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Strategic Environmental Assessment Guidelines for the Spatial Planning Sector of Georgia

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Strategic Environmental Assessment Guidelines for the Spatial Planning Sector of Georgia

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The publication is issued in English and Georgian.

List of abbreviations and acronyms

Agency	National Environmental Agency
BAF	Biotope Area Factor
Center	Levan Sakvarelidze National Center for Disease Control and Prevention
CEPF	Critical Ecosystem Partnership Fund
EC	European Commission
EIA	environmental impact assessment
EU	European Union
EUNIS	European Nature Information System
GI	green infrastructure
GIS	geographic information system
IBA	Important Bird Area
IPA	Important Plant Area
IPCC AR6	Sixth Assessment Report of the Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
NbS	Nature-based Solutions
NDC	Georgia's updated nationally determined contribution
OECM	other effective area-based conservation measure
PA	Protected Area
Protocol on SEA	UNECE Protocol on Strategic Environmental Assessment
SEA	strategic environmental assessment
SPA	Special Protection Area
Spatial Planning Code	Code of Spatial Planning, Architectural and Construction Activities of Georgia
SUDA	Spatial and Urban Development Agency
UNECE	United Nations Economic Commission for Europe
WMO	World Meteorological Organization

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1. INTRODUCTION

1.1. Purpose and linkages to other guiding documents

The purpose of the *Strategic Environmental Assessment Guidelines for the Spatial Planning Sector of Georgia* (hereafter – 'the Guidelines') is to:

- ensure effective implementation of a strategic environmental assessment (SEA) procedure, as required by the Environmental Assessment Code of Georgia (2017[1]) in application to the spatial planning sector of Georgia
- promote sustainable spatial development
- ensure earlier and more effective integration of environmental protection principles and approaches into spatial strategic documents.

Where appropriate, the *Guidelines* refer to international case studies to illustrate possible approaches or methods of SEA that may be applied to spatial planning in Georgia. The guidance also defines additional tools that derive from green concepts and explains their possible links to SEA and spatial planning (see **section 5**).

These sectoral *Guidelines* should be used in conjunction with the generic Guidelines on Strategic Environmental Assessment (2023), published on the website of the LELP National Environmental Agency (the Agency) of Georgia at https://nea.gov.ge/Ge/News/1160. The sectoral *Guidelines* abstain from repeating the information contained in the Guidelines on Strategic Environmental Assessment, instead referring to it on a variety of themes, including SEA principles, benefits, procedures and responsible parties.

The *Guidelines* constitute a document for reference and will be placed on the Agency's website to be available to all interested parties. They are aimed at the competent bodies, municipal authorities, project developers, SEA consultants and other stakeholders who are engaged in developing or reviewing SEAs for spatial planning documents in Georgia.

Where appropriate, the *Guidelines* also refer to the draft Health Impact Assessment Guidelines developed for Georgia within the framework of the EU-financed twinning project *Support in Implementation of Health Impact Assessment Practice in Georgia (2022–2024).*[2]

1 https://matsne.gov.ge/en/document/download/3691981/1/en/pdf. The clauses on SEA entered into force on 1 July 2018.

2 https://eu4georgia.eu/projects/eu-project-page/?id=1673

1.2. Background

The need for the *Guidelines* was conveyed by the Ministry of Environmental Protection and Agriculture of Georgia to the United Nations Economic Commission for Europe (UNECE) in 2019. In late 2022, the Agency and UNECE agreed to develop the spatial sector guidelines in 2023, before the end of the EU4Environment programme.

The *Guidelines* follow the provisions of the Environmental Assessment Code, as well as the UNECE Protocol on Strategic Environmental Assessment (Protocol on SEA)[3] to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)[4] adopted in 2003 in Kyiv, and Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.[5]

3 https://unece.org/fileadmin/DAM/env/eia/documents/legaltexts/protocolenglish.pdf

4 https://unece.org/environment-policyenvironmental-assessment/introduction

5 https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32001L0042

2. TERMS AND DEFINITIONS

The *Guidelines* use the following terms and definitions that are adopted from the national legislation[6] and consistent with the meaning of the terms used in the Protocol on SEA:

- **Biological diversity** means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.[7]
- **Consultant** is a person holding the qualifications necessary to prepare an SEA report and have scientific, technical and methodological capacities.
- **Cultural landscape**[8] constitutes the "combined works of nature and humankind" that illustrate the evolution of human society and settlement over time, under the influence of physical constraints and/or opportunities presented by their natural environment, and of successive social, economic and cultural forces, both external and internal.
- **Decision-making authorities** are governmental and/or public bodies in charge of approving or adopting a strategic document in accordance with the related legal provisions and administrative structure. It can be the Government or Parliament, ministries, municipalities bodies, the Government of the Autonomous Republic of Adjara, planning authorities, or any other administrative authorities who hold power to approve the strategic documents. In terms of SEA, decision-making authorities should consider SEA recommendations in their decisions.
- **Ecological network** (for conservation) is a system of core habitats (protected areas, OECMs[9] and other intact natural areas), connected by ecological corridors, which is established, restored as needed and maintained to conserve biological diversity in systems that have been fragmented.[10]
- **Ecosystem services** are the direct and indirect contributions of ecosystems to human well-being.[11]

6 Primarily, the Environmental Assessment Code (2017) and the Code of Spatial Planning, Architectural and Construction Activities (2018). Where definitions are absent in the national regulations, good international practice notions, international conventions or other credible sources are referenced.

7 Convention on Biological Diversity, https://www.cbd.int/

8 UNESCO. 2024. Cultural Heritage. https://whc.unesco.org/en/culturallandscape/

9 "Other effective area-based conservation measure" (OECM) is a geographically defined area, other than a protected area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and, where applicable, cultural, spiritual, socioeconomic and other locally relevant values are also conserved (IUCN WCPA, 2019).

10 Hilty, J. et al. 2020. Guidelines for conserving connectivity through ecological networks and corridors. Best Practice Protected Area Guidelines Series No. 30. Gland, Switzerland: International Union for Conservation of Nature (IUCN). https://portals.iucn.org/library/sites/library/files/documents/PAG-030-En.pdf

11 TEEB, 2010. The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB. https://www.teebweb.org/wp-content/uploads/Study%20and%20Reports/Reports/Synthesis%20report/TEEB%20Synthesis%20Report%202010.pdf

- **Ecological stability** is defined as the ability of a system to continue functioning under changing conditions or during disturbances.
- **Environmental impact** is any change of the environment resulting from the implementation of strategic documents or activities. It may include effects on: human health and safety, biodiversity and its components, water, air, soil, climate, landscape or protected areas. Environmental impacts also include impacts on cultural heritage or socioeconomic factors caused by their change.
- **Environmental sensitivity** is a susceptibility of ecological systems and natural resources to human-induced (and sometimes natural) effects. At times, it is considered in terms of values of an area (for example, an area is sensitive if it has higher biodiversity values).
- **Green (and blue) infrastructure** is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services.[12] It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, green (and blue) infrastructure is present in rural and urban settings.
- **Habitat** means the place or type of site where an organism or population naturally occurs.[13] The European Nature Information System (EUNIS) habitat classification defines a habitat as: "a place where plants or animals normally live, characterized primarily by its physical features (topography, plant or animal physiognomy, soil characteristics, climate, water quality, etc.) and secondarily by the species of plants and animals that live there".[14]
- **Landscape-ecological approach** examines the pattern and interaction between ecosystems within a region of interest, and the way in which the interactions affect ecological processes, especially the unique effects of spatial heterogeneity on these interactions.[15]
- **Landscape-specific areas**[16] refer to a distinct, recognizable and consistent pattern of elements that makes one landscape different from another.
- **Natural capital** is a stock of renewable and non-renewable natural components (e.g. plants, animals, air, water, soils, minerals, solar radiation) that combine to yield a flow of benefits to people.[17]
- **Nature-based Solutions** are solutions that are inspired and supported by nature, which are cost-effective, simultaneously providing environmental, social and economic benefits and helping to build resilience.[18] Such solutions bring more and more diverse nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.
- **Other administrative bodies** are competent authorities such as sectoral ministries, State agencies, or municipal institutions, which might be consulted by the Agency during different stages of SEA-related procedures. Executive bodies (City Hall) of municipalities and/or representative bodies (Sakrebulo) of municipalities must inform the public about the SEA process via placing information on the initiation of different stages of SEA procedures, public hearings and issued decisions on their notice boards.

12 Communication from the [European] Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Green Infrastructure (GI) — Enhancing Europe's Natural Capital /* COM/2013/0249 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52013DC0249

13 *Ibid.*

14 EUNIS. https://biodiversity.europa.eu/europes-biodiversity/habitats

15 Clark, W. (2010) Principles of Landscape Ecology. Nature Education Knowledge 3(10):34 https://www.nature.com/scitable/knowledge/library/principles-of-landscape-ecology-13260702/

16 Designing Buildings Ltd. 2024. https://www.designingbuildings.co.uk/wiki/Landscape_character_area

17 UN System of Environmental Economic Accounting: https://seea.un.org/content/natural-capital-and-ecosystem-services-faq#What%20is%20natural%20capital?

18 EU Commission https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions_en

- **Public concerned** is the public which may have an interest in a decision on the implementation of a strategic document or activities or which will or is likely to be affected by such a decision. The public concerned also includes non-entrepreneurial (non-commercial) legal entities registered in accordance with procedures established by the legislation of Georgia, whose goals of operation are to promote environmental protection in the country.
- **Planning authority** is an administrative body or any other competent organization which, pursuant to a relevant normative act, is responsible for preparing a strategic document. It must ensure that SEA is carried for strategic documents (if required) and is responsible for its quality and for meeting legal provisions. Planning authority is also referred to as an '**initiator**' of the development of spatial planning and urban development plans in spatial planning by-laws. The planning authority organizes public hearings during the SEA procedure.
- **Spatial and Urban Development Agency (SUDA)** is the public law legal entity established in accordance with the Code of Spatial Planning, Architectural and Construction Activities of Georgia[19] (hereafter – "the Spatial Planning Code") and belonging to the system of the Ministry of Economy and Sustainable Development. SUDA is responsible for developing spatial and urban planning policy, legislation and methodological guidance, and reviewing and approving the concepts and drafts of detailed development plans initiated by physical persons and legal entities.
- **Spatial planning** is a geographic reflection of society's economic (agricultural, industrial, transport, etc.), social, cultural and ecological policies, which develops within the framework of a multifaceted and multidisciplinary approach and ensures balanced development in accordance with the overall strategy and physical organization of space.
- **Spatial plans** (also called "spatial planning plans" in the Spatial Planning Code) are plans that reflect the geographic issues of the economic, social, cultural and ecological policy of the society and that are developed within the framework of a multidisciplinary approach and ensure balanced development and physical organization of space in accordance with the overall strategy.
- **Strategic document** is a sub-normative act of an administrative body issued in accordance with the legislation of Georgia. The strategic document establishes a future development framework for individual sectors and determines characteristics and/or volumes for the types of activities provided in annexes I and II to the Environmental Assessment Code.
- **Strategic environmental assessment (SEA)** is a procedure of study and general forecasting of the possible impact on the environment and human health by the implementation of the strategic document provided for by the Environmental Assessment Code. SEA includes scoping, SEA report preparation, public participation, holding consultations with authorized administrative bodies and considering the recommendations and evaluation results received from them when adopting/approving the strategic document.
- **The Ministry of Environmental Protection and Agriculture of Georgia** implements the State policy in the field of environmental assessment.
- **The National Environmental Agency LEPL**, within the Ministry of Environmental Protection and Agriculture, identifies the need to perform a SEA based on a screening procedure, issues screening decisions and scoping opinions, establishes expert commissions to examine SEA reports, and issues SEA recommendations within its competency. The Agency organizes the procedures for transboundary SEA, if relevant.
- **The Environmental Information and Education Centre LEPL** ensures the opportunity for participation of the public/the public concerned in the SEA process, specifically during the issuance of a screening decision, a scoping opinion, and a SEA recommendation, providing access to relevant information, including related to a transboundary SEA.

