Developing a comprehensive spatial policy for a high quality and sustainable living environment in Estonia

Deliverable 4 Report: Proposal for a living environment development plan concept

11 July 2023

This project is carried out with funding by the European Union via the Technical Support Instrument and in cooperation with the Directorate General for Structural Reform Support of the European Commission.

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Date

Rotterdam, 11 July 2023

Acknowledgement

The project is funded by the EU via the Technical Support Instrument and implemented by Trinomics, SEI Tallinn, Hendrikson & Ko, SWECO and TalTech, in collaboration with the European Commission.

Trinomics

Rotterdam, 11 July 2023

Coherent Policy Development for High-Quality and Sustainable Living Environment

Deliverable 4 Report: Proposal for a living environment development plan concept

In cooperation with:

SEI Stockholm Environment Institute

HENDRIKSON & KO

SWECO

TAL TECH

CONTENT

1 Introduction

1.1 Project objectives and methodology

The aim of the project is to seek solutions to the current problems and challenges of spatial development in the national strategic framework. The project is based on the understanding that the development of the living environment has to take into account the fundamental needs of society and that its design is effectively organised.[1] **This Deliverable 4 report details the need for a high quality living environment development plan as a national strategic document, proposes a concept for the content of the development plan and gives an overview of the links with the national spatial plan that is concurrently being prepared.** The report builds on the results of the previous work packages (D2 Situation Analysis and D3 Policy Recommendations), and is based on the consultants' team's review, complemented by the assessments and observations collected during the stakeholder engagement activities.

To identify the need for a development plan, **five regional seminars were held in** cooperation with the national planning team of the Ministry of Economic Affairs and Communications and the Ministry of Finance: 15.11 in Lihula (31 participants), 16.11 in Rapla (18 participants), 22.11 in Käärik (29 participants), 23.11 in Kiviõli (29 participants) and 12.12 in Tallinn (16 participants). A total of 123 people attended the seminars.

The seminars presented the objectives and the intended preparation of the national spatial plan and the living environment development plan, the baseline study on trends affecting spatial development and international best practice, as well as the results of the survey carried out in Deliverable 2.

In the second part of the seminars, the starting points for achieving a high-quality living environment were discussed in group work.

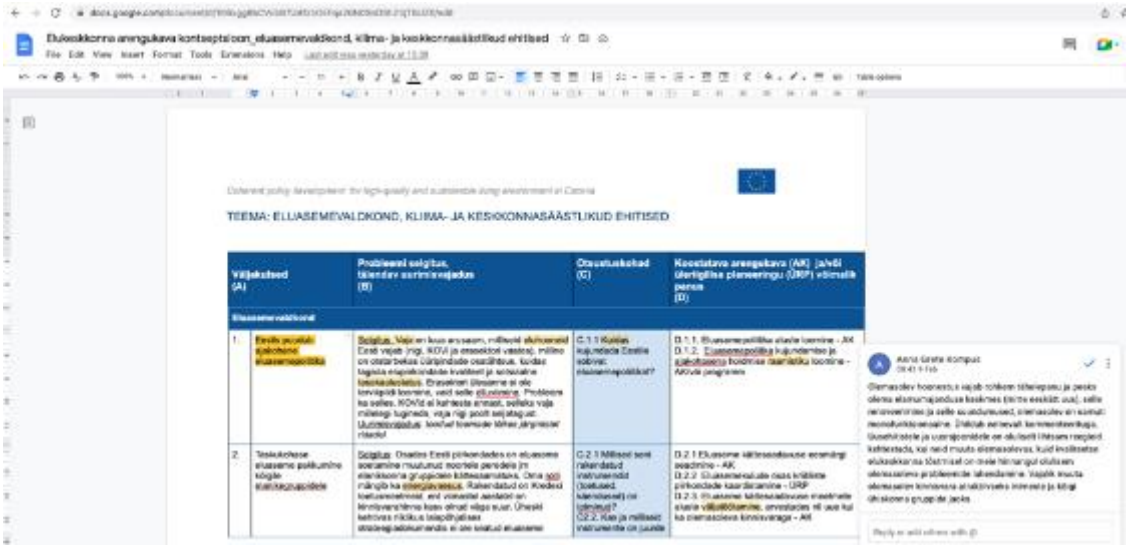
Regional seminar in Kiviõli. Photo Hendrikson & Ko

1 https://valitsus.ee/media/67/download

During the group discussions, it became apparent that in order to achieve a high-quality living environment, local authorities expect support from the state in the form of agreed objectives, principles and well thought-out action programmes. A development plan for the living environment and national spatial plan could work in tandem, as it is in Ireland, where jointly agreed strategic objectives are implemented on the basis of a development plan, which is linked to the national budget and guidelines for local planning**.** The group work identified a number of challenges and decision points and discussed the roles of state and local government in shaping the living environment. A summary of the regional seminars can be found in Annex 1.

The results of the group work have been taken into account in the design of the development plan concept. The results of the regional workshops were analysed together with the outputs of Deliverables 2 (state of play analysis) and 3 (policy recommendations). International practice and experts' knowledge and experience were also taken into account in the design of the concept. In December 2022, web-based 'worksheets' were developed for each of the thematic areas of the development plan concept. These served as the working material for **the preparatory thematic seminars on the development plan concept** in January 2023. The web-based spreadsheets were sent to invitees for review and completion prior to the workshops. Many participants took the opportunity to comment on the tables in advance. The thematic workshops in January (11, 18, 25) and February (1) were attended by members of the Steering Group on the Long Term View for Construction and experts from public authorities, universities, consultancies and the private sector. During the four-hour seminars, after a thematic introduction by the project leaders, the online tables were jointly updated.

Figure 1-1 Example of a web-based worksheet prepared by the project leaders for a thematic workshop.



Participation in the seminars was active (an average of 15 participants per seminar) and the discussions were meaningful. Explanations of the problems to be addressed and issues to be decided under the development plan were continuously updated. Terminology in Estonian was discussed and additional examples from Estonia and around the world were suggested. The information gathered during the seminars was also a direct input to the conceptualisation of the development plan.

Both the regional and thematic seminars also provided input **to the policy recommendations** developed under Work Package 3:

1. Develop a long-term vision for spatial development towards a high quality living environment (e.g. in a national plan).
2. Develop a comprehensive national development plan in line with the vision, including an action plan. Alongside this, reorganise government structures to ensure a clear division of roles in implementing the vision and actions.
3. Strengthen cooperation and coordination between and across levels of government to achieve a high-quality living environment (e.g. the creation of a central governmental unit for spatial issues).
4. Empowering local authorities to take and implement decisions that are in line with the vision of a high quality and sustainable living environment.
5. Stimulate sustainable reform of the construction sector.

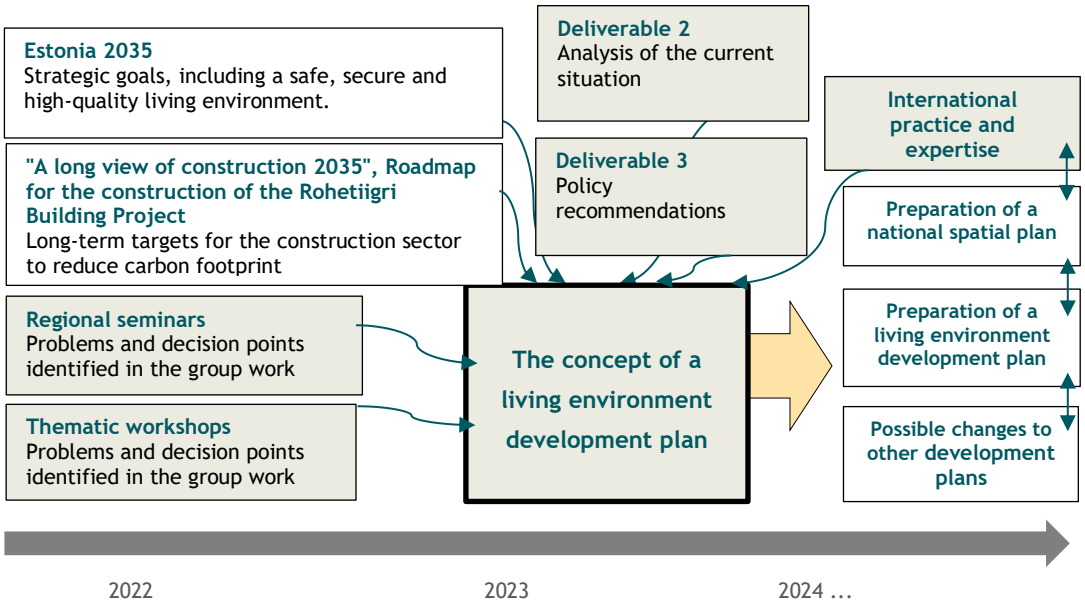
The policy recommendations put forward by the project experts also form the basis of the development plan concept reflected in this report. In addition, the Construction Roadmap 2040,[2] which is being prepared in parallel by the Green Tiger,[3] was considered as an important input.

The proposal for living environment development plan and the preliminary concept was presented to policy makers and to a wider set of audience during the annual Tartu Planning conference 30-31.03.2023 (the recording of the conference sessions is available in the conference's website https://planeerimiskonverents.ut.ee/konverentsi-kava-2023; the session where the results were presented https://www.uttv.ee/naita?id=34343). The topic of high-quality living environment came up repeatedly during the panel discussions. As a result, the New Bauhaus topic was even more emphasized in the concept, also the preparation details in chapter 3 were fine-tuned.

The consultancy service for the preparation of the development plan identified areas that have not been addressed in Estonia through strategic development documents by means of objectives (including sub-objectives), indicators and policy instruments to achieve the objectives. The Action Plan of the Estonia 2035 Strategy outlines the changes needed in Estonia, including in the area of spatial development and mobility. However, it is not the task of the Estonia 205 to set out the changes in terms of sub-objectives, policy instruments and key options and action programmes, as this must be done at a more detailed strategic planning level.

[2] https://rohetiiger.ee/valjaanne/rohetiigri-ehituse-teekaart-2040/
[3] The Green Tiger Foundation is a cross-sectoral cooperation platform that aims to create a balanced economy model for Estonia and the world. To this end, a roadmap will be drawn up for at least five sectors.

Figure 1-2 Methodological scheme for the conceptualisation of a quality of life development plan



Note: coloured text boxes stand for tasks carried out in this project.

1.2 The need for a living environment development plan

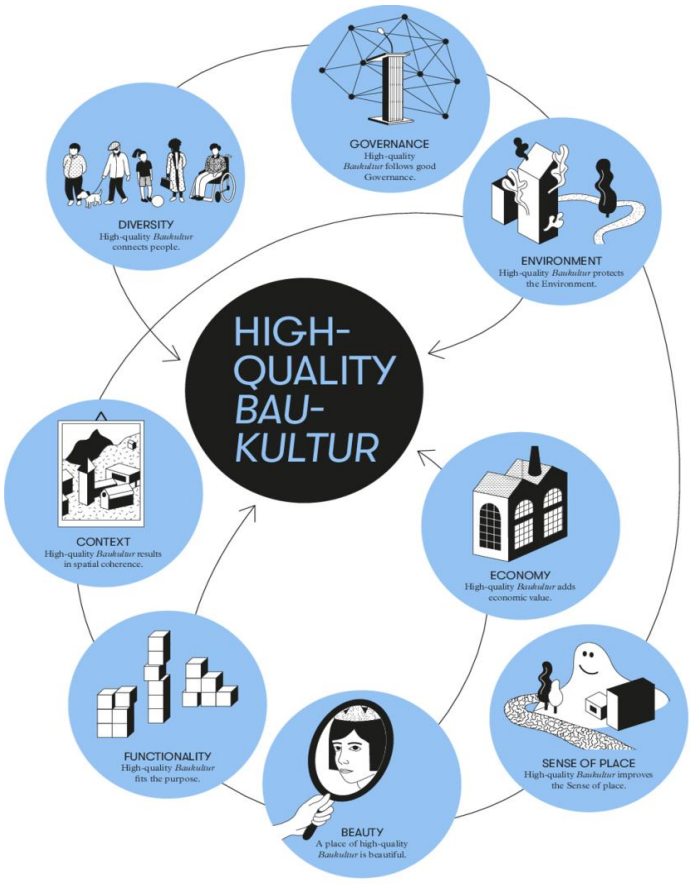
The need to prepare a development plan for the living environment stems from a number of strategic decisions taken at the European Union and Estonian national level:

1. The EU's agreed goal of climate neutrality by 2050, in which smart design of the built environment plays a key role.
2. One of the goals of the 2030 Agenda for Sustainable Development, adopted at the UN Summit on 25 September 2015, is to ensure a good quality of life for all whilst also respecting the natural environment. So far, no strategy, development plan or programme has been drawn up in Estonia to address Goal 11 of the Action Plan 'Sustainable cities and human settlements'.
3. The long-term strategy "Estonia 2035" adopted by the Riigikogu on 12.05.2021 sets as one of its strategic goals is the creation of a safe and high-quality living environment that takes into account everybody's needs. The goals and necessary changes agreed in the Strategy "Estonia 2035" are followed by all the programmes approved by the Government of the Republic of Estonia and sectoral development plans and programmes drawn up by the ministries.
4. The European Union's policy priorities for 2021-2023 in the field of spatial development and mobility, approved by the Government of the Republic on 2.12.2021, highlight the need to follow the quality principles of the Davos Declaration signed by 34 countries in the design of spatial development and built environment.
5. The long-term strategy for the renovation of buildings approved by the Government of the Republic on 9.07.2020 sets the target to renovate the majority of the building stock by 2050, thus significantly affecting the quality of the living environment.
6. The new national spatial plan initiated by the Government of the Republic in January 2023 will develop the future basis for Estonian spatial policy and quality spatial design, taking into account sustainable development, healthy living environment and human-friendly (urban) space. The thematic scope and the level of detail of the national plan have not yet been agreed at the time of writing this report.

7. The Green Transition Action Plan 2023-2025 (draft), prepared under the leadership of the State Chancellery, has as one of its three pillars, the development of a modern and high-quality living environment.
8. One of the objectives of the construction sector development document "The Long View of Construction 2035" approved by the Government of the Republic on 21.04.2021 is "The principles of designing a high-quality living environment have been agreed upon and the parties are implementing them together".

One of the main policies of the European Union that is relevant to Estonia is to build a good building and spatial development culture, the so-called new European Bauhaus.[4] Estonia is a signatory to the 2018 Davos Declaration,[5] which states that all activities and decisions that have an impact on space must take into account the quality of the environment created. In order to implement the Declaration, a quality assessment system has been developed, which should be used as a basis for space creation by both the public and private sectors (see diagram below). The Living Environment Development Plan would be the national reference document for implementing the Declaration. At the same time, the principles agreed in Davos will be the main point of reference for the issues to be addressed.

Figure 1-3 The 8 principles of the Davos Spatial Quality Assessment System.



Source: https://davosdeclaration2018.ch/quality-system

[4] https://estonia.representation.ec.europa.eu/strateegia-ja-prioriteedid/eli-peamised-poliitikavaldkonnad-seoses-eestiga/uus-euroopa-bauhaus-eestis_et
[5] See more at https://davosdeclaration2018.ch/

According to Deliverable 2 of this project, **Estonia still lacks a common understanding and agreement among public authorities and policy makers on what it means and what is needed to create a high-quality living environment.** The results of the work of the Expert Group on Spatial Design has concluded that in order to ensure the quality of space, it is necessary to set out a mandate for quality space in the statutes of institutions that make spatial decisions or have an impact on space. Currently, the statutes of government agencies, public foundations and companies, including RKAS, the Land Board, the Transport Board, the Port of Tallinn, etc., do not include the objective of creating quality space. Rather, decisions are often taken in isolated 'silos', which instead focuses on the achievement of key sectoral objectives, which does not necessarily reflect the broader perspective necessary to ensure the development of a coherent and high-quality space.

The established practice of spatial planning in Estonia is based on predominantly narrow and prescriptive land use planning. Spatial development is intended to be guided by imposing restrictions or conditions on land use. Planning is not strongly linked to programmes and measures regulating the use of public funds. Although the Planning Act sets out a long list of tasks for planning (e.g. 30 tasks to be solved by general plans, plus 'other related tasks'), in some cases, the solution is based on the prescriptions of the ministry or agency concerned, which may be in clear contradiction with the municipality's vision of integrated and balanced development.[6] There is often a lack of a balanced and equal dialogue between the municipalities making spatial decisions and the national authorities implementing spatial policy. However, planning is the only administrative procedure that must consider the spatial needs of the different sectors in a specific location and in interaction with each other.

"The Green Paper on Spatial Planning (Ministry of Finance 2020) identifies as a problem, among other things, the fact that when drawing up a plan, the priority of a participating agency or authority may be to protect the interests of its own sector, without taking into account the overall spatial solution and the compromises necessary to achieve it in a specific location. If one's own contribution to the overall solution is not given sufficient importance, there may be no need for competent in-house planners (p. 10). **There is a lack of a comprehensive and coherent spatial policy at the national level which could provide a basis for regional spatial development guidance and decisions at the local level, covering both the natural and built environment.** A holistic spatial policy needs to continue to be complemented by the mapping of interests between different sectors.

Further challenges are Estonia's sparse population and the "two-Estonia" phenomenon (a clearly distinct metropolitan region with a large urban sprawl) and the resulting challenges for sustainable mobility. The development of sustainable transport is a large-scale investment, but also has a significant impact on the living environment, and therefore decision-making needs to be broad-based.

The experience of other countries shows that steps need to be taken **to use the spatial planning process as a tool to improve the effectiveness of cohesion policy funding and to coordinate the territorial impact of sectoral policies**, including by leveraging the mutual positive effects of projects

[6] e.g. in the case of the conditions of use of mineral deposits, it has proved difficult to determine alternative uses after reclamation (in the Saku master plan, it was therefore decided to designate the Tammemäe VIII sand quarry in Männiku village as a conflict area and to exclude it from the master plan solution), and it has proved impossible to establish the order in which deposits are to be put into use or the principles of the exhaustion of previous deposits. The design of the transport network must be based on the requirements of the Transport Administration. Reduction of the no-build zone of a watercourse will be decided by the Environment Agency. The heritage protection authority influences settlement design through the requirements for the visibility of monuments (e.g. the Taagepera area in the general plan of Tõrva municipality).

using EU policies and instruments. Estonia is one of the biggest beneficiaries of European development funds, but very weak in terms of cross-fertilisation.[7] The green turnaround already underway in Estonia has a significant and wide-ranging impact on the living environment (from renewable energy production to the provision of affordable housing), which in the long term could be addressed astutely through a living environment development plan.

So far, national spatial plans in Estonia have had no direct link to the national budget, and sectoral strategic development documents have not been linked to the hierarchical system of spatial planning. National spatial plan provides spatial guidance only through local plans, and sectoral spatial decisions are made without taking into account overall spatial development objectives. The ministries do not follow the national spatial plan in force when guiding their own sectoral development. A better link with the national budget strategy would be made possible by the creation of a living environment development plan, together with the other development plans. These plans would form part of the national strategic documents in terms of the national budget, which is not the case with the national spatial plan under the current Planning Act. This would make it possible to steer public sector investment by means of long-term, counter-cyclical plans that would also contribute more to the achievement of spatial development objectives. The new national spatial plan to be drawn up will link national development plans, but there will still be a need for the budgetary support that a living environment development plan could provide.

The living environment development plan would provide a strategic view of the issues that affect the human living environment, including issues that have not yet been reflected in the national spatial plan, other development plans or addressed in sufficient detail in the Estonia 2035 Action Plan. The preparation of the development plan will bring together in a single development document the different sub-areas of the living environment for which the national strategic long-term development vision and the supporting activities have not yet been defined; it will describe the baseline situation and trends, analyse the main challenges and the most effective policy instruments, and formulate the objectives and indicators for each sub-topic up to 2035. The intended development plan may also face similar problems to those identified in the preparation of other strategy documents, that it only guides the actions of government agencies in a particular area and does not apply to local authorities. **Local authorities have expressed the need of support to their spatial decisions by stronger target setting at national level** (see section 1.1). It is also important that the preparations for the national plan and the development plan will form a coherent whole which will be implemented through a hierarchical spatial planning system.

The Green Tiger Construction Roadmap 2040 (working version as of 13.03.2023)[8] states that in Europe, an average of 36% of greenhouse gas emissions come from the construction sector (production of building materials, construction of buildings, use). In Estonia, this figure is 46%. In addition, the transport footprint is directly linked to spatial development. Ensuring a sustainable and healthy living environment will require major changes in spatial development, spatial design and construction. Drawing up a development plan for the living environment will create a broad-based agreement for implementing the green transition in the built environment. The construction sector, together with the real estate sector, accounts for nearly 16% of GDP. Employment in the construction sector is *ca* 65 000

[7] ESPON COMPASS survey 2018
[8] Final version published 04.04.2023, see https://rohetiiger.ee/valjaanne/rohetiigri-ehituse-teekaart-2040/

people. By planning for long-term and counter-cyclical construction investment in the economy, the living environment development plan contributes to the creation of a favourable business environment.

The objectives and indicators of the development plan and the resulting programmes, together with the performance targets, must form a strategic planning framework that provides a sound input to the preparation of the budgetary strategy and the national budget. It will work together with national planning, giving it a financial dimension and enabling the country to consistently set an example in meeting its spatial objectives (see also section 3.1). In addition, the living environment development plan would facilitate the successful implementation of other development plans, such as closely linking the energy development plan (ENMAK), the transport and mobility development plan, the environment development plan (KEVAD), the population health development plan and the internal security development plan.

1.3 Key decision points of the development plan

The main starting points for the living environment development plan lie in the fundamental principles of quality space and the objective of a beautiful, sustainable and inclusive space. Among other things, the plan will address issues that remain unresolved at the level of national strategic documents, such as:

- ✓ Housing;
- ✓ Climatic and environmental impact of buildings and land use;
- ✓ Material resources for construction;
- ✓ Skills of professionals involved in shaping the built environment and
- ✓ Quality of the micro-environment (buildings and their surroundings).

In order to ensure that the purpose and the focus of the plan are clear to those involved in its preparation, further consideration should be given to the priority issues to be included in the plan before it is drawn up (at the stage of the development plan proposal). Chapter 2 sets out the consultant team's proposal in the form of a description of thematic challenges, recommendations and possible contributions. According to the outline of the project, the themes addressed are:

1) Settlement and infrastructure;
2) Cities;
3) Housing;
4) Sustainable construction and energy efficiency of buildings;
5) Urban nature;
6) Mineral resources;
7) Materials and circular economy;
8) Competences;
9) Integrated e-solutions for spatial development; and
10) Participatory tools.

