processes, which aim to ensure that land use does not threaten its short-term value and long-term profitability, are increasingly interconnected with the search for a

broader common good, which legitimises the planning of many interests and long-term land use interventions [7], [8]. Several authors conclude in scientific publications that the concept of common good is not clearly defined enough, but it is constantly used as a means to legitimise many planning decisions [9], [10], [11].

At the same time, urban planning can be political in nature, the goals of which stem from political assumptions regarding the guiding principles of planned development [12], [13]. A large role in these processes is played by the understanding of local governments about the basic principles of the common good and the tools for achieving it [14], [15]. Traditionally, planners have considered it their task or duty to define the interests of the community at the expense of private interests [16]–[19]. However, according to some planning theories [7] and

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from a critical viewpoint, there is a belief that planning by its very nature supports the interests of capital and the social elite. In the neoliberal planning system, planners are more or less institutionally forced to act as agents to support power, and therefore, they cannot adhere to the principles of the common good even if their own moral and ethical judgments force them to do so [20] [23]. In such a discussion, the role of planners in planning processes for the common good is becoming increasingly relevant [24], [25], [26]. This raises questions about whether planning practitioners, when making planning decisions, take the common good into account at all [21], [22]. Do local governments understand whether existing planning measures can achieve the common good? In this context, strengthening local capacity is a crucial process dominated by the influence of social conditions [23], [24]. Local social relations, such as power dynamics and trust, facilitate coordinated action and complement the volume and structure of knowledge [25], [26]. Social coherence at the local government level, the main driving force of which is common interests, can promote the implementation capacity of various development processes [27], [28].

To promote understanding of the need to substantiate public interests in municipal master plans, to identify the current situation regarding the quality of municipal master plans, and to clarify what knowledge planners should acquire to improve planning processes, a research project “Quality Assessment of Municipal Master Plans and Their Amendments” was conducted. Based on the results of this research project, the study “Arguments of Common Good in Planning: Comprehensive Analysis of Planning Documents in Latvia” was developed. The novelty of the study lies in its focus on strengthening planners’ awareness of their unique competence and rights while at the same time highlighting the need for a comprehensive approach to planning. The study aimed to conduct a substantive evaluation of existing municipal master plans and amendments made to them, including reviewing property rights restrictions, their proportionality and the argumentation of the common good of society in them.

To reach the set goal, it was necessary to evaluate the following aspects:

- 1) compliance of municipal master plans with sustainable development strategies of municipalities and their connection with planning documents of various levels and neighbouring municipalities;
- 2) justification and argumentation of the solutions included in the municipal master plan;
- 3) legal evaluation of the land use and building regulations for the content and quality of the regulation.

Although the study also touched on aspects related to public participation, this article will not address them. Instead, the authors will focus on issues such as the

determination of restrictions and their justification in spatial planning, i.e., the justification of public interests in spatial planning. According to the planning regulatory framework in Latvia, a valid municipal master plan or amendments to a municipal master plan have equal legal force; therefore, the study analyses municipal master plans and their amendments and the restrictions on property rights set out in the amendments, their balance, and the argumentation of the common good of society. In turn, the impact of the public involvement process on planning solutions will be examined in the upcoming articles.

I. The Development of the Common Good Concept and Its Context in Latvia

Urban planning seeks to ensure the common good [29]. This guiding principle has remained unchanged even though both spatial planning priorities and planning interventions have changed over time [30]–[35]. Today, the focus of urban planning is on improving quality of life through the efficient use of resources – creating more sustainable and well-functioning settlements while minimising the environmental impact of human activities by means of modern technologies [35], [36], [37]. The Constitution of the Republic of Latvia provides that the state protects everyone’s right to live in a favourable environment. Everyone has the right to own property. Property shall not be used contrary to the interests of the public [38]. Ensuring the common good, spatial planning in Latvia also aims to create conditions for a healthier, more sustainable, and better-organised society [39].

Historically, one of the first definers of the public good in urban planning was the founder of socialism, Robert Owen (1771–1858), who promoted the ideas of justice and a balanced society. He was one of the first to support the improvement of working conditions and the ideas of social welfare, and his work influenced social policy and economics throughout the world. Along with industrialisation in the 19th century, modern urban planning developed at a time when industrial cities grew at a tremendous speed and society began to worry about problems – pollution, overpopulation, and crime – associated with rapid growth. The hitherto dominant economic philosophy, which allowed market processes to develop without restrictions (*laissez-faire*), began to transform, as the theories of socialism and new liberalism developed.

During this time, urban planning models began to be developed to mitigate the consequences of the industrial age, providing residents, especially factory workers, with a healthier environment. Both at that time and in later periods, planners worked on various often contradictory urban planning models, beginning with Ebenezer Howard’s

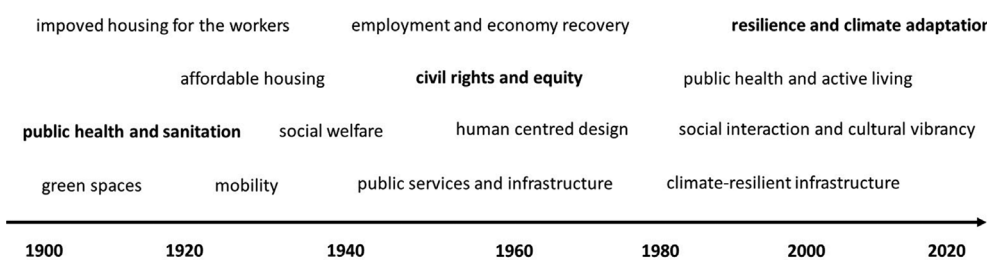


Fig. 1. Evolution of priorities for the common good in urban planning [by the authors].

(1850–1928) “garden city”, Patrick Geddes’ (1854–1932) regional planning models, Daniel Burnham’s (1846–1912) City Beautiful, and later Le Corbusier’s (1887–1965) “Ville radieuse”, which criticized urban planning practice as too mechanical and unresponsive to human needs. In the 1980s and 1990s, urban planning became more focused on sustainability and environmental protection, with strategies emerging to reduce energy consumption, promote the use of public transport and improve the quality of life, given growing concerns about climate change and pollution. In the scientific literature, researchers have focused on relatively common issues related to the common good, such as the environment, landscape [6] and green space [51], [40].

In turn, in relation to energy transitions in the field of urban planning, researchers have also focused on renewable energy resources as a common good [41], as well as on the sustainable balancing of public interests in the context of cultural values in buildings and energy efficiency [42] or landscape aesthetics and necessary installations for promoting renewable energies [43], [44]. Cities are also confronted with challenges to become climate-neutral and reduce their environmental footprints, which will also require investment in public transport, sustainable water supplies, and renewable energy [40].