19 https://matsne.gov.ge/ka/document/view/4276845?publication=23

- **The Levan Sakvarelidze National Centre for Disease Control and Prevention LEPL**, under the Ministry of Displaced Persons from the Occupied Territories, Health, Labour and Social Affairs, together with the Agency, plays an important role in the SEA process and, within its competence, issues a screening decision, a scoping opinion, and recommendations on the SEA report and the strategic document.
- **The public** is defined as one or more natural or legal persons as well as other organizational forms (which are not legal persons) provided by the legislation of Georgia. These could be associations, organizations, or groups.
- **Transboundary impact** is any impact on the environment of Georgia and any other state arising from the full or partial implementation of a strategic document or planned activities in Georgia or in any other state.
- **Urban development plans** are general plans, development plans and/or detailed development plans which constitute a normative administrative-legal act. Urban development plans can be prepared for a city, town or village.
- **Urban planning** is the process of developing an urban plan for settlements and different types of territories in order to create a decent, healthy and safe environment for human life, activities and recreation based on the principles of sustainable development and of cultural heritage protection.

3. INTEGRATING SEA INTO SPATIAL PLANNING

3.1. Overview of the spatial and urban planning process

3.1.1. Planning levels and stages based on the national legislation

The purpose of the Code of Spatial Planning, Architectural and Construction Activities of Georgia is to legally regulate spatial planning, urban planning and architectural and construction activities in Georgia. The Spatial Planning Code establishes the spatial and urban planning system; the main principles, goals and tasks of this system, as well as the hierarchy and composition of spatial and urban plans; the rules of their development and approval; conditions for using land for construction and the basic requirements for building; and rules of administrative proceedings related to construction permits, construction supervision, responsibilities and other aspects.

The Spatial Planning Code defines plans of upper and lower taxonomic levels. At the upper level, spatial planning is involved in the development of territories, while at the lower level, urban planning is involved in managing development. In general, the strategy for developing plans at the higher taxonomy level includes goals, objectives, implementation schedules and financing; at the lower taxonomy level, it includes priorities and sequencing. Graphics, such as maps and drawings, for the plans of higher (strategic) levels are schematic, while at the lower taxonomic level they are more concrete and detailed.

As per the Spatial Planning Code (art. 5):

- spatial plans are developed at the following levels:
  - spatial plan of Georgia
  - spatial plan of the autonomous republics
  - multi-municipal/municipality spatial plan
- urban plans are developed at the following levels:
  - general plan (or otherwise called a "master plan") (of cities, towns or villages)
  - development plan (of parts of cities, towns or villages)
  - detailed development plan (of blocks or districts in the cities, towns or villages).

The tasks of spatial and urban planning are to regulate, develop and properly arrange the entire territory of Georgia, its parts and settlements, reconcile different sectoral interests, overcome possible contradictions between different levels of planning, and create conditions for harmonious development of the human living environment (Spatial Planning Code, art. 4). The aims of spatial planning should facilitate its full integration with the main requirements of European and international development.

Spatial and urban plans consist of both textual and graphical parts. The textual part must spell out the essential aspects of the spatial planning (including the description of the existing situation and its assessment), legal requirements, the key tasks of the planning document, and activities to be implemented. The graphical part must comply with the cartographic standards and the scales established by the legislation of Georgia. When preparing spatial plans, it is required to ensure that they include basic measures to be taken to improve the existing ecological situation in respective parts of the country, and to preserve the territories of natural and historical-cultural heritage (Spatial Planning Code, art. 15). Methodological approach used in planning may vary according to the context and particularities (issues) of the planning area (deploying good practice methods).

Since the quality of a spatial/urban plan can influence the quality of SEA, it is important that the former is based on environmentally inclusive methods (for some suggestions, see section 5) and that SEA is used to improve the quality of the planning documents.

3.1.2. Process, procedure and timeline

The Rules for Development of Spatial Planning and Urban Development Plans (2019)[20] detail the requirements of the Spatial Planning Code on a variety of aspects, including the procedure and timeline of the plan-making and approval process. Only a few of these are considered below to the extent needed to inform the *Guidelines*.

The review and approval of the spatial planning plans/urban development plans is carried out in two stages (Spatial Planning Code, art. 19):

- **Stage I** – review and approval of the spatial / urban plan concept;
- **Stage II** – review and approval of the spatial / urban plan.

Stage I begins *after* the concept has been developed based on pre-development studies, such as topographic-geodesic research, engineering-geological research and condition surveys of structures. The planning authorities initiate the preparation of the concept – for instance, SUDA for national-level planning, and the executive body of the municipality for municipal-level planning.

The concept should include the main goals and objectives of the spatial plan and the ways to achieve them. According to the current practice in Georgia, the preparation of the concept of a spatial plan takes around five to seven months for larger plans such as multi-municipal spatial plans;[21] and three to five months for that of smaller plans, such as for a part of the municipality.

The planning authority's decision to initiate spatial or urban plans should include not only the description of the planning needs, purpose of the planned change, and definition of the planning unit,[22] but also the requirement / tasks to develop "a strategic environmental assessment report and other related documents".[23]

The municipality should submit its concept to SUDA in order to obtain the "expert conclusion".

Stage I should take no more than 90 working days for concepts of spatial planning and general plans; and no more than 40 working days for concepts of (detailed) development plans (in both cases, counted from the date of submission of the concepts to SUDA).[24] Stage II has the same legally prescribed duration for review and approval of the drafts of spatial planning and general plans, and (detailed) development plans upon their submission to SUDA.

Proceeding to Stage II is possible only after the concept of a spatial planning plan/urban development plan has been approved in Stage I.

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20 Resolution of the Government of Georgia No. 260, 3 June 2019. https://matsne.gov.ge/ka/document/view/4579368?publication=0#DOCUMENT:1

21 Several municipalities can agree to develop a multi-municipal spatial planning plan together (Chapter V, Spatial Planning Code).

22 A planning unit is a geographical area, which can be a country, an autonomous republic, a municipality, a historical-cultural and/or economic region, a territory and/or zone of special regulation, a settlement, a part of a settlement (e.g. district, quarter, district).

23 Article 6. Rules for Development of Spatial Planning and Urban Planning Plans (2019).

24 Article 16. Rules for Development of Spatial Planning and Urban Planning Plans (2019). In exceptional and justified cases, this period can be extended by up to three months.

Stage II is launched once the draft of the spatial planning plan/urban development plan is developed, based on the approved concept.

The final draft of the spatial planning plan of the municipality and SUDA's expert conclusion on this draft are submitted for legal consultation to the legal supervision body in accordance with the law.

Both stages of the administrative process for the development of the plans are led by the initiator.

3.1.3. Institutional actors and responsibilities, and provisions for participation and consultations

The planning authority takes a decision about the initiation of the plan. The planning authority (with the exception of the municipalities in the territory of the Tbilisi City Municipality and the autonomous republics) submits the prepared concepts or drafts of the plans to SUDA. Within the scope of its competence, SUDA is authorized to prepare an "expert conclusion" for the concepts/drafts of the plans.

SUDA ensures the participation of other interested ministries/agencies and the submission of the expert conclusion to the municipality based on the comments and opinions received.

Annex I describes the roles of administrative bodies involved in the review of the concepts and drafts of the plans according to the Spatial Planning Code.

Annex II summarizes the provisions for public participation and consultations, which are contained in the Rules for Development of Spatial Planning and Urban Planning Plans (2019).

After public discussion and receiving feedback from other administrative bodies, the final concept/draft of the spatial planning plan and/or urban development plan must be developed. Both are approved by the respective planning authorities via legal acts (that is, the final concept is approved by an individual administrative-legal act, whereas the final draft of the spatial plan is approved by a normative administrative-legal act).

The recommendations of the Agency and the Centre are required for a spatial plan/urban planning document (which is subject to an SEA as per the Environmental Assessment Code) so that it can be adopted or approved.

3.2. Overview of the SEA procedure

The SEA procedure, alongside the description of institutional actors, responsibilities and timelines, is detailed in the Guidelines on Strategic Environmental Assessment (2023) https://nea.gov.ge/Ge/News/1160. The procedural integration of the SEA steps with the spatial / urban planning is discussed in the next sub-section, whereas their interrelation is considered in **section 4**.

3.3. Procedural integration of the planning and SEA processes

The Spatial Planning Code (art. 10) determines that spatial and urban development plans shall be subject to an SEA in the cases established by the Code, and also makes reference to the Environmental Assessment Code. The spatial planning by-laws further detail that the *concept* of the plan is approved *after* the scoping opinion is issued in accordance with the Environmental Assessment Code.[25]

25 Article 16. Rules for Development of Spatial Planning and Urban Planning Plans (2019).

The SEA report is prepared for the draft spatial plan based on the SEA scoping opinion. If the planning authority obtains the screening decision – which states that no further SEA procedure is required – the planning authority proceeds with the planning procedure (without an SEA).

The planning authority applies to the Agency and the Center and submits the SEA report and the draft of the strategic document both in a physical and an electronic format. The Agency and the Center, within their competence, issue recommendations regarding the SEA report and the draft of the strategic document.

The planning authority holds a public hearing; while the Agency and the Center participate in it at the SEA report review stage.[26]

As stipulated by the Environmental Assessment Code, the adoption/approval of a strategic document is possible only after the Agency and the Center issue the recommendations on the draft strategic document and the SEA report.

Before adopting or approving the strategic document, the planning authority is obliged to consider the recommendations issued by the Agency and the Center on the SEA report and the draft strategic document, and the opinions and comments submitted by the public on the drafts of the SEA report and strategic document.

A schematic illustration of the possible integration of the spatial planning and SEA is presented below based on the legal requirements. Where the timelines are not noted in the laws, current practice in Georgia is used as a reference.[27]

Table 1. Integrating SEA and spatial/urban plan-making

Plan-making timing	Spatial plan-making process	SEA process	SEA timing	Comments on interconnections between plan-making and SEA-making
This step is not legally time-bound	Decision to prepare a plan taken by the planning authority Development of the terms of reference for a plan, including an SEA	Preparation and submission of screening application	This step is not legally time-bound	Processes can be easily integrated
Five to seven months for larger plans Three to five months for smaller plans	Preparation of the concept	Implementation of the screening procedure Screening decision issued by the Agency and the Center[28]	No earlier than 10 and no later than 15 working days	Processes can be easily integrated
		Preparation of the scoping report	Within the period required for the preparation of the concept	

26 Environmental Assessment Code, article 27.

27 Based on the terms of reference for the preparation of (a) the spatial plan of Gurjaani Municipality, including SEA documentation (2021) and (b) the spatial planning documentation for the villages in Bazaleti administrative unit and their surroundings, including SEA documentation (2023).

28 Where the screening decision determines that the strategic document is not subject to an SEA, it will go through the approval procedures in accordance with the legislation.

Plan-making timing	Spatial plan-making process	SEA process	SEA timing	Comments on interconnections between plan-making and SEA-making
Up to 90 working days for concepts of spatial planning and general plans[29] Up to 40 working days for concepts of (detailed) development plans	Review of the concept by SUDA	Review of the scoping application and issuance of the scoping opinion by the Agency and the Center NB: *Note that the screening and scoping applications can be submitted together, alongside the accompanying concept of the plan*	No earlier than 20 and no later than 25 working days to issue the scoping opinions (after the application registration date)	Processes can be easily integrated
	Public hearing during the concept review stage	*No public hearing at the scoping application review stage*		
Timing not legally defined and is set individually for each concept/plan	Approval of the concept by the planning authority	Scoping opinions should have been issued by this time to enable the approval of the concept	Not applicable	As a concept cannot be approved without a scoping opinion, the planning process depends on the SEA process at this stage
Six to seven months for larger plans Two to three months for smaller plans	Preparation of the draft plan	Preparation of the SEA report	Within the period required for the preparation of the draft plan	Processes can be easily integrated
Up to 90 working days for drafts of spatial planning and general plans Up to 40 working days for drafts of (detailed) development plans	Review of the draft plan by SUDA	Review of the SEA report and draft plan by the Agency and the Centre	No earlier than 51 and no later than 55 working days to issue the SEA recommendations (after the application registration date)	Processes can be easily integrated in the cases of spatial planning and general plans; however, a collision of deadlines is noted in relation to (detailed) development plans
Accommodated within the draft plan review period	Public hearing at the draft plan's review stage	Public hearing on the SEA report and draft plan	Accommodated within the SEA report review period	Processes can be easily integrated for spatial plans; however, a collision of deadlines is noted in relation to (detailed) development plans
Timing not legally defined	Review and consideration of the SEA recommendations in the plan Adoption of the final plan	SEA recommendations are issued by this time to enable this adoption of the plan	Not applicable	As a plan cannot be approved without SEA recommendations being issued and considered, the planning process depends on the SEA process at this stage

29 The review period in practice is shorter for the plans commissioned by SUDA.

As it can be seen from the above table, the spatial / urban planning process and SEA process match procedurally. The exception is the accommodation of the up-to-55-working-day review of the SEA report and the up-to-40-working-day review of the draft plan allocated for drafts of (detailed) development plans.