The most important decision points, which are expected to require a broad discussion during the preparation of the development plan and to be targeted in the national strategy documents, i.e. the living environment development plan and the national plan, are as follows:

Table 1-1 Key decision points

	Key decision point	Key topics
1.	What is a sustainable settlement pattern that respects climate objectives and is culturally appropriate for Estonia, and what sustainable mobility solutions support it?	• Ways of providing services; Settlement structure (network of urban centers); • Sparsely populated areas - the '1-hour-Estonia' model • Hindering urban sprawl; • Differentiation of land use rules by settlement type; • Ending the land take - replacing the *greenfield* development model with a *brownfield* mode; • The future of shrinking regions; • Reducing forced commuting; • Adapting the living environment to the needs of changing work patterns; • Encouraging sustainable modes of transport; • Accounting for the carbon footprint of planning and construction activities
2.	What are sustainable urban environments in Estonia?	• Fostering human diversity and reducing car-centricity; • Vibrant urban cores (compact, diverse and linear); • The role of urban greenery in reducing the ecological footprint and providing biodiversity; • Infrastructure solutions close to nature (permeable pavements, etc.) and other climate resilience options suitable for urban environments; • Functional, 8-80 public spaces;[9] • Heritage-centered development
3.	What is Estonia's comprehensive view on housing developments?	• Alignment of the housing stock with high-quality *Baukultur* principles; • Desegregation; • Affordability of housing
4.	What is climate-resilient and energy-efficient building and construction?	• Design and construction methods that promote energy efficiency and savings; • Holistic renovation (including district-wise renovation, links to urban nature and other themes); • Ongoing maintenance of buildings; • Accounting for the carbon footprint of buildings and residential areas
5.	How can we ensure that the benefits of urban nature are taken into account in the design of space?	• Quality and accessibility of urban greenery; • Replacing *greenfield* developments with *brownfield* developments; • How can green spaces be valued and used to adapt to climate change and preserve biodiversity and natural communities?
6.	How to promote the circular economy and sustainable use of materials (including construction land)?	• How can we encourage the re-use of materials?
7.	How to promote spatial competence?	• What interventions are appropriate for Estonia to replace *greenfield* developments *with brownfield*?
8.	What are the coherent e-solutions for spatial planning?	• Availability and user friendliness of spatial data and digital services for the development of the living environment; • Spatial data mapping, assessment, integration; • Promoting participatory tools

[9] A space suitable for both 8- and 80-year-olds.

1.4 Definition of living environment

In the project's analysis of the state of play in Estonia (Deliverable 2), it is noted that the terms "built environment" and "living environment" are often used in parallel in Estonia.

Textbox 1-1 Living environment vs built environment

The analysis of the state of play (Deliverable 2) of this project describes: *The General Multilingual Environmental Thesaurus defines "living environment" as "the external conditions or environment in which people live or work". The Thesaurus also defines the "built environment" as "the part of the physical environment that is man-made or organised by man, such as buildings and other large structures, roads, bridges, etc., down to smaller objects such as platforms, telephones and pillar boxes". The term 'built environment' was coined in 1980 and covers everything man-made.*

The focus of the living environment development plan should generally be on the living environment, encompassing both the built environment and the related natural environment - people's everyday, working, living and domestic spaces. Different groups of the population have different needs and aspirations for the living environment, depending on their age, economic and life situation. A high quality living environment enables different groups of the population to live their daily lives in a comfortable and healthy way and to meet their basic needs - access to services, work, leisure, hobbies, privacy and participation in family and community life - in a sustainable manner.

The European Commission has stressed the importance of the built environment as a foundation for a functioning society. The built environment encompasses everything in which people live, work and recreate - from housing and transport infrastructure to service networks and public spaces. How these resources are planned and managed have a major impact on people's quality of life, to promote and achieve equal opportunities and access to services for all. Traditionally, the concept of the built environment has been used to refer to places or spaces adapted by people to meet their daily needs. More recently, the concept has been extended to include people's health needs - for example through accessibility, walking and cycling. The concept of the built environment also includes the processes that underpin the creation of the built environment: land use planning and land use management, demolition and reuse.[10]

Since the concept of the built environment has a clear link primarily to specific construction activities in Estonia, often with the misleadingly negative connotation of 'concrete', the authors consider it more appropriate to use the term 'living environment' in future work. It is a matter of creating a 'home', not solely designing 'concrete' buildings in the environment.

Among the strategic development plans in force in Estonia, the term "living environment" is used in the Population Health Development Plan 2020-2030, for example: *living environment means the set of socio-economic, psychosocial, natural and artificial environmental factors that surround a person and influence or may influence his or her health. The living environment includes the home, learning, working and leisure environments.*

The development plan should focus on the spatial outputs of the living environment, and hence the living environment could be understood as a human activity space, where the physical environment is complemented by the spatial outputs of different activities.

[10] https://ec.europa.eu/docsroom/documents/40541/attachments/1/translations/en/renditions/pdf

2 The concept of a living environment development plan

An overview of the possible issues to be addressed in the development plan is provided in the following sub-chapters. For each of the ten identified themes, as required by the terms of reference of this project, the following topics are discussed:

1) Challenges arising from the current situation;
2) Examples and recommendations of the Expert Group;
3) Further research needed;
4) Decision points;
5) Issues to be addressed in the development plan as well as potentially in the national spatial plan;
6) Suggestions for possible indicators.

Examples of solutions from other countries are given in each theme, broadening the understanding and providing alternative approaches. The weight of the themes varies - some topics are already largely covered by other national development documents and are therefore less covered, others are still subject to strategic objectives and are therefore covered in greater depth. A number of themes are cross-cutting in nature, linking different topics, e.g. heritage, digital solutions, urban landscape, but are also set out below as separate sub-chapters. They are also often interlinked, e.g. housing development and energy efficiency in buildings. Each theme (see also Table 1-1) also requires the development of action programmes and measures.

The red line running through the themes is the quality of the living environment, i.e. the output and impact on the space around us. The starting point for the living environment development plan must be the basic principles of quality space.[11] The development plan to be drawn up would also serve as a strategic development document at national level, in which the basic principles of a quality environment are set out as guidelines, linked to the various thematic areas and explained in an attractive visual way. Many of the themes addressed in the following sub-chapters have common ground with other development plans (e.g. the environmental development plan [KEVAD], the transport and mobility development plan). The intended living environment development plan would give these themes a spatially focused output.

2.1 Settlement structure and infrastructure

2.1.1 Challenges

A. The sustainability (including the footprint) of Estonia's settlement structure is questionable - there is no network of centres providing public services and jobs in sparsely populated areas; the capital region and other major cities have not expanded in line with the principles of sustainable mobility; regional fragmentation causes social and economic inequalities

The main development objective of the current national plan Estonia 2030+ is to ensure the possibility of living in every inhabited place in Estonia. To achieve this, a high quality living environment, good

[11] https://www.kul.ee/media/61/download

and convenient mobility and access to essential networks are necessary. In line with this objective, the spatial development vision for Estonia 2030+ is formulated as follows:

> *Estonia is a country with a coherent spatial structure, a diverse living environment and is well-connected with the outside world. An urbanised space links compact cities, suburbs and traditional villages into a whole, valuing all these ways of living equally. The human-friendliness and economic competitiveness of an urban agglomeration are ensured above all by a natural environment and a well-connected network of settlements.*
>
> *The notion of dispersed urban space that underpins the vision summarises a desirable model of future urban-rural settlement, where suburbanisation, large-scale commuting and the predominance of urban lifestyle in the countryside have largely eliminated the social and economic differences between urban and rural areas, while leaving differences in the physical living environment. The 'sparse urban living' combines the availability of quality urban services, urban and mobile lifestyle with the advantages of rural living. This is supported by social and spatial networks.*

In reality, the concept of 'sparse urban living' has not worked as a starting point for spatial decisions. It has become apparent that it is not possible to guarantee an equal quality of living environment throughout Estonia and that small centres are declining, mainly due to the loss of public services and jobs. The dispersed settlement pattern in most parts of Estonia does not support the maintenance of a dense network of shops and services (see Textbox 2-1). The location of services is not comprehensively spatially targeted or regulated at national level. Existing planning instruments for guiding the network of services and centres (thematic plans for social infrastructure in the counties, network of centres in the county plans) have not achieved their objective. The maintenance of regional service centres requires budgetary resources (e.g. extra pay for teachers and doctors in Ida-Virumaa) which may compete with the achievement of sectoral objectives (e.g. quality of service).

Textbox 2-1 Unavoidable cost on services in rural areas

The '*unavoidable costs of smallness and remoteness*' have been used to design and finance services in rural areas. Articulating and differentiating the corresponding additional costs in the calculation models will allow a more accurate assessment and consideration of the additional resources needed to provide services in peripheral areas, and a comparison of the corresponding additional costs with the added value created (e.g. keeping the area inhabited or other societal benefits).

In Estonia, a similar instrument is used for the calculation of grants from the Local Government Equalisation and Support Fund (see e.g. § 3(1) of the 2023 State Budget Act). It would be useful to articulate the corresponding cost component more precisely in the context of all public services.

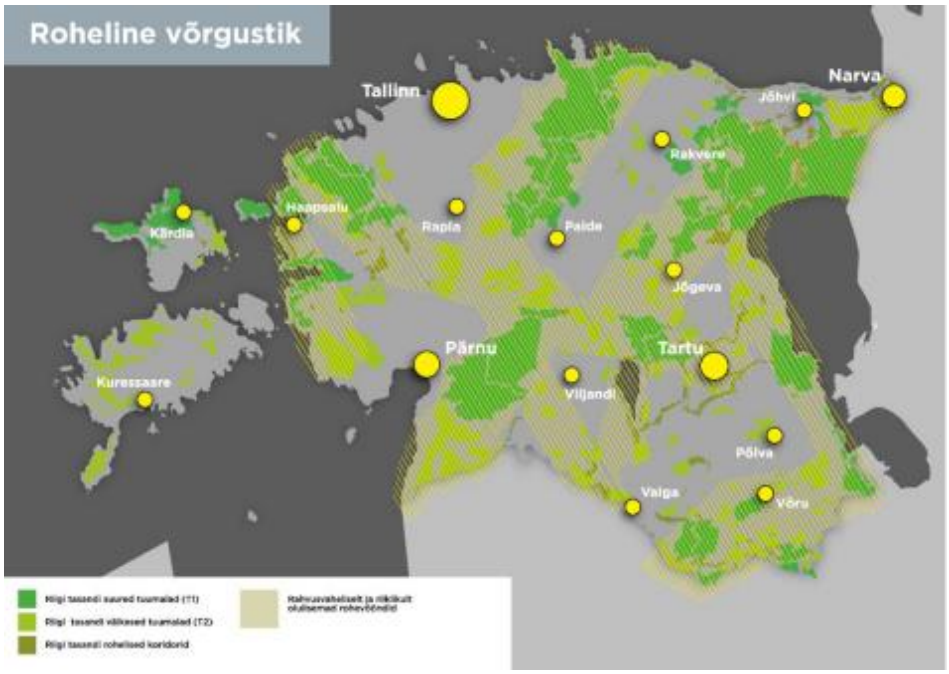
Examples:
OECD (2022), *Shrinking Smartly in Estonia: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris.

Costs of unavoidable smallness due to remoteness. https://www.england.nhs.uk/wp-content/uploads/2016/04/acra-2015-36-costs-unavoidable-smallness-upd.pdf

The previous national plan, Estonia 2010, obligated county governments to prepare thematic plans on "Environmental conditions guiding settlement and land use". These county-wide thematic plans (mostly adopted between 2004 and 2007) resulted in the creation of a nationwide network of green areas, where nature reserves are complemented and connected by green core areas and corridors with predominantly natural land use. Established in the first decade of the century, the green network can

be considered a success story of spatial planning, which significantly hindered the development of uncontrolled urban settlements and ensured the preservation of extensive green areas. However, at regional level, building pressures have significantly impaired the performance of the green network. In addition, mineral extraction, defence needs and renewable energy space requirements increasingly intensify the pressures on the green network.

Figure 2-1 Green network in the national plan Estonia 2030



The situation is more problematic in the area of mobility. The development of a sustainable settlement pattern is hampered by the lack of a well thought-out link between the national mobility concept and settlement development directions. Furthermore, sustainable modes of transport have not been the basis for the planning of the metropolitan region, but rather the spatial development around Tallinn has been car-centric. In Estonia, it is common practice to try to reorganise public transport connections only after the development of a new built-up area. Further, densification has not been directed towards areas where good public transport connections already exist (e.g. train and tram stops).

Figure 2-2 Axes of settlement expansion in the capital region

Existing tramways are marked in red, while highways that are also axes of rapid urban expansion are marked in black. The blue dashed line indicates railway lines around which there has been no settlement development. Conceptual visualisation by Oliver Alver, used with permission.

B. Spatial separation between living and working spaces, requiring daily commuting

Across Estonia, business and manufacturing premises are spatially separated from residential areas, making it time consuming to get to work. As green transport links are often lacking and transport by car is preferred by a significant proportion of the population (nearly 60% of the employed in 2022 according to Statistics Estonia), commuting also has a negative environmental impact.

C. The current use of space and mobility does not meet the needs for flexible working and teleworking

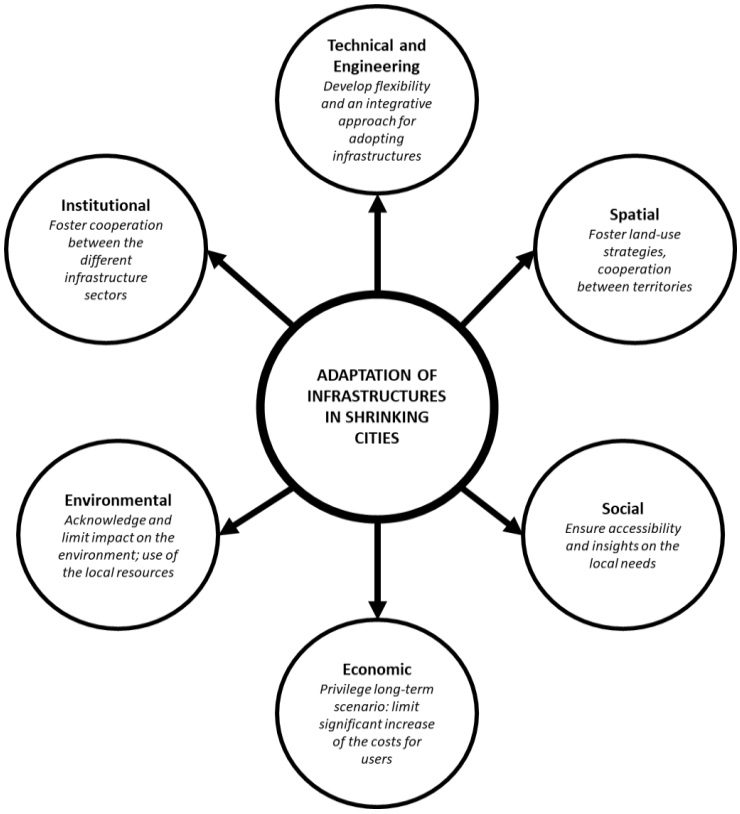
The rapid spread of teleworking and flexible working in some sectors of the economy is leading to changes in the use of space and the organisation of transport, favouring flexible systems (transport on demand, car sharing etc), temporary use of space and multi-purpose buildings.

D. The development of shrinking regions is not strategically targeted

Many regions in Estonia are affected by the decline in population and economic activity. The challenges related to shrinkage are outlined in the OECD study 'Adapting smartly to shrinkage in Estonia: regional preparation for demographic change'.[12] Initial experience in adapting to a shrinking living environment has already been gained[13] but further attention is needed in terms of maintaining and creating suitable jobs in the regions (with a functioning mobility system and quality housing), demolition of unsuitable housing stock, optimising infrastructure and improving the overall quality of the living environment. Residual space, in the form of vacant buildings and land, is a problem not only in shrinking areas but also in areas with a growing population. The adaptation of infrastructure in shrinking cities should consider various elements, as shown in Figure 2-3 below.

[12] https://www.oecd.org/publications/shrinking-smartly-in-estonia-77cfe25e-en.htm
[13] See e.g. Valga city master plan, Lüganuse rural municipality master plan; Nationwide study on housing vacancy and patterns of vacancy.

Figure 2-3 Several issues that need to be considered when adapting to shrinking cities



Source: Handbook on Shrinking Cities (Pallagst et al., 2022).

E. Renewable energy development affects settlement patterns

In the near future, the acceleration of renewable energy development will lead to significant changes in the spatial structure of Estonia. Opportunities for decentralised energy production will increase the competitiveness of rural areas. Compensation fees for the residents near wind farms and grid fee incentives can create favourable conditions for the emergence of new business and residential areas and the revitalisation of traditional settlements.

At the same time, renewable energy solutions also have a negative perceived spatial impact (e.g. the replacement of long vistas in the natural environment and valuable landscapes by solar parks, especially around small settlements). The extent to which solar parks are installed, or planned to be installed in Estonia is shown in Figure 2-4.

Figure 2-4 Existing and planned solar parks in 2022

Source: Hendrikson & Ko.

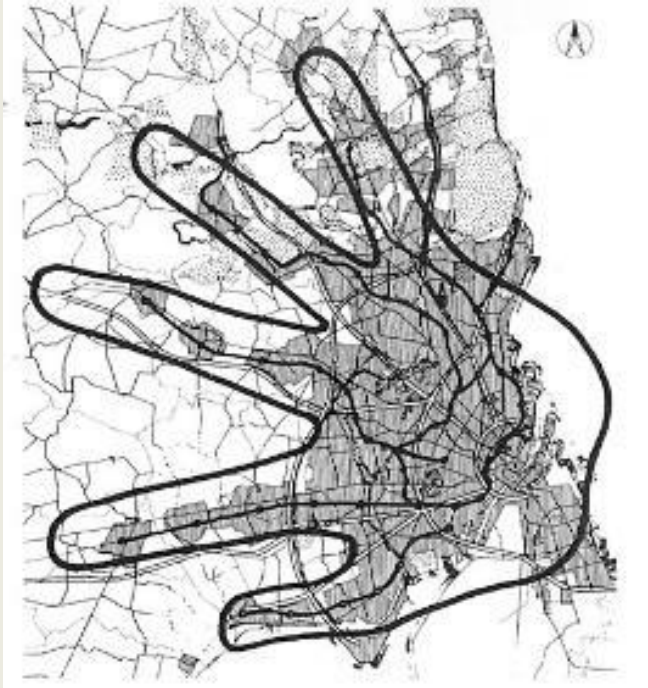
2.1.2 Examples

Sustainable land-use planning, sustainable mobility and cross-border approaches are important in many Western European countries. The long-term cooperation of municipalities in settlement planning is well illustrated by Copenhagen's 'Five Finger Plan' (see Example 2.1-1 below).

Example 2.1-1 Copenhagen "Five Finger Plan"

A classic in urban planning, the "Five Finger Plan", adopted in 1947, has guided the spatial development of the Copenhagen metropolitan region, now home to around 2 million people, for over 70 years. The strategic plan was based on five development corridors, centred on railway lines linking residential development areas with the dense central city. Between the fingers, the plan called for "green wedges" of agricultural and recreational landscapes. The urban area has now expanded to include an additional finger on Amager Island, in the Ørestad area, where development will be boosted by a bridge link to Malmö. The finger plan was prepared by the Regional Planning Office, a cooperative entity covering 22 municipalities and three counties, in collaboration with urban planners S.E Rasmussen and C.E Bredsdorff. The plan was never adopted, but as the municipalities were closely involved in its preparation, efforts were made to follow the plan. The concept was carried forward into the planning of the 1960s and later and remains a planning doctrine to this day, although the planning rules have been relaxed in the light of the neoliberalism that prevailed between 2015 and 2019.

The Copenhagen Ring Plan has been seen as a drawback in the early days of the central city's depopulation - development corridors encouraged taxpayers to move out of the city centre, leading to a rapid deterioration in economic conditions.



Copenhagen Five Finger Plan 1947.
Source: danishdesignreview.com/townscape/2017/9/3/the-finger-plan-at-70

The Nordic countries are often cited as examples of outstanding spatial planning for settlement and mobility. Sweden's 'four-step' approach to transport planning (see Example 2.1-2 below) is a good example.

Example 2.1-2 Step-by-step transport planning system in Sweden

In Sweden, transport planning is based on the four-step principle. In order to meet the growing demand for transport, the first step is to consider whether the identified shortfall in the transport system can be solved by reducing or modifying demand. The second step focuses on identifying more efficient uses of existing transport infrastructure. The third step involves considering limited modifications and the fourth step already considers new investments or major modifications. A fourth step should only be proposed if the measures in the first three steps are not sufficient to meet the needs.

The methodology was developed at Lund University of Technology in the late 1990s. The Four Steps Principle has evolved into a tool for finding alternative resource-efficient ways to achieve transport policy objectives or to solve transport system problems and deficiencies. In Sweden, the four-step approach is predominantly used at national level, but also at regional and local level for the sustainable development of transport infrastructure.

The four-step principle

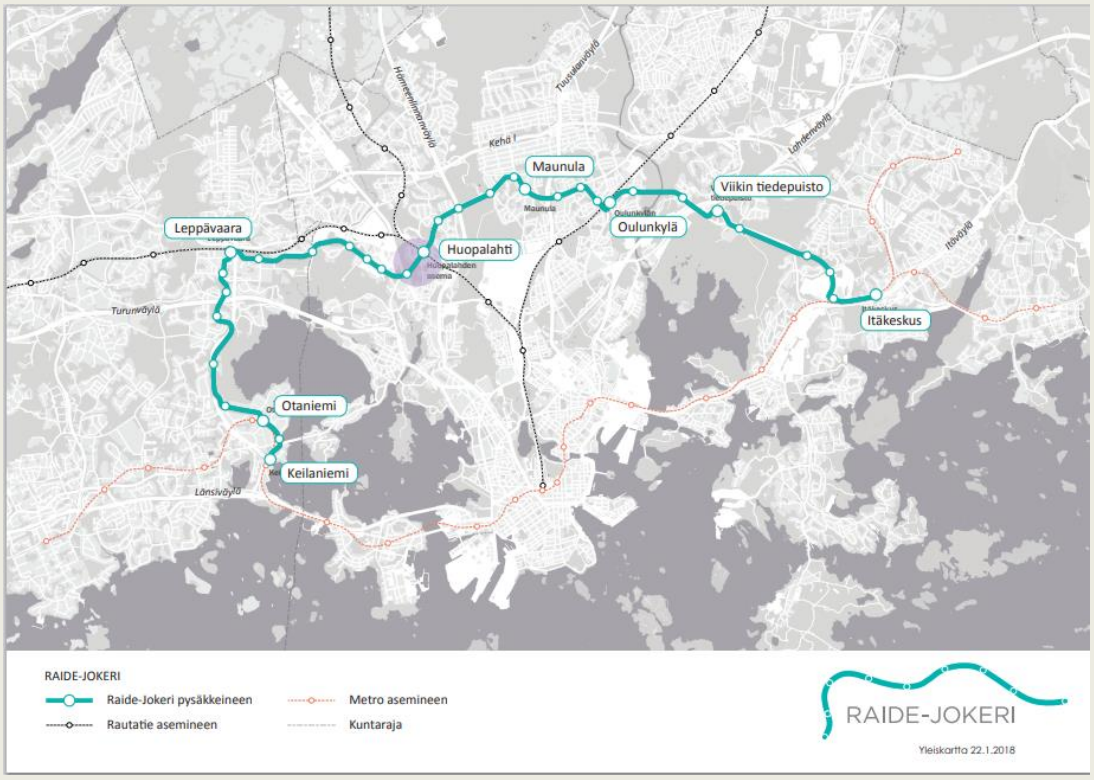
1. **Think again:** **the first step involves considering in particular measures that may affect transport and travel needs and the choice of transport mode.**
   Examples of measures: locations, land use, taxes, charges, parking fees, subsidies, cooperation, free-ride meetings, speed limits, information, marketing, routes and programmes, etc.
2. **Optimise:** **the second step involves the implementation of measures leading to a more efficient use of existing infrastructure.**
   Examples of measures: reallocation of areas, bus lanes, prioritisation of signals, ITS solutions, special operation, coordinated train schedules, increased frequency of journeys, logistics solutions, trip planners.
3. **Conversion:** **if necessary, a third phase will be carried out, involving limited renovation/conversion.**
   Examples of measures: reinforcements, trimming measures, load-bearing measures, widening, platform widening, bypasses, etc.
4. **Build a new one:** **the fourth step will only be carried out if the need cannot be met by the previous three steps. This implies new investments and/or major transformation.**
   Examples of measures: new railways, bypasses, new motorways, central intermodal terminals, circulation area, new station locations, BRT solutions, airport connections, bus lanes, etc.