The concept of the common good is closely related to the concept of public interest. Some authors use these concepts as synonyms in their studies [4], while others point out the substantive differences between these two terms [45], [46]. In the framework of this study, the authors will use the concept of public interest as a synonym for the concept of common good.

In urban planning, the concept of public interest can be used to legitimise the role of the state in planning [47], [48]. In Latvia, this encompasses both questions of the common good, such as setting priorities in a municipality’s development program, as well as matters concerning the restriction of property rights. According to the jurisprudence of the Constitutional Court of the Republic of Latvia, property rights may be restricted to protect the rights of others, for example, the right to live in a favourable environment [38]. In turn, the tasks of urban planners are both to balance various competing interests so that the territory is used in accordance with the “highest and best use” [1], and also to engage the public in the planning process [48]. That emphasises the need to ensure the

protection of public interests in the decision-making process, taking into account that resulting decisions can often create conflicts between various groups [29].

Public interests are reflected in two main formats: policy statements and planning regulations or land-use zoning [49]. In Latvia, one of the main instruments for ensuring balanced and sustainable territorial development, taking into account the interests of society, the economy, and the environment, is a municipal master plan. According to the definition included in the Law on Spatial Development Planning, a municipal master plan is a long-term development plan that determines the procedure for the use and development of the territory of a specific municipality, as well as the objectives and conditions of the planned use of the territory [48]. While the role and legal status of municipal master plans differ across countries and cultural contexts, in Latvia, the Constitutional Court has established that property rights – including the right to use and manage one’s property freely for personal benefit – may be restricted by the land-use and building regulations set out in a municipal master plan. The right to property may be restricted only if the restrictions are established by law for the sake of a legitimate aim and are relevant to this aim.

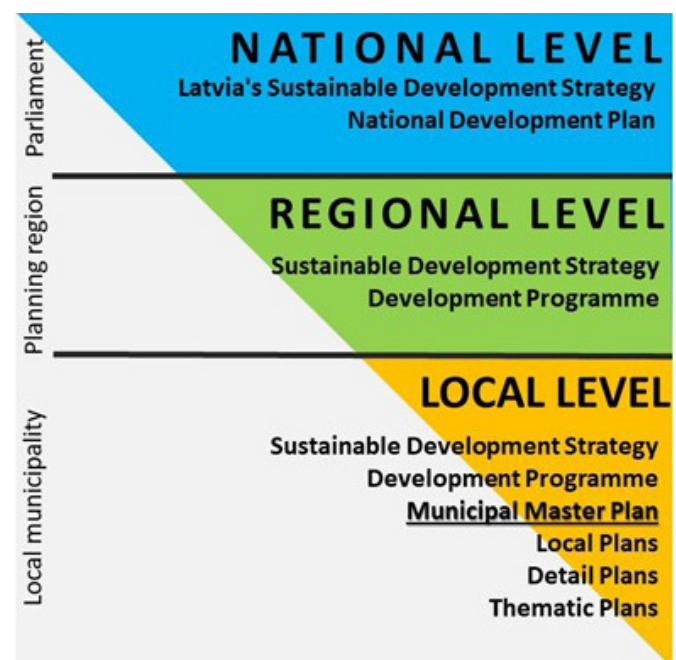


Fig. 2. Hierarchical spatial development planning requirements in Latvia [by the authors].

II. Research Methods and Materials

The municipal master plan is a strategic document of each local government of the Republic of Latvia that determines the use of the territory and development conditions in the long term (usually at least a 12-year period), including both general development objectives and specific land use and construction regulations. In situations where new circumstances or needs arise, there are changes in regulatory legal acts, or development priorities change with respect to specific issues or territories that do not require the development of a new municipal master plan, amendments may be made to the existing plan by developing amendments to the municipal master plan [50]. The process of developing amendments does not differ significantly from the process of developing a spatial plan, providing for both political decision-making when initiating its development, submitting it for public consultation and approving it, as well as the involvement of the Ministry of Smart Administration and Regional Development, which is the same as when developing a municipal master plan from scratch. After the amendments to the municipal master plan come into force, the amendments to the plan replace the municipal master plan.

A. Selection of Planning Documents

For the study, municipal master plans and their amendments were selected, applying the principle of covering all planning regions of Latvia, including the national capital, and urban and rural municipalities of all planning regions, including those in the border areas of the country. Out of a total of 43 Latvian municipalities, 22 municipal master plans and their amendments were selected for analysis.

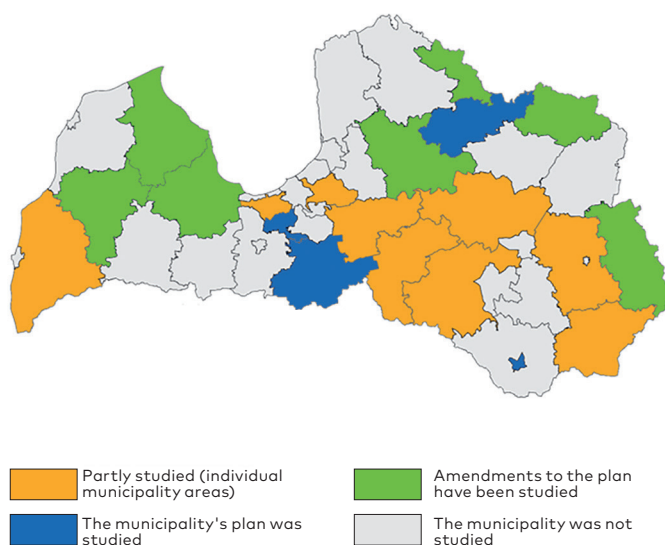


Fig. 3. Map of the study area [by the authors].

B. Studied Documents

The documentation of the aforementioned plans, which is publicly available on the website GEOLatvia.lv, the public section of the Latvian territorial development planning information system, was selected for the analysis. In accordance with the research design of each selected municipal master plan and its amendments, land use and building regulations, explanatory notes, decisions, and other documents were used in the analysis.

The regulatory framework (laws, Cabinet regulations, Constitutional Court rulings, etc.) that determines the requirements for the development of municipal master plans and their amendments was identified. Other publicly available data sources were also used for the study, including the websites of state institutions, municipalities, and non-governmental organisations for a more complete evaluation of the content.

C. Research Methods

The main method of the study was content analysis to evaluate the content of regulatory enactments and the text of the municipal master plan and its amendments available on GEOLatvia.LV. Comparative analysis was used as an additional method for comparing the content of documents (e.g., transferring historical norms, duplicating content, etc.), as well as for comparing documents, analysing the conformity of terminology. Artificial intelligence tools were used for document comparison, term matching analysis. Specific criteria were used to evaluate planning documents, structured in forms for each of the 22 municipal master plans and their amendments, separately determining the evaluation criteria and methodological framework for the analysis of explanations and separately for the analysis of territory use and building regulations.