Annex III provides an example of the workplan of a parallel preparation of the Grigoleti and Kvavilnari coastal development plan and its SEA (2020).

3.4. Specific benefits of SEA for spatial planning

The benefits of SEA that are described in the Guidelines on Strategic Environmental Assessment (2023) also apply to the spatial/urban planning sector. International good practice shows many specific benefits of an SEA for spatial planning, including the following:

- SEA identifies potential planning conflicts i.e. provides 'early-warnings' for further spatial development;
- SEA formulates principles and possible mitigation measures applicable at the level of more detailed regional planning and thus contributes to efficient spatial planning;
- SEA ensures that environmental issues without clear spatial dimensions and formal spatial limits set by regulations are not neglected in the spatial planning process;
- SEA verifies that environmental data used in the planning are up-to-date and reflects reality (e.g. establishes where the biodiversity hot-spots really are regardless of the area´s formal status or land-use category);
- SEA supplies the planning process with specific expertise that is often not available to planners (i.e. on biodiversity, air quality, hydrology);
- SEA provides inputs into the process of selecting planning alternatives, identifies preferred (spatial) variant with least negative/most positive potential environmental impacts;
- SEA facilitates public engagement, when the planning process becomes too long and complicated for non-specialists to participate by simplifying and singling out the key concerns and communicating them to the stakeholders.

4. SEA IN SPATIAL PLANNING

4.1. Scope of application – when it is mandatory to conduct an SEA for spatial planning documents

According to article 20 of the Environmental Assessment Code, strategic documents are subject to an SEA if they are prepared in the specific sectors defined by the Code and set the framework for future development projects listed in annexes I and II of the Code. The list of sectors includes **Planning and spatial arrangement**.

"**Planning and spatial arrangement**" is a broad notion. It may cover such strategic documents as municipal spatial arrangement plans, city master plans, tourism area development plans, land-use spatial development of a self-government unit/districts therein, and so forth.

A mandatory SEA is required not only for newly prepared spatial planning/urban development documents, but also for major changes to them – if such changes set the framework for future development projects listed in annexes I and II of the Environmental Assessment Code. The Code, in article 20.4, determines that a "**major change**" entails such amendments to a strategic document that are linked to conceptual changes, e.g.: an increase in the scale of the activity to be carried out under the strategic document, the change of the location (including expansion), type, operational conditions or production capacity of the activity.

In addition, according to international good practice, major changes can relate to the changes in the priorities and objectives of a strategic document. Such changes are expected to trigger further major changes that are stipulated in the Code (e.g. a change in the scale of types of activities; see above). For an example of a major change, see box A.

BOX A

Example of a major change (triggering an SEA)

If a strategic document is originally a rural administrative unit development plan with the priority of developing agriculture but later the priority and scope of activities change to developing recreational areas and creating an eco-tourism hub, this can be considered as a **major change** to the *concept* and *scope* of the development plan.

Minor changes (see **box B**)[30] in the spatial planning/urban development plan that do not alter its content conceptually, as well as those plans that relate to a territory of self-government community (excluding self-governing cities), are subject to an SEA, if such change or plans covering the territory of a self-governing community:

(a) have a long-term and irreversible impact on the environment or an impact with a highly cumulative effect;

(b) pose an increased risk to the environment and/or human health;

(c) affect territories having unique natural characteristics or containing cultural heritage and protected areas, as well as areas and/or landscapes to which the status of local and/or international importance has been assigned.

BOX B

Example of a minor change (not triggering an SEA)

A development plan for part of a town envisages renovating and extending the green areas/parks, and installing fountains in several locations. These changes can be considered as **minor changes** to the concept and scope of the development plan that, as per the screening, would therefore not trigger an SEA.

Such changes do not qualify as 'major changes' according to the Environmental Assessment Code (art. 20.4) and do not satisfy any of the three criteria that expose minor changes to a mandatory SEA (Environmental Assessment Code, art. 20.5).

All *strategic documents*, however, irrespective of their titles (e.g. strategy, concept, programme), that meet the above criteria are subject to an SEA.

Guiding questions to determine if strategic documents are subject to an SEA are detailed in the Guidelines on Strategic Environmental Assessment (2023) (see section III.3).

An SEA is to be applied to strategic documents across the spatial and urban planning hierarchy – from national to regional and local spatial plans/programmes. In principle, higher-level strategic documents are supposed to guide lower-level planning. The spatial planning system in Georgia builds on a hierarchic approach as well, as described in the above sections. Current practice shows, however, that sometimes lower-level spatial plans are developed ahead of higher-level ones in response to the urgent need of certain administrative territories.[31] In such circumstances, policy analysis (or otherwise "strategic planning analysis"), described in the scoping section below, becomes vital.

30 It is noteworthy that the Spatial Planning Code contains its own definition of a "non-substantial change", which serves the purpose of spatial planning/technical decision-making. A "non-substantial change" is one that does not change the planning concept, in particular it does not increase the total development intensity factor (K-2), the number of floors, or the density of the housing stock. If changes are categorized as non-substantial, the plan is not subject to passing Stage I defined by the Spatial Planning Code, in particular it does not require the preparation of pre-design studies of the plan, nor re-examination and approval of the concept. In this case, the initiator files a screening application to the Agency and the Center, and conducts an SEA if the screening decision determines the need for it.

31 For instance, detailed development plans for small areas in Batumi are submitted to the Agency for a screening procedure, while Batumi City does not have an approved master plan.

4.2. Screening

As defined in the Environmental Assessment Code (art. 3.u), screening is a procedure of determining the need to perform an SEA. In other words, and relative to the spatial / urban planning, screening is about deciding whether the SEA procedure will be carried out for a specific spatial or urban planning document.

First, the planning authority considers if its spatial or urban plans or changes to them are subject to an SEA. It does so at the same time when deciding to develop a spatial or urban plan and shaping its concept. As practice in Georgia shows, when the need for an SEA is straightforward (e.g., both criteria mentioned in **section 4.1** are met), the planning authority directly submits the scoping application to the Agency and Center.

If the planning authority considers that an SEA is not required, it may submit a screening application[32] to the Agency and the Center which will issue a "screening decision" about whether one is required or not. The planning authority has also a right to submit both the screening and the scoping application at the same time.[33]

Practically speaking, the planning authority may consider an SEA unnecessary and thus apply for a screening procedure for spatial/urban plans:

- Where spatial/urban plans or changes to them are minor, apply to small territories (within a self-government unit) or cover a self-government unit but do not (a) have a long-term and irreversible impact, (b) pose an increased risk to the environment and/or human health, or (c) affect territories having unique natural characteristics.
- Where spatial/urban plans set frameworks for projects that are not listed in Annexes I and II of the Environmental Assessment Code.

For a screening procedure, the planning authority is also obliged to submit a concept or a draft of a spatial/urban plan in both physical and electronic forms at the earliest stage of its development. The Agency and the Center, considering the criteria defined by the Environmental Assessment Code and the opinions and comments received from the public, will decide whether the spatial / urban plan should undergo the SEA process or not. The screening procedure takes from 10 to 15 working days.

Screening criteria and the time-bound procedure are detailed in the Guidelines on Strategic Environmental Assessment (section IV.1).

4.3. Scoping

Scoping is a procedure to determine the information that needs to be obtained and studied for an SEA and the means to include it in the SEA report (Environmental Assessment Code, art. 3(r)). This information should cover the key environmental and health issues to be further addressed in the SEA report, and identify those issues which are not relevant to the spatial/urban planning document and therefore do not need to be considered.

The planning authority must prepare a scoping application and submit it to the Agency and the Center, together with a concept or a draft of a spatial / urban plan. The Agency and the Center will issue their individual scoping opinions no earlier than 20 and no later than 25 working days upon registering the application. If the SEA report and the relevant draft spatial/urban planning document are not submitted to the Agency and the Centre within five years, the planning authority will have to undergo the scoping procedures again.

The scoping procedure as per the legal requirements, as well as various practical instructions regarding scoping, are detailed in the *Guidelines on Strategic Environmental Assessment* (section IV.2).

32 Article 20(6) of the Environmental Assessment Code.

33 Article 24(6) of the Environmental Assessment Code.

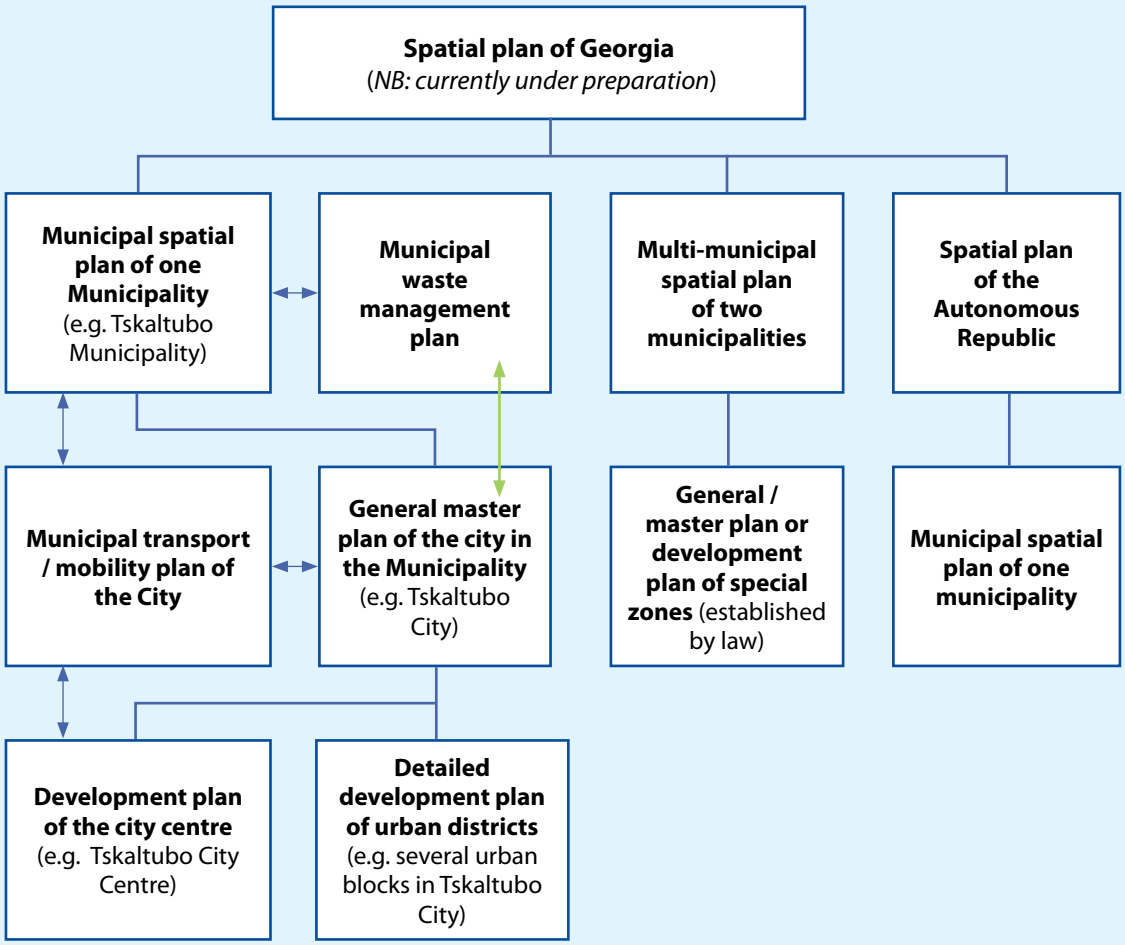
The Environmental Assessment Code stipulates nine elements that should be included in the SEA scoping application (art. 24.2.), and the Guidelines on Strategic Environmental Assessment provide guidance on additional scoping elements (section IV.2 and annex 2). The current sectoral guidelines provide advice on several critical elements that the SEA scoping report for spatial/urban planning documents should cover:

1. **Policy analysis (or "strategic planning analysis")**,[34] which determines the extent to which other relevant strategic documents are tiered to and cross-related with the spatial plan undergoing the SEA (see **box C** for an example of tiering).

   To establish the basis for this analysis, it is necessary to identify the strategic documents that can be related to the spatial plan "vertically" [strategic initiatives located higher in the planning hierarchy, which can form the framework for this particular spatial plan, or strategic initiatives located lower in the planning hierarchy, and thus they can be aimed at implementing the given spatial plan, including creating mechanisms for its operationalization]. It is also useful to study "horizontal" and, if possible, "diagonal" connections with other strategic documents, which may influence the given spatial plan or are related to it.