Source: The four-step principle in Swedish transport planning. Available at: www.trafikverket.se/for-dig-i-branschen/Planera-och-utreda/Planerings--och-analysmetoder/fyrstegsprincipen/

In Finland, major efforts have been made recently to develop tramways: tram services opened in Tampere in 2021, there is planned restoration of tram services in Turku, and the extension of the tram network in Helsinki. The Espoo-Vantaa tramway is in the process of being launched (see Example 2.1-3). The ongoing Länsimetro development connects several areas west of Helsinki through a fast and environmentally friendly mode of transport. In parallel, new metro stations are being developed and dense local centres are being developed at the stations, linking different land uses (see Example 2.1-4).

Example 2.1-3 Tramway line Raide-Joker

A good example of cross-border cooperation between municipalities in the development of sustainable mobility is the so-called Raide-Joker high-speed tram line, which is being developed as a joint project between Espoo and Helsinki. The need for such a link was already reflected in the Uusimaa regional plan that entered into force in 2007. A more concrete planning basis for the connection was provided by the Espoo and Helsinki master plans, and amendments to the detailed plans were also necessary. The first feasibility study on the tramway was completed in 2009, and test runs on the completed infrastructure will be completed in 2022. The high-speed tramway will connect **the Itäkeskus (Helsinki) and Keilaniemi (Espoo) areas.** The design of the tramway has been focused on its suitability for the urban environment. The permitted speed, the construction and the covering material have been chosen according to the surrounding urban space. The track is covered in many places with grass and the design has taken into account the possibility of adding additional urban vegetation.



Source: *https://raidejokeri.info/wp-content/uploads/2016/01/hankesuunnitelma.pdf*

Example 2.1-4 Dense housing development in Finnoo, new Länsimetro station

One of the stops to be built on the Länsimetro line will be in Finnoo, where a central area of around 2 800 inhabitants will be created at the metro station, with services, green areas and technical infrastructure. The development of the central area and the metro line will go hand in hand, creating the conditions for an environmentally sustainable and convenient connection to the centre of Helsinki.

Architectural vision of the Finnoo Centre (2018, Cederqvist & Jäntti Arkkitehdit Oy)

Sources: ***https://www.lansimetro.fi/en/stations/finnoo-station/***; ***https ://www.projektiuutiset.fi/finnoon-keskus-nousee-metroaseman-ymparille/***

Spatial planning for shrinking areas has been practised in many countries for decades, although it is only recently that adaptation to shrinkage has entered the 'everyday language' of planning. For example, Detroit, which has lost 60% of its population since the 1950s, has used a variety of measures to reorganise urban space (see Example 2.1-5).

Methodological guides for adapting to shrinkage have also been developed for rural areas, see for example the Canadian Guide to Adapting to Shrinkage in Smaller Rural Municipalities.[14] The author of the guide, Paul Hicks, a researcher at McGill University, highlights the need for a location- and context-based approach to shrinkage strategy, a long-term view, the need to combine local and regional planning, and the need for involvement and consensus. A number of guidelines for adapting to shrinkage also exist in Estonia, and their consistent use in guiding development is necessary.

[14] https://escholarship.mcgill.ca/concern/papers/5m60qx48d

Example 2.1-5 Long-term strategy for adjusting to Detroit's shrinkage

Detroit's broad-based, long-range **shrinkage adjustment plan** has now been in place for over 10 years. Developed through a thorough participatory planning process, the plan provides both specific strategic goals and a foundation for a diverse set of implementation activities. Noteworthy is the wide range of implementers of the Detroit Plan - a number of non-profit organisations and collaborative platforms have been formed to implement the Plan and contribute to the strategic objectives through targeted activities.

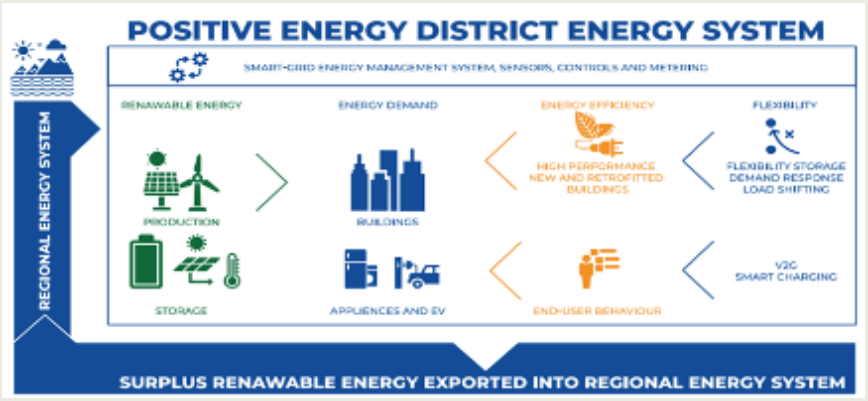
Source: *https://detroitfuturecity.com/resources/strategic-framework/*

As one of the basic needs of society, energy has a major spatial impact and is reshaping living environments around the world. Taking into account the spatial needs of energy is one of the most important starting points for long-term spatial development planning, and is taken into account in the national spatial visions of almost all Western countries. At the level of cities and towns, a number of concepts have been developed to introduce energy savings and to facilitate the use of renewable energy (see Example 2.1-6).

Example 2.1-6 Positive Energy Districts (PED)

The concept of Positive Energy Districts (PEDs), which grew out of the EU's Horizon 2020 Smart Cities and Communities projects, is gaining popularity across Europe.

PEDs are energy-saving and energy-efficient neighbourhoods or districts that have zero greenhouse gas emissions and actively produce and manage renewable energy. PEDs require integration of different systems, synergies between buildings, users and energy, mobility and ICT systems. At the same time, they ensure energy supply and a socially, economically and naturally sustainable living environment. The EU Strategic Energy and Technology Plan[15] (foresees the deployment of 100 PEDs across Europe by 2025).



Source: ***https://smart-cities-marketplace.ec.europa.eu/insights/solutions/solution-booklet-positive-energy-districts***

[15] https://energy.ec.europa.eu/topics/research-and-technology/strategic-energy-technology-plan_en

2.1.3 Recommendations

1. Reassess the functionality of the green network (defined in county plans) in guiding settlement. A broader package of measures than planning and zoning conditions is appropriate to promote the functioning of the green network, including urban green spaces and corridors.
2. Cross-border cooperation between municipalities is the key to sustainable spatial planning. Empowering county development organisations should be considered, as well as supporting networks of municipal planners-architects-building consultants.
3. The current Planning Act does not contain a suitable tool for cross-border planning of urban regions. Formally, it is possible to proceed in parallel with general, thematic or designated planning in different municipalities, but in practice this is inconvenient, cumbersome and time-consuming. Consideration could be given to either supplementing the Planning Act with a specific type of plan, or emphasising the need for specific regulations to take account of cooperation and spatial decisions taken outside the framework of legal planning. As a pilot project, it would be useful to draw up a plan for the Tallinn urban region.
4. Extend the principle of the Transport and Mobility 2035 development plan to an integrated assessment of the need to build roads and railways, and the planning for all mobility and all modes of transport. It is worth taking the Swedish four-step planning principle as a model, whereby the construction of new infrastructure is the last option to meet mobility needs. A similar principle could be applied to spatial decisions in other areas.
5. Large-scale, high-density real estate and mixed-use development (with a view to high spatial quality) should be directed towards the vicinity of public transport nodes. Frequent and convenient public transport connections must be a prerequisite for property development.
6. Develop a public sector plan for the strategic acquisition of land for public transport-centred land use and other land uses conducive to sustainable mobility.
7. Develop non-structural and other cost-effective measures to encourage walking and cycling in places where building new infrastructure is not feasible, practical or too costly (e.g. traffic calming, pop-up cycle lanes, reallocation of existing space, speed limit reduction, traffic management changes) - in different types of settlements.
8. Adapting to shrinkage requires further reflection and thoughtful guidance in areas beyond planning - institutional, engineering, socio-economic and the natural environment.
9. The role of (renewable) energy in shaping the use of space needs to be acknowledged and addressed as scenarios and guidelines at the national level, both from regional and local perspectives.

2.1.4 Further research needs

1. The nature of a sustainable settlement structure in Estonia and how to ensure it (including sample calculations of the cost-effectiveness of technical and social infrastructure and average distance to destinations at different population densities, to illustrate the societal benefits of higher population densities. Institutional and legal empowerment).
2. Follow-up assessment of master plans. As part of the review of the master plans currently under preparation, it would be useful to carry out a more in-depth study to analyse the relevance of the master plans in actually guiding spatial development.
3. An analysis of the feasibility of population targeting based on public transport hubs, e.g. in the Capital Region. The feasibility of the “1-hour Estonia“ for Tallinn, Tartu, Pärnu, Narva and complemented by smaller centres such as Võru, Viljandi, Kuressaare, Kärdla, which provide services and jobs for people living in scattered settlements.

4. Identifying the need and spatial solutions for infrastructure and alternative transport fuels and charging infrastructure around major roads, public transport hubs and cities.
5. Analysis of the implementation of the national guidelines on adaptation to shrinkage.
6. Making sense of the so-called "peripheral cost" concept in the Estonian context. Solutions have been implemented in different areas (e.g. health, education) to mitigate the low cost-effectiveness due to the small number of service consumers. This could be, for example, by making premises belonging to the municipality available free of charge for the provision of services, or by financially supporting the provision of services in the area. So far, there is no cross-sectoral overview of the instruments implemented, and the peripherality component may not be identifiable in the financing of public services.
7. The needs of energy communities and positive energy neighbourhoods. In the context of Ida-Virumaa, the national defence ban on renewable energy development affects the spatial structure; guidance is required on whether or not, and how to relax energy efficiency rules in such a situation where it is not possible to install solar panels or small wind turbines on buildings for national defence reasons.

2.1.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-1 Decisions to be taken by the Government of the Republic in the field of settlement structure and infrastructure when drawing up the development plan

	Decision needed
1.	What is the right sustainable settlement structure for Estonia that ensures security and safety, and how should it be managed? How will smart solutions (e.g. mobility of services, ridesharing, etc.) and the development of renewable energy change the settlement pattern? What kind of decentralisation, including the way public services are provided, is appropriate for Estonia in the long term?
2.	Is the current concept of settlement development based on regional centres still relevant? How can we support and guide the emergence of regional centres?
3.	How can we reduce forced labour mobility and promote environmentally sustainable transport connections?
4.	How can we adapt our living environment to the needs of changing work patterns?
5.	Whether and how should the rules on settlement density be differentiated by settlement type? How is it appropriate to target access to services in different settlement types in Estonia?
6.	What interventions can be made to change the current location of services to support the objective of sustainable land use?
7.	How can we encourage the provision of services in both existing and new housing developments? For example, is it feasible to use tax incentives or other subsidies for service and commercial space in new housing?
8.	What is the long-term development vision for shrinking regions, based on broad societal agreement?
9.	What is the right sustainable national (transport) infrastructure for Estonia, including railways *vs.* roads, the role and solutions of multimodality?

2.1.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-2 Potential contribution of the development plan (DEP) and the national plan (NMP) to be prepared

		DP	NSP
1.	Defining a sustainable settlement pattern suitable for Estonia as a strategic spatial objective, including a desirable spatial model by settlement type (urban, town(s), scattered village). Setting a target for population density to ensure accessibility to services	✓	✓
2.	Defining the criteria for diverse compact settlements; Setting the preference for mixed compact development as a social agreement; Preparation of planning guidelines with pilot projects and practical visual guides		✓
3.	Creating the basis for the development of the "10 Finger Plan" for the metropolitan region - a plan for sustainable mobility-based settlement development		✓
4.	Setting spatial targets and developing measures to hinder urban sprawl; Defining the future prospects of new housing estates in suburban areas		
5.	Setting targets to guide everyday movements in areas with different settlement patterns in Estonia	✓	✓
6.	Creating the basis for the implementation of the "1 hour Estonia" concept	✓	✓
7.	Broad-based guidelines and requirements for the maintenance and development of regional service centres (e.g. limiting peri-urban shopping centres)	✓	✓
8.	Setting a target that the siting of all public buildings should take into account the long-term location of residents	✓	✓
9.	Introducing the obligation to take into account wider spatial impacts, including ecological footprints, when planning and designing settlement development. Establishing the basis for a footprint accountability and incentive mechanism	✓	✓
10.	Implementation support as a basis for concrete programmes and support measures for the introduction of a sustainable settlement pattern (in addition to planning at the level of LAs)	✓	
11.	Objectives, policy instruments and support measures for adapting to shrinkage	✓	
12.	Creating a basis for action to develop practical guidance material on adapting to shrinkage (infrastructure "shrinkage", mobility, etc.) and pilot projects	✓	
13.	Spatial perspective of renewable energy; enhancing planning measures; East-Viru County context - how the national defence ban on renewable energy development affects the spatial structure, whether and how to relax energy efficiency rules as a consequence		✓
14.	Programme of measures for the creation of energy cooperatives and positive energy neighbourhoods, including to promote the development of deep geothermal heating	✓	
15.	Principles for spatial targeting of funding (at the level of the settlement unit) from SoM, Regional Development Fund, transport investments, etc.	✓	

2.1.7 Examples of potential indicators

1. Percentage of municipalities with a declining population, where a spatial and action plan, supported by a master plan and/or other relevant strategy document has been established to adapt space to a declining population;
2. Spatial accessibility of public and commercial services, jobs and public transport at regional level;
3. Density near rail stops or other public transport nodes, creation of new housing units and jobs in line with the 15 minute concept.

2.2 Cities

2.2.1 Challenges

A. Cities are car-centric

In Estonia's urban areas, everyday destinations are generally not easily accessible without a car. The network of shops and services is built around the car, and it is difficult to transform it into a sustainable mobility network. In cities, there is a lack of opportunity to build single-family housing (as opposed to apartment buildings), which is a traditional housing option for many people. Urban sprawl continues

around Estonia's major cities, and new settlements are predominantly mono-functional residential districts, with modest commercial and service development and remote employment. The implementation of the 15-Minute City principles proposed at COP 2015 in Paris is obstructed by mono-functional and sparse land use and the spatial separation of places of work and residence. At the same time, the concept of the 15-Minute City has been criticised for encouraging segregation and gentrification (small shops and cafés close to home are more expensive and therefore more likely to be frequented by people with higher incomes), which calls for a more thoughtful approach to its implementation, both spatially and sectorally.

B. Public spaces are often of poor quality and poorly accessible

Deployment of the principles underpinning quality space[16] is fragile; it lacks public commitment, professional competence, and awareness of commissioners. It is important to apply the principles underpinning the quality of space as a whole (at best, individual criteria) and across the various sub-themes, as a strategic network. Streets, as public spaces for all, need to be transformed into people-friendly spaces conducive to sustainable mobility. Street space is a (landscape) architectural object that determines the quality of life in a city. Street space also includes the first floor of buildings, which are functionally lively and as open as possible. Until now, the design and layout of roads and streets in Estonia has focused on increasing the capacity of motor vehicles. Winter road maintenance in cities, too, has so far favoured car users. It is essential to meet the needs of all road users equally and to give priority to sustainable modes of transport. The principles of inclusive/universal design are available on the website of the Equality Competence Centre,[17] and the Minister for Enterprise and Information Technology has issued a regulation setting out requirements for buildings based on the special needs of people with disabilities. However, there is a lack of consistency in the day-to-day implementation of these principles.

C. Development and construction activities do not consider the built heritage

Built heritage is falling into disuse, while new buildings are being constructed, including for public functions. Heritage and conservation requirements are often stringent while funding for the preservation of built heritage is modest, making it more economically viable in the short term to build new buildings rather than to use or to restore historic buildings. The approach to heritage buildings is object-oriented - there is no strategic approach that takes into account the (urban) environment and context.

D. Climate resilience of the built environment is inadequate

While climate proofing is taking root, there is a lack of a comprehensive understanding of the different options for increasing climate resilience in urban environments. Larger cities have, for example, been working on identifying heat islands and introducing nature-based stormwater solutions. There is also a problem of conflicting interests in the design of stormwater systems - densification *vs* green space. There is a lack of numerical and spatial targets and requirements for climate-resilient construction at both national and municipallevels. Building in flood-prone areas continues. Spatial data on flood risk areas is readily available, but there is a lack of clarity on who is responsible for the costs of correcting planning decisions (cancellation of detailed plans).

[16] https://www.kul.ee/media/60/download
[17] https://kompetentsikeskus.sm.ee/et/vordsed-voimalused/ligipaasetavus/mis-see/pohimoisted/universaalne-ehk-kaasav-disain

2.2.2 *Examples*

To achieve sustainable development, a number of cities are implementing the principles of the 15-minute city. Although this is not an innovative approach in the history of urban planning, but rather a skilful synthesis of principles that have been used in the past, the concept pioneered by Professor C. Moreno of the Sorbonne University is a success. As an easy-to-market and understandable principle, the 15-minute city is becoming one of the main planning reference points for reducing urban car concentration and improving the quality of life. However, there are also implementation bottlenecks as experienced in Oxford, see Example 2.2-1 below.

Example 2.2-1 Implementing the 15-minute city principles in Oxford

Oxford is in the process of drawing up a new master plan with a focus on planning 15-minute neighbourhoods for the next 20 years. The idea has generated a lot of controversial feedback during the public consultation on the plan. Among other things, there is a conspiracy theory that the council's decision to have 15-minute neighbourhoods means limiting car trips so that driving out of your neighbourhood more than 100 days a year will result in a fine.[18] Policies aimed at reducing car-centricity are associated with the restriction of personal freedoms and the introduction of a 'surveillance society'.

Source: https://www.oxford.gov.uk/info/20067/planning_policy/1460/oxford_local_plan_2040

Valuing the built heritage is also a key principle in strategic development documents. Heritage environments are intrinsic and play an important role in creating and strengthening local identity. Such places are generally located in logistically central locations or at least close to existing infrastructure. For example, historic town centres are compact, relatively dense and polyfunctional, and therefore have a prerequisite to be a quality living environment. They also have a high potential for implementing the principles of a 15-minute city. Various sources of European funding have encouraged the introduction of a number of approaches that emphasise the importance of cultural heritage, see Example 2.2-2 below.

Example 2.2-2 Heritage-centred development

Over the past decade, a number of initiatives have been set up with funding from the European Union and heritage organisations to harness built heritage as a driver for the social and economic development of cities. A handbook has been developed which calls for the development of Integrated Cultural Heritage *Management Plans to* ensure the protection and use of cultural heritage for the benefit of local stakeholders.

The Handbook underlines the central role of built heritage in guiding the development of many other policy areas:

Source: https://www.researchgate.net/publication/303004198_Ripp_Matthias_Stadt_Regensburg_Hrsg2011HerO_-_Heritage_as_Opportunity_The_Road_to_Success_Integrated_Management_of_Historic_Towns_Guidebook_Regensburg

[18] https://www.spiked-online.com/2022/10/25/the-madness-of-the-15-minute-city/

2.2.3 Recommendations

1. Reducing car-centricity also requires supportive measures outside the area of spatial planning, such as taxes, incentives, etc.
2. While Tallinn is well on its way to introducing the 15-minute city concept, according to official news from the city administration, the bottlenecks and site-specific differences of this approach need to be recognised.[19] There are sources that strongly question the feasibility of the concept in low-density urban areas, with a minimum of 2 households per 1 000m^2.[20]
3. Introducing the concept of heritage-centred development as a basic principle for sustainable, broad spatial planning. Prioritising the use of historic buildings of importance to the local community, with additional functions being added where necessary. Prioritising the rehabilitation of historic buildings in the town centre as an activity with a lower environmental footprint, rather than the construction of new buildings, thereby exploiting the positive image of heritage as a competitive advantage. A positive image of place increases people's love of place and strengthens communities, which in turn fosters integration and reduces inequalities between regions.
4. When drawing up master plans, it is necessary to analyse the establishment of heritage areas within the municipality to highlight local heritage.

2.2.4 Further research needed

1. Implementing the 15-minute city principles in a sparse urban space in Estonia (source https://www.cnu.org/publicsquare/2021/02/08/defining-15-minute-city assumes a population density of 2 households per 1000m^2 for the 15-minute city principles).
2. Analysis of historical planning in Estonian cities (e.g. E.Saarinen's Greater Tallinn) to identify successes in implementation and reasons for failure. Historical planning already addressed many of today's challenges, such as decentralised development, rail-based settlement patterns, etc.
3. Illustrative calculations of the cost-effectiveness of technical and social infrastructure and the average distance to destinations at different population densities to illustrate the societal benefits of higher population density.

2.2.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-3 Decisions taken by the Government of the Republic on urban development when drawing up the development plan

	Decision needed
1.	How can we encourage the development of compact urban centres in shrinking areas?
2.	Whether and by what means to densify urban settlements (possible contradiction with Estonians' current residential preferences)?
3.	What can be done to improve the quality of outdoor spaces in apartment buildings and to modernise apartment areas in a holistic way?
4.	How to curb urban sprawl?
5.	How can the rules on the conservation/use of built heritage be changed to achieve the objectives of quality of life and green transition?
6.	How can we make street space human-dimensioned and responsive to the needs of all road users?
7.	What are the options for increasing climate resilience in Estonia's urban environment?
8.	How can we raise awareness of flood risks?

[19] https://www.tallinn.ee/en/news/planning-tallinn-based-15-minute-city-concept
[20] https://www.cnu.org/publicsquare/2021/02/08/defining-15-minute-city

2.2.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-4 Potential contribution of the development plan (DEP) and the national plan (NMP) to be prepared

		DP	NSP
1.	Laying the foundations for the implementation of the principles of the 15-Minute City in a sparse urban space in Estonia, including principles for (re)planning the immediate surroundings of existing new housing estates (within 15 minutes walking distance) to achieve functional public space	✓	✓
2.	Developing and implementing criteria for a sustainable city/town	✓	✓
3.	Agreement on the preservation and prioritisation of the built heritage, including the formulation of expectations for RKAS to enhance the built heritage	✓	✓
4.	Exaggeration of heritage rules and priorities, clarification of cooperation and responsibilities	✓	
5.	Drawing attention to the local heritage, i.e. the potential for highlighting sites and individual objects of interest	✓	✓
6.	Fixing the use of inclusive/universal design principles as an objective in the strategic development document, creating a basis for support measures for their implementation	✓	✓
7.	Defining and setting the objective of a human-friendly streetscape in a strategic development document. Creating the basis for supporting measures to improve streetscapes, renewal of the urban streets standard	✓	✓

2.2.7 Examples of potential indicators

1. Percentage of monuments and buildings of cultural value that are in use, are to be taken in active use or renovated;
2. Linking the results of the nationwide living environment satisfaction surveys more strongly to policy and intervention planning at national and local level, including quality of life in different areas (the share of residents satisfied with the quality of living environment), access to services (travel time and public transportation options) and green spaces (e.g the share of residential units where the green space is within 500 m radius should be more than 75%), and the heritage areas;
3. Breakdown of mobility by age group, urban-rural lifestyle and occupational sector;[21]
4. Estonian car fleet and fleet mileage;
5. Accessibility to destinations by public transport, walking and cycling (travel time and/or frequency of travel mode options).