D. Criteria to be Assessed in the Analysis of Explanatory Notes and Materials Used in the Assessment

1. Initially, the purpose of the development of each municipal master plan and its amendments was analysed, identifying the reason why the development of the plan was initiated. To clarify this, documents available on GEOLatvija.lv were used – explanatory notes, municipal decisions, municipal letters on the start of development, letters from the Ministry of Smart Administration and Regional Development on the development of the plan, etc.
2. The justification for the compliance of each municipal master plan with the sustainable development strategy and its connection with planning documents of various levels and neighbouring municipalities were analysed. The explanatory notes of each of the 22 municipal master plans were analysed, indicating whether the

territory and its development issues in relation to neighbouring municipalities were assessed, as well as whether the connection of the municipal master plan with the tasks defined in the sustainable development strategy was indicated. To clarify this, the documents available on GEOLatvija.lv – explanatory articles and the sustainable development strategy of the relevant municipality, based on which the municipal master plan was developed, were used.

3. The evaluation of the implementation of the existing local plans and detailed plans was analysed in the explanatory articles for each of the 22 municipal master plans and their amendments, identifying good examples. The documents available on GEOLatvija.lv – explanatory articles – were used for the analysis.
4. Places that are essential for the development of the territory or that require special analysis, including green areas and green infrastructure, were examined, which were analysed in the explanatory articles for each of the 22 municipal master plans and their amendments, indicating which topics are examined in more detail and which are based on studies that justify the municipal master plan and the solutions for their amendments. The documents available on GEOLatvija.lv – explanatory articles – were used for the analysis.
5. The data on which the solutions included in the planning documents are based were evaluated. They have been analysed in the explanatory notes for each of the 22 municipal master plans and their amendments, identifying and analysing the data characterising the territory used in the justifications of the solutions and the sources of their justification, including whether data characterising the territory have been used or whether deeper research has been carried out, for example, studies, thematic plans have been prepared, etc., which substantiate the statements made in the explanatory note. The documents are available on GEOLatvija.lv – explanatory notes and the references and/or sources of information indicated in them – and have been used for the analysis.
6. The justification and argumentation contained in the explanatory articles, why restrictions and burdens were set in the municipal master plan and its amendments, were evaluated, examining their usefulness and proportionality, as well as whether public interests were assessed in their determination. They were analysed in the explanatory articles for each of the 22 municipal master plans and their amendments, identifying and analysing the observance of public interests in determining the proportionality of burdens and restrictions, including the reasoning of the justification (for example, whether it is based on detailed analysis, studies, explanations) and the proposed alternative solutions.

E. Criteria Evaluated in the Analysis of Land Use and Building Regulations, and Materials Used in the Evaluation

1. As part of the evaluation, the current version of the land use and building regulations was selected on the GEOLatvija.lv website. The norms of the land use and building regulations were checked according to the verification criteria specified in the evaluation form, including the compliance of the regulations with the requirements of legal technique.
2. The analysis was carried out using evaluation forms prepared for the purposes of the study, which were based on the self-assessment form for the conformity of a draft legal act, which is used in the process of preparing draft laws of the ministry and draft regulations of the Cabinet of Ministers. In the evaluation form, each criterion was completed with the following assessment:
 - “yes”, if all norms of the land use and building regulations comply with the criterion;
 - “no”, if at least one norm of the land use and building regulations does not comply with the criterion;
 - “no assessment”, if it is not possible to assess compliance.
3. In the event that a non-compliance was detected and the form was marked “no”, then a specific point of the land use and building regulations that do not comply with this criterion was indicated, as well as the justification for which the relevant point should be recognised as non-compliant.
4. The compliance of the land use and building regulations with the requirements of legal technique was checked by assessing their compliance with the Cabinet of Ministers Regulation No. 108 of 3 February 2009 “Regulations on the Preparation of Draft Regulatory Acts”, while the substantive compliance was assessed by considering the requirements of regulatory acts with higher legal force, as well as the judgments of the Constitutional Court, case law, legal literature and explanations prepared by the Ministry of Smart Administration and Regional Development. When conducting a substantive assessment, for example, whether the adopted regulation complies with the competence of the issuer, is appropriate for the purpose, is unambiguous, or whether the restrictions included are relevant to the benefit of society.
5. Examples of good practice were identified.
6. After evaluating the land use and building regulations of each municipality, conclusions were identified concerning the most typical shortcomings and recommendations for planners, municipalities, and the Ministry of Smart Administration and Regional Development to eliminate the identified shortcomings.

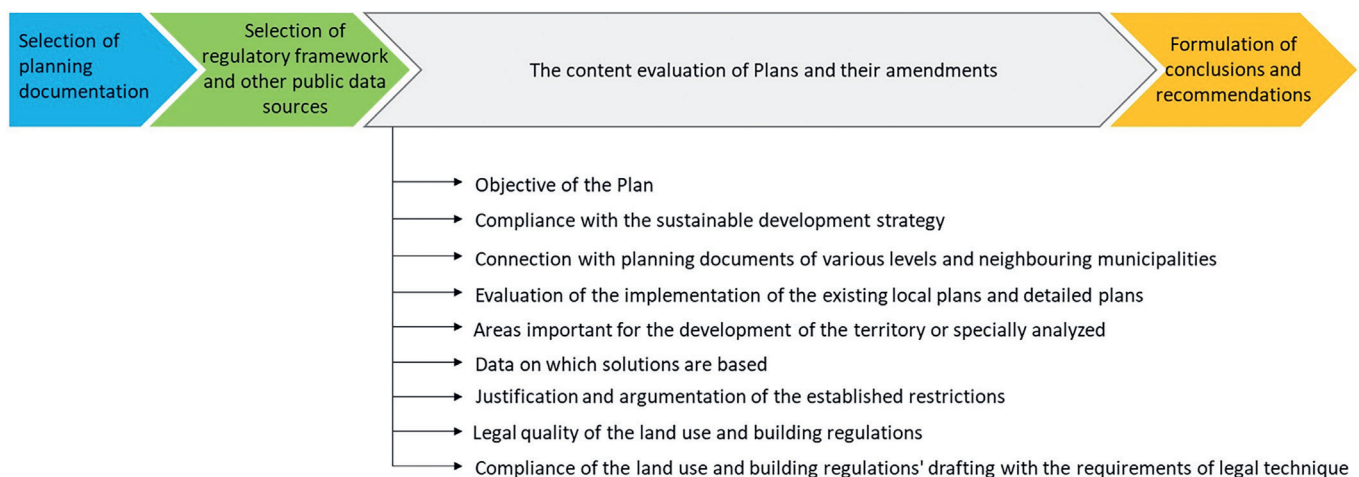


Fig. 4. Research methodology [by the authors].