BOX C

A tiering example for spatial/urban planning in Georgia



34 Linked to the Environmental Assessment Code, article 24.2.(g).

The Spatial Planning Code requires that spatial planning and urban development plans should not conflict. When preparing the plan, it is necessary to consider those plans (or their concepts) that are hierarchically superior to the plan. In addition, sectoral plans[35] should be considered in the plan.

This is based on the principle of vertical planning hierarchy tiering (compatibility). In exceptional cases, a hierarchically subordinate plan can establish requirements that are essentially different from those in the hierarchically superior plan – however, only after making a corresponding change in that superior plan or simultaneously with it.

If, for example, a master plan is developed, it must take into account the requirements of the municipal spatial plan, and must not contradict the goals and objectives set in the spatial plan, or initiate any change in the superior plan with the corresponding justification.

The SEA (for both a concept and a draft plan) is expected to examine whether the plan is well aligned with the existing strategic context – and specifically the environmental and social sectoral plans. The sectoral plans may already be integrated with the hierarchically superior plan and therefore will be considered by the compatibility requirement of the plan. However, it may have been updated or clarified later and should be considered separately in the SEA.

2. **Identification of environmental, health and social objectives that will be further used for the objective-led assessment in an SEA**[36] entails compiling a list of relevant environmental, health and social objectives (and targets where such exist) established on the national level from existing strategic documents identified above. Such targets and objectives are determined for each baseline component (e.g. air, water, biodiversity, public health) via a review of relevant policy documents adopted at the international, national, regional or local level. It is critical to identify those environmental, health and social objectives, the fulfilment of which can be achieved or contributed to by a spatial planning document.

Box D sets out examples of the objectives that can be used in an SEA.

BOX D

Example of SEA objectives that can be selected as relevant to a spatial/urban plan

Topic: Climate change

Objective and target: By 2030, a 15 percent reduction of greenhouse gas emissions in the transport sector compared to the baseline. The task involves encouraging alternative forms of travel/mobility – walking, cycling and public transport (bus, metro, minibus) – instead of using private cars. It is important to increase the capacity of metro trains and buses, effectively improve bus routes, reduce the traffic of private cars in central areas, improve the parking system, arrange bicycle lanes, etc.

***Source**: formulated according to the 2030 Climate Change Strategy of Georgia.*

35 A sectoral plan (environmental protection, cultural heritage protection, energy development, agricultural development, waste management, mobility/transport management transport system development, etc.) is a document developed and approved by the relevant authorized body. Its content, development and approval are regulated by legislation. Sectoral plans can be relevant to certain spatial and urban development plans.

36 Although this is not mentioned in the Environmental Assessment Code, it is, however, a good practice and is required under the UNECE Protocol on SEA, article 7.2.

Topic: Land use and landscapes

Objective and target: To reduce occupation of new land by supporting brownfields utilization.

***Source**: formulated based on the XXX country's National Environmental Policy*

Topic: Biodiversity

Objective and target: To secure protection and renewal of migration routes, corridors and stops for migrating species, and to reduce landscape fragmentation caused by migration barriers.

***Source**: formulated based on the XXX country's Biodiversity Protection Strategy*

Topic: Socioeconomy

Objectives and targets: To ensure environmental protection as an integral part of the process of economic growth. To facilitate the introduction of environmentally-friendly modern technologies and development of a green economy

***Source**: formulated based on the Socio-economic Development Strategy of Georgia – "Georgia 2020"*

Etc.

3. **Environmental, including health and social, baseline analysis**[37] that should be focused on those elements of the physical, natural and social environment that are relevant to the given spatial plan. Such key environmental, including health and social, baseline components[38] would include:
   - atmospheric air quality
   - climate (adaptation, mitigation)
   - surface and groundwater
   - agricultural land
   - forests/ land intended for forest functions
   - relief, geological environment, and raw material resources
   - flora, fauna, biodiversity
   - ecosystem services
   - soils
   - landscape (natural, cultural and historical)
   - public health
   - cultural, architectural, and archaeological heritage.

   For each of the listed baseline components (air, water, soil, etc.), it is necessary:
   - To describe the current development and **current state** of an individual environmental component (its key features, relevant indicators) in the area under consideration, and include an extrapolation of their expected development *without* implementing the spatial plan.
   - To identify the main characteristics of the components and **environmental problems** that may be affected by applying the spatial plan.

For the purposes of the *Guidelines*, we consider "environmental problems" to be negative/undesired change in components of the environment (such as air, water, noise, soil and so forth). In the case of components of the environment for which the legislation does not set thresholds or value limits (agriculture land area, forest area),

37 Linked to the Environmental Assessment Code, article 24.2.(c and h).

38 For what is implied under "environmental components", refer to clause 10.3.D of the Environmental Assessment Code.

the "problem" can be defined through an expert opinion based on the interpretation of the applied indicators (e.g. concentration of their highest or lowest values in a certain area), indicating that the current state or trend is not desirable and that it is therefore necessary to proceed with maximum care when defining new development areas and corridors within the spatial plan.

Scoping reporting for spatial/urban planning should avoid presenting environmental and social information that is not directly relevant to planning decisions. Instead, the scoping report should focus on key issues for the plan under review, and what the plan can have a significant effect on. A simple method that helps keep the scoping report focused (and the subsequent assessment more effective) is referred to as a "scoping matrix" (see **box E**).

Another example of the scoping matrix is provided in annex 2 of the Guidelines on Strategic Environmental Assessment.

BOX E

Scoping matrix from the pilot SEA of the master plan for the City of Orhei, Republic of Moldova

Main issues	Specific concerns and problems	Geographic areas of concern	Likely linkages to the spatial plan
Public health	Poor water quality in rural areas (wells); lack of drains for rain water management	Landfills, wastewater cesspools	Lack of overall plan Construction performed in the '50 of the last century
Water	Microbiological pollution of surface water Pollution of surface water with chemicals Flooding natural areas Air pollution (arsenic) Sewerage only on 65% of the area Runoff water treatment is missing Raising groundwater in the River Raut meadow	All water basins (Raut, Ivanos, lac) Orhei town Area adjacent to the river Ivanos meadow of the River Raut Partially solved	Polluted water coming from…
Air	Air pollution (nitrogen dioxide, soot, particles, dust) Quarry / mine – dust and noise Ring highway road around Orhei	Trucking-transport Household heating systems Large companies: asphalt production plant (7 km suburbs) High-level dust from soil erosion Extraction from the quarry Local pollution (in some parts of roads)	No monitoring station located in Orhei Both quarries were closed, and there is an authorization issued by the Government; their cultivation is planned The proposal was that the ring road be extended outside the city

Main issues	Specific concerns and problems	Geographic areas of concern	Likely linkages to the spatial plan
Land	Landslides Lack of boundaries between green areas and areas for construction Extraction from quarries in the city Land erosion Land-use change at the expense of agricultural land	Landslides – in two districts: Slobozia Doamnei and Bucuria Currently no land allocated for industrial investments	Spatial plan to determine limitations on future land-use
Waste	Waste from mining activity Lack of the authorized waste land filed	Domestic waste landfill exists but is not according to standards and is on the bank of the River Raut	The strategy of waste The decentralization strategy of waste

The common task of the preparation of these baseline analyses is the differentiation of the territory under consideration on the basis of the observed characteristics, in particular focusing on the most exposed (burdened) areas, or on the area with the highest concentration of the observed environmental feature as a basis for the subsequent assessment of cumulative effects.

Identification of key issues that might be affected by the spatial plan must focus both on key sensitive/vulnerable recipients and on the spatial dimension of potential effects (i.e. from the concentration of proposed activities in particular areas).

Various quantitative indicators – i.e. with the calculation algorithm – are used in order to express the differentiation of the territory under consideration in terms of the state of a specific environmental component or the frequency of occurrence of a specific environmental problem. In principle, two different sources of environmental data can be defined according to their instant availability:

- Environmental issues standardly included in the spatial plan (required by planning regulation, i.e. the data that should be possible to take from the plan)
- Other data necessary to describe or evaluate the topic.

The former is to be considered as minimum standard input data within any given SEA analyses, while the latter can be a matter of discussion with the Agency during the scoping phase as to what effective and efficient data gathering effort should be made for the SEA to deliver appropriate results.

Section 4.4.2 provides the basic outline for analysing individual key environmental components. The indicators and the related graphical diagrams (see section below) are suggested as recommendations. It is within the competence of the SEA team (experts hired to conduct the SEA and prepare the reports) to use indicators and diagrams which, depending on the characteristics and values of the described area and the state of the environmental components, fulfil the purpose of the analysis.

The interpretation of the results must always include an expert's reflection on the extent to which the results obtained correspond to the actual state of the territory.

The verbal (narrative) assessment should be as far as possible supplemented by a graphical part showing the spatial projection of the phenomena and characteristics to be displayed and their spatial distribution.

Depending on the scale and method of display, two types of graphical annexes can be distinguished:

- Spatial data (GIS or geographic information system) with reference to coordinates (with shp-file), at a scale identical or close to the spatial plan drawings:
  - Spatial data with a graphic definition of the legally binding "environmental land-use limits" such as borders of protected areas, sanitary buffer zones, and protection zones of water resources.
- Graphic diagrams, cartograms and chart diagrams:
  - To show the area of interest and the values of the observed characteristics in relation to the selected territorial unit (e.g. administrative district of the municipality).
  - To visualize the differentiation of the territory in question in terms of the monitored characteristics and the definition of the most exposed areas.
- A drawing scale allowing the area of interest to be shown in A3 or A4 format may be considered appropriate.

Any baseline analysis must include a description of the expected development of the state of environmental baseline components without the spatial plan implementation (Business-As-Usual scenario). This could be a simple extrapolation of existing development trends, possibly considering the knowledge of possible scientific and technical development or any planned changes in legislation. In terms of the development of individual functional systems (especially relating to transport and energy infrastructure), it is necessary to reflect projects in an advanced stage of preparation or implementation, the completion of which will not be affected by the preparation and implementation of the spatial plan.

Typically, little to no quantified data are available for this assessment and it is therefore carried out by an expert estimation. The conclusions should indicate whether the following can be assumed without implementing the spatial plan:

- (significant) changes in the observed characteristics of environmental components, or in the dynamics of their development (improvement or deterioration).
- (significant) changes in the spatial distribution of these characteristics, in particular the expansion or reduction of the most exposed areas.

4.4. SEA report for spatial/urban planning documents

4.4.1. Overall approach

The subject of an SEA assessment includes both narrative and graphical components of the spatial planning document.

Narrative components are those that do not include graphics, e.g.:

- land-use planning priorities
- principles and specific measures for protecting and developing the natural and cultural values of the territory
- determination of target landscape characteristics, including conditions for preserving and achieving them
- determination of the order of changes/impact in the territory – phasing.

Components with graphical representation of the spatial information may include, e.g.:

- definition of areas and corridors, including requirements for the use of the territory, and conditions for decision-making on changes in the territory

- delineation of landscape types (natural, cultural, historical)
- delineation of areas for publicly beneficial buildings and measures, buildings and measures to ensure the defence and security of the State, definition of transformation areas
- definition of areas and corridors in which the preparation and issuing of a regulatory plan by the municipal or central authorities is a condition for decision-making on changes in their use.

It is important to keep in mind that the requirements for the use of the territory, or criteria and conditions for subsequent decision-making on variants of changes in the territory in the form of narrative statements, are also part of the subject of assessment in an SEA.

4.4.2. Proposed content of baseline analyses for individual environmental components

The list of environmental and social components below is typically relevant to spatial/urban planning. The contents of the components are indicative. Both the list of components and the contents should be adjusted to the specifics of a particular SEA and its planning subject, and supplemented, if necessary. The data sources and related legislation are not exhaustive.

4.4.2.1. Air quality

Key indicators

- Area with poor air quality
- Number of municipalities and inhabitants in areas with poor air quality.

The environmental issue monitored can be defined based on information about exceedances of the air quality threshold values in individual parts of the territory.

The assessment of atmospheric air is carried out according to the resolution of the Government of Georgia No. 383 "On Technical Regulation on Atmospheric Air Quality Standards" (2018) (for example, for sulphur dioxide SO_2, nitrogen dioxide NO_2, solid particles PM10 and PM2.5, carbon monoxide CO and benzene C_6H_6).

The quality of the atmospheric air if individual areas is determined according to the values of background concentrations: 1 – based on the data of regular observations at air pollution observation posts; 2 – in the absence of data, according to the size of the population, according to the coefficients assigned to 0–250,000 people.

The assessment of the air quality of the natural environment can be carried out in accordance with atmospheric air monitoring. Monitoring includes measurement, recording and reporting of substances in the ambient air.