2.3 Housing

2.3.1 Challenges

A. Estonia lacks an up-to-date housing policy

Estonia does not have a comprehensive view of housing developments. There is a need for an understanding of:

- How alignment of the housing fund with a holistic approach to the basic principles of quality space (from the perspective of the state, local authorities and the private sector);
- What the appropriate share of rented accommodation is;
- What the share of below-market rented housing for certain target groups should be;

[21] Points 3 to 5 are suggestions taken from the Green Tiger Road Map.

- How high quality and social balance in residential areas can be achieved;
- What the regional specificities are that need to be taken into account.

The objective must be to provide quality and affordable housing for all groups of the population. Housing policy should create the conditions for modern housing (which should include both renovation of existing buildings and new housing), based on the principles of high-quality space, taking into account the principles of the energy and green economy and the need to reduce inequalities (*housing inclusion*).

Housing policy must be developed in close cooperation between the public, private and non-profit sectors (see also Chapter 3 on principles for the preparation of a housing development plan) and be based on a people-centred, citizen-centred approach.

In Estonia, since the implementation of the property reform in the 1990s, the development of the housing sector has been driven by market-based decisions or individual cases led by the municipality or state. Although local authorities have also regulated the creation of new housing by means of general and detailed plans, the commercial considerations of landowners have played a very important role in their introduction and implementation. Housing policies, formulated at a strategic level and implemented in a coordinated way, will support the following developments:

1. Long-term planning and coordination of national, local government and community-based interventions and strategic activities;
2. Assessing the consistency of real developments with set objectives;
3. Visibility for all parties involved, which helps coordinate public and private investment, creates a stable operating environment for businesses and also supports, among others, the planning of temporary accommodation for educational institutions and employers;
4. Linking the objectives of the sector to the national strategic planning and development monitoring framework, promoting coherence between sectoral activities.

B. Housing is not affordable for residents

Access to quality and affordable housing is considered to be a human right, and is addressed by all developed countries. In areas of high market demand in Estonia (particularly in the urban areas of Tallinn and Tartu), housing has become unaffordable for young families and other groups of the population. In shrinking regions (peripheral areas of Estonia, including Järva and Jõgevamaa in central Estonia and Ida-Virumaa), the problem is the cost of the modernisation of housing, including a shortage of affordable rental accommodation. Energy and mobility poverty also play a role, with a large share of income being spent on heating and daily travel costs. None of the current national broad-based strategy documents set detailed targets for housing affordability. Strategy Estonia 2035 identifies the improvement of the quality and availability of the building stock through a long-term nationwide renovation programme as a necessary change. Unambiguous principles for the construction of affordable housing (including municipal housing) are not in place at the planning stage.

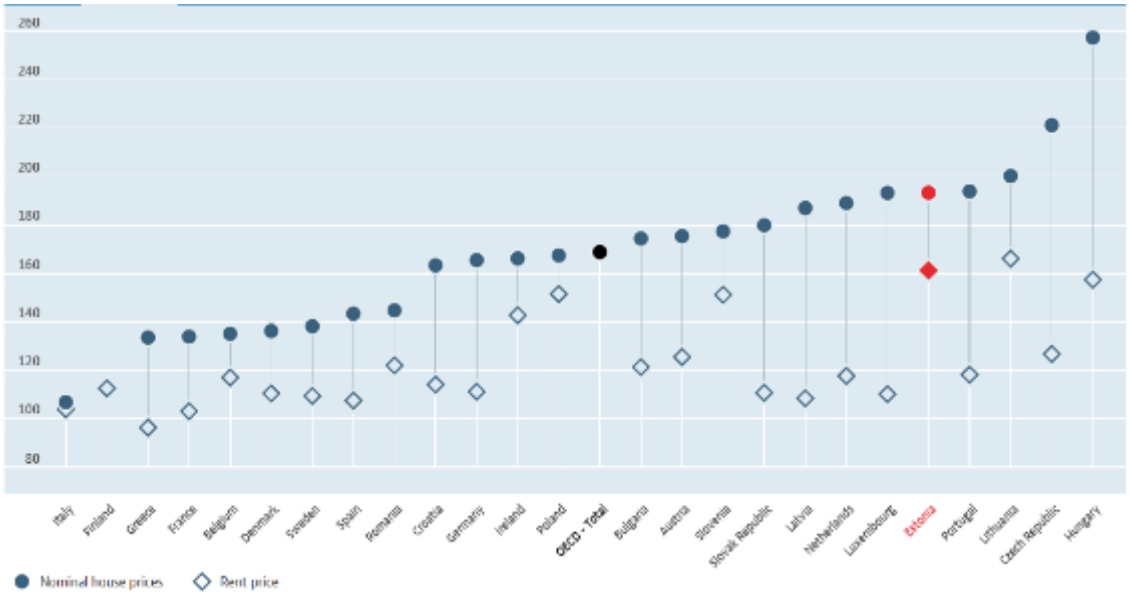
Social groups that have been identified in international studies as being in a weaker position in the housing market are women, young people (with low educational attainment), the unemployed, single parents and multi-parent families, the elderly, refugees, people with disabilities and people with reduced work capacity.[22] Existing support schemes (e.g. rental housing programme for socially

[22] https://www.europarl.europa.eu/doceo/document/TA-9-2021-0020_EN.html

disadvantaged groups and various Kredex services) have improved over time, but their targets and modalities need further work (see section 2.3.4). Inflation in Estonia has been one of the fastest in Europe, with knock-on effects on housing affordability (general increase in prices).[23] In addition, the rapid rise in the Euro Interbank Offered Rate (Euribor) has affected households' ability to purchase real estate.

Housing costs[24] (the maximum allowed share of housing costs in total income) are currently an area not targeted at strategic level in Estonia. The growth in both the sale and rental prices of housing in Estonia has been one of the fastest in the European Union, based on OECD data. Among the other countries, only Lithuania has recorded faster rental price growth than Estonia over the period 2015-2023, while the Czech Republic, Hungary and Lithuania have seen faster growth in purchase prices.

Figure 2-5 Growth in the purchase and rental price of housing (2015=100)



Source: OECD (2023), Housing prices (indicator). doi: 10.1787/63008438-en

Example 2.3-1 European Investment Bank financing instruments

The European Investment Bank (EIB) is lending to Member States to support investment in housing affordability. In 2019, the Bank co-financed the development of 1 100 affordable housing units in Poland, a programme of over 400 million euros in housing improvements in Ireland in 2017, and 500 million euros in France. In 2019, the Bank provided nearly 50 million euros in loans for the development of affordable rental housing in the Madrid region. In 2023, the EIB loan will finance the development of 29 energy-efficient apartment buildings in Finland.

In Estonia, there has been no need to implement the EIB instruments, as access to financial resources has been facilitated by state guarantees.

Sources: European Investment Bank Group. Social and affordable housing overview 2020. https://www.eib.org/en/; https://www.eib.org/en/press/all/2023-066-joo-group-receives-eur100-million-eib-green-loan-for-new-high-energy-performance-residential-buildings-in-finland

[23] https://www.housingeurope.eu/resource-1705/the-state-of-housing-in-europe-2022
[24] This refers in particular to the monthly costs of rent, electricity and heating, which are also taken into account in the calculation of subsistence allowances.

C. Spatial stratification has increased in Estonia

Real estate developments in recent decades have not been conducive to the mixing of different social groups. Both existing residential areas and new housing developments are often monotonous, with car-centric mobility and environment not suitable for social contacts. Parts of metropolitan areas are rapidly gentrifying. The challenge is to maintain and create diverse central areas. None of the current national broad-based strategy documents has set targets for preventing and reducing spatial stratification.

Outside Estonia's growth areas, there is surplus square metreage, but there may not be enough rental or sales space to meet modern requirements and expectations, which in turn can hinder the movement of workers and thus economic development. Investment by property owners may not be justified due to low returns. This has already been partly addressed, e.g. by the state/municipal rental housing programme (one of the objectives being to ensure the availability of quality housing for mobile households and the skilled working-age population); and the provision of public loan guarantees in market failure areas. At the same time, the number of municipalities interested in participating in the rental housing programme has been significantly higher than the financial resources available.

D. The housing stock does not take into account the needs of the elderly, families with young children, people with disabilities.

According to Statistics Estonia, 68% of Estonia's population live in apartment buildings (Statistics Estonia 2022). The vast majority of residential buildings and their surroundings do not take into account modern accessibility requirements - there are no lifts, handrails, wheelchair and pram access, etc. Increasingly, accessibility is one of the issues to be tackled in renovation activities, and accessibility requirements for housing are being developed.

2.3.2 Examples

In most Western countries, housing policy is a central issue in national strategic planning. In many countries, the challenge is primarily one of housing demand in the context of rapid growth, while affordability, energy savings (and avoiding energy poverty), links with the circular economy, climate objectives and also security are common themes as well.

An example of a strategic development document that is well aligned with the country's strategic choices and at the same time provides concrete measures is 2.3.4the Irish housing policy (see Example 2.3-2).

Example 2.3-2 Irish housing policy "Housing for all"

Given the country's overall growth trajectory (with an estimation of an increase in population of 1 million people by 2040), the Irish housing policy sets out four *pathways*:
1) Supporting home ownership and increasing affordability;
2) Ending homelessness, increasing social housing supply and supporting social inclusion;
3) Increasing the supply of new housing; and
4) Making efficient use of vacant housing and existing stock.

A record 20 billion euros of public funding has been earmarked for housing. Housing policy includes a number of specific measures, such as:
- *Help to Buy* (30 000 euros per household), where support is provided to adapt housing to the needs of elderly and disabled people;
- Extending *Rent Pressure Zones*, where the annual rent growth rate must not exceed the rate of inflation in residential areas with high or rapidly rising rents;

- Creating a special tax to stimulate the take-up of vacant land for housing;
- Building approximately 33 000 new homes per year, of which 9 500 will be social housing, in line with, inter alia, *Town Centre First* planning policies.

The implementation of the housing policy will be carried out by a separate cross-cutting structure.

Source: https://www.gov.ie/en/publication/ef5ec-housing-for-all-a-new-housing-plan-for-ireland/

The issue of access to affordable housing has evolved rapidly in Western countries over the last decade. While affordable housing was initially seen as a target mainly for vulnerable groups (refugees, low-income households, etc.), today, the issue is relevant for the whole population. Thus, housing strategies are to address the whole housing issue in a general way and are specifically linked to other sectoral development programmes.

Example 2.3-3 Affordable housing in the Netherlands

The Netherlands has one of the most unique affordable housing programmes in Europe. Affordable housing (also known as social housing in English, *Sociale Huurwoningen in* Dutch) accounts for nearly 80% of rental housing in the Netherlands, and 33% of all housing. There are a number of planning policies in place to ensure the existence of affordable neighbourhoods in all cities, connecting different population groups. A prominent example is the IJburg residential area in Amsterdam - a dense residential area of 45 000 inhabitants on a man-made island on the shores of the Natura 2000 designated IJssel lake. The housing is built according to a fixed rule - 30% affordable rental units, 30% privately purchased units, 40% market-rate rental units (on the island of Steigereiland 40% affordable rental units, 40% mid-market rental and purchase units and 20% higher-end purchase units). The distribution of housing types must be respected in each quarter to avoid social stratification and to ensure interaction between different groups of residents. However, tensions between different groups do occur, but these are prevented by organising joint events. The high proportion of families with children contributes to integration, with children's playgrounds and the local children's football team bringing residents from different social groups closer together.

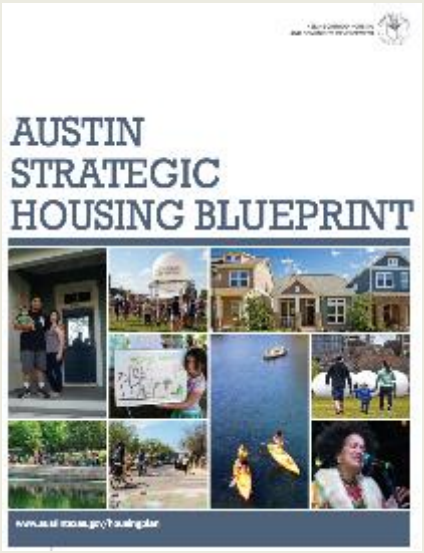
IJburg urban plan © dRO Amsterdam

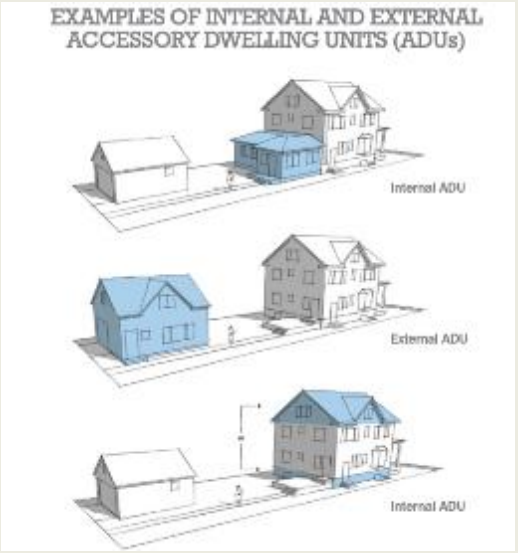
Source: https://www.parool.nl/nieuws/ijburg-breidt-uit-met-nieuw-eiland-voor-20-000-bewoners~bc55eb4b/?referrer=https%3A%2F%2Fwww.google.com%2F

In the United States, one of the areas with the greatest housing challenges is considered to be Austin, the capital of the state of Texas, among others (see Example 2.3-4). The traditional large-plot, single-family residential zoning, in force since 1986, plays a role here.

Example 2.3-4 Austin, Texas Strategic Housing Plan

The 2017 Strategic Planning Document sets numerical targets for affordable housing for the next ten years. It also identifies key actions to preserve community assets, reflects funding mechanisms and possible planning solutions, such as additional housing as an extension to or adjacent to an existing building (see below). However, in six years, the plan has not made significant progress, due to strong opposition from current private landlords.





Source:
https://www.austintexas.gov/sites/default/files/files/StrategicHousingBlueprint_Final_September_2017.pdf

The housing market in Norway has similar characteristics to Estonia, with a low share of rented accommodation (24% of all living space in 2020)[25], high housing costs, a high share of seasonal second homes (estimated at one for every six households) and spacious dwellings (45% of the population aged 44 years and beyond live in very large dwellings with more than 3 rooms in total). The OECD Economics Unit has produced a guidance document "Making Norway's housing more affordable and sustainable" for 2022, recommending, among other things, higher taxation of owner-occupied housing.[26]

2.3.3 Recommendations

1. A strategic framework for the development of housing is needed to guide specific interventions in the long term. There is a need to address issues arising from EU guidelines, such as the:
    - Quality of available housing space (including social space by preventing stratification and promoting social inclusion);
    - Affordability for different groups (including young people embarking on housing careers[27]);
    - Suitability of housing (including cultural factors arising from the increasingly diverse ethnic composition); and
    - Housing security.[28]
2. There is a need to formulate and implement national guidelines and local principles (in master plans and other local development documents) to regulate housing development in a way that supports the *social mix*, the wider use of different forms of property ownership and the availability of housing.
3. Resolving legal issues related to the modernisation of the existing housing stock. Fragmented property rights make it difficult to reach agreements on innovative renovation solutions. For example, legal solutions are needed for so-called energy donation, where a fully renovated building produces energy for an adjacent building that cannot be renovated, for example, for heritage reasons, using renewable energy solutions.
4. Create a system of metrics to define a household in need of affordable housing. In addition, create a mapping exercise analysing affordable housing needs by region.[29]

2.3.4 Further research needed[30]

1. Regional overview of the proportion of housing costs and impact of interventions so far. How to avoid a price rally in big cities and contribute to the housing market in peripheral centres?
2. An overview of ways of coping with energy poverty and their impact on society.

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25 OECD. 2022: Making Norway's housing more affordable and sustainable. Source: https://www.oecd-ilibrary.org/economics/making-norway-s-housing-more-affordable-and-sustainable_c740833e-en

26 https://www.oecd-ilibrary.org/economics/making-norway-s-housing-more-affordable-and-sustainable_c740833e-en

27 Housing career typically refers to the progression or trajectory of an individual or household's housing situation over their lifetime. It describes the various stages and transitions people experience in terms of their housing arrangements.

28 The TENLAW project, funded by the European Commission, found that there is housing insecurity in Estonia, which leads to a lack of planning for e.g. family expansion and indirectly hinders social inclusion (see https://cordis.europa.eu/project/id/290694/reporting).

29 https://www.oecd.org/els/family/HC1-5%20Overview%20of%20affordable%20housing%20indicators.pdf

30 Numerous studies and analyses have been carried out in the field of housing, e.g. "Programme of publicly supported rental housing. Overview of the measure." 2022; "Report on the analysis of the accessibility of the KredEx apartment buildings measure.", 2021; Survey of Estonian small settlements. Hendrikson&Ko and TUT, 2019; Recommendations for local authorities on housing management. TREA, 2018; Development of the measure on subsidies for the renovation of apartment buildings - Final report. TREA, 2018 ; "Analysis of the implementation options for the measures of the publicly supported rental housing programme". KredEx and PwC, 2016; Attitudes of Estonian residents and the situation on the housing market. Faktum & Ariko, 2016; Comparative legal analysis of solutions to the problem of empty apartment buildings and housing association debts. Civitta & Sorainen, 2016; Tallinn residential suburbanisation scenarios and the future of "sleeping quarters". TUT, 2015; Necessity of a rental housing fund among 50+ residents. TUT, 2015; Availability and need for rental housing. Analysis of student evaluations. TUT, 2013; Perspectives on comprehensive spatial renovation of residential areas based on regional and demographic trends. ECHA, 2015.

3. Developing a definition of affordable housing and mapping the types of housing needed - what types of affordable housing are needed, for whom and where; what are the user profiles.
4. An overview of solutions to ensure access to housing in the Estonian context, which also prevent and reduce spatial stratification, and promote the use of existing housing stock (e.g. *social housing association*, housing cooperatives or housing associations; *co-housing/collaborative housing*, housing designed in partnership with tenants, where shared spaces play an important role). The solutions must relate to both the renovation of existing buildings and the design of new housing (e.g. *social housing association*, housing cooperatives or housing associations; *co-housing/collaborative housing*, housing designed in partnership with tenants where shared spaces play an important role).
5. Which housing accessibility instruments (subsidies, guarantees) implemented so far have worked (comprehensive ex-post evaluation of the impact of the different measures)?

2.3.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-5 Decisions to be taken by the Government of the Republic in the field of housing when drawing up the development plan

	Decision needed
1.	What is the strategic framework for guiding long-term housing interventions?
2.	How can the construction of affordable housing be guided in a sustainable way, taking into account the principles of quality space?
3.	Who and how advises and finances the planning and construction of affordable housing?
4.	What instruments should be used to steer development to increase spatial social diversity?
5.	What additional housing instruments are needed (including European Investment Bank housing instruments, limiting rental growth)?

2.3.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-6 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Establishing a framework for housing policy design and implementation	✓	
2.	Setting a target for access to and affordability of housing	✓	✓
3.	Mapping of critical areas, risk factors and risk groups in terms of housing costs		✓
4.	Development of housing accessibility policies, taking into account both new and existing real estate (including conversion of existing buildings, e.g. vacant industrial sites into housing complexes or vice versa, tax policy, housing recycling - re-use of residential buildings, possible extension to related service functions), with the need to avoid segregation and promote social cohesion	✓	
5.	Developing principles for affordable housing (for whom, what, where and with what life-cycle perspective - as a temporary or long-term solution, and taking into account that it does not increase segregation and supports social integration)	✓	
6.	Defining criteria for the construction of affordable housing in cooperation between owners and the private sector, local authorities and the state	✓	✓
7.	Setting a target for increasing social spatial cohesion	✓	✓
8.	Developing the basis for actions to increase social spatial cohesion	✓	

		DP	NSP
9.	Setting guidelines for the balanced development of market failure areas[31]	✓	✓
10.	Elaboration of principles for the development of the housing sector in deprived areas	✓	
11.	Systematic development of the rental market, measures to promote the availability of affordable rental housing.	✓	

2.3.7 Examples of potential indicators

1. Satisfaction level with the home and the environment;
2. Share of housing costs in household expenditure for owner-occupied and rental housing;
3. Ratio of housing costs to average wages;
4. Construction price index;
5. Proportion of owned and rented homes;
6. Physical accessibility of the dwelling for all groups of residents;
7. Percentages of the level of energy performance certificate of residential buildings;
8. Construction confidence indicator, which describes the development perspectives for the construction sector[32].

2.4 Sustainable construction and energy efficiency of buildings

2.4.1 Challenges

A. Design practices that reduce the environmental impact of buildings and promote energy savings are not widespread

The principles of building siting, poly-functionality and diverse land use patterns, 15-minute city, reduction of involuntary movements, conscious consideration of the ecological footprint, application of a district or wider area energy saving model instead of a single building (including building energy donation) and other specific planning methods to ensure energy savings in buildings have not yet taken root in Estonia as specific planning principles.

B. There are no comprehensive solutions for the renovation of Soviet-era apartment districts

Compared to other Eastern and Central European countries, Estonia's high-rise residential areas are generally in a relatively good condition, including rather low stigmatisation. The upgrading of residential areas has mostly been led by cooperatives and on a building-by-building basis so far. A good example of the regeneration of the outdoor space between housing estates is Annelinn in Tartu, where, under the initiative of the city administration, among other things, the so-called "light traffic arc" (a curved road for pedestrians and cyclists connecting the former micro-rayons of Annelinn) was revitalised. In particular, the focus will be on the complete renovation of the building in terms of energy efficiency, indoor climate and sustainability (technical quality of solutions).