III. Results

A. Compliance of the Plan with the Sustainable Development Strategy of the Municipality and its Connection with the Planning Documents of Different Levels and Neighbouring Municipalities

The regulatory framework of the Republic of Latvia requires this compliance to be determined for municipal master plans, not for amendments to municipal master plans. It has been established that the explanatory notes to municipal master plans often contain information even about documents of all three planning levels – national, regional, and local planning levels – but it must be concluded that only some of the municipalities have assessed higher-level planning documents in their essence, defining the planning tasks that arise from each specific planning document in relation to the particular municipality. For the most part, the assessment of higher-level planning documents is formal and serves as educational material on the role of the planning system and planning documents, as well as on the content of the relevant planning document, without providing information on the planning tasks and specific issues to be addressed that arise from each reviewed planning document in relation to the particular municipality and is not linked to planning solutions.

A similar situation is in the evaluation of the existing municipal master plan. Although municipalities often indicate that one of the principles on which the development of the municipal master plan is based is the principle of succession, the evaluation of the existing municipal master plan rarely ends with conclusions and recommendations for the new municipal master plan.

The evaluation of twelve municipal master plans shows that in approximately half of the cases, municipalities have not reflected the evaluation of the planning documents of neighbouring municipalities in the explanatory notes of their municipal master plans. In three cases, municipalities limit their explanatory notes to information on taking into account the conditions and concerns issued by neighbouring municipalities. Three of the amendments to municipal master plans have focused on the development processes of neighbouring municipalities, determining territories of common interest and assessing the mutual compatibility of the functional zonings established in the territories.

Analysing the reflection of the evaluation of the implementation of more detailed planning documents – detailed plans and local plans – in the explanatory notes to municipal master plans, it must be concluded that municipalities do not have a unified approach to the evaluation of detailed plans and local plans. Some municipalities have included information about the developed detailed plans and local plans in the explanatory notes to their municipal master plans without indicating what further action is to be taken with the planning document – whether it should be cancelled, left in force, integrated, etc. – while others indicate a recommended planning intervention. The regulatory framework of the Republic of Latvia does not require the reflection of the evaluation of the implementation of detailed plans and local plans in the explanatory notes to amendments to municipal master plans; however, half of the municipalities have included such an evaluation in the explanatory notes to amendments to municipal master plans.

TABLE I
Summary of Explanatory Notes of Analysed Plans [by the authors]

First-time planning or amendments	Plan analysed in the study	Planning documents at all levels are evaluated	Only regional and local level planning documents are evaluated	Only local planning documents are evaluated	Planning documents from neighboring municipalities are evaluated	Only conditions and opinions provided by neighboring municipalities are evaluated	Neighbouring municipalities are not mentioned	Evaluation of detailed plans and local plans, indicating further actions	Evaluation of detailed plans and local plans, without indicating further actions	No evaluation of detailed plans and local plans
First-time Plan	Jēkabpils city master plan for 2019–2030									
	Viesīte municipality master plan									
	Smiltene municipality master plan									
	Babīte municipality master plan									
	Skrīveri municipality master plan									
	Daugavpils city master plan									
	Bauska master plan									
	Ikšķile municipality master plan									
	Olaines municipality master plan 2018–2030									
	Rēzekne municipality Viļāni union master plan									
	Ropaži municipality Ropaži parish master plan									
	Aizkraukle municipality Pļaviņas city, Aiviekste, Klintaine, and Vietalva parishes master plan									
Plan amendments	Kuldīga municipality master plan amendments for 2013–2025									
	Kārsava municipality master plan amendments									
	Cesvaine municipality master plan amendments									
	Valka municipality territorial plan amendments									
	Cēsis municipality master plan amendments for 2016–2026									
	Tukums municipality master plan amendments									
	Priekule municipality master plan amendments for 2015–2026									
	Ludza municipality master plan amendments for 2013–2024									
	Talsi municipality master plan amendments									
	Alūksne municipality master plan amendments for 2015–2027									

The analysis of explanatory notes of planning documents shows that there is no unified approach to their development. The explanations vary – from concise ones that meet only the minimum requirements of regulations, to more detailed ones that include additional information, which helps achieve the goal of the explanatory note, which is to justify the planning document's recommended interventions. Planning work in each municipality is organised at its discretion, often involving external service providers. Not all municipalities have professional planning specialists who oversee the entire process.

B. Justification and Argumentation of the Solutions Included in the Plan

The regulatory framework of the Republic of Latvia provides that the justification for the municipal master plan and its amendments may be a thematic plan. Thematic plans are developed to address a specific issue related to the development of a particular sector or a specific topic, for example, engineering and technical supply, transport development, and landscape protection and preservation. Thematic planning as an auxiliary tool for addressing

planning tasks has been used relatively little – out of the 22 municipal master plans and their amendments under review, only three municipalities have used thematic plans. In turn, the explanatory notes of two municipalities contain references to solving specific planning tasks in the field of transport in the thematic plan for future scenarios.

Some municipalities have developed thematic plans to substantiate planning interventions, studying current situations and determining development conditions and recommendations for further planning in relation to settlements, landscapes, greenery, transport infrastructure, land reclamation, and disadvantaged territories, as well as specific municipal territories.

Some municipalities have also used other strategies in the development of municipal master plans and amendments: cultural and historical research, development concepts, guidelines for traffic safety and calming, nature protection plans, as well as student coursework. However, even in these cases, the explanatory note only contains information that such documents have been used in the development of the plan, without going into further detail.

When assessing whether the explanatory notes reflect any special areas, it must be concluded that there are no such comprehensive areas that would result from higher-level planning documents or regulatory framework and would be purposefully addressed in the municipal master plans of local governments and their amendments. The topics that are specially assessed are mostly those that are relevant to the particular municipality and therefore receive increased attention, for example, wetlands and their infrastructure, development of residential areas, development of transport infrastructure, and restriction on gambling. Several municipalities have made amendments to the regulations on the use and construction of territories and designated territories with special regulations in order to specify the location of wind power plants and the extraction of minerals, as well as conditions for the protection of cultural heritage, landscapes, and natural values. Considering the above, it is not surprising that, except for the areas that are specially assessed, restrictions and burdens in territorial plans and amendments are most often determined only by referring to higher-ranking regulatory enactments without an explanation of the benefits to society, necessity, or assessment of alternatives. The burden caused by protective zones is justified by restrictions set by regulatory frameworks, but the restrictions imposed by municipalities on the use of territories are poorly explained. For example, the section on functional zoning contains a description of each zone and subzone without explaining the reasons and justifications for restrictions on use. In some cases, municipalities refer to the proposals received. The situation is better concerning territories with special regulations since the description of these territories more often mentions the reason for special regulations. Therefore, it must be

concluded that municipalities describe and inform about solutions, restrictions, and prohibitions in their municipal master plan and their amendments, but very rarely explain and justify them with data, facts, and studies.