Based on the above, it is necessary to carry out an assessment of the atmospheric air of the area from the perspective of development.[39]

Environmental limits of the land use

- Areas (1 km^2) where one or more air quality limits[40] have been exceeded on average over the last one year.

Text section

- Basic climatic characteristics of the area under consideration
- Main emission sources in the area (individually monitored point sources, area sources – heating, line sources – major roads)

39 In addition to the ambient air, it is also necessary to consider if the proposed spatial/urban plan includes the development of transport roads or other noise-intensive developments. If so, the scoping can require the performance of a noise propagation calculation, where background noise and noise propagation as a result of development will be taken into account.

40 According to the Technical Regulation on Atmospheric Air Quality Standards – N383, 2018.

- Air quality information (results of air quality monitoring)
- Evaluation of air quality in terms of threshold values for air pollutants, distribution of pollutant concentrations (evaluation based on 5-year averages in 1×1 km squares, see **Figure 1**)
- Extent of the territory and estimate of the population affected by pollutant concentrations that are above threshold values (squares in which threshold values for one or more air pollutants have been exceeded on average over the last one year)
- Estimated future trend development without the implementation of the plan
- Detailed descriptions of sub-issues (optional).

Form of visualization

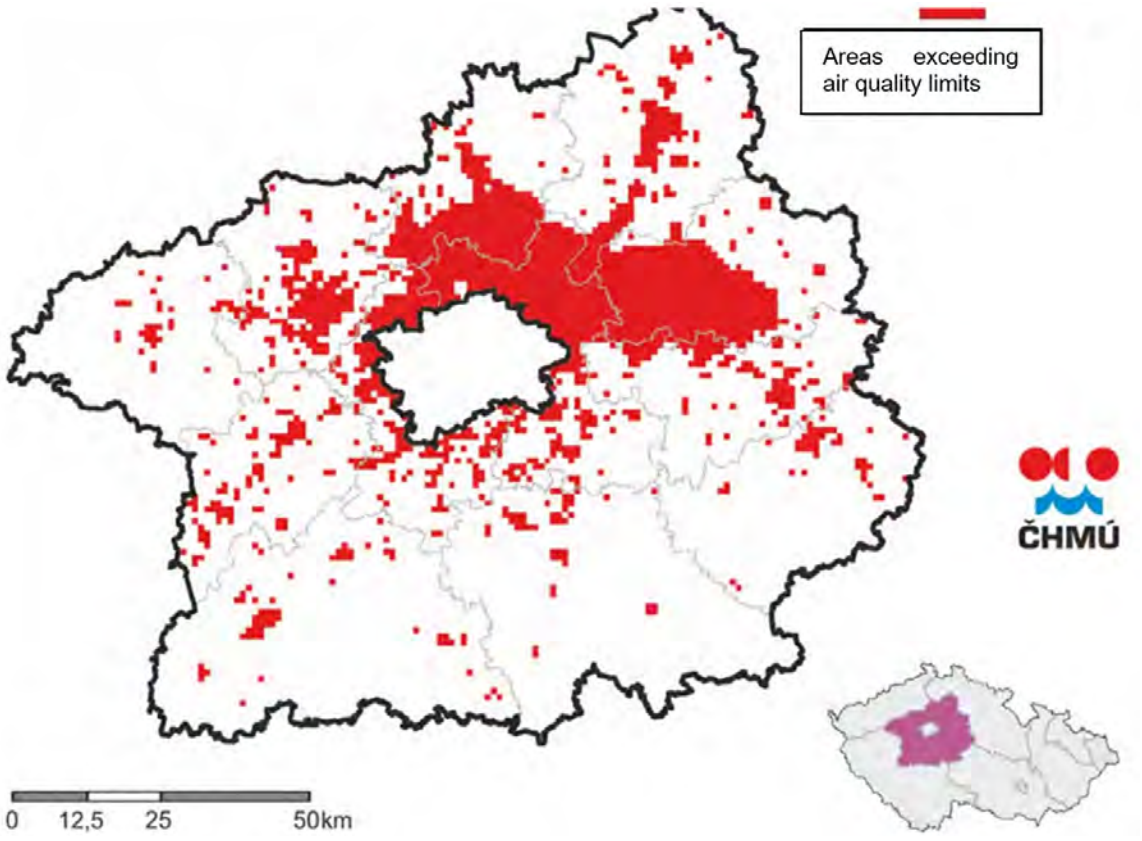
- Graphical diagram for each of the substances assessed.

It is possible to add a summary diagram expressing the number of substances for which exceedances of the air quality threshold values have been detected in a given square. If the visualization format allows, names of the substances and concentrations can be included in the diagram as well.

For working purposes, it may be recommended to create a map at a scale of 1:100 000[41] with a projection of the proposed areas and corridors (or other plan proposals with a spatial projection) as a basis for the subsequent assessment of air quality effects.

Example of visualization

Figure 1. Example of the baseline air quality map for selected pollutants based on 5-year averages (g/m³) in 1×1 km squares (Programme for air quality improvement of the central Bohemian region, Ministry of Environment, 2020)[42]

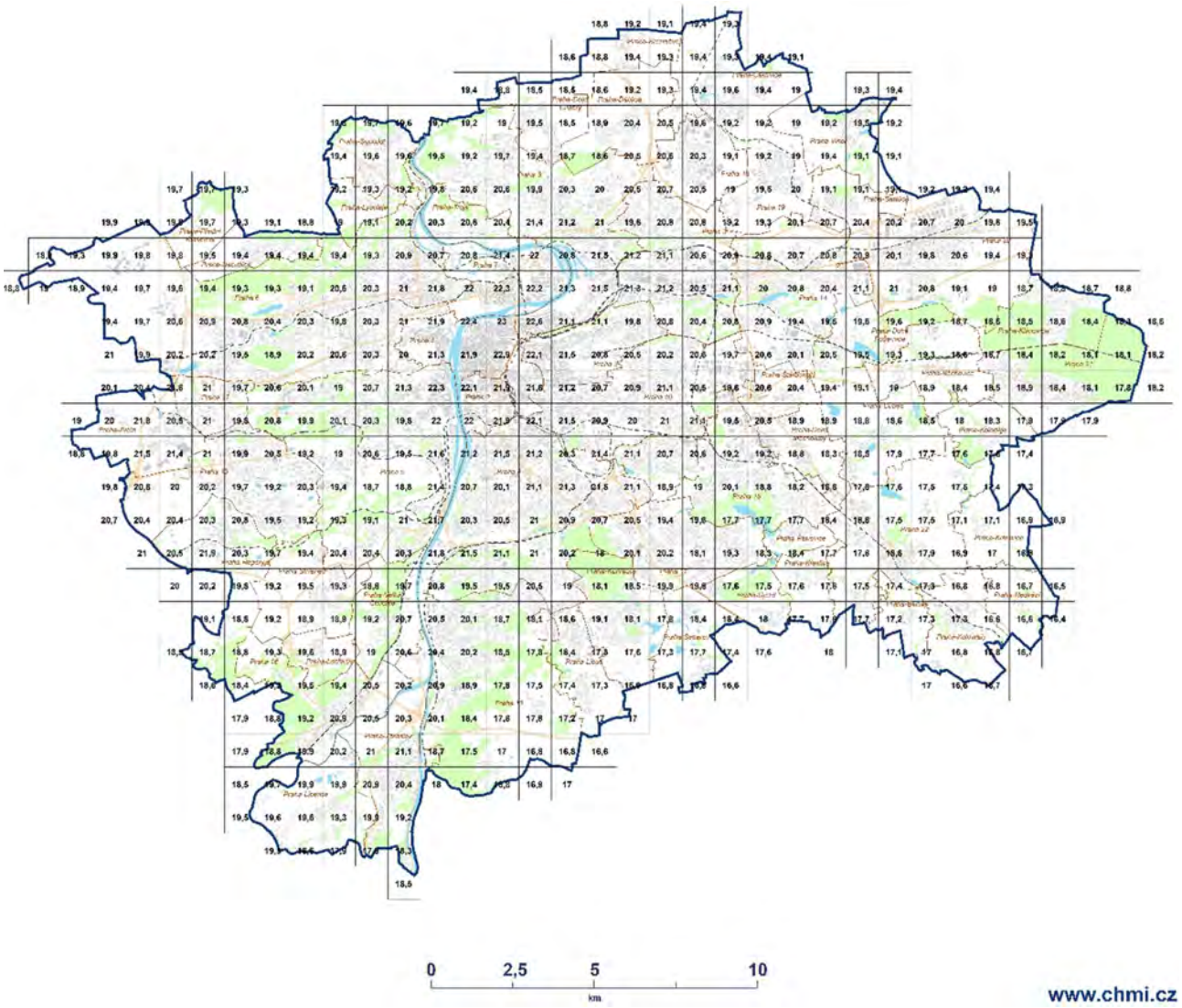


41 Annex to the Spatial Planning Code: About the Scales of the Graphical Part of the Spatial Planning Plan/Urban Development Plan/ Multi-municipal/Municipality Spatial Planning Plan recommends to develop 1:100000–1:50000 scale maps.

42 https://kr-stredocesky.cz/web/zivotni-prostredi/pzko

For a more detailed assessment, larger scale baseline air quality maps can be prepared (e.g. see **Figure 2** for PM10 concentrations). In Czechia, these baseline air quality maps, including underlining GIS shape files, are regularly published and freely available through the website of the Czech Hydrometeorological Institute.

Figure 2. Example of the official background air pollution map of Prague City (PM10 concentration) based on 5-year averages (g/m³) in 1×1 km squares that are standardly used for pollution dispersion studies and air pollution impact evaluation. Czech Hydrometeorological Institute[43]



Data source and related legislation

- The Air Quality Portal is available at https://www.air.gov.ge/en/
- Resolution of the Government of Georgia No. 383 "On Technical Regulation on Atmospheric Air Quality Standards" (2018). https://matsne.gov.ge/ka/document/view/4277611?publication=0.

43 https://www.chmi.cz/files/portal/docs/uoco/isko/ozko/ozko_CZ.html

4.4.2.2. Climate

Key indicators

- Vulnerability to climate hazards

The aim of the vulnerability analysis is to identify the relevant climate hazards for the given specific envisaged developments in the planning area. The vulnerability is a combination of two aspects, (a) sensitivity and (b) exposure: how sensitive the envisaged development components (i.e. future activities or potential projects in areas and corridors designated for specific development or land use) are to climate hazards in general and the probability of these hazards occurring at the planning area now and in the future (exposure).

The vulnerability analysis – enabling the potential risks associated with climate change to be considered in a manner appropriate to the spatial planning stage – can be carried out as a part of the SEA for spatial planning documentation, where no detailed information is available on the envisaged developments (e.g. specifics of the construction design, technology parameters). Full climate risk assessment (climate proofing of specific projects), if required, can be carried out at a later stage, as part of the EIA, feasibility studies or technical documentation of individual projects.

The following climate-related issues can be considered within the vulnerability analysis (see for instance table 2):

- heatwaves (including impact on human, animal, and plant health, damage to crops, and forest fires)
- droughts (including decreased water availability and quality and increased water demand)
- flood management and extreme rainfall events
- storms and high wind (including damage to infrastructure, buildings, crops and forests)
- landslides
- sea-level rise, extreme storms, coastal erosion, and saline intrusion
- cold spells, freeze-thaw damage.

Table 2. Possible format for a vulnerability matrix

Sensitive components of the Plan	**Exposure** (relevant climate variables and hazards for the planning area, both current and future, i.e. considering climate change)			
	Heat	**Droughts**	**Floods**	**…**
Area X.x. agriculture land (along the river)	low	medium	high	
Corridor Y.x (railway)	medium	low	low	
Corridor Z.x (high voltage power line)	low	low	low	
Area X.z (residential area, family houses)	high	low	high	
…				

It is important for the analysis to provide justification for assigned ranking (i.e. the evaluation matrix shall be accompanied with a brief verbal description of the assessment rationale). Typically, vulnerabilities ranked as "high" and possibly "medium" (depending on the scale) are considered an indication of a need for climate change adaptation measures to be considered within the planning, and triggering a recommendation to carry out a dedicated climate proofing at the level of project preparation where appropriate (typically for big infrastructure projects).

Environmental limits of the land use

- flooding areas
- landslide areas.

Text section

Describing climate patterns within the planning area is essential. The climatic parameters to be considered include air temperature, wind speed and direction, and rainfall/precipitation. Additionally, the recorded locality-specific climate patterns should be discussed in the context of available regional climate-change projections so that climate-related hazards relevant to the planning area can be identified.