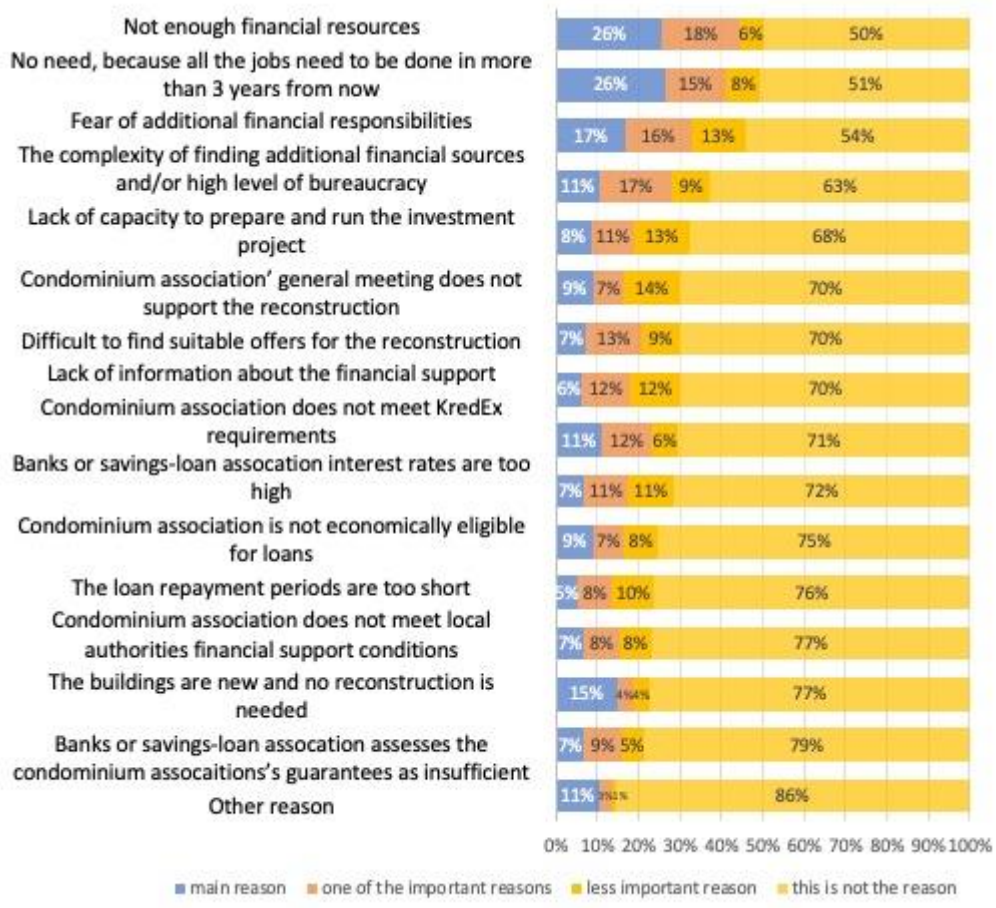
C. Renovation of residential buildings is expensive and complex, also due to Estonia's ownership structure

In Estonia's private property-centered housing structure, it is difficult to carry out building renovations; a replacement development of a dilapidated apartment building—a *greenfield development*—is incomparably easier. New construction compared to reconstruction is considerably less expensive. The

[31] In the context of the renovation of existing buildings and the availability of rental space
[32] This indicator is regularly published by Eurostat. Accessible from: https://ec.europa.eu/eurostat/databrowser/bookmark/00b2943c-65b4-45b5-a43e-d5c7aeeeef08?lang=en

target has been set to renovate around 14 000 apartment buildings. Estonian market in terms of renovation (specialists, construction companies, materials) is small and at the same time the decision-making processes within housing associations are complicated. The residents posess different levels of socio-economic capacity to finance renovation. Thus it is important to ensure sufficient financing possibilities and different support systems (counselling, clear regulations, digital tools).

Figure 2-6 Reasons why condominium associations do not plan to carry out reconstruction works in the next three years, N=190



Source: Praxis, EY 2022[33]

D. There is no obligation to calculate the carbon footprint of buildings and residential areas

In Estonia, there is still no legal obligation to analyse the carbon footprint of procurement, planning, construction and renovation in advance. The design of new buildings does not take into account the whole life cycle of the building and the ecological footprint of the construction activity. The lifespan of buildings, the need for renovation, the durability of materials, etc. are largely ignored in building design.

[33] Michelson, A., Nuiamäe, M., Paat-Ahi, G., Friedanthal, K., Toomsalu, H., Meier, H., Reinstein, M.-J., Merilo, M., Vendla, E. (2022). Ex-ante evaluation of the financial instruments proposed under cohesion policy for the period 2021-2027 for the Ministry of Finance.

E. The buildings are poorly maintained.

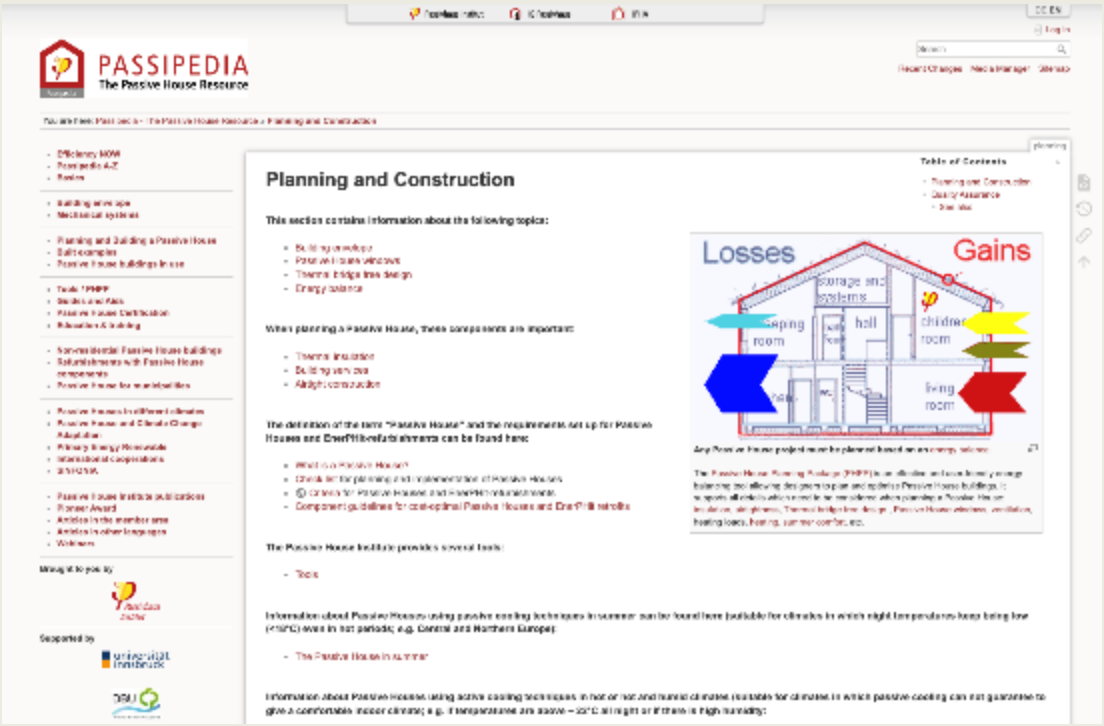
Regular maintenance prolongs the life of buildings. In Estonia, there are still no principles, user and maintenance manuals for long-term maintenance. Continuous maintenance of technical systems is considered particularly difficult.

2.4.2 *Examples*

Energy efficiency is an area that concerns all citizens, which is why countries have made efforts to share relevant information quickly and easily (see Example 2.4-1).

Example 2.4-1 Passipedia, the passive house information portal

The Passivhaus Institute is an independent research institute headquartered in Darmstadt, Germany, which, in addition to its research activities, maintains a comprehensive information portal on the planning, design and management of passive houses. The web portal contains plenty of useful information materials and guidelines.



Source: ***https://passiv.de/***

2.4.3 *Recommendations*

1. Introduce a carbon footprint calculation obligation for buildings and residential areas.
2. Strengthen requirements and compose guidelines for the introduction of environmentally sustainable planning practices.
3. There is a need to agree on the division of roles between the state and the municipality (energy efficiency is the responsibility of the state, outdoor space is more the responsibility of the municipality) in the overall solution for the renovation of the residential area (buildings and modern outdoor space between buildings).
4. Establish principles, standards and guidelines for ongoing maintenance.

2.4.4 Further research needed

1. Specific principles for the construction of new buildings that ensure climate resilience and energy savings, applied to Estonian conditions, and their testing in pilot projects.

2.4.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-7 Decisions to be taken by the Government of the Republic in the field of green building and energy efficiency of buildings when preparing the development plan

	Decision needed
1.	How to consider the carbon footprint of planning and construction?
2.	What are the possibilities for introducing design methods that promote energy efficiency and energy savings in buildings more widely?
3.	What could be the numerical-spatial requirements for the implementation of climate action?
4.	What are the possibilities for supporting the comprehensive renovation?
5.	What are the possibilities for diversifying the layout of the interior of an apartment?
6.	What is the division of roles between local and national level?
7.	What are the principles of long-term maintenance of buildings, who is responsible for it?

2.4.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-8 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Setting numerical-spatial targets for climate security	✓	✓
2.	Setting requirements to increase climate resilience	✓	✓
3.	Setting requirements for the use of energy-saving design principles	✓	✓
4.	Developing the basis for a regional approach to renovation	✓	✓
5.	Developing design principles and methods that promote energy efficiency and energy savings in buildings and setting requirements for their use	✓	✓
6.	Setting targets for overall renovation	✓	✓
7.	Developing measures to promote healthy renovation.	✓	
8.	Developing principles for the long-term maintenance of buildings and technical systems	✓	

2.4.7 Examples of potential indicators

1. Greenhouse gas values for buildings;
2. Percentage of energy efficient buildings;
3. Smart readiness indicator, which describes the readiness of buildings to implement smart energy solutions, both from the point of view of occupants and technical solutions.[34]

[34] https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator/sri-implementation-tools_en

2.5 Urban Nature

2.5.1 Challenges

A. There is little awareness and appreciation of urban nature that can reduce the ecological footprint of urban sprawl

The benefits and values associated with urban nature (mitigating the effects of heat islands and flooding, optimising heating and cooling costs, etc.) are poorly understood in the design of space. Spatial decisions (e.g. local authority budget decisions, planning, design conditions) do not pay sufficient attention to urban biota and its ecological status. Nature-based solutions (e.g. on-site rainwater infiltration, heat island mitigation) are not widespread. A change of mindset is needed - things can be done differently to achieve broader goals with the same money. A green urban environment is not just about big trees. Urban environments are often much more biodiverse than monoculture fields. By thinking about urban nature, positive changes can also happen quickly, for example, the nightingale has returned to an unmown park in Tartu after only a year.

B. Residential areas lack high quality green spaces that support the living environment

Urban (and other high density) green spaces are monotonous and do not support biodiversity, urban connectivity and climate change resilience. There is limited access to high quality green spaces which supports a diversity of species and uses, and can support people's mental and physical health. However, green spaces are not readily available in different areas. Successive versions of the Population Health Plan have emphasised access to physical activity, but change has been slow. Urban landscapes need to form a network both within the city and in relation to the wider area, and consider the need for green space when making development plans.

Green areas are created and maintained without regard to the principles necessary for the conservation and development of biodiversity, including habitat diversity and condition, and urban habitat connectivity. The use of green spaces in urban areas, e.g. for nature-based stormwater management, etc., is very modest. Restoration of degraded or poor ecological status communities (e.g. grasslands) is modest. Little use is made of vertical vegetation and green roofs (with native species). *Blandscaping*, where infrastructure and landscaping are based on landscaping trends rather than existing natural assets, is common. The use of impermeable ground cover is also common. In urban environments, green spaces are often lacking. Urban greening is as much about the micro scale (e.g. traffic islands in the street) as the macro scale. Soil depletion is a problem, and landscaping should make greater use of existing soil rather than replacing it.

C. Continued expansion of human-used land at the expense of natural areas and communities

In 30 years, the area[35] under settlement in Estonia has increased by 225 thousand hectares (+7%). At the same time, the number of Estonian inhabitants decreased by 15%. This means that the area of land under human occupation has gradually increased, despite the decrease in population, although the

[35] Residential area - a densely built-up area with roads, streets and squares, paths, parks, industrial and manufacturing land, sports facilities, airfields, legal dumping sites. Building plots and individual buildings with a yard/garden area of up to 0.3 ha. Quarries are also included: areas used for the surface extraction of mineral resources under mining concessions, excluding freestone fields. Source: Statistical Office

number of inhabitants has decreased significantly. New developments are predominantly *greenfield*[36] rather than *brownfield*[37].

Developments are often located in green spaces around densely populated areas, i.e. in natural and recreational areas close to the city, where good ecological status of habitats should be promoted and, where necessary, ecological restoration of ecosystems should be ensured. To this end, valuable and potentially valuable natural areas in the peri-urban area should be mapped out and given special protection status as 'natural assets' of the area (not only boreal forests, but also bogs, meadows and other ecosystems valued as habitats in Estonia).

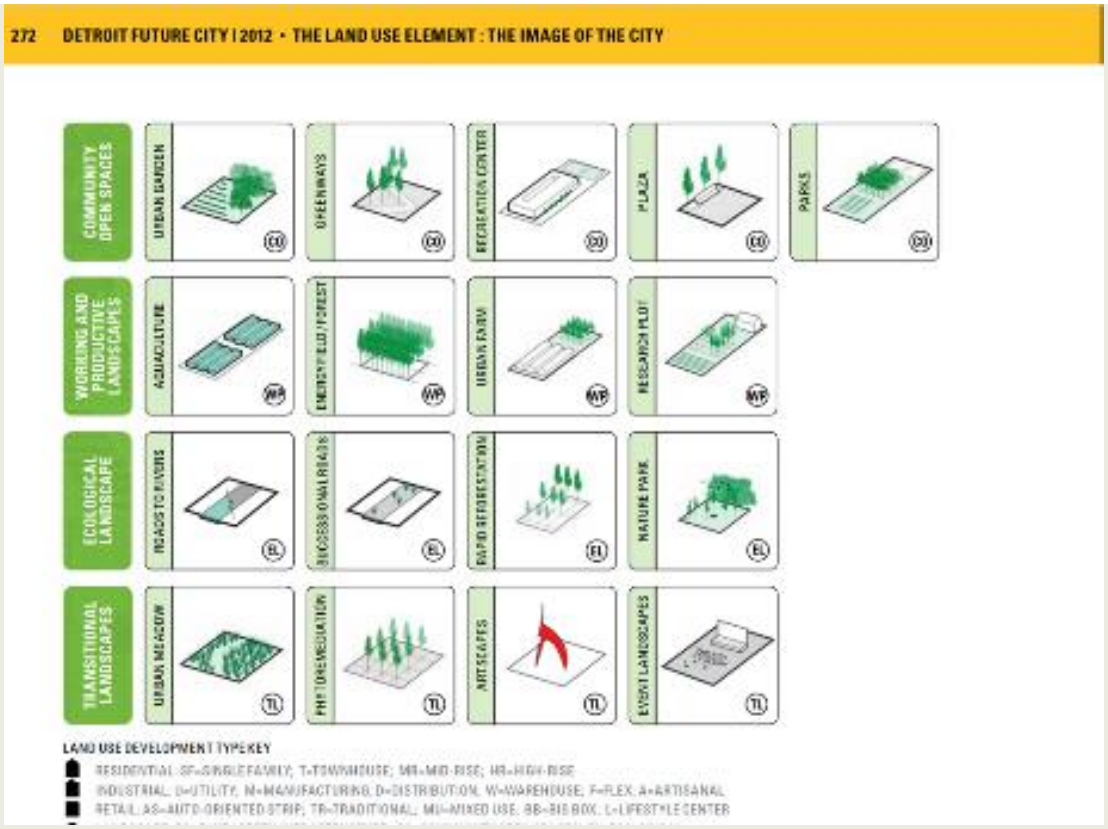
2.5.2 Examples

Urban landscape is given careful attention in most metropolitan planning and other development documents, but implementation is often a challenge. Detroit's long-term plan (see Example 2.5-1) is an exception in this respect, with a ten-year plan almost fully implemented.

Example 2.5-1 Thoughtful design of diverse green spaces - Detroit Future City 2012

For 10 years now, the strategic plan for rapidly shrinking Detroit has been to "return" vacant urban space back to nature, with diverse uses of green space. The plan's attractive visual language explained the benefits and diverse functions of green space in simple, straightforward terms. The plan is now largely implemented.

[36] Greenfield developments refer to real estate developments in previously undeveloped areas.
[37] Brownfield developments refer to real estate developments in abandoned, idle, or underutilised commercial or industrial properties.



Source: https://detroitfuturecity.com/resources/strategic-framework/

2.5.3 Recommendations

1. Support urban nature-related initiatives in educational and research institutions, as well as citizens' initiatives.
2. Produce guidance material on the planning of diverse green spaces, introduce planning practices and a programme of activities.
3. Set limits to the continuation of *land take* - develop regulations to curb the expansion of land under human use.

2.5.4 Further research needed

1. Preparation of a methodological guide for urban green network planning and the introduction of tools to ensure the growth of functional greenery.
2. An overview of what interventions have been used to tackle the *land take* problem.
3. A collection of positive examples of diverse urban greenery, with an analysis of how legislation can encourage its creation.

2.5.5 Decisions

The main decisions to be taken in the preparation of the development plan resulting from the regional seminars, the workshops and the analysis of the expert group are set out in the table below.

Table 2-9 Decisions to be taken by the Government of the Republic in the field of urban nature when preparing the development plan

	Decision needed
1.	How can we ensure that the benefits of urban nature are taken into account in the design space?

	Decision needed
2.	How can we promote the availability of green spaces in existing and new residential areas?
3.	How can green spaces be valued and used to adapt to climate change and preserve biodiversity and natural communities?
4.	What interventions are appropriate for Estonia to replace *greenfield* developments *with brownfield* developments?

2.5.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-10 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Setting targets for designing space based on the benefits of urban nature	✓	✓
2.	Developing the measures to promote urban design based on natural environment	✓	
3.	Agreeing and targeting the use of nature-based solutions in urban spaces to respond to different environmental and social challenges, support and restore biodiversity and improve the carbon storage capacity of densely populated areas	✓	✓
4.	Setting targets for the spatial availability of green spaces	✓	✓
5.	Agreeing on principles for valuing green spaces and managing them in an ecologically sustainable way (including human-used green spaces outside cities)	✓	✓
6.	Developing guidelines for the use of green spaces (overview of benefits of green spaces, recommendations, rules)	✓	
7.	Setting a target for reducing the share of land in human use and backing it up with the necessary interventions	✓	✓

2.5.7 Examples of potential indicators

1. Percentage share of the built environment in the total territory of the municipality or settlement to monitor the rate of expansion of the area under human occupation, i.e. settlement area;
2. Percentage of renovated and new residential, public or commercial areas that use nature-based solutions;
3. Indicators describing the accessibility and quality of green spaces in urban areas, e.g. area of green spaces per capita, proximity of green spaces to residents (in minutes or metres), abundance of native species, proportion of green spaces in the densely populated area in a given location.

2.6 Mineral resources

2.6.1 Challenges

A. Increasing demand for different mineral resources affects the living environment

The change of direction in the use of different mineral resources, mainly due to the needs of the green economy, could lead to situations where the focus is on the critical raw materials (rare earths, vanadium) needed for such an economy to function, while on the other hand, fossil raw materials used in the energy economy are abandoned. In the context of Estonia, this means closing large-scale oil shale mines and planning new functions for existing mining sites. On the other hand, the potential exploitation and refining of new resources (e.g. phosphogypsum and associated resources or magnesium-rich technological dolostone) may have an impact on the development of new industrial sites and associated infrastructure. In addition to the above, there are a number of mineral occurrences

in Estonia that may prove to be of interest as a resource in the future. Knowledge of hitherto under-exploited mineral resources and their processing technologies is increasing (e.g. ore deposits, iron ore, polymetals, etc.). It is therefore necessary to take into account potential new mineral resources whose exploitation may have an impact on the future environment.

The expansion and modernisation of the built environment is creating an increased demand for construction minerals and, at the same time, it is also putting pressure on the use of existing and potential minerals located in close proximity to residential areas or in valuable landscapes, valuable agricultural land and green areas. In order to address the conflicts arising from these overlaps, the state has initiated thematic plans for Harju, Rapla and Pärnufor construction mineral resources[38]. In the future, the preparation of such thematic plans will be extended to other counties. To this end, basic geological studies will have to be intensified so that the information available at the time of drafting and approving thematic plans is sufficient and of good quality. Applications for and the processing of extraction permits for construction minerals must take account the regional demand.

Large infrastructures require large quantities of local construction minerals (sand, gravel and limestone), so it is impractical to transport them far. Construction mineral supplies need to be planned on a regional basis. It is also necessary to look at the distribution and quality of construction minerals, which is not the same everywhere in Estonia. For example, sand in general can be found everywhere in Estonia, but reserves of construction sand (higher quality sand) are more limited compared to reserves of aggregates. Gravel is a much rarer mineral than sand - it is not found everywhere and its reserves are smaller than those of sand. Limestone of higher quality is found only in northern Estonia, where the Väo stratum and its openings extend from Paldiski to Narva, with a slight decline in quality to the east. Towards the south, limestone quality decreases, from central Estonia onwards limestone is not available.

The Mineral Deposits Policy 2050 considers it important that the user of the environment should at all times manage land and soil to make it fit for purpose and compatible with future uses. The guidelines for remediation are already set out in the application for a mining permit. Municipalities can have a say in the permitting process and also at the remediation project stage. In the context of master planning, it has proved difficult to change the conditions for the future use of exhausted mineral deposits. Mining and the production of various materials cause disturbances to the living environment, and the impact on the living environment should therefore be analysed and mitigated as a whole, in addition to the natural environment.

B. Quarries and mines should be used not only for mining, but also for multifunctional purposes

Quarries should also encourage other activities in addition to mining, e.g. crushing and fractionating bricks and concrete, producing asphalt mixes for road construction, producing renewable energy (solar and wind farms), etc., in addition to the extracted mineral itself. A good example of a multifunctional use of a quarry is the production of asphalt plant at the Harku quarry. There is also potential of using closed quarries to produce geothermal energy.

[38] https://www.fin.ee/riik-ja-omavalitsused-planeeringud/ruumiline-planeerimine/maakonnaplaneeringud

2.6.2 Examples

The impact of mining on the living environment has been a concern for decades. The practice of redeveloping former mining sites has developed rapidly (see Example 2.6-1). The subsequent use of former mining sites is also diversifying in Estonia, with good examples being the Paepark in Lasnamäe and the planned vineyard at the Marinova quarry in Setoma in the near future.

Example 2.6-1 Eden Project, "Global Garden" in a former clay mine

For twenty years, one of Cornwall's best-known visitor attractions has been the magnificent botanic garden in a former clay quarry. A community initiative, the garden, which now hosts over 750 000 visitors a year, cost 85 million pounds to build in 2001, half of which was funded by the Millennium Commission, the national fund for public works. The starting point for the project was to demonstrate the potential for positive change. Grimshaw Architects, who designed the garden with bioomes (tropical humidity domes), are designing new 'Edens' around the world.

*Source: **https**://www.edenproject.com; https://revitalization.org/article/eden-project-worlds-spectacular-reuse-mined-land-expand-globally/; https://www.greatbritishgardens.co.uk/cornwall/item/eden-project-near-st-austell.html, https://grimshaw.global/projects/culture-and-exhibition-halls/the-eden-project-the-biomes/*

2.6.3 Recommendations

1. Intensify complex geological mapping (1:50,000) and focused mineral exploration to identify potential prospective areas.
2. Continue complex geological studies of the Estonian subsurface to link major projects affecting the living environment with the threats and opportunities arising from the subsurface.
3. Continue the preparation of regional thematic plans on mineral resources, which will create the conditions for ensuring the best possible security of supply of mineral resources for construction.
4. Update the "Handbook on the remediation of exploration and extraction areas for construction minerals" published in 2017.[39]
5. Explore further the potential for innovative solutions in road construction, including, where appropriate, modifying requirements for road design and construction to increase security of supply and reduce extraction of construction minerals.
6. Re-assess, in accordance with the current general geological survey and geological exploration procedures, the reserves at least in those areas where the reserves of construction minerals are critical, in order to have reliable information in the Mineral Resources Register on the characteristics and uses of construction minerals for the purposes of assessing security of supply.
7. Flexibility in the remediation guidelines set out in the application for an environmental permit, allowing for the possibility to adapt or modify these guidelines over time.

2.6.4 Further research needed

1. Analyse the potential and scale of the introduction of alternative materials and innovative solutions to replace construction minerals.
2. Analyse the potential uses of raw materials (such as rare earth elements in phosphorus) for the green and digital economy, alongside possible on-site beneficiation options (including in the context of phosphorus as a raw material for its own fertiliser) and its impact on the wider environment including logistics, infrastructure, jobs, etc.
3. An overview and analysis of how to motivate companies to redevelop brownfield sites in a way that creates high quality space and multifunctional uses close to residential areas.
4. Analyse the establishment of a statistical overview of the use of construction land resources.