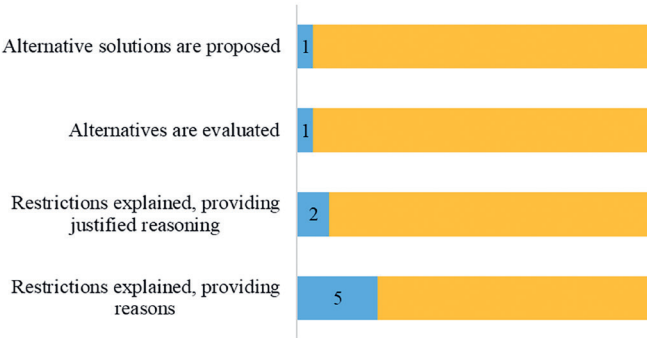


Fig. 5. Justifications for interventions in municipal master plans and their amendments [by the authors].

Justifications for municipal master plan amendments are mentioned in the explanatory notes for only half of the spatial plan amendments reviewed. Justifications for the development of five municipal master plan amendments mention specific tasks to be addressed, while other municipalities mostly limit themselves to general justifications, referring to the decision of the municipal council and regulatory enactments. However, six municipalities have explained municipal master plan amendments in the analysed municipal master plan amendments.

It is characteristic that none of the evaluated explanatory notes for municipal master plans and their amendments include a list of information sources used. The developers of individual municipal master planning documents have included references in the explanatory text to higher-level planning documents, regulatory enactments, actions of state and municipal institutions, existing data, and data compilations, however, there is no unified compilation of information sources that would provide document users with a clear overview of where the data or information used in the preparation of the planning document originate.

C. Legal Assessment of the Content and Quality of the Regulation of Land Use and Building Regulations

Results suggest that the majority of the assessed land use and building regulations are written in a language that does not meet the requirements of legal technique, which not only does not allow understanding of the obligation imposed on persons but also makes it impossible to determine the person on whom an obligation is imposed by the regulations.

When assessing the substantive compliance of the land use and building regulations, it was concluded that the land

use and building regulations include a number of norms that, at first glance, could be disproportionate, because they could not ensure a reasonable balance between the established restrictions and the interests of society. It was also found that local governments could have violated an authorisation by establishing nonspecific prohibitions with the prohibition of a specific economic activity. For example, although the coordination of economic activity with a local government is not a planning issue, building regulations include norms that provide for the local government's right to either prohibit economic activity or the obligation to coordinate the commencement of economic activity with the local government. In addition, legal norms were identified that either should not be included in the land use and building regulations or whose inclusion in them is debatable.

The absence of a reference to the authorising norms based on which law or Cabinet of Ministers regulations have been issued is considered a deviation from the requirements of legal technique. The reference to the authorising norm of the law or Cabinet of Ministers regulations demonstrates the competence granted to the local government by the legislator to foresee what the content of the issued regulatory act will be. The above is significant in relation to the scope of regulation that may be included in the land use and building regulations.

The assessment of land use and building regulations concerning the norms included therein on the requirements for renewable energy infrastructure shows that only certain municipalities have included related requirements in their building regulations. Those municipalities that have included such requirements have included norms in their land use and building regulations that put various restrictions, rather than norms that could promote the development of renewable energy infrastructure. For example, several municipalities have completely banned solar panels in their historic centres rather than offering standard solutions that would be compatible with historic buildings. Similarly, building regulations of several municipalities contain such norms, where in similar cases the Ministry of Smart Administration and Regional Development, referring to the practice of the Constitutional Court, had already indicated to other municipalities on several occasions that when planning the placement of wind power plants and wind parks in spatial plans, the municipality was not authorised to determine engineering requirements (capacity, height, distance to objects, etc.). Methodological materials from the Ministry of Smart Administration and Regional Development were publicly accessible for use in preparing municipal master plans

In addition, when looking at the stipulations contained in the building regulations, it can be concluded that they include a relatively large number of norms that are impossible to apply, or their application is cumbersome. These norms might also incorporate declarative elements.

Similarly, most of the assessed building regulations have several hundred points, which makes the text difficult to understand not only for individuals but also for those applying them. The analysis concludes that there is a different practice in municipalities regarding the issuance of land use and building regulations. Only some have been issued as binding regulations, while some have been approved by binding regulations or created as an annex to binding regulations.

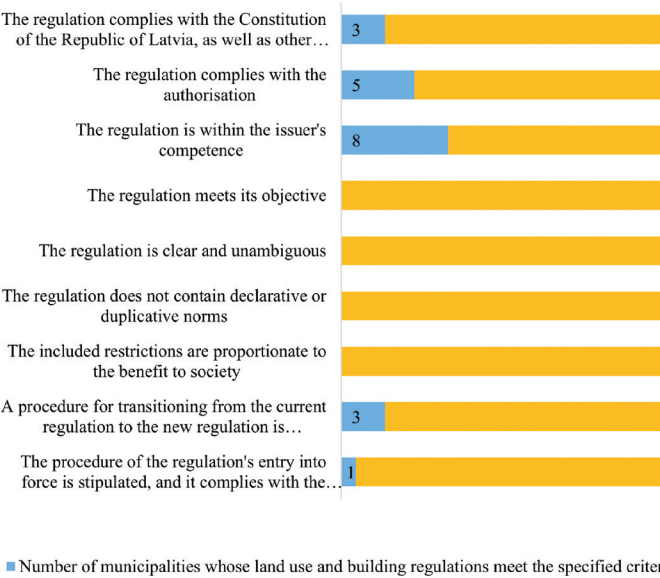


Fig. 6. Evaluation criteria used in the research and scope of compliance of the plans [by the authors].

IV. Discussion

The chosen methodology has made it possible to evaluate the argumentation of the common good of society in the explanatory notes and to draw conclusions about the substantive quality of the municipal master plan in terms of public interest.

The explanatory note included in the municipal master plan is a document that indicates the initial impact assessment. Although the explanatory note's content on building regulations differs from other explanatory notes to binding local government regulations, the notes also have common features. One of them is the need to indicate the purpose of the prepared regulation and the justification for its necessity, including describing possible alternatives. Such a description is also essential in relation to the argumentation of the common good of society because the explanatory note should also indicate the legitimate purpose of the restrictions.

The regulatory enactments of the Republic of Latvia impose an obligation to observe the principles of succession and mutual coherence in spatial planning. It means that higher-level, other local government planning documents

and more detailed planning documents must be evaluated in the development of municipal master plans [40]. Similarly, the regulatory enactments of the Republic of Latvia set different requirements for the content of explanatory notes to municipal master plans and amendments to municipal master plans. For municipal master plans requiring a broader assessment to ensure the linking of municipal planning activities with other local government planning functions, as well as planning activities of neighbouring local governments, the content of the explanatory note to amendments to municipal master plans is simpler, as only the justification for the amendments and a description of the solutions are required.