Previous occurrence of extreme weather events and related disasters should be recorded (e.g. heatwaves, floods, forest fires, landslides, massive soil erosion events, infrastructure damage triggered by the extreme weather events).

Form of visualization

- Drawings of the climate hazards.

The content of the drawings depends upon the availability of graphical representations of individual relevant climate hazards. As a minimum, flood zones and areas with landslide risks should be included.

Data source and related legislation

For establishing current climate conditions, the information from the nearest weather station(s), or where available the aggregated regional climate data, should be presented to describe basic climate characteristics, including maximum, minimum and extreme values, to provide a representative description of the existing climate conditions in the planning area.

Hydrometeorological data can be obtained as a paid service from the Agency. Observations on meteorological elements and weather events are being conducted at the stations and posts of hydrometeorological network. Since 2010, installation of automatic weather stations and posts has started with meteorological elements measured each hour.

In total 120 meteorological stations, 118 posts and 96 precipitation gauges operated in the network during the various periods since the beginning of the observations. Currently active are: conventional – five meteorological stations and 31 posts (including eight precipitation gauges), automatic – 84 points with 40 stations and 44 posts (including 7 rain-gauges).

As a member of the World Meteorological Organization (WMO), Georgia periodically provides WMO with meteorological observation data for global deployment. Characteristics of the essential climatic variables are available through the European Climate Assessment and Database Project. These include air temperature and atmospheric precipitation, based on the information provided by the Agency, for all meteorological stations in Georgia, which are obtained from the Agency's databases and have passed the relevant quality control procedures.

For the information about likely future climate development and relevant climate risks, one may refer to the following texts:

- Existing, authoritative and preferably peer-reviewed analyses or reports such as the Intergovernmental Panel on Climate Change Sixth Assessment Report (IPCC AR6)[44]
- Fourth National Communication of Georgia under the United Nations Framework Convention on Climate Change[45]

44 https://www.ipcc.ch/assessment-report/ar6/

45 https://unfccc.int/documents/271341

- Climate Change Strategy of Georgia for 2030 and its 2021 – 2023 Action Plan[46]
- Georgia's Updated Nationally Determined Contribution (NDC)[47]
- Climate Risk Country Profile: Georgia[48]
- Georgian Road Map on Climate Change Adaptation[49] and other relevant adaptation strategies and policies, and academic journals.

An initial review at the national level should be followed by a more detailed assessment focusing on the planning unit/area.

4.4.2.3. Surface and groundwater

Key indicators

- Water source of surface water or groundwater including protection zones
- Sensitive area (as per EU Nitrates Directive)

Inundation areas/flood risk zone, the area intended for the rise of water level during a flood.

Environmental limits of the land use:

- land of the State Water Fund (water areas and watercourses)
- water resources and their protection zones
- floodplains
- active floodplain zone
- flood protection objects and facilities
- natural medicinal resources, natural mineral water sources and their protection zones.

Text section

1. Water regime:
   - Watercourse catchment area, watershed identification of the main and sub-watersheds of the watercourse and the watersheds crossing the study area, river profile and runoff value for a particular cross section, their gradient and direction, main receiving watercourses
   - Characteristics of natural and artificial surface and groundwater bodies, flow characteristics of key watercourses (depending on the details of available data)
   - Level of compliance of current land use with the established water protection regime(s), if any
   - For surface waters:
     - Existing disturbance of natural surface water runoff, slowing down, accelerating runoff, water erosion, drainage of rainwater from continuously built-up and paved areas
     - Quality of surface waters and their use
     - Significant water abstractions from streams
     - Significant discharges to watercourses
     - Significant sources of surface water pollution.

46 https://matsne.gov.ge/ka/document/view/5147380?publication=0
47 https://mepa.gov.ge/En/Files/ViewFile/35777
48 https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15836-WB_Georgia%20Country%20Profile-WEB.pdf
49 https://www.researchgate.net/publication/337286978_The_Georgian_Road_Map_on_Climate_Change_Adaptation

- For groundwater:
  - Quantity characteristics (depending on details of available data)
  - Groundwater quality, groundwater availability
  - Significant groundwater abstractions
  - Significant sources of groundwater pollution.

2. Water resources:

- Basic identification of water resource(s)
- Significance and position of the water resource within the water supply system or water body under consideration
- Useful yield, permitted withdrawal. Characteristics of the current use, capacity of the source and its potential capacity reserve or, conversely, overloading or other threats to the yield
- Quality of abstracted water, quality treatment
- Underground water source protection zones, possible conflict activities in protection zones
- Evaluation of existing wastewater treatment capacity in the planning unit, including information on a planned wastewater treatment plant (if applicable) and its effectiveness.

3. Flood protection:

- Characteristics of the watercourse basins, especially with regard to the occurrence and character of floods, their severity and the existing flood protection measures affecting the course of the flood (reservoirs, protective dams, polders, technical and nature-based modifications)
- Extent and characteristics of designated (i.e. administratively designated) floodplains, active zones, floodplain areas and special floodplains
- Existing factors promoting flood damage risks and opposing factors retarding flood flows[50]
- Share of built-up areas located in the floodplain in the total area of the municipalities' built-up area (that is a share of the settlement that is exposed to the flood risk).

Form of visualization

- Drawings of environmental limits of land use for surface water and groundwater.

Such drawings are the basis for identifying and assessing the significance of effects on surface water and groundwater. They should include all the environmental limits of land use mentioned above, depending on their visibility at a given scale.

Figures 3, **4** and **5** provide visualization examples.

Data source and related legislation

- River basin administrations (under development).
- Law on Water https://matsne.gov.ge/ka/document/view/33448?publication=27.
- Law on Water Resources Management https://matsne.gov.ge/ka/document/view/5846594?publication=0.

50 The item suggests that the description of the flood risk/protection concerns in the area shall involve indication of any factors potentially contributing to the flood risk and increasing the potential damage, such as: buildings and other structures constructed in the floodplains, grown up vegetation, fences or other items that in case of flooding can hinder the flow and cause flood level increase, etc.

Examples of visualization

Figure 3. Water protection zones and strips. SEA scoping report of the spatial planning plan of the Kazbegi Municipality and its communities. Kazbegi Municipality, 2020[51]

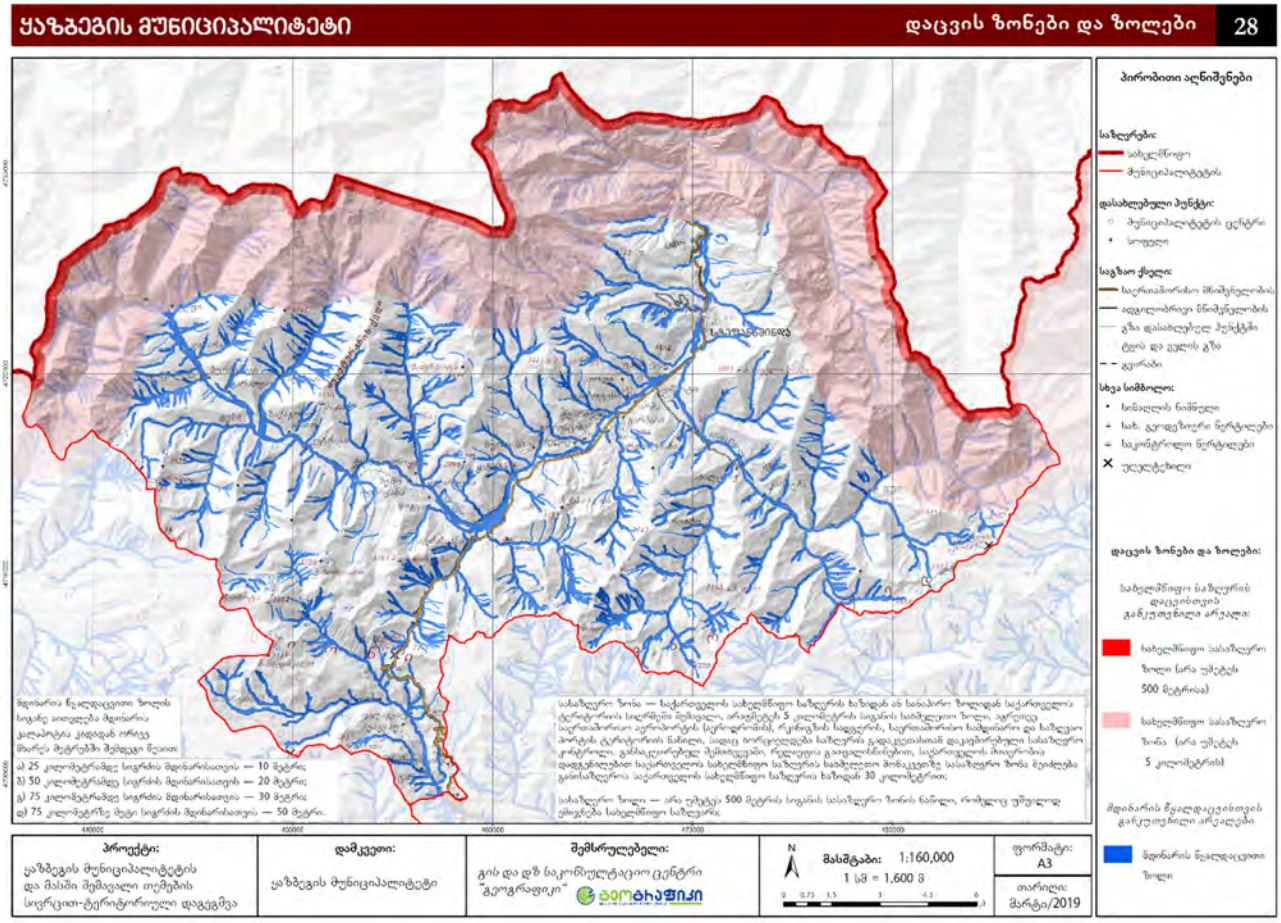
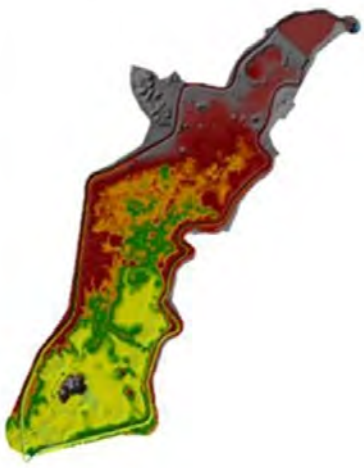


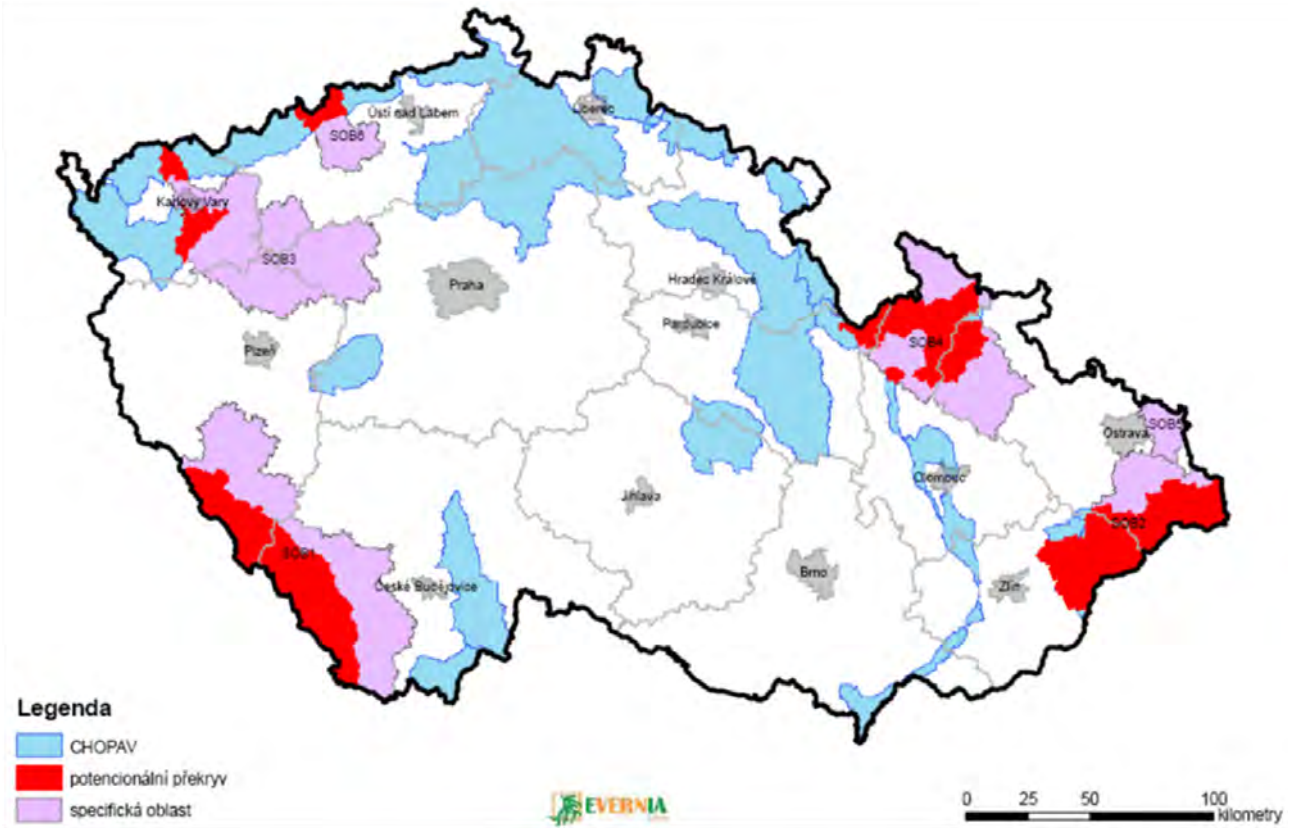
Figure 4. An elevation point layer and a digital elevation model created using this layer. SEA of the Development Plan for the centre of Tskaltubo City. BAU Design Ltd., 2022[52]