2.6.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-11 Decisions to be taken by the Government of the Republic in the field of mineral resources when drawing up the development plan

	Decision needed
1.	How can we ensure the supply of high quality building materials to infrastructure and the building materials industry in the most sustainable way possible, taking into account the potential for alternative materials and innovative solutions?
2.	Is it necessary to exploite new mineral resources and to develop the corresponding multi-faceted infrastructure that would be needed?
3.	How to take into account environmental values in the management of mineral extraction?

[39] https://digikogu.taltech.ee/en/Item/71b86de4-a8e5-4bd2-a8b4-c37ec918df78

2.6.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-12 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Setting targets for the sustainable development of exploration, extraction and further processing of construction minerals	✓	
2.	Respecting the values of the living environment in mining and in the post-exploitation use of mineral deposits - agreement and target setting	✓	✓
3.	Flexible and multi-functional use of quarries and underground mines in addition to mineral extraction	✓	✓

2.6.7 Examples of potential indicators

1. The area of mineral land reserves; and
2. Number of multifunctional quarries.

2.7 Materials and circular economy

2.7.1 Challenges

A. Circular economy principles not in use

The White Paper on the Circular Economy (2022)[40] highlights the challenge that the circular economy is not firmly rooted as a cross-cutting framework in Estonia. Selecting materials in the most environmentally friendly and sustainable way possible, optimising material quantities, slowing down the use of materials (extending product life) and recycling products/materials/waste will help to reduce disturbance to the environment and mitigate climate change.

B. Modest reuse and recycling of materials

Separate collection of construction waste often lacks motivation and opportunity for reuse, and *urban mining* is hampered by quality requirements and entrenched building practices. The inappropriateness of materials used in old buildings for new buildings and the complexity of using them have also been described as barriers to the reuse of materials. In the future, there will be an increasing use of composite materials (e.g. wood combined with adhesive resins, with metal and plastic details added for precision and durability; as well as concrete admixtures); these will be difficult to sort and consequently reuse. There is no adequate information in the building register on the specific materials used. The demolition of buildings should be considered as dismantling, where buildings should be designed to be demountable and the standards should be updated accordingly. It is also necessary to ensure that the designer has access to the demolition project information.

Introducing the reuse of building materials requires changes in design practices, e.g. the use of an old component cannot be required, but rather reuse of the material; consequently, requirements for filling tools need to be relaxed. A supportive network is needed for the marketing of recycled materials to avoid materials sitting idle for years.

[40] https://ringmajandus.envir.ee/sites/default/files/2022-06/Ringmajandus_valge_raamat.pdf

C. Slow uptake of renewable and/or low-carbon materials in construction

The construction sector is conservative by nature, which often makes the introduction of new solutions difficult and time-consuming. In Estonia, wood is used less in construction than in Scandinavia, for example.

Research and development for the deployment of new building materials must contribute to several objectives at the same time.[41] Modern building materials must respect the principles of the circular economy (reuse and re-use of existing resources, recyclability of building materials), be affordable, promote access to housing, but at the same time support human health, for example by improving indoor air quality. There is also an expectation (and increasingly a requirement) for building materials to have a low environmental footprint and to sequester carbon over the long term.

2.7.2 Examples

The Nordic countries are at the forefront of material recycling and reuse. Popular examples include "material banks" (see Example 2.7-1 and Example 2.7-2).

Example 2.7-1 Pådriv Arena, Oslo *material bank"

Pådriv is a sustainable urban development partnership in Oslo, which includes a shared materials management space in Hovinbyen. It aims to reduce the climate footprint of construction activities in Oslo by promoting a circular economy and the reuse of materials in the city to reduce transport waste. The initiative highlights the complexity of managing circular and recycled materials, which requires cooperation between different actors, including public authorities, industry associations, consultants and businesses. Space constraints are a challenge for materials management, and municipalities need sites for recycling. By recycling materials, Oslo can extend the life of its high-quality resources and reduce the transport emissions associated with mineral waste. This is particularly important as local resources of aggregates are expected to run out before 2050.

Example 2.7-2 Kaj 16 in Gothenburg - Use of former buildings as material banks

On average, 90% of current buildings will exist in 2050, so it makes sense to treat them as material banks. In Sweden, this has been done in Gothenburg in the Kaj 16 construction project for a new residential area with a focus on reuse. The idea behind Vasakronan, the developer of Kaj 16, is to minimise the building's carbon footprint through the reuse of on-site materials. The aim was to reuse all concrete, 70% of all sheet metal used in the façade and steel, 50% of all material used to finish the frame and form the space, and at least 25 different product groups on the installation side. Further examples of the Kaj 16 project's recycling efforts include:

- 100% of all steel is recycled;
- 100% of all office acoustic ceilings are recycled;
- 100% of all glass partitions are recycled;
- The metal sheeting of the façade of the 1100 m2 old building will be reused;
- 100% of all fittings are made of recycled steel;
- 100% of all cable trays are reused.

Source: https://ramboll.com/projects/group/kaj-16-gothenburg

[41] https://ec.europa.eu/docsroom/documents/40541/attachments/1/translations/en/renditions/pdf

2.7.3 Recommendations

1. Create "material banks" to encourage the re-use of materials.
2. Transform design practices and standards to boost the circular economy.
3. Improve the building register by adding details of materials used.

2.7.4 Further research needed

1. Interactive mapping of empty and demolished buildings, updated over time, to understand the spatial arrangement of materials used;
2. Design on how to buildings may be dismantled and what to do with dismantled materials (through pilot projects);
3. Preparation of an overview of the spatial needs of the circular economy;
4. Identification of regulatory barriers that exist in the field of re-use of materials and the circular economy and how to remove them;
5. An overview of possible activities to boost the circular economy (e.g. distribution of milled wood to residents, material banks).

2.7.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-13 Decisions to be taken by the Government of the Republic in the area of materials and circular economy in the preparation of the development plan

	Decision needed
1.	How to take into account environmental values in the production of building materials and to use materials already present in the built environment?
2.	How can we spatially support the objectives of waste reduction and the promotion of the circular economy, including the promotion of circular economy solutions for quality space and living environments?
3.	How can we integrate reuse thinking into the design of buildings and design construction processes to minimise material use?
4.	Which digital solutions would support the uptake of circular economy principles?
5.	How can we encourage the uptake of wood and other low-carbon materials as building materials?
6.	What interventions or regulations can be put in place to encourage the construction sector to favour comprehensive renovation over demolition and new construction?

2.7.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-14 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Agreeing on the principles of a circular economy for a quality living environment	✓	✓
2.	Raising awareness among people, businesses and institutions about the need for re-use/recycling	✓	
3.	Development of a national support scheme for municipalities (pilot projects) for the separate collection of materials from demolished buildings and their use in new public buildings	✓	
4.	Developing principles for demolition as demolition to ensure the reuse of building materials	✓	

		DP	NSP
5.	Creation of the basis for a nationwide database of buildings to be demolished, available materials, quantities, locations, testing possibilities, etc	✓	
6.	Developing a legal requirement for a certain proportion of the building or materials to be reused	✓	
7.	Establishing and implementing a system of green construction procurement. Piloting and demonstration procurement	✓	
8.	Introducing an environmental label for buildings and an environmental declaration for building materials (including environmental footprinting)	✓	
9.	Refining of wood as building material	✓	

2.7.7 Examples of potential indicators

1. Reuse rate of construction materials;
2. Proportion of green building contracts.

2.8 Competences

2.8.1 Challenges

A. Municipalities and public authorities lack manpower to deliver a high quality living environment

Professional specialists are needed to design quality living environments and make competent spatial decisions. Jobs for architects in local governments often remain unfilled because professionals are not offered the professional tasks and responsibilities associated with creating space and vision. Municipal work in the preparation of planning and spatial decisions is not valued and is seen as bureaucratic and over-regulated.

B. Quality of life and circular economy not sufficiently reflected in higher education and continuing vocational training of architects and planners

Continuous (not project-based) training of specialists (especially local government officials) is needed, as well as the transformation of higher education to take into account the challenges of quality spatial design, climate change and the circular economy.

C. Research and development in spatial planning is modest

The field of spatial design needs a much greater investment in research and development (R&D). In order to meet the objectives of the Spatial Planning Green Paper and to increase the added value of the construction sector, R&D is needed at many stages of the spatial design process (e.g. innovation in design and use of materials, the impact of the environment on human mental and physical capacities and corresponding design, construction management, etc.). The challenge is also to identify the organisation of research and development in the field of spatial design, i.e. who should take the overall leadership in spatial planning and with which institutions should it collaborate?

D. Environmental topics in the qualification standards

It is important to update the professional qualification standards for specialised experts to take into account the relevant issues needed for designing high-quality and sustainable living environment. The qualification standard forms a basis to shape higher and further education and to ensure a high level of know-how in the implementation of green solutions.

E. Raising awareness in communities

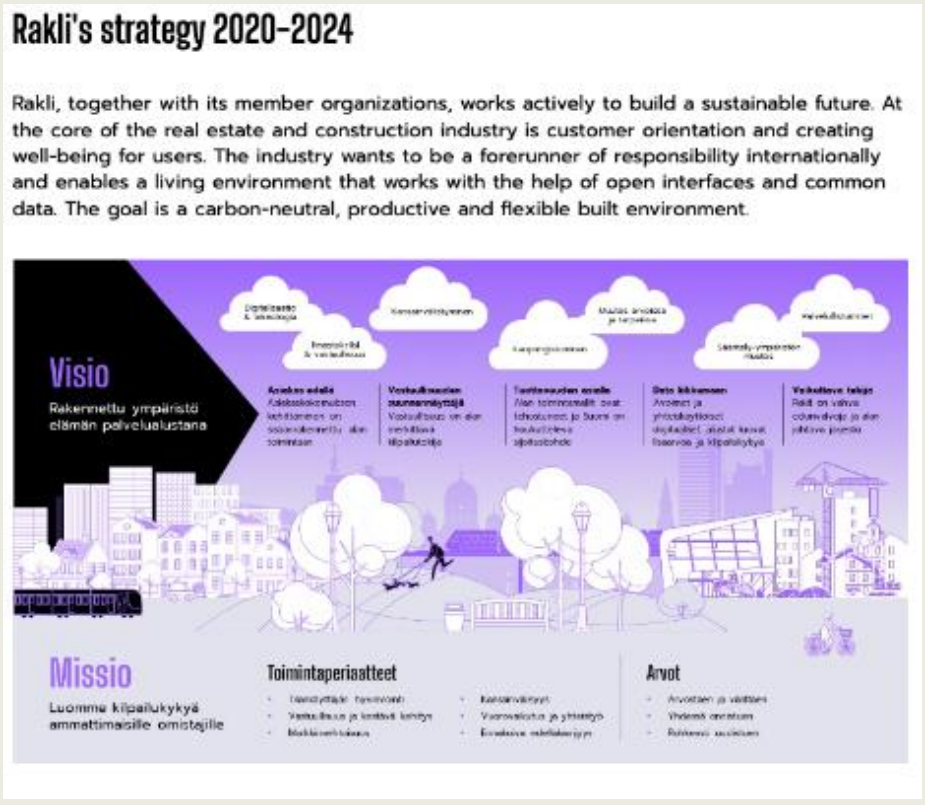
The public sector needs to lead by example in designing the living environment and adopting circular economy principles. By putting solutions into practice, new ways of thinking and acting will spread. Empowering cooperation and communities through „Let's do it!" projects can quickly raise awareness.

2.8.2 Examples

Increasingly, cross-sectoral cooperation platforms are being used to raise awareness and to share skills and knowledge (see Example 2.8-1). Estonia is moving in a similar direction, with the digital construction cluster as a good example.

Example 2.8-1 Construction association Rakli Finland

The nonprofit sector and sectoral organisations have been used to promote private-public cooperation. An example is Rakli, a Finnish construction association that has been active since 1977 and is made up of professional property managers, investors and representatives of construction companies. Under the leadership of Rakli, a series of workshops lasting up to six months ("hankeklinikka" in Finnish) have been held to support various development projects, where representatives from both the public and private sectors can work out the most appropriate solutions for realising developments on a neutral platform.



Source: https://www.rakli.fi/klinikat/

2.8.3 Recommendations

1. A central advisory centre for spatial competences should be set up, and regional experts should be involved to ensure a closer view of place-based planning and spatial decisions.
2. Each municipality must have an in-house competent official specialised in spatial design. Consideration should be given to giving this specialist greater powers, e.g. the role of deputy mayor or mayor-mayor.

3. Developing research and development in the field of spatial design and thinking through organisational arrangements.
4. Transform professional competences to address the challenges of modern environmental and energy issues through higher education institutions and professional associations.
5. Further develop the tasks of the Construction Task Force along the lines of the Finnish example to develop more appropriate solutions for specific demonstration projects.

2.8.4 Further research needed

1. Drawing up a forecast of the competent professionals needed to ensure a quality living environment.

2.8.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-15 Decisions to be taken by the Government of the Republic in the area of competence development when drawing up the development plan

	Decision needed
1.	How can we ensure that local authorities and agencies have competent professionals and that they carry out professional and meaningful tasks?
2.	How can we ensure continuous training and higher education education for professionals?
3.	Who advises on sustainable settlement development and how? How will appropriate training and monitoring be organised?
4.	Who will advise on the implementation of the principles underpinning a quality living environment and how? How will appropriate training and monitoring be organised?
5.	Where the centre of excellence for materials recycling/reuse should be positioned? Who collects and disseminates information to both the public and private sectors?

2.8.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-16 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Ensuring that municipalities and public authorities have specialists in the field of high-quality living environment, creating the basis for programmes of measures	✓	
2.	Promoting the principles of high-quality living environment as part of higher education and continous training for planners and architects	✓	
3.	Increasing the capacity of smaller municipalities to focus on local heritage opportunities and high-quality public spaces	✓	

2.8.7 Examples of potential indicators

1. Percentage of sectoral experts regularly attending training; and
2. Percentage of municipalities employing an accredited architect and/or a planner who meets the competence requirements of the Planning Act.

2.9 Integrated e-solutions for spatial planning

2.9.1 Challenges

A. Fragmentation of detailed technical spatial data, as well as spatial data relevant to residents and other target groups, including between different government departments

The public spatial data of the Land Board is quite widely used by the Estonian population. At the same time, detailed data including technical information such as the location of pipelines and cables, and other information that is important for residents, such as transport, playgrounds, sports fields, etc., are fragmented between different datasets. It is difficult to locate and access the necessary datasets, and it is also difficult to get a complete picture - the data are not systematised according to the needs of a high-quality living environment. A great deal of detailed data on the built environment including buildings and other structures is centralised in the building register (EHR) and the e-building platform, including the 3D twin.[42] These are growing in number and new ones are being added, such as the online facilities database and building information models (BIM). The situation is more problematic for urban nature elements and population data within a settlement.

Preparations are underway to launch the network facilities information system, and the database of spatial plans (PLANK) is already up and running. The Association of Towns and Municipalities is developing the VAAL (Valla Public Data Solution) system, which is oriented towards the aggregation of spatial data for the municipalities.[43]

The management of different datasets on similar subjects is still carried out by different bodies, both at national and local level. VAAL, PLANK, EHR, e-Building Platform or similar systems are much needed developments, but they need more support and stable funding to realise their full potential.

At the technical level, it is also important to adopt a common data standard for the living environment, selecting and building on international open standards, e.g.. CCI[44] , OpenBIM[45] , CityGML[46] , to make machine-readable data easier to use and share between different systems.

B. Spatial data often lacks a clear owner

Data with an owner is usually of a higher quality than data without an owner. In the field of spatial development, however, it is not known exactly who the owners of the (underlying) data are, nor what purpose the data will serve over its lifetime. It is important to identify the creators of the data and to identify the needs of data users over the whole life cycle. Based on the needs of the users, the data should be formalised at the moment of data creation, which will also ensure a greater sense of ownership of the data.

C. No analytical tool to support spatial decisions

Spatial decisions that have already been taken are not comprehensively reflected on public maps (e.g. on the Geoportal of the Land Administration). Data remain fragmented between different agencies. At the same time, there is a lack of spatial monitoring; this becomes a barrier to gaining a broader understanding of the real environmental impacts (including footprint) of decisions and their links with other sectoral decisions or development needs. Data-based support for spatial decisions and monitoring

[42] https://livekluster.ehr.ee/ui/ehr/v1/3d
[43] https://www.elvl.ee/vaal
[44] https://cci-collaboration.org/
[45] https://www.buildingsmart.org/about/openbim/
[46] https://www.ogc.org/standard/citygml/

of impacts are needed. Spatial data, as a high-value key input, is not integrated into spatial decision-making and its machine-readability is not always ensured.

Improvements should be made to enhance accessibility and visibility of spatial data that are available, including the source/owner of the data and means to actually access them. The Land Board has a spatial data catalogue[47], but it is not very easy to use and does not give a true picture of the quantity and quality of the data. The Statistical Office has a large amount of data, but the systematisation and usability for spatial planning is sometimes poor. A better application of open data principles would be important in this respect. Within the framework of the EU directive, there is an obligation to make spatial, environmental and weather data available in a machine-readable form. Further development and support for the systems mentioned in the previous point (EHR/e-building platform, Land Registry systems, VAAL) would be one way of improving the situation. The E-Construction platform already brings together a large amount of data on the built environment, visualised in a 3D twin[48] or in the form of various graphs and reports on the information portal[49].

Digital tools must also be used more widely for spatial visioning and spatial development scenarios, both at regional and at property or block level.

C. Support for appropriate anonymisation and aggregation of mass-collectable personalised data to enable wider use

Many of the important data that can be collected en masse - such as mobile positioning data - are very limited at present in their use due to their sensitivity, and are only used by a few companies/organisations.

For a wider use of this data, support is needed to automatically group and de-anonymise them in a suitable way. Similarly, there is a need to continue to improve data quality and the (anonymised) availability of data from other national databases, such as the Labour Register or the Education Information System.

D. Assessing the relevance of different spatial data and their applications

There is a wide variety of spatial data collected by different organisations, which provides information on economic activity, infrastructure, electricity, water, systems, mobility, etc. However, its practical value and applications are difficult to assess. At the same time, there are areas where data are lacking, for example, on information for the owner on material reuse opportunities, realistic information on specific materials in the EHR etc. In addition, there is also a need to increase the value of available data.

E. There is a lack of IT support for planning to reduce energy consumption and greenhouse gases emissions in the built environment

It is very difficult to adequately assess the impact, acquisition/installation costs and future running costs of different insulation measures, ventilation systems and heating systems. This sometimes lead to inefficient solutions. IT support could simplify this and increase efficiency. There is also a need for a

[47] https://metadata.geoportaal.ee/
[48] https://livekluster.ehr.ee/ui/ehr/v1/3d
[49] https://livekluster.ehr.ee/ui/ehr/v1/infoportal/buildingdata

user-friendly environmental footprint calculation capability, a tool to analyse material recovery options, and a tool to calculate transport emissions.

F. Information on the state of the natural environment is not readily available to the public.

A wealth of relevant data on the natural environment can be found on the Geoportal of Estonian Land Board, and information is also available from the Environment Agency. However, up-to-date information on the state of the natural environment may not be accessible and understandable to the public. The state of the natural environment is regularly monitored, but it is difficult for people to understand the extent / detail / purposefulness with which this is done. Information on all aspects of the living environment, i.e. the interplay between the natural and built environment, is not displayed in a comprehensive way.

G. Lack of up-to-date, easily accessible information on the state of residential areas and property price levels

Bringing together and visualising information on the wider living environment in a way that is understandable and convenient for the public, will improve the quality of decisions and ensure better public involvement. For example, data that show the price levels of real estate.

H. Modern digital solutions are underused in construction

Modern digital solutions can help make construction more efficient, from the design stage to the reusing or recycling of materials. The further development of the e-Building platform will contribute to this development.

2.9.2 Examples

Web portals offering up-to-date data, specific tools or spatial overviews are proliferating around the world (see examples below).

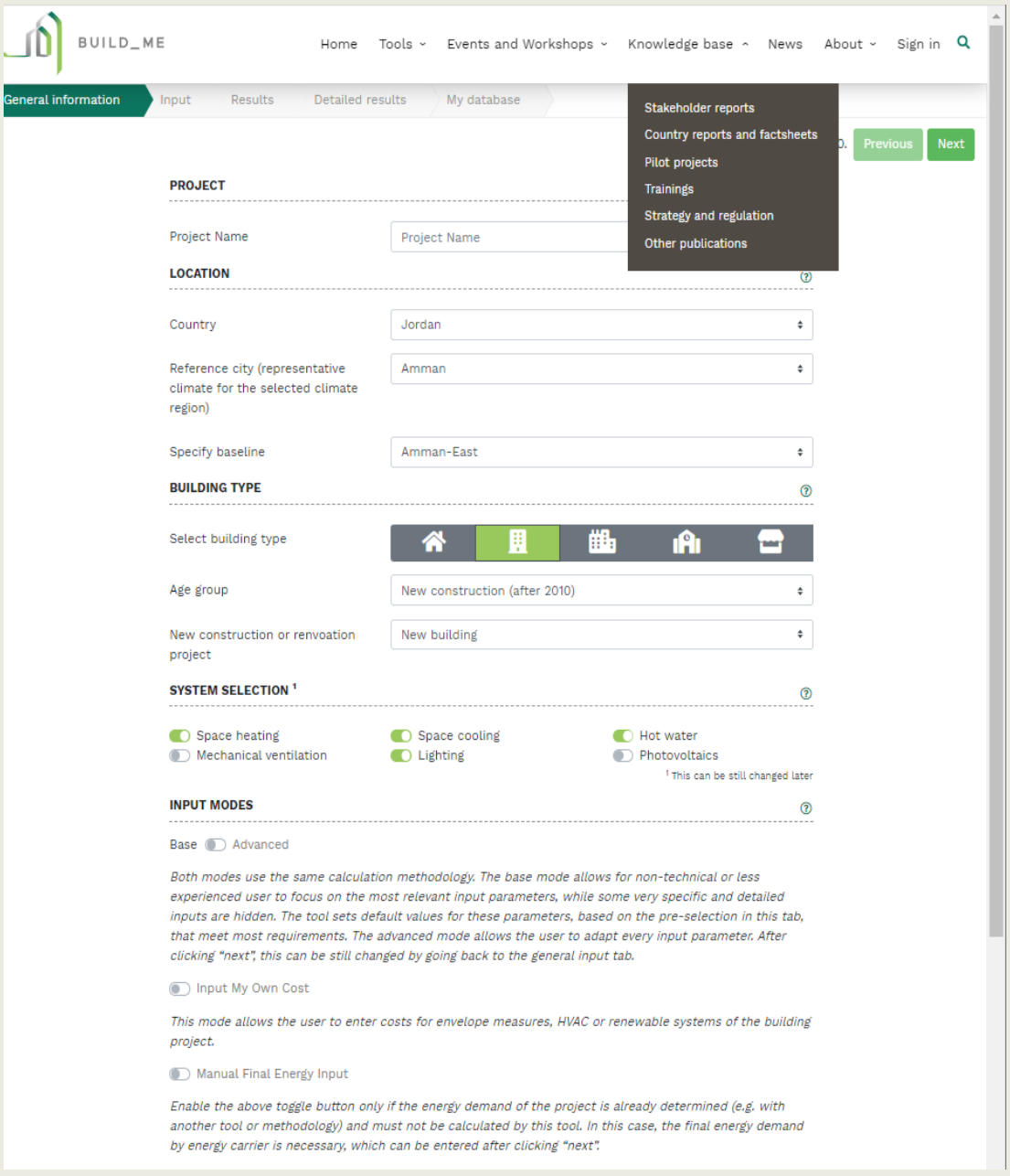
Example 2.9-1 e-Building platform

The Ministry of Economic Affairs and Communications has created an information system, which brings together the services and data of the construction sector. The aim of the platform is to ensure the seamless flow of standardised and reliable information on construction and buildings between parties. Most of the services on the e-Building Platform are also available via a machine interface, i.e. the "e-Building Platform APIs."