Good examples of linking municipal master plan interventions to sustainable development strategies are those that specify in detail the compliance of the municipal master plan with the guidelines and principles of the sustainable development strategy. They also include plans that define development aspects important for the municipality in planning documents of various levels, outline the planning tasks arising from them to be addressed in the municipal master plan, and explain how the proposed solutions comply with the sustainable development strategy. The explanatory note to amendments to municipal master plans either only includes references that the planning document complies with the sustainable development strategy, or mentions the sustainable development strategy in the conditions for developing the amendments.

In order to ensure respect for the interests of neighbouring municipalities and an exchange of information, and thus prevent possible contradictions in the development processes of neighbouring municipalities, the regulatory framework provides for cooperation between institutions, including municipalities, in spatial development planning. In practice, this means that a municipality, when starting work on the development of a municipal master plan or amendments to a municipal master plan, may request conditions from neighbouring municipalities through the Territorial Development Planning Information System, and later expect an opinion from neighbouring municipalities on the wording of the developed planning document. In addition, the regulatory framework provides that in the process of developing a municipal master plan, not only the conditions provided by neighbouring municipalities but also what is specified in their planning documents are to be assessed.

Thus, the legislator has twice emphasised the need to coordinate interests between adjacent municipalities. The study found that in approximately half of the cases, municipalities did not include an evaluation of the planning activities of neighbouring municipalities in their explanatory notes. However, positive examples show the identification of jointly developed directions, the analysis of functional zoning and restrictions in border territories

defined by neighbouring municipalities' master plans, and the definition of common areas of interest where coordinated action is required, which should be reflected in the explanatory note.

Thus, we propose a discussion concerning how an evaluation of sustainable development strategies of a municipality and the planning documents of neighbouring municipalities should be carried out in explanatory articles, especially in relation to the common good or public interests. For example, if the evaluation of a higher-level or neighbouring municipality's planning document in the explanatory notes does not conclude with an assessment of how these documents impact the development of the municipality's territory, the resulting consequences, and the issues that should be addressed in its own spatial planning documents, important guidance may be missing. In turn, an evaluation of the implementation of municipal master plans, local plans and detailed plans could conclude with the definition of decisions and planning tasks on further action in the municipal master plan and their amendments in relation to the specific detailed planning document, which is explained in the explanatory article of the planning document.

Recommendations and studies of thematic plans are integrated into spatial planning solutions, however, as an issue that requires further development, it should be noted that the explanatory notes related to the aforementioned municipal master plans and their amendments do not include a more extensive explanation of the connection of thematic planning solutions with the municipal master plans, and they are also often not used to justify spatial planning solutions. Thematic planning as a planning tool has been created specifically with the aim of addressing a specific topic in detail, while including development conditions in planning documents that are externally binding, such as, for example, in the spatial plan.

Our analysis of the content of the explanatory notes related to municipal master plans shows that the developers of planning documents do not have a common understanding and clarity about the information to be included in the explanatory note: the content of the explanatory notes varies from minimal, fulfilling only the minimum requirements of the regulatory legal acts, to extensive, including information that is not required as mandatory, but helps to achieve the purpose of the explanatory note – to explain and justify the interventions in the planning document. It is possible that this can be explained by an insufficient understanding of the purpose of the evaluation required by the legislator and the way to achieve it – what exactly is expected from the evaluation of higher-level, other local government planning documents and more detailed planning documents, and how to create and justify the connection of these planning documents with spatial planning solutions. The evaluation of planning documents should be guided by the purpose of the task: whether and how the implementation

of detailed planning documents has been successful, whether they should be maintained as valid, and how their recommendations can be integrated into planning.

Compliance with legal requirements in the preparation of regulatory enactments is not just a formal requirement, as non-compliance with the requirements of legal technique significantly complicates the perceptibility of the text of the regulatory enactment (see Fig. 6). Our study concluded that, from the point of view of legal technique, building regulations not only do not fit into the general system of Latvian regulatory enactments but also differ significantly in terms of design from other binding regulations of local governments.

Although information is freely available online that can be used in the preparation of a municipal master plan, for example, methodological materials prepared by the Ministry of Smart Administration and Regional Affairs in the field of spatial planning, letters prepared by them in connection with the municipal master plans of other local governments, judgments of the Constitutional Court and the jurisprudence of the Senate of the Supreme Court related to spatial planning, as well as other methodological materials, these materials are not fully used in the process of developing a municipal master plan.

Methodological materials, case law, and other information are used only in connection with current practical problems known to local governments, for example, restrictions on gambling, or in response to the instructions of the ministry regarding the need to comply with legal techniques. However, this is not a general practice, and as a result, many ill-considered prohibitions are included in building regulations, which, for example, do not promote the installation of renewable energy production facilities and the construction of related infrastructure. At the same time, it should also be mentioned that the established prohibitions and restrictions may not be properly justified. Consequently, only prohibitions related to the establishment of gambling venues were considered in the explanatory notes, with the local government assessing aspects related to proportionality. At the same time, the authors concluded that the scope of the regulation of land use and building regulations considered within the framework of the study is very different. In the authors' opinion, this is due to different understanding of local governments regarding what should be regulated within the framework of land use. Nor is it possible to derive criteria from regulatory enactments, case law, or methodological materials that local governments could use to infer their competence in relation to the concept of land use. For example, should the spatial plan include only issues related to requirements for planned construction? Can the municipal master plan also determine other issues related to urban planning, for example, requirements related to the maintenance of existing buildings, territories, and greenery? Or are these

issues still within the jurisdiction of local governments, arising from their autonomous competence, but not related to planning? The authors of the study propose further discussion in the Latvian situation to consider issues related to the clarification of the scope of the concept of land use and building regulations, which would allow planners to more accurately identify aspects of the common good that could be achieved by planning.

Comparing the building regulations examined within the framework of the study with the publicly available previously valid land use and building regulations of the same municipalities, it can be concluded that, in general, the quality of development of land use and building regulations has increased, and the currently valid building regulations only in some cases include duplicative norms. Also, within the framework of the study, it was found that in most cases, municipalities have followed changes in higher-level regulatory enactments, and the norms of land use and building regulations have been revised.

CONCLUSIONS

Planning must be aimed at achieving the common good, and it may do so by determining restrictions on property rights while also reflecting the proportionality of restrictions and an understanding of the common good of society. However, this analysis concluded that the development of plans by local governments is very different. Local government officials interpret in different ways the requirements of regulatory enactments that guide the development of municipal master plans.

Formal fulfilment of regulatory requirements does not achieve the goal set for explanatory notes. For example, it makes no sense to fill an explanatory note with a list of higher-level planning documents, because the information contained does not lead to any conclusions, tasks or justification for planning solutions.