51 https://mepa.gov.ge/Ge/PublicInformation/25659

52 https://nea.gov.ge/Ge/GZSH/830

Figure 5. An overlay of designated "Specific Development Areas" (violet) and "Areas Protected for Natural Accumulation of Water" (blue) to identify potential spatial conflicts (red). SEA for the National Territorial Development Policy of the Czech Republic (REC, 2006)[53]



4.4.2.4. Agricultural land

Key indicators

- Acreage of cropland, arable land, permanent grassland and special agricultural crops by cadastral area
- Categories of protection.

Environmental limits of the land use:

- Areas of agricultural land with protection.

Text section

- Pedological characteristics of soils (soil types, soil types).
- Area of agriculture land within the territory concerned, evaluation of its changes in the period under review.
- Structure of the agricultural land fund, area and evaluation of its changes in the period under review.
  - arable land
  - permanent grassland
  - special agricultural crops (orchards, gardens, hop gardens, vineyards).
- Protection of the agricultural land (classes of protection of the agricultural land).
- Threats to agricultural land from wind and water erosion.
- Other forms of threat.

53 https://portal.cenia.cz/eiasea/detail/SEA_MZP012K?lang=cs

Form of visualization

- Drawings of the agricultural land.

The content of the drawings is the delineation of the agricultural land (according to categories of protection).

- Graphical diagram of relative importance of agricultural land in a given area, and land-use trends.

Categorization of the area based on the extent of the area of the agriculture land in the cadastral area, or based on the increase (decrease) of the agricultural land over a certain period. The optimal length of the time period is considered to be about 10 years.

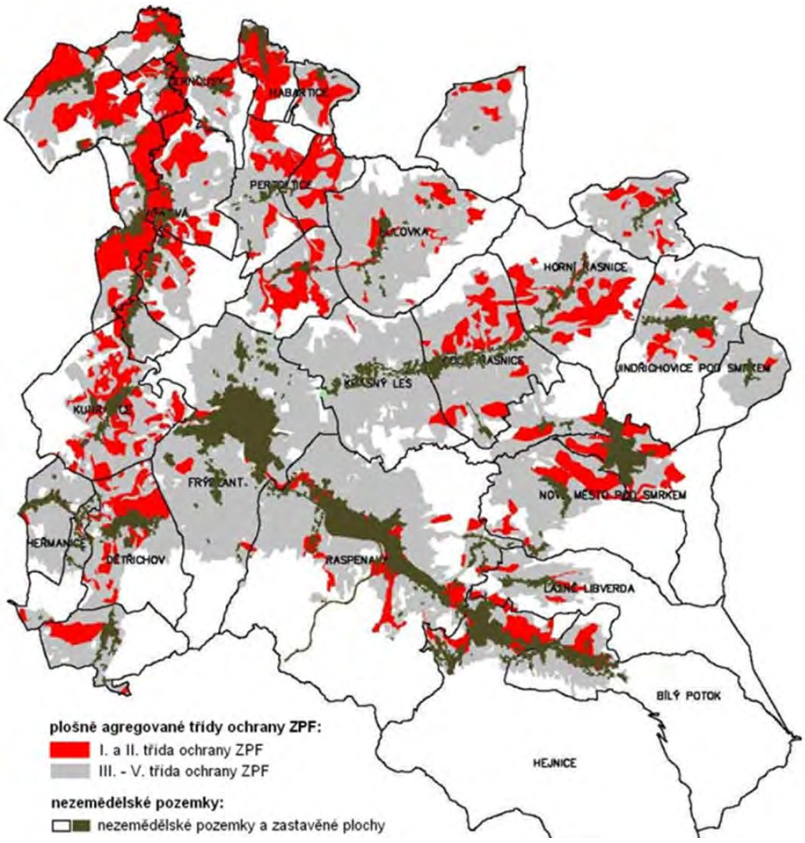
Such graphical presentation can support various calculations (see **Figure 6** and **Figure 7**). For instance, the result will be expressed as a percentage share of the area of agricultural land in the total area of the selected territorial unit, or as the percentage difference of these shares calculated for two time horizons (current situation – beginning of the period under consideration), with negative values representing the loss and positive values in the gain of agricultural area (**Figure 6**).

Data source and related legislation

- Code of Georgia to determine the purpose of land and sustainable management of agricultural land https://matsne.gov.ge/ka/document/view/4596113?publication=0

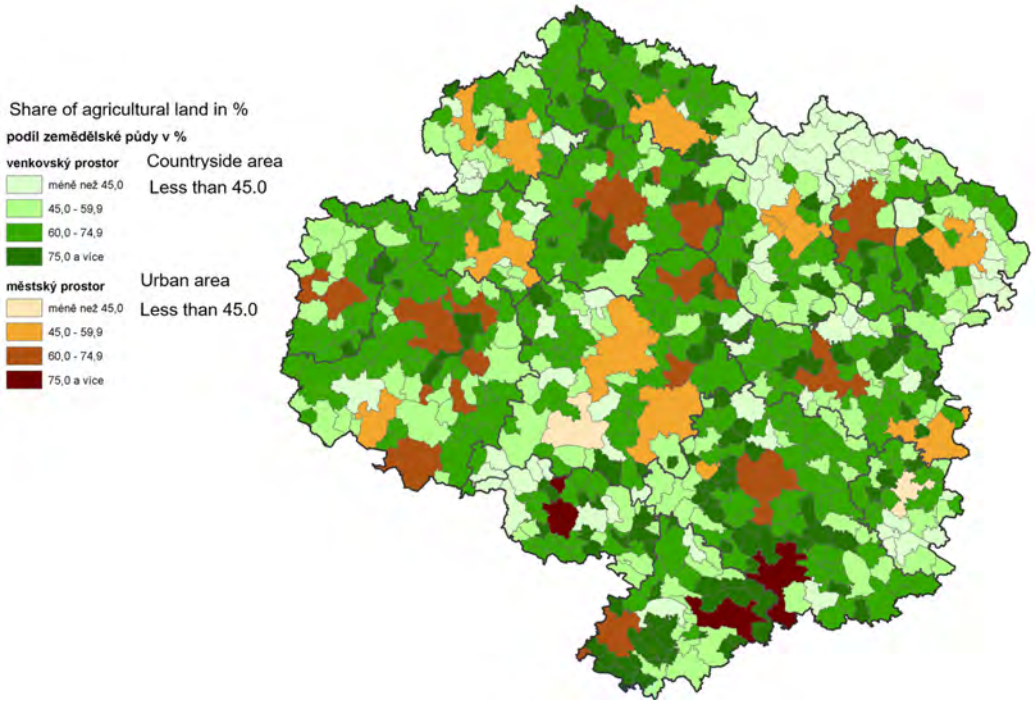
Example of visualization

Figure 6. Agriculture soil protection categories (red and grey) and built-up areas (dark green). Example of a drawing from the SEA for a municipal spatial plan for a rural municipality, Czechia (Integra Consulting, 2021)[54]



54 https://portal.cenia.cz/eiasea/detail/SEA_MZP254K?lang=cs

Figure 7. Relative importance (percentage of territory) of agricultural land in municipalities of the Vysocina region, Czechia. Czech Statistical Office[55]



4.4.2.5. Forest[56]

Key indicators

- Forest boundaries
- Structure of forest inside the forest boundaries (areas covered with forest forming species and other areas which are an integral part of the forest ecosystem)
- Bounds of the forest categories (protected forest;[57] protection forest; resort and recreational forest; commercial forest).
- Bounds of intact forest cover.
- EUNIS forest habitats.
- Bounds of hazards in forested areas (slope erosion, landslides, debris flow, floods).

As the forest biome supports important biodiversity areas, both sets of indicators can be integrated to form the forest-biodiversity matrix.

Environmental limits of the land use

- Forest boundaries and areas covered with forest
- Protected forest categories (riparian forest and an arid forest creating a natural landscape, as well as a forest with a high (dominant) concentration of forest-forming species that are protected at the national level), protection forest, resort and recreational forest
- Forest areas at risk of natural hazards.

In addition, it is useful to consider overlaying maps with environmental limits of the land use for biodiversity (**see section 4.4.2.7**) with those for forests.

55 https://www.czso.cz/csu/czso/631361-09--11

56 Terms used in this section correspond to the terms of the Forest Code of Georgia https://matsne.gov.ge/en/document/view/4874066?publication=3

57 Bounds of a forest granted the status of a protected area is an indicator under the biodiversity section.

Text section

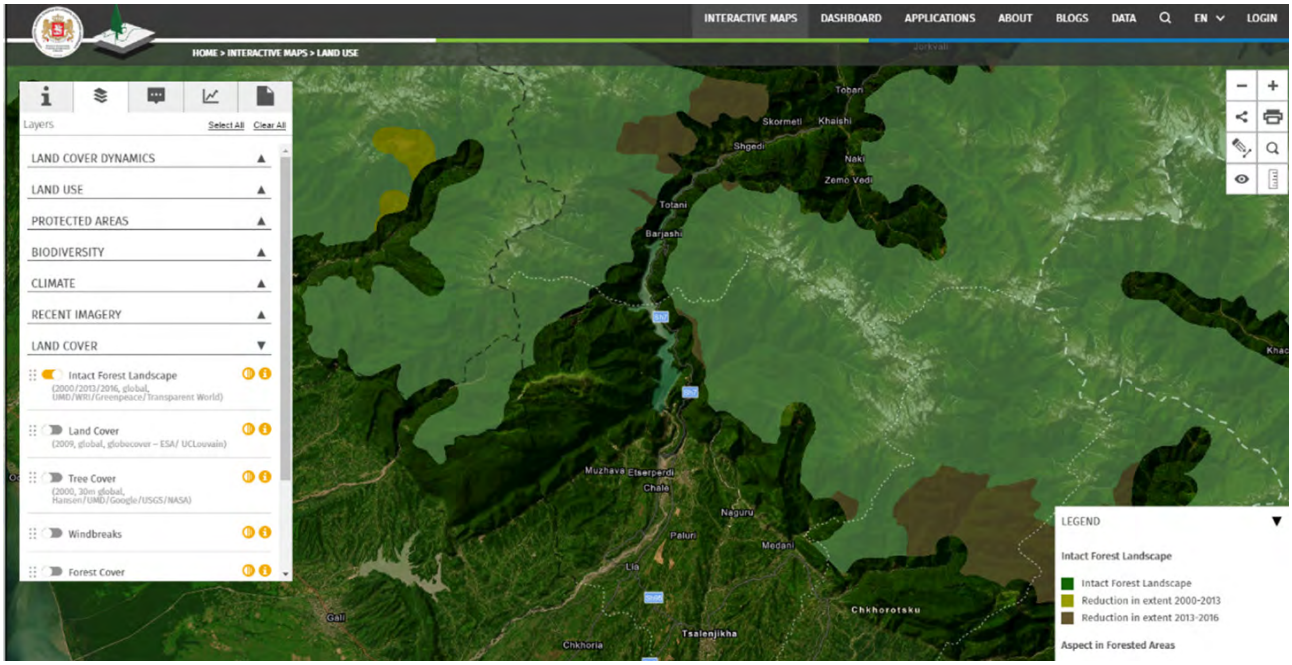
- Phytogeographical breakdown of the area under consideration, types of forest, including intact forests, EUNIS forest habitats.
- Current status of the forest (including areas covered with forest forming/dominant species and other areas), protected and protection forests, tree cover, pest infestation and diseases spreading, forest use.
- Temporary trends of forest changes and their extrapolation to the future (forecasting). Such monitoring data as tree cover loss/gain, forest use, data on forest fires and restoration will be of use.
- Description of the key drivers causing pressures on forests in the planning area, and among them forest loss drivers (e.g. forest cut, forest fires) and forest gain drivers (as natural forest gain, reforestation, afforestation).
- According to the National Report of the State of the Environment of Georgia 2014–2017,[58] the main threats to forest ecosystems are illegal and unsustainable extraction of forest resources, excessive grazing, climate change, spread of pests, forest fires, spread of invasive alien species, energy and infrastructure projects. Open pit mining is considered as one of the growing threats to forest ecosystems. Natural hazard risk analysis of forested areas should be added.
- Special attention must be paid to current and forecasted climate change trends and their impact on forest.
- Description of any plans and programmes that are being implemented at the planning area: if and how they affect the forest (for example developing open pit mining). It is useful to assess if the previous spatial plans affected the forests.
- Action taken to monitor and protect forests (policy responses).