Source: https://eehitus.ee/vision/

Example 2.9-2 BUILD_ME: energy efficient building design tool

BUILD_ME is an easy-to-use public planning system for buildings and renovation with sufficient accuracy and with a focus on energy cost reduction, created with the support of the German federal government, specifically for the Middle East and North Africa (MENA) region. The system was developed by a consortium of seven members: local non-profit and public sector organisations in the region, as well as large companies and, for example, the European Development Bank.



Source: https://globco.buildings-mena.com/#step-1
For methodology see in more detail https://www.buildings-mena.com/info/building-energy-performance-tool

Example 2.9-3 EnviroAtlas: US environmental status mapping system

The US Environmental Protection Agency has created a public, easy-to-understand, yet very comprehensive mapping system that displays in detail different aspects of the environment, which can be selected as layers of maps, some of which are displayed as heat maps. The system includes map layers for soil, vegetation, fauna, protected species and areas, pollution and its control, as well

as plant productivity, economy, population density, employment, schools and quality of life assessments. Detailed information is also available for very small areas.

For detailed methodology see https://www.epa.gov/enviroatlas

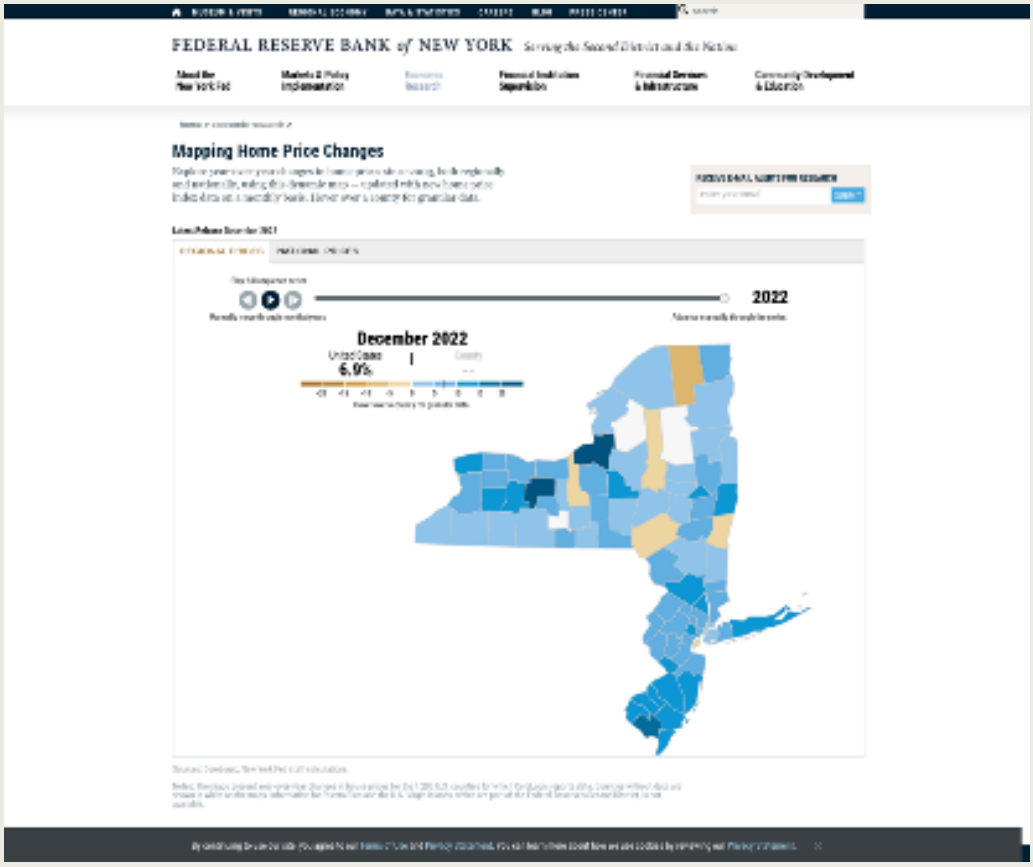
Source: https://enviroatlas.epa.gov/enviroatlas/interactivemap/

Example 2.9-4 Maps of property price hotspots

Detailed zoomable hotspot maps of property prices and their dynamics over time allow better analysis and forecasting of developments in the region and are useful for property seekers. Some maps also display specific prices, some allow you to segment property types and provide rental prices, while others allow you to see price changes over time, moving back to previous years or quarters.

One of these maps for the UK: ***https://www.primelocation.com/heatmaps/***

Price dynamics map for the US: *https://www.newyorkfed.org/research/home-price-index*



2.9.3 Recommendations

1. Bring together the spatial data and services needed for the development of the living environment on an e-Building platform, so that as much spatial data as possible can be easily accessed and visualised in 3D through a single platform.
2. Ensure stable and sufficient funding to maintain and continuously develop the e-Building platform.
3. Develop new e-Building platform services, including:
    a. Building materials products database and CO_2 footprint calculator;
    b. Carbon footprint calculator for planned new developments;
    c. A service to identify recyclable demolition waste;
    d. A Building Renovation Passport (BRP) service, which also offers appropriate support measures;
    e. Processing of authorisations from the Transport Administration;
    f. Planning procedures;
    g. BIM-based automated checks for the processing of authorisations and for the control of network crossings.

2.9.4 Further research needed

1. Overview of the nature of spatial decisions, which includes the following questions:
    - What is the frequency of spatial decisions;
    - What are the most common types of spatial decisions;
    - Where does the data come from?;

- What spatial data are available;
- Who needs what data?;
- Who would need to know what the most important spatial data are and how to value and use them practically? A preliminary analysis at a general level may be necessary to identify the use cases and data sets for potential digital solutions.

2. Overview of existing information aggregation systems (e.g. e-Building platform, VAAL, Geoportal of the Land Administration), and understanding their strengths, weaknesses, use and development plans.
3. Overview of what the most important mass data should be collected, for which grouping/anonymisation is a priority?
4. Overview of simulation systems used for planning, for example when calculating energy costs. How to organise the sustainable management of the model(s): regular updating of formulas, prices, materials, etc.?
5. Overview of what spatial and environmental data are already continuously monitored, what is missing, what are the quality indicators in use, what could be added?
6. Legal analysis to understand what the legal constraints on the use of data are, and what needs to be changed. What solutions can be taken regarding the production of statistical data?
7. How can we make people more aware of the data available?

2.9.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-17 Decisions to be taken by the Government of the Republic on e-solutions for spatial planning in the preparation of the development plan

	Decision needed
1.	Where is information on existing detailed databases kept up to date and easily accessible?
2.	Is it realistic to regularly aggregate detailed data into a single interoperable application or to merge them into a single machine-readable dataset?
3.	How can we increase the interoperability of all data related to the planning and use of the living environment, but also its machine readability?
4.	What kind of data-driven spatial decision support can we create?
5.	Which agency will be responsible for creating a coherent digital support for spatial decisions, and whether and who should support more active further development of already existing solutions?
6.	What kind of mass data should be used more widely?
7.	Which organisations should provide a service to group/anonymise data and make it publicly available?
8.	Do spatial decision-makers have the capacity to analyse spatial data and use it in their decision-making?
9.	Who owns spatial data? Who would be in a position to assess and monitor the collection, actual and potential use, as well as the potential benefits of spatial data?
10.	How can we make people more aware of the data available?
11.	What digital solutions could support the re-use of building materials?

2.9.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-18 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	NSP
1.	Specific needs for the aggregation of detailed databases or the creation of a mapping system	✓	
2.	Basis for the establishment of an aggregation or mapping system for detailed databases	✓	
3.	Foundations for a data-driven support framework for spatial decisions	✓	
4.	Setting up a monitoring system for spatial decisions	✓	✓
5.	Creation of an application with spatial analysis, including scenario planning, to support spatial decisions	✓	✓
6.	Further development and awareness-raising of the e-Build platform and 3D twin capabilities	✓	
7.	The basis for the wider uptake of anonymised data aggregated from personalised data	✓	
8.	Regular mapping of the spatial data collected and assessment of their practical usability, relevance and real-world applications	✓	
9.	Investing in IT solutions for effective planning to reduce the energy consumption and environmental footprint of buildings, such as the GHG footprint, including life-cycle assessment capabilities	✓	
10.	Ensuring high quality monitoring and assessment of the dynamics of the natural environment and publicly available visualisations	✓	
11.	Ensuring the monitoring of the condition and price level of residential areas, the assessment and simulation of dynamics and the provision of publicly available visualisations	✓	

2.9.7 Examples of potential indicators

1. Percentage of design and construction companies and local and national governments using innovative digital solutions

2.10 Participatory tools

2.10.1 Challenges

A. Insufficient use of modern digital tools to involve the public in spatial decision-making

For decades now, informing residents about spatial decisions has been done through well-established methods - through letters, e-mails and websites. The public accessibility of planned land-use decisions is poor, and access to information is inconvenient. However, Tartu and Tallinn have already made initial efforts to improve accessibility (e.g. Tartu's web gateway to inclusion, the distribution of daily movements, see Example 2.10-1 below), and the situation is expected to improve with the launch of the planning database and the planning information system. At the same time, the living environment is also shaped by a number of 'non-planning' activities for which there are no clear procedural rules in the legal framework (e.g. closure of service facilities).

B. The functionalities for gathering input related to quality of life are not actively used

There are no operational and convenient ways of gathering the qualitative information needed to shape the living environment. At the same time, for example, the anna-teada.ee system (see Example 2.10-4 below) for notifying residents about the state of good health has been in widespread use for several years. The same principle of public information gathering and processing by local authorities could be extended to other areas in addition to public amenity.

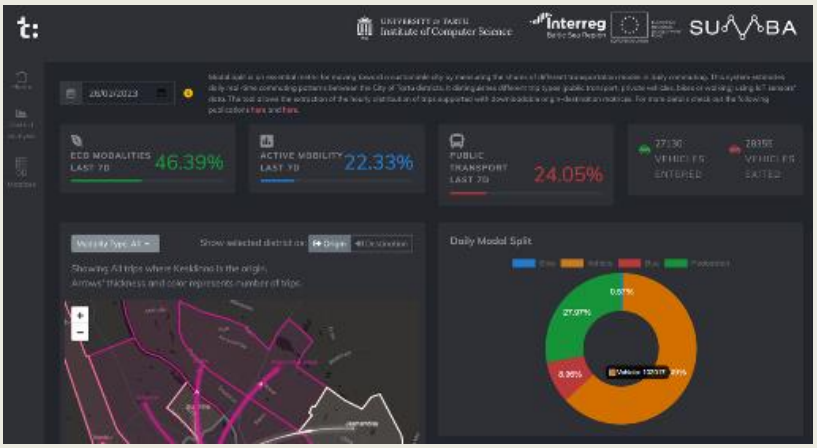
In the future, IT solutions will have to support, among other things, the principles of data tracking, bureaucracy and event services. Functionalities ranging from information to broad decision making should be covered.

2.10.2 Examples

There are also positive examples of up-to-date spatial data information portals in Estonia (see Example 2.10-1 below).

Example 2.10-1 Data on daily mobility in Tartu

The mobility data portal of the city of Tartu, developed under the auspices of the University of Tartu, allows real-time monitoring of both mobility flows and the distribution between different modes of transport.



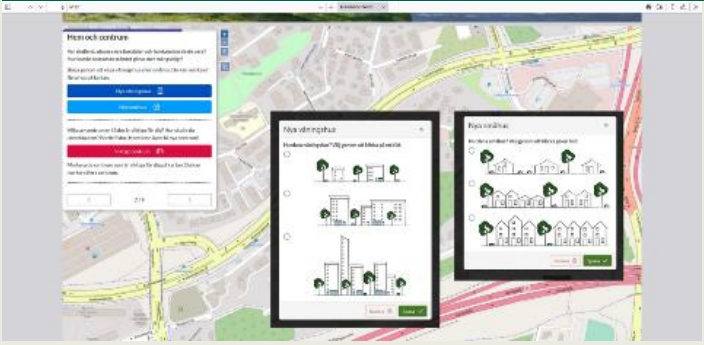
Source: https://its.cs.ut.ee/modsplit/#home for methodology see in more detail https://www.mdpi.com/1424-8220/22/8/3030

In our case as elsewhere, in the field of spatial development it is mostly one-way information, or e.g. a periodic brainstorming exercise (see Espoo and Camden examples below), rather than web portals that are constantly updated in real time based on public input.

Example 2.10-2 "My Espoo Map" - a portal for collecting information from the public for urban planning purposes

The City of Espoo collected information from around 6,000 people in the autumn of 2020 to describe the different types of areas/locations in Espoo and to indicate its development preferences for whether/what/where to build. No personal data is shown in the results.

Methodology and results at length: https://www.espoo.fi/en/housing-and-building/city-planning/read-about-and-participate-city-planning/my-espoo-on-map



Source: My Espoo on the Map website

Example 2.10-3 "We are Camden" portal for public engagement in city governance

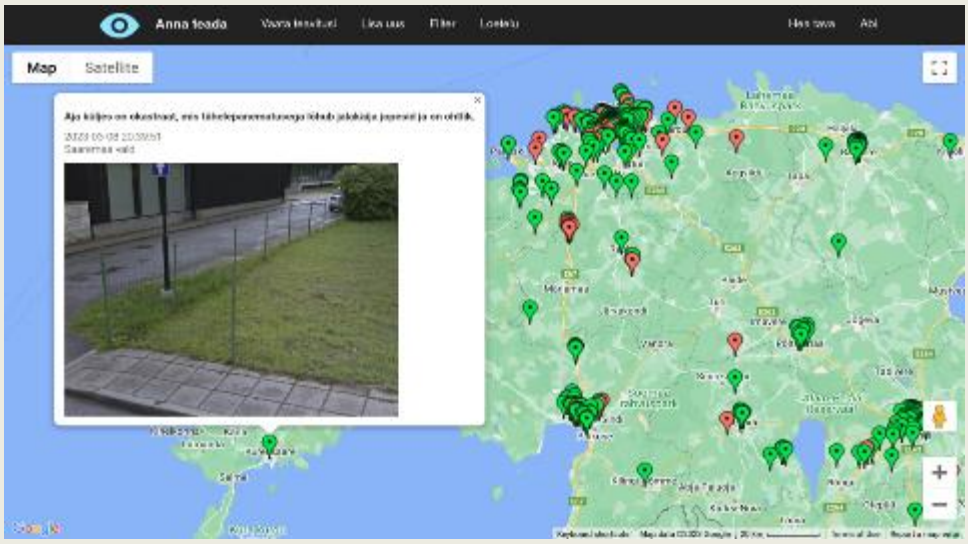
In the London Borough of Camden, the portal is used by the London Councils to involve the public in pre-decision discussions. The portal makes it easy to locate and participate in relevant discussions based on different interest groups/residences. The portal also displays summaries of the discussions that have taken place so far, the results of the polls and the final decisions taken.

Source: https://consultations.wearecamden.org/

In Estonia, a positive example is the web-based information system in the field of waste management (hosted by AS Andmevara), which was developed on behalf of the Ministry of the Interior and with funding from the European Regional Development Fund (see example below).

Example 2.10-4 "*anna-teada.ee*" (*let-me-know)* system for collecting information from the public on clean-up problems

The anna-teada.ee project is a successful project that has been running for several years in Estonia for the ongoing mapping of cleanliness problems and their transmission to local authorities – the public can use both mobile apps and a web interface, and add a photo if desired. The system automatically sends the information to the municipalities and the road authorities, and the information markers they have viewed and taken into account turn green on the map.



Source: https://anna-teada.ee

2.10.3 Recommendations

1. Encourage the emergence of informative web portals, updated in real time with public input, to promote two-way communication, participatory planning, presence and good governance.

2.10.4 Further research needed

- An overview of the nature, including frequency, of space decisions in different types of government;
- An overview of the most common digital engagement practices in use so far;
- An overview of what would be the most important areas for map-based public information gathering, beyond well-being.

2.10.5 Decisions

The main decisions to be taken in the preparation of the development plan, resulting from the regional seminars, workshops and expert group analysis, are set out in the table below.

Table 2-19 Decisions to be taken by the Government of the Republic in the field of the development of participatory tools when preparing the development plan

	Decision needed
1.	How to legally regulate public digital solutions for spatial decision-making?
2.	Which government structure should coordinate the collection and dissemination of spatial information with the public?

2.10.6 Potential contribution of the development plan (DP) and the national spatial plan (NSP)

An overview of the issues to be addressed in the development plan and the national spatial plan is given in the table below. The overview is based on the results of the regional seminars, workshops and expert group analysis.

Table 2-20 Potential contribution of the development plan (DP) and the national spatial plan (NSP) to be prepared

		DP	nSP
1.	Creation of a nationwide findability and proactive information system for planning spatial decisions, building on existing and developing solutions (e.g. planning databases/systems PLANK/PLANIS, Viimsi VAAL, 3D twin).	✓	
2.	Creating a nationwide system for collecting and feeding back public views and opinions on planned spatial decisions, making use of existing solutions where possible (e.g. 3D twin).	✓	
3.	Creating the basis to support the ongoing collection of map-based information from residents. Improving the availability of existing tools.	✓	

2.10.7 Examples of potential indicators

1. Number of web-based two-way communication information systems facilitating participatory planning and empowerment.

3 Principles for the preparation of the Living Environment Development Plan

3.1 Reconciling spatial and strategic development guidance

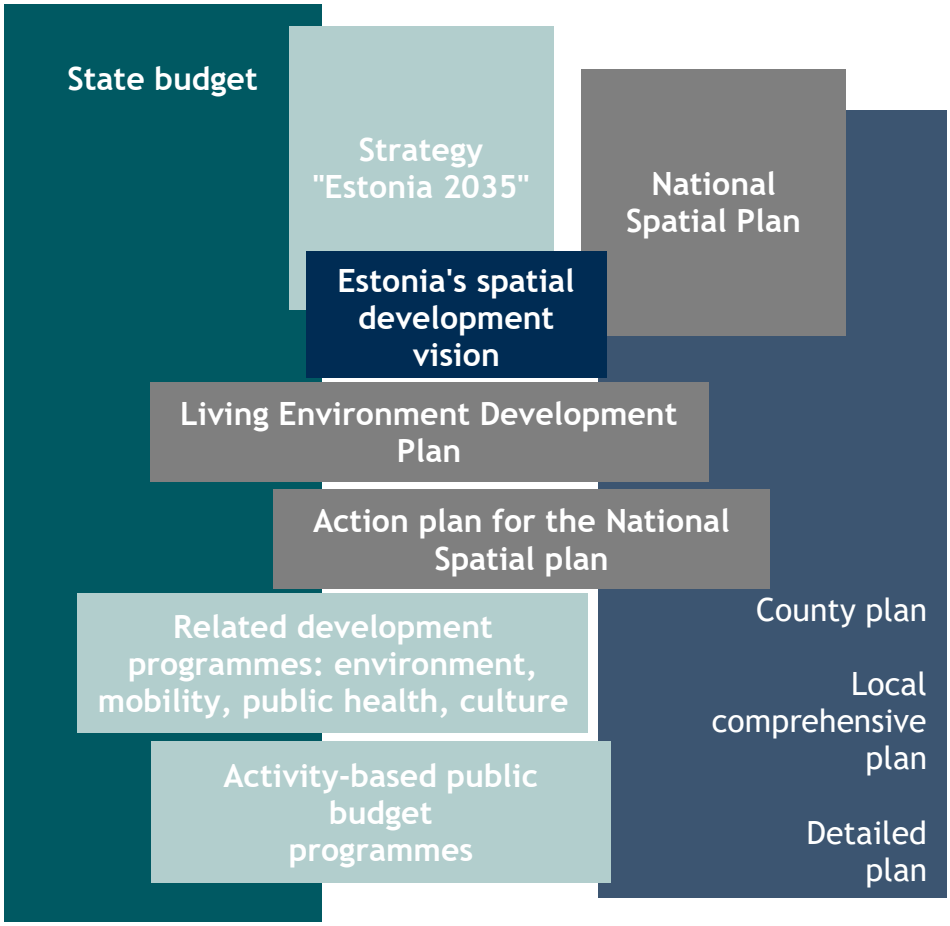
According to the State Budget Act, the long-term development of the state is guided by a strategic planning framework linked to an activity-based state budget. Strategic planning documents are defined by the law as the long-term development strategy of the country, the policy framework, the sectoral development plan and the programme. For a large part of the issues described in this document, the country's strategic development documents do not set out precise objectives and the policy instruments to achieve them. For some themes, the necessary development orientations are addressed only at the level of individual programmes. In accordance with the Regulation on strategic documents,[50] a programme is drawn up to implement a development plan or long-term strategic objectives for Estonia approved by the Riigikogu or the Government of the Republic. In contrast to the development plan, the Regulation does not see the programme as a development document based on broad-based cooperation and involving a wide range of stakeholders. **Thus, on many issues of importance for spatial development, the national strategic objectives and the actions needed to achieve them are not broadly formulated.**

National spatial plan is drawn up on the basis of the Planning Act; in today's legal area, spatial planning is implemented primarily through more detailed planning under the Planning Act. Therefore, the principles of Estonia's spatial development objectives set out in the Planning Act do not apply to a large number of spatial decisions that are taken outside the planning act. The Planning Act, and therefore spatial plans, do not address many of the issues related to the development of the planning system (e.g. digitalisation of the field, capacity building and the introduction of innovative methods to guide spatial development). These issues are only formulated at programme level in the strategy papers, which are not prepared on the basis of broad stakeholder cooperation.

In the national spatial plan and the living environment development plan to be prepared, a vision for Estonia's spatial development supporting the implementation of the goals of the development strategy "Estonia 2035" and the necessary changes must be formulated in cooperation. Also, the activities for its implementation through the state's strategic planning and budgeting system and more detailed planning need addressing. The planning and the environmental development plan, together with other sectoral development plans, must form a coherent whole. This is how a long-term public investment plan is created, which provides the basis for counter-cyclical planning of construction investment. The national plan provides a national framework for spatial development and sets objectives for local authority planning and other sectoral development documents. The development plan for the living environment sets out the sub-objectives and activities to achieve the objectives, linking them to the action plan for implementing the national plan.

[50] https://www.riigiteataja.ee/akt/123122019005

Figure 3-1 Proposal for an integrated spatial and strategic planning framework



Note: Text boxes in grey indicate strategic development documents addressed in the framework of this project. The placement of the text boxes indicates direct links.