To increase the quality of explanations and justifications for municipal master plans and their amendments, the use of additional planning tools, such as research and thematic plans, should be popularised and promoted to assess development scenarios and justify planning document solutions, especially the restrictions set by the municipality. At the same time, we urge practitioners to refrain from formal disclosure of content, but to use both planning documents and additional research to evaluate alternatives and explain the selected solutions.

It is essential to include an explanation in the explanatory notes on planning solutions, identify, explain, and justify the selected intervention, and reflect on the assessment of proportionality and the public interest for which restrictions have been established.

Although planners in Latvia are familiar with the requirements of regulatory enactments related to planning, especially the procedural aspects of adopting a municipal

master plan, the determination of the requirements of building regulations included in the municipal master plan and the completion of the explanatory note are guided by each planner's individual understanding of what should be included in each section of the document. The results of the study show that the examined land use and building regulations do not meet the requirements of legal technique according to several verifiable criteria, and they also contain various substantive inconsistencies. We consequently conclude that planners may not have all the necessary knowledge to prepare high-quality municipal master plans, which is especially important because municipal master plans can infringe on the fundamental rights of individuals. This is also facilitated by national regulatory frameworks, as municipalities cannot capture the extent of their powers in spatial planning in relation to the concept of land use.

Therefore, it is necessary to strengthen the competence of planners, and the study revealed the areas where this need is particularly relevant. Following the completion of the study, the authors developed an education program, which has already been implemented in the training of Latvian planners. However, the issue of identifying the common good in practice and fostering public understanding requires deeper analysis in order to ensure that planning documents, which restrict private interests in the name of the common good, are prepared in a legally sound manner. For this reason, the authors intend to continue their research by conducting a more detailed analysis of the common good conflicts.

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REFERENCES

1. **Trevor J. Wideman.** Land use planning and the making of a 'properly propertied' Vancouver. *Geoforum*, vol. 120, 2021, pp. 46–57.
<https://doi.org/10.1016/j.geoforum.2021.01.019>
2. **Nagy, J.A.** Planning and the public interest. A critical review. *Romanian Review of Regional Studies*, vol. 11, no. 2, 2015, pp. 115–121.
3. **Ginger, C.** Integrating Knowledge, Interests and Values through Modelling in Participatory Processes: Dimensions of Legitimacy. *Journal of Environmental Planning and Management* vol. 57, no. 5, 2014, pp. 643–659.
<https://doi.org/10.1080/09640568.2012.761132>
4. **Astleithner, F., Hamedinger, A.** Urban sustainability as a new form of governance: obstacles and potentials in the case of Vienna. *Innovation*, vol. 16, no. 1, 2003, pp. 51–75.
<https://doi.org/10.1080/13511610304510>
5. **Agger, A.** Democratic innovations in municipal master planning: Potentials and challenges of place-based platforms for deliberation between politicians and citizens. *Cities*, vol. 117, 2021, art. no. 103317.
<https://doi.org/10.1016/j.cities.2021.103317>
6. **Cerquetti, M., Nanni, C., Vitale, C.** Managing the landscape as a common good? Evidence from the case of "Mutoria" (Italy). *Land Use Policy*, vol. 87, 2019, 104022.
<https://doi.org/10.1016/j.landusepol.2019.104022>
7. **Murphy, E., Fox-Rogers, L.** Perceptions of the common good in planning. *Cities*, vol. 42, 2015, pp. 231–241.
<https://doi.org/10.1016/j.cities.2014.07.008>
8. **Salo, M., Puustinen, S., Jounela, P., Hänninen, H., Hiedanpää, J.** The art of the 'common good': Property and nature values in strategic land-use planning in Finland. *Environmental Science & Policy*, vol. 159, 2024, 103815.
<https://doi.org/10.1016/j.envsci.2024.103815>
9. **Campbell, H., & Marshall, R.** Public Involvement and Planning: Looking beyond the One to the Many. *International Planning Studies*, vol. 5, no. 3, 2000, pp. 321–344.
<https://doi.org/10.1080/713672862>
10. **Zakhour, S., Metzger, J.** Placing the action in context: Contrasting public-centered and institutional understandings of democratic planning politics. *Planning Theory & Practice*, 2018, vol. 19, pp. 345–362.
<https://doi.org/10.1080/14649357.2018.1479441>
11. **Davoudi, S., Galland, D., Stead, D.** Reinventing planning and planners: Ideological decontestations and rhetorical appeals. *Planning Theory*, 2020, 19, pp. 17–37.
<https://doi.org/10.1177/1473095219869386>
12. **Fischler, R.** Fifty theses on urban planning and urban planners. *Journal of Planning Education & Research*, 2012, vol. 32, no. 1, pp. 107–114.
<https://doi.org/10.1177/0739456X11420441>
13. **Sheydayi, A., Dadashpoor, H.** The public interest – schools of thought in planning. *Progress in Planning*, 2022, vol. 165, 100647.
<https://doi.org/10.1016/j.progress.2022.100647>
14. **Tait, M.** Planning and the public interest: Still a relevant concept for planners? *Planning Theory*, vol. 15, no. 4, 2016, pp. 335–344.
15. **Andres, L., Denoon-Stevens, S., Jones, P.** Planners, blended (in)formality and a public interest of fragments. *Planning Practice & Research*, vol. 39, 2023, pp. 207–222.
<https://doi.org/10.1080/02697459.2023.2247249>
16. **Gorzym-Wilkowski, W. A., Trykacz, K.** Public Interest in Spatial Planning Systems in Poland and Portugal. *Land*, vol. 11, no. 1, 2022, 73.
<https://doi.org/10.3390/land11010073>
17. **Koglin, T., Pettersson, F.** Changes, problems, and challenges in Swedish spatial planning – An analysis of power dynamics. *Sustainability*, vol. 9, no. 10, 2017, 1836.
<https://doi.org/10.3390/su9101836>