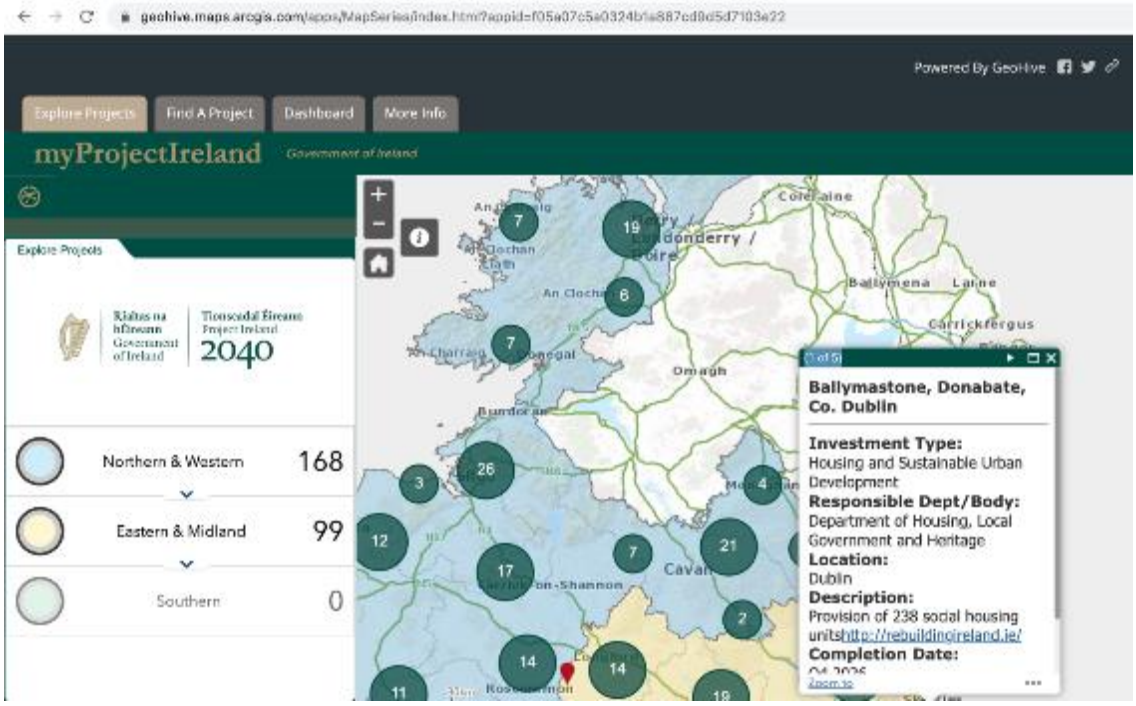
A similar model has been used in Ireland, where the national strategy Project Ireland 2040[51] consists of a National Planning Framework[52] and a 9-year National Development Plan.[53] Both the planning framework and the development plan follow a common set of objectives, targeting six strategic outcomes (see figure below). In addition, there are 75 National *Policy Objectives in* 11 areas to ensure that the country's long-term investments are made in a considered and holistic way. In addition, the strategy emphasises the specific characteristics of the country's regions. An interactive map application has also been created for the Strategy[54] (see excerpt in Figure 3-3). Project Ireland 2040 is also highlighted as a positive example in the Department of Finance's 2020 Green Paper on Spatial Planning.

[51] https://www.gov.ie/en/campaigns/09022006-project-ireland-2040/
[52] https://www.gov.ie/en/publication/774346-project-ireland-2040-national-planning-framework/
[53] https://www.gov.ie/en/press-release/7ac57-government-launches-the-renewed-national-development-plan-2021-2030/
[54] https://www.gov.ie/en/collection/f828b-myprojectireland-interactive-map/

Figure 3-2 An integrated framework for spatial and strategic planning in Ireland, Project Ireland 2040

Source: https://www.gov.ie/en/publication/daa56-national-planning-framework-ireland-2040-our-plan-npf-2018/

Figure 3-3 Map application of the Irish National Development Plan 2021-2030.



Source: https://geohive.maps.arcgis.com/apps/MapSeries/index.html?appid=f05a07c5a0324b1a887cd9d5d7103e22

3.2 Co-creation in composing the living environment development plan

The creation of the living environment development plan must take place in close cooperation between government, local authorities, communities, NGOs and businesses. This is why it is also necessary to plan the preparation of an environment development plan as a broad-based co-creation process.

Decisions relating to the development of the living environment are best taken at local level, in line with the subsidiarity principle. At national level, a stable, predictable, visible and appropriate legal framework, the setting of long-term strategic objectives and public societal guidance should be ensured. Also, the guidelines should be set at national level for the regional resolution of areas of national importance in the strategic documents to offer direction to the spatial and strategic development of local authorities. Local spatial decisions are often implemented by businesses through property development, so development decisions must be taken in partnership between the private and public sectors. Increasingly, non-governmental organisations (NGOs) are playing an active role in helping to make these decisions a reality. It is therefore increasingly important to develop and use forms of cooperation between the private, public and non-governmental sectors that support discussion between different organisations and facilitate the introduction of innovative solutions. Forms of cooperation can be tested during the development planning process.

The active participation in the workshops held in the framework of the preparatory work of this development plan shows that there is a high level of interest among the representatives of different organisations to participate in the creation of the development plan. A method that has proved to work well is the online document distributed to participants before the workshop, where they can add their ideas and on the basis of which the discussion part of the workshop is conducted. It is important that the document is clearly structured (in this case, a standardised table with pre-filled fields was used)

and of a moderate size. Feedback from the workshops conducted for this report also identified a focus group interview on a specific topic as a preferred form of collaboration. Critically, the need for paid experts and the volume of work needs to be considered.

A preliminary list of the parties to be involved in the preparation of the development plan are listed below:

- Estonian Owners' Confederation
- City Lab (NGO dealing with urban issues)
- Tallinn Chamber of People with Disabilities
- Tartu Housing Foundation
- Estonian Federation of Youth Associations
- Estonian Village Movement "Kodukant"
- Union of Estonian Architects
- Estonian Association of Civil Engineers
- Estonian Association of Spatial Planners
- Estonian Association of Landscape Architects
- Committee for the Development of the Construction Sector (CDE)
- Community organisations
- Roundtable on Estonian Historic Buildings
- Estonian Leader Association
- Estonian Academy of Arts
- TalTech
- University of Tartu
- Tallinn University
- University of Earth Sciences
- Representatives of local authorities
- State Chancellery
- Ministry of Economic Affairs and Communications
- Ministry of Finance
- Ministry of Culture
- Department of the Environment
- Ministry of Social Affairs

A preliminary list of the documents underpinning the development plan include:

- Long-term strategy "Estonia 2035" (2021);[55]
- Green Paper on Spatial Planning (2020);[56]
- Estonian Human Development Report 2019/2020. "Spatial choices for an urbanised society" (2020);[57]
- A Long View of Construction in 2035;[58]
- Final report of the Spatial Design Task Force (2019);[59]
- Spatial Design Expert Group Final Report (2018);[60]
- Vision for the e-Building platform;[61]
- Long-term strategy for building renovation (2020);[62]
- Overview of the implementation of the national plan Estonia 2030+ and the county plans (2020);[63]
- Green Transition Action Plan.[64]

[55] https://valitsus.ee/strateegia-eesti-2035-arengukavad-ja-planeering/strateegia
[56] https://planeerimine.ee/prr/
[57] https://kogu.ee/eesti-inimarenguaruanne-2019-2020/
[58] https://eehitus.ee/timeline-post/ehituse-pikk-vaade/
[59] https://www.fin.ee/media/447/download
[60]https://vv.riigikantselei.ee/sites/default/files/riigikantselei/strateegiaburoo/ruumiloome_lopparuanne_.pdf
[61] https://eehitus.ee/timeline-post/majandus-ja-kommunikatsiooniministeeriumi-tellimusel-valmis-e-ehituse-visioon/
[62] https://www.mkm.ee/media/155/download
[63] https://www.fin.ee/media/6608/download
[64] https://valitsus.ee/valitsuse-eesmargid-ja-tegevused/rohepoliitika/tegevusplaan

3.3 Monitoring and policy evaluation

To understand the developments related to the quality of the living environment in Estonia and to target further interventions, a comprehensive monitoring and evaluation framework should be designed and implemented. National monitoring and evaluation activities help to understand and track progress on policies, programmes and activities, and to provide insights to whether their purpose and objectives have been achieved, and their impact.

Both monitoring and evaluation activities need to be employed. Monitoring is about gathering and analysing information on relevant changes – routine tracking of progress against set aims. Evaluation looks at the results achieved to assess if the activities will deliver the overall objectives set on the quality of the living environment. Organising monitoring and evaluation activities needs to be aligned with current responsibilities of national authorities (e.g., Statistics Estonia, Environment Agency).

In drawing up the development plan, a limited number of specific, cross-sectoral indicators will have to be developed in the light of the objectives to be achieved. Key indicators to be monitored need to be baselined. This includes the policy indicators of the national strategy “Estonia 2035” (e.g., quality of living environment and differences between regions), as well as organisational programmes of the relevant ministries. Further indicators to be considered for national monitoring include the following: land take indicators, share of covered areas (permeability index), share of supported housing, share of cycling work travel (already monitored, to be aligned with policy making), density of the built environment, and others. Where possible, information should be gathered and presented on local municipality accuracy.

Annex 1: Summary of regional seminars

Developing comprehensive policies for a high quality and sustainable living environment in Estonia
Summary of regional seminars
December 2022

Regional seminars were held in Lihula on 15.11 (31 participants), in Rapla on 16.11 (18 participants), in Käärik on 22.11 (29 participants), in Kiviõli on 23.11 (29 participants) and in Tallinn on 12.12 (16 participants). A total of 123 people attended the seminars.
The seminars were organised in cooperation between the Ministry of Economic Affairs and Communications and the Ministry of Finance, and covered topics related to both the proposed new national planning and the development plan for a quality living environment.
Seminar agenda (starting time varied):
10:30 Introduction. New national planning and the development plan for a high quality built environment. *Taivo Tali, Ministry of Finance; Kaja Pae, Ministry of Economic Affairs and Communications.*
11:00 I Keynote speech: Trends influencing Estonia's spatial development in 10 and 30 years perspective. What trends can we be sure of? How much uncertainty is there in the development of spatial solutions in the Cohesion Policy? *Veiko Sepp University of Tartu RAKE*
11:30 *Group work I (discussion in groups)*:

1) What is the impact of key trends on the development of the region, on the spatial structure of the county?
2) How to leverage positive and mitigate negative trends (inputs to national planning and the built environment development plan)?

12:00 Presentation of group work results
13:00 Lunch break
13:45 II Keynote speech: Preparation of a development plan for a high quality built environment. Preparation of the preparation of the preparation of the CIP for a European Quality Strategy for the Built Environment.Overview of the work done so far: presentation of international best practice; main strengths and challenges of the Estonian built environment. Results of the survey conducted. Discussion. *Peter Lemoine, Ulf Johansson; Trinomics/Sweco. Tiit Oidjärv, Pille Metspalu (presenters) Trinomics/Hendrikson&Co.*
14:00 Group work II:
Starting points for achieving a quality living environment. What should be the themes to be addressed in the development plan? What are the needs of the municipality in guiding a quality living environment? A *rotating discussion led by experts*.
14:50 Presentation of group work results. Summaries
16:00 Closing

The second part of the day focused on the starting points for achieving a quality living environment. In the form of group work, the expert-led rotating discussion was designed to take place in two or three (depending on the number of participants) panels on three themes, with participants able to move between themes to provide input on each. Participants were free to choose a topic of their choice, and

the discussions were usually started by the experts themselves, who formed appropriate groups (varying from 4 to 7 participants per group), based on the background of the participants.

Group work topics:

I Themes guided by the Quality of Life Development Plan

II The needs of local authorities in guiding a quality living environment

III National digital solutions to support a quality living environment

In practice, the input of the first half of the day, the trend analysis discussion, also took a chunk out of the time planned for our project. Thus, our presentation was somewhat shorter than originally planned. Due to lack of time, and perhaps also due to the Estonian long-windedness, the planned rotation took place only partially and not in every seminar. However, this was not a problem as the discussions at the tables were active and meaningful. Rather, it was a pity to interrupt a meaningful discussion. There were only a handful of lunchtime leavers across the five seminars, confirming the interest of those present in the topics and testifying to the well-organised proceedings.

The most important outcome of the group work was that local authorities expect support from the state in the form of agreed objectives, principles and well thought-out action programmes to achieve a quality living environment. It is hoped that the guidelines will be accompanied by a budget. Following the example of Ireland, the development plan for the living environment and national planning are seen as a tandem, where jointly agreed strategic objectives are implemented through a development plan linked to the national budget, and at the same time, through national planning, guidance is given to local authority planning.

Results of group work

In the lists below, the most frequently expressed views are highlighted in **bold.**

GROUP I Themes to be addressed by the Quality of Life Development Plan

1. **How to agree on principles for space quality?**

- The CoR + the Cohesion Policy would provide a basis for formulating the quality of the environment as an objective in its own right, which has not been done so far.
- There are no targets for what services must be in a settlement. Everything is based on the market economy. South Estonia is full of small hospitals, is that necessary? Those who want a quality service still go to Tartu. Sometimes, in fact, more money is spent to keep some services open that could be used to improve the quality of lesser services. Quality > Quantity
- Mobility dimension: demand-driven transport; micromobility. Integration of different modes of transport, including train and bus connections. Problem: Train timetables are changed without coordination.
- Energy Communities: the roofs of housing associations are an untapped resource! But the decision-making process in condominiums is complex.
- Adapting to climate change: tall vegetation, replacement planting, rainfall management systems are important.
- People's awareness to sort and reuse. Guidelines for counties/regions to analyse e.g. waste generated and what would be the best solution for them. Storage and digital accounting of what waste and resources we have and whether to incinerate to waste, produce biogas or something else?
- Nature dimension: valuable farmland, natural communities, land use, biodiversity, urban environment, etc. issues.
- For urban maintenance and other requirements, there is no need to have a specific centimetre of grass cut.'
- **Guides, guidelines needed**. What is social impact assessment? How to do it.
- National development plans should be made in partnership, the mantra for the state is that local and regional authorities are independent.
- IT systems are needed to help make spatial decisions, e.g. to model people's movements, the need for services, the associated impacts, visualise.

- Tools for spatial analysis: if you plan it, look at it. Have you thought about it? Have you looked at it?
- Let's not make a lifestyle development plan, but a smart app, e.g. Telia mobility data. You put the input data in, it gives the answer.
- **Data-driven management.**
- Sectoral working groups in central government are a good way to steer new issues and facilitate agreements.

2. **Which topics should be included in the development plan** (in addition to the predefined list of: public space, sustainable urban space, sustainable mobility, energy communities, adaptation to climate change, circular economy, use of mineral resources). The first two of the shortlist were considered the most important.

- Cleanliness rules and space quality indicators. Social aspects are more difficult to include in the public space/quality agenda.
- A quality living environment that attracts people to live there.
- Relations between land use, mobility. What density to build where.
- Missing population processes, segregation.
- spatial diversification of functions, architectural diversification. to provide standard building patterns at national level.
- Estonia was developed as a big city during the Soviet period. An apartment building does not want to be built on a field. The development plan has to say that we don't want certain types of buildings in certain places.
- Circular economy - is it a necessary theme in this development plan? From some point of view it is, for example mineral resources.
- The use of mineral resources could only be included if it can be spatially targeted at local level.
- Sustainable mobility - what can a national development plan do here? There is probably still something. Distance of residence from bus stops etc. E.g. parking standards? Sustainable mobility.
- Adaptation to climate change should be included: e.g. covered surfaces, transboundary issues such as floodplains.
- Subject missing: landscaping design.
- Creating a new space vs improving the quality of an existing space.
- Economic sustainability: housing competitiveness. Creating a housing market, including a rental market.
- Security, social services network, etc.
- Housing definitely to be included, including the creation of a rental market.
- Guiding developments.
- Reconstruction as part of housing policy, including replacement construction
- Creating a rental sector as a solution to many issues
- The CoR should address all these aspects:
  - shared apartments
  - rental apartments
  - condominiums
  - houses

3. **How would you use a national development plan? What should be included in a development plan?**
   - Created in cooperation with local authorities. Quality space varies greatly from place to place, Lihula cannot apply the principles of Tallinn and vice versa. A more local development plan, but guidelines could come from the state.
   - A sustainable plan at national level should help to think about this issue at county level - to put it into a more concrete context. Provide guidance to counties. Would help to make considered decisions as the baseline studies are nationally produced and are a reliable source to refer to.
   - National planning has so far not prescribed anything for local authorities. The current strategic planning does not explain or describe a good living environment.
   - There is no housing development plan, but it is badly needed. ENMAK exists but is not spatial.
   - Development plans are decisions on how money is spent, setting the framework for the kind of grants that local authorities can give.
   - **It is important to have everything in one place/concept. Can't just be a guide, the budget has to come with it.**
   - It would also be good to follow the Irish example - how to visualise in a similar way?
   - In the case of local development plans, resources are scarce to make science-based decisions, and the starting points could come from the state.

- The state probably has no idea of the state of many schools or large USSR buildings; manors and cultural centres. Under the administration of the municipality. Action inventory/mapping. When to renovate and when to demolish?
- Think strategically to figure out a direction - e.g. smart specialisation
- When people choose a place to live they don't just look at functionality. We want people to live in small settlements and then you need quality.
- Single Programming Document *vs* Development Plan:
  - The CFP needs to bring together nature, etc., very many issues
  - The CoR is the operational programme of the CFP, acting in tandem.
- The development plan should be an agreement between the state and the local authority.
- The development plan should span election cycles
- How does it relate to the SPD?
- Usage depends on what it is - if it's a general conversation, I'd use exciting sentences. If you're doing a CAP, you'd make sure it doesn't conflict with the
- There can't seem to be standardisation - a quality elukk is up to 3-storey houses, with roads no more than a width of, a bench every hundred metres.
- If it's very bubbly, it's no use to anyone.
- There can obviously be no standardisation - high quality living is up to 3-storey houses, with roads no more than a width of, a bench every hundred metres.
- If it's very bubbly, it's no use to anyone.
- We would like to see local room for interpretation for the implementation of the AQS, on the basis of which local regulation of quality space is made.
- The issuer of a building permit could benefit from precise local regulation.
- **The local authorities currently have *no* say on some issues, support would be needed.**
- It would be good: The document provides guidance on what needs to be implemented at local level
- The master plan would reflect these things. The living environment is already included in the development plan, landscaping, etc. today. There must be a link to the development plan!

CHAPTER II The needs of local authorities in guiding a quality living environment

1. **What are the main obstacles to guiding spatial development/quality space at local level?**
   - Short of money
   - Mindset - especially when implementing, don't want to get involved, it's easier without it
   - General plans are old
   - There is no agreed vision. Master planning is done once every 10 years, residents do not have a real say in shaping where they live.
   - Awareness low
   - Poor visualisation of the Masterplan - a clear map for the house buyer is needed.
   - Project-based planning - where the money goes, it gets planned for.
   - Council
   - Human resources in the local authority and locally more broadly
   - Quality of operators
   - There is nothing to rely on e.g. for public space planning, especially in rural areas.
   - Over-regulation - fear of paragraph; DP needed for everything.
   - Need for universal sets of rules, models, basic conditions
   - **No definition of quality of life as an evidence-based social agreement**
   - **The basic principles of a quality space/living environment are needed - in a concrete, robust, simple and measurable way.**
   - A development plan as a set of regional objectives? The key objectives should be set out in the regional development strategies. Refer to national ones. There are certain benchmarks for county development strategies given by the Ministry of Finance.
   - A deputy mayor-level planning officer in local authorities? The problem is a brain drain, unable to compete with business.
   - Adapting to shrinkage: centres that have already been selected, support them.
   - Regional centres are dealing with other issues: shrinking population, lack of resources, no point talking about quality of life if the basic conditions are not in place, e.g. public transport, schools and nurseries, jobs and adapting to teleworking opportunities.
   - There is no legal basis, the master plan is in place. Action plans may not have a legal basis.
   - The state probably has no idea of the state of many schools or large Soviet-era buildings, manors and cultural centres, which are run by local authorities. Inventory/mapping needed. When to renovate and when to demolish?

- Local and regional authorities are in charge of getting money, but there is no chapter on spatial planning.
- The central squares programme is a good example.
- A problematic regulatory environment for the region's rapid population growth. It is not possible to maintain social and educational institutions.

2. Where is public support needed and in what institutional form?

- Sectoral working groups (like the Green Turning Group)
- Energy cooperatives to fight NIMBYs
- Recruitment of senior specialists from local and regional authorities, for which incentive funding is needed.
- Peer-review of spatial solutions e.g. by the spatial planning authority. Need to decide whether this is a regulatory or enabling body.
- Advisory competence centre for emergency situations (e.g. skyscraper in Lihula), no matter if national or regional, could also be e.g. Tallinn and Tartu, but ideally regional. In any case, it must have practical experience.
- National permanent fund for the development of good public spaces
- More guidance material (like in Finland), especially good if in a simple visual format - e.g. Mitte_tallinn on social media, with pictorial comparisons of how it could be and how it is.
- Legislative review - simplification
- The Centre for State Support Services (CSS) to carry out procurement itself
- The country could have a one-size-fits-all solution, where people could just understand something about planning
- The state needs to solve problems beyond the local level
- Augmented reality with the scent of flowers
- 1 ministry for Estonia (or 3: finance and economy, security, environment and education).
- Involving young people - so that young people will come back to their place of origin, and it doesn't just have to go through a school or youth centre.

3. How can cooperation between municipalities be encouraged?

- Officials in the field in Harjumaa meet regularly, usually on a specific topic. Proposed solutions could be backed by national support.
- There is a need for a cross-border instrument to avoid duplication of cross-border services.
- The pre-conditions of the funding conditions force cooperation, but are often difficult for smaller LAs to meet.
- In Pärnu County, a strategic planning and spatial development committee has been set up at the level of deputy mayors.
- Network of planning professionals
- More logical municipal borders
- Study trips/days/seminars - professionals from municipalities together, need state support for this, just as there used to be county planning funds to learn about foreign examples.
- Thematic seminars
- Showcasing your good examples
- State coercion with money

4. What kind of training is needed?

- Increasingly, local authorities need "people talkers" - both green and empty homes need such specialists. Incentive funding needed to hire specialists (e.g. Rae municipality hired a Mobility Agency).
- Spatial design programme for managers - should be part of strategic management
- Free public training for local authorities
- Raising awareness (again, a non_metropolitan example)
- A planning curriculum in higher education, also as a microcredit, a better MSc - it will also generate a positive tsunfti
- Lifelong learning in spatial design
- Simple video clips on social media for citizens to understand
- Include in the general education curriculum, in cooperation with local authorities (Kiviõli Secondary School visited Lüganuse municipality) - should also be an initiative on the part of local authorities.
- A community developer in each LA

- Data management - The building register and other registers are not always operational or reliable. Municipalities need to have their own data just in case.
- The solutions provided by the statistical office are very clumsy, it is difficult to see the right layer of maps, rather they are designed for the average person who is interested in spatial data.
- Study of shrinking areas - electricity data can be used to find out who actually lives in an area, where the consumption is. From Elering you can get information by postcode. When drawing up a general plan, municipalities today should indicate the electricity supply and voltage *(grid)* across the territory of the municipality. Every month, the electricity company bills everyone, with details of how much is consumed. But the experts can't get the information easily. It might be possible to aggregate. In my area/community there is just so much consumption. It might be possible.
- The plan should mention the possibility of connecting to the grid, but this is rapidly changing over time. It must be possible to see on an ongoing basis whether there is spare capacity.
- Algorithms that track your movements – data could be transmitted in real time so that local authorities know when to add capacity to the fire brigade or order more food from the local shop.
- Overall view: LAs are interested in centrally developed solutions that could be standardised enough to make it easier to fix bugs. It is not feasible to develop systems individually. These systems can then be specialised, e.g. for visualising the availability of medical and other services.

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