18. **Michels, A., De Graaf, L.** Examining citizen participation: local participatory policymaking and democracy revisited. *Local Government Studies*, vol. 43, no. 6, 2017, pp. 875–881. <https://doi.org/10.1080/03003930.2010.494101>
19. **Olić, N., Nedović-Budić, Z.** Public interest as a basis for planning standards in urban development: State-socialist and post-socialist cases in Serbia. *Journal of Planning Education & Research*, vol. 44, no. 3, 2021, pp. 1288–1302. <https://doi.org/10.1177/0739456X211051421>
20. **Fox-Rogers, L., Murphy, E., Grist, B.** Legislative change in Ireland: a Marxist political economy critique of planning law. *Town Planning Review*, vol. 82, 2011, pp. 639–668.
21. **Klosterman, R. E.** A public interest criterion. *Journal of American Planning Association*, vol. 46, 1980, pp. 323–333. <https://doi.org/10.1080/01944368008977047>
22. **Sheydayi, A., Dadashpoor, H.** The public interest – schools of thought in planning. *Progress in Planning*, 2022, 165, 100647. <https://doi.org/10.1016/j.progress.2022.100647>
23. **Fox-Rogers, L., Murphy, E.** Informal strategies of power in the local planning system. *Planning Theory*, vol. 13, no. 3, 2014, pp. 244–268. <https://doi.org/10.1177/1473095213492512>
24. **Fox-Rogers, L., & Murphy, E.** Self-perceptions of the role of the planner. *Environment and Planning B: Planning and Design*, vol. 43, no. 1, 2015, pp. 74–92. <https://doi.org/10.1177/0265813515603860>
25. **Moroni, S.** Planning, evaluation and the public interest. In: *Evaluation in Planning*, E. R. Alexander (ed.). Routledge: London, UK, 2016; pp. 55–72.
26. **Moroni, S.** The role of planning and the role of planners: Political dimensions, ethical principles, communicative interaction. *Town Planning Review*, vol. 91, 2020, pp. 563–576. <https://doi.org/10.3828/tpr.2020.85>
27. **Hanssen, G. S.** Ensuring local community interests in market-oriented urban planning? The role of local politicians. *Environment and Planning C: Government and Policy*, vol. 28, 2010, pp. 714–732.
28. **Agterbosch, S., Meertens, R. M., Vermeulen, W. J. V.** The relative importance of social and institutional conditions in the planning of wind power projects. *Renewable and Sustainable Energy Reviews*, vol. 13, no. 2, 2009, pp. 393–405. <https://doi.org/10.1016/j.rser.2007.10.010>
29. **Dadashpoor, H., Sheydayi, A.** Defining Public Interest in Planning: A Review. *Journal of Planning Literature*, vol. 36, no. 4, 2021, pp. 543–561. <https://doi.org/10.1177/08854122211018379>
30. **Hall, P.** Chapter 7. The City of Towers. In: *Cities of Tomorrow*, P. Hall (ed.). Cambridge, Mass.: Blackwell Publishers. 640 p.
31. **Bourne, L. S.** Urban Spatial Structure: An Introductory Essay on Concepts and Criteria. In: L. S. Bourne (ed.) *Internal Structure of the City: Readings on Urban Form, Growth, and Policy*. 2nd edition. New York, New York: Oxford University Press. pp. 28–45.
32. **Albrechts, L., Barbanente, A., & Monno, V.** From stage-managed planning towards a more imaginative and inclusive strategic spatial planning. *Environment and Planning C: Politics and Space*, vol. 37, no. 8, pp. 1489–1506. <https://doi.org/10.1177/2399654419825655>
33. **Alexander, E. R.** Approaches to Planning: Introducing *Current Planning Theories, Concepts, and Issues*. London, UK: Taylor & Francis, 1992, 173 p.
34. **Bengs, C.** Time for a critique of planning theory. *European Journal of Spatial Development*, (Editorial no. 3, 2005 June) [online, cited 1.03.2025]. <http://www.nordregio.se/EJSD>
35. **Chen, X., Orum, A. M., Paulsen, K. E.** Chapter 13. “Urban Environments and Sustainability.” In: Introduction to Cities: How Place and Space Shape Human Experience, X. Chen, A. M. Orum and K. E. Paulsen (eds.). John Wiley & Sons, 2018, pp. 296–320.
36. **Newman, P., Kenworthy, J.** *Planning for Sustainable Urban Development*, 1999.
37. **Kitchin, R.** Making sense of smart cities: addressing present shortcomings. *Cambridge Journal of Regions, Economy and Society*, vol. 8, no. 1, March 2015, pp. 131–136, <https://doi.org/10.1093/cjres/rsu027>
38. Constitutional Court. Case No 2009-09-03.
39. **Wolsink, M.** Land Use as a Crucial Resource for Smart Grids—The ‘Common Good’ of Renewables in Distributed Energy Systems. *Land*, vol. 13, no. 8, 2024, 1236. <https://doi.org/10.3390/land13081236>
40. Global Compendium of Land Value Capture Policies. *OECD Regional Development Studies*, OECD Publishing, Paris. <https://doi.org/10.1787/4f9559ee-en>
41. **Christiernsson, A., Geijer, M., Malafry, M.** Legal Aspects on Cultural Values and Energy Efficiency in the Built Environment—A Sustainable Balance of Public Interests? *Heritage*, vol. 4, no. 4, 2021, pp. 3507–3522. <https://doi.org/10.3390/heritage4040194>
42. **Puustinen, S., Mäntysalo, R., Jarenko, K.** The varying interpretations of public interest: Making sense of Finnish urban planners’ conceptions. *Current Urban Studies*, 2017, vol. 5, no. 1, pp. 82–96. <https://doi.org/10.4236/cus.2017.51006>
43. **Hendricks, A., Thiemann, K. H.** Transition of Power Generation to Renewable Energies. In: *Land Ownership and Land Use Development – The Integration of Past, Present and Future in Spatial Planning and Land Management Policies*, pp. 257–282. [online, cited 1.03.2025]. <https://vdf.ch/land-ownership-and-land-use-development-e-book.html>
44. **Halleux, J. M., Hendricks, A., Nordahl, B., Maliene, V.** (eds.). Public Value Capture of Increasing Property Values across Europe. 2023, COST, Switzerland: vdf Hochschulverlag AG an der ETH Zürich. <https://doi.org/10.3218/4147-7>
45. **Haikio, L.** Expertise, Representation and the Common Good: Grounds for Legitimacy in the Urban Governance Network. *Urban Studies*, vol. 44, no. 11, 2007, pp. 2147–2162. <https://doi.org/10.1080/00420980701518982>
46. **Alexander, E. R.** The public interest in planning: From legitimation to substantive plan evaluation. *Planning Theory*, 2002, 1, pp. 226–249. <https://doi.org/10.1177/147309520200100303>

47. **Machakaire, D., Mokhele, M.** A Literature Review on the Paradoxes of Public Interest in Spatial Planning within Urban Settings with Diverse Stakeholders. *Sustainability*, 2024, vol. 16, no. 9, 3608.
<https://doi.org/10.3390/su16093608>
48. **Tamužs K., Bakmane B., Statkus S., Krastiņš U., Potaičuks A. Celma D.** (2023), Satversmes tiesas judikatūra. Latvijas Republikas Satversmes 105.pants. 14 p.
49. **Čepāne, I., Statkus, S.** Pašvaldības teritorijas plānojums kā nekustamā īpašuma tiesību aprobežojums. *Jurista Vārds*, January 2005 /No.3 (358).
50. Noteikumi par vietējās pašvaldības teritorijas attīstības plānošanas dokumentiem. [online, cited 1.03.2025].
<https://likumi.lv/ta/id/269842-noteikumi-par-pasvaldibu-teritorijas-attistibas-planosanas-dokumentiem>
51. The Constitution of the Republic of Latvia, issued 15.02.2022.



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