Form of visualization

- Map(s) of forest areas.

The maps can present forest cover, structure of forests inside the forest boundaries, forest categories, intact forest, and current status. If data allow, the dynamics of some indicators can be shown to see the trends (e.g. **Figure 8**).

Figure 8. Map of intact forest, central Georgia[59]



58 The National Report of the State of the Environment of Georgia 2014–2017 https://mepa.gov.ge/En/Files/Download/35552.

59 Forest and Land-Use Atlas of Georgia https://atlas.mepa.gov.ge

Integrating forest maps (**Figure 8**) with hazard risk maps (**Figure 9**) allows obtaining a vision of the forest sustainability. That is, if weights are assigned to different hazards and such weighted hazards are depicted on the map with forests, then a forest sustainability map can be prepared.

As the most of open data are small scale (by national level) they can be used as a framework; to move to a large-scale planning additional detailed data (for example, from forest inventory) have to be requested.

- Drawing of trends.

Tables, charts and other graphs help form a matrix and understand the dynamics of indicator values. Rates of changes in these values need to be obtained for forecasting in the SEA assessment.

Data source and related legislation

- forest inventory databases
- data and maps of natural hazards monitoring
- *Forest and Land-Use Atlas of Georgia* https://atlas.mepa.gov.ge
- national environmental reports
- international forest databases
- Forest Code of Georgia.

Note: The natural environment of Georgia includes many habitats and ecosystems, the sensitivity of which to environmental effects could be very high. They encompass meadows (alpine and steppes), swamps, semi-arid thickets, arid ecosystems (semi-deserts) and others. Assessment of spatial planning on them is considered in the Biodiversity section below.

4.4.2.6. Relief, geological environment, and raw material resources

Key indicators

- Designated mining/quarrying area
- Landslide areas and areas of other geological risks.

Environmental limits of the land use

- Designated mining/quarrying area
- Area with mineral deposit
- Area affected by mining (undermined area)
- tailings, spoil heap, tailings dump
- Landslide areas and areas of other geological risks
- Contaminated areas.

Text section

- morphological conditions
- geological structure of the area
- hydrogeological conditions (hydrogeological zonation of groundwater, aquifer permeability, groundwater level, etc.)
- resource base and its use:
  - important mined deposits (method of extraction, production, lifetime, territorial claims, conflicting spatial interest)
  - definition of areas most affected by mineral extraction including related activities (processing, transport connections, etc.).

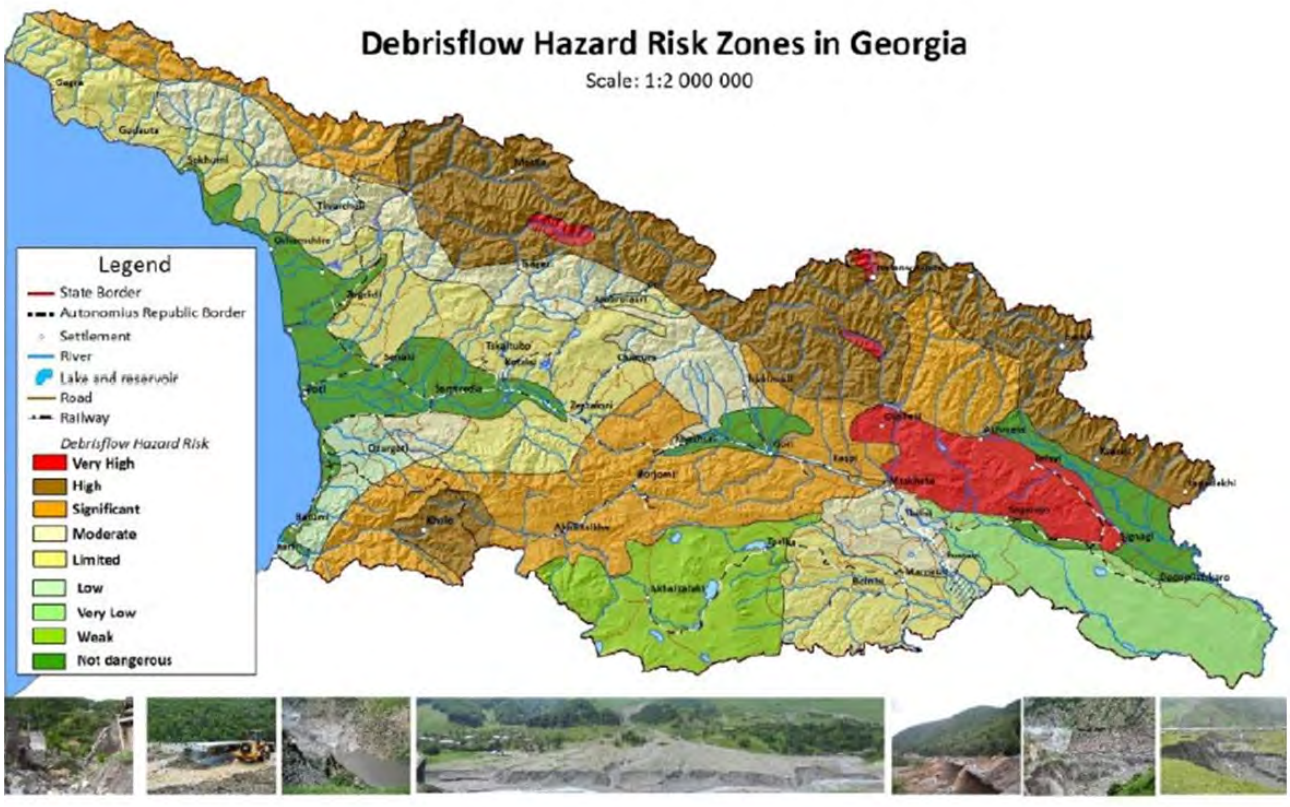
- geological risks:
  - impacts of undermining
  - slope deformations (assessment of slope stability)
  - other geological risks (if identified)
  - summary commentary on the differentiation of the area according to geological risks.
- Expected development without the application of the plan.

Form of visualization

- Drawing of the geological environment and raw material resources. It must include all the environmental limits of land use mentioned above, depending on their visibility at a given scale.
- Graphic scheme (optional) of the burden of mineral extraction on the territory. This is calculated as a percentage share of the sum of the areas of mined-out quarrying areas and areas of active spoil heaps and tailings ponds, in the area of the cadastre. It expresses the concentration of mining activities in the area. A higher value indicates an increased level of burden on the territory and disturbance of environmental components.
- Graphic scheme (optional) of the geological conditions for placement of buildings. This is calculated as a percentage share of the sum of the areas of individual monitored geological risks (i.e. slope deformations and other monitored risks) on the area of the cadastre. The indicator expresses the concentration of the area with potential geological risks. A higher value indicates an increased level of disturbance of the geological environment, i.e. worsened conditions for the location of buildings and infrastructure.

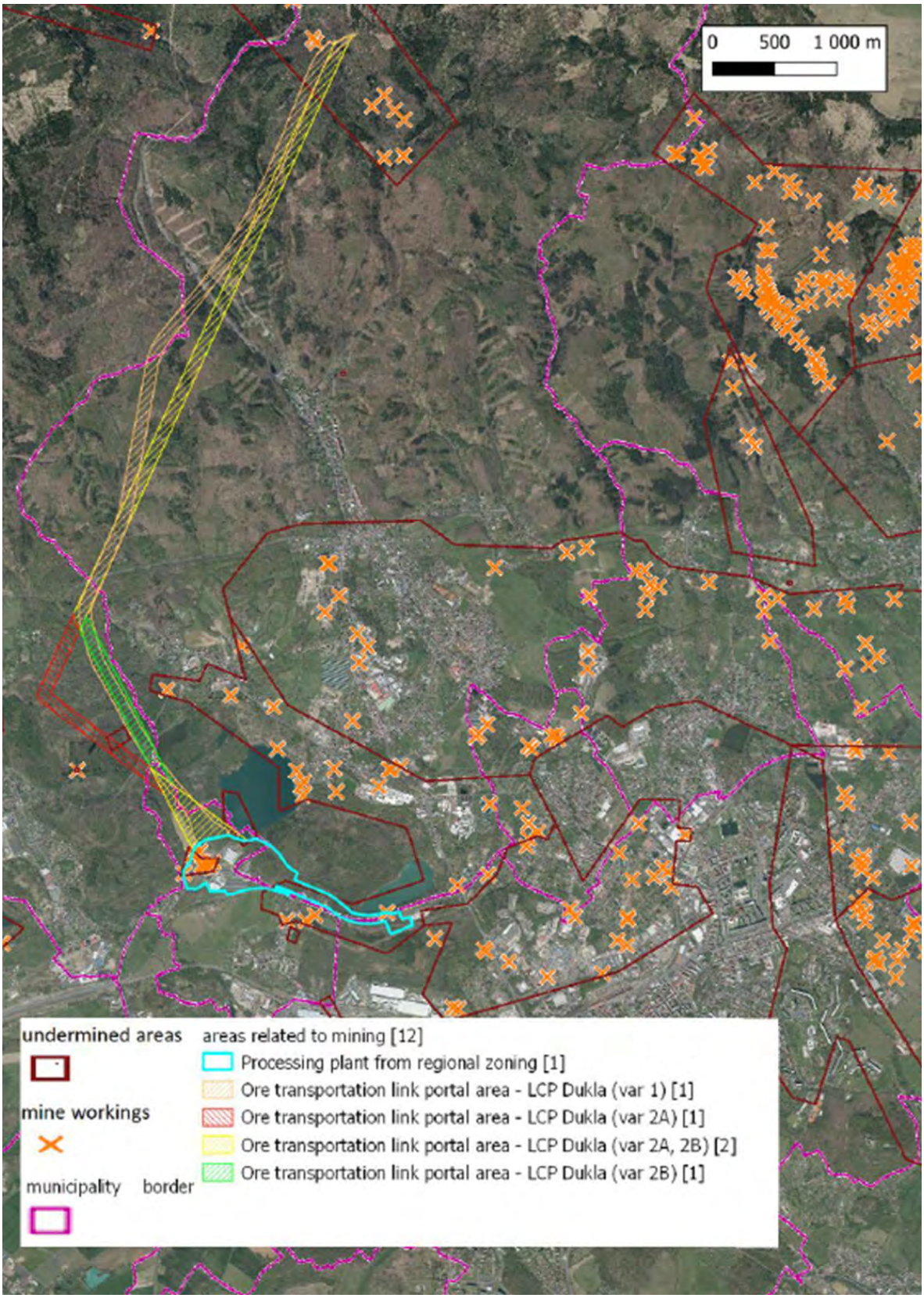
Examples of visualization (Figures 9-12)

Figure 9. Debris/mudflow hazard risk zones map of Georgia, by probability and damage[60]



60 *Ibid.*

Figure 10. Proposed infrastructure corridors vs. old mining works and areas affected by mining. SEA for the updated regional territorial plan (Ustecky region, Czechia) (Integra Consulting, 2023)[61]



61 https://portal.cenia.cz/eiasea/detail/SEA_MZP028J?lang=cs

Figure 11. Proposed infrastructure corridors vs. location of old contaminated sites. SEA for the updated Regional Territorial Plan (Ustecky region, Czechia) (Integra Consulting, 2023)[62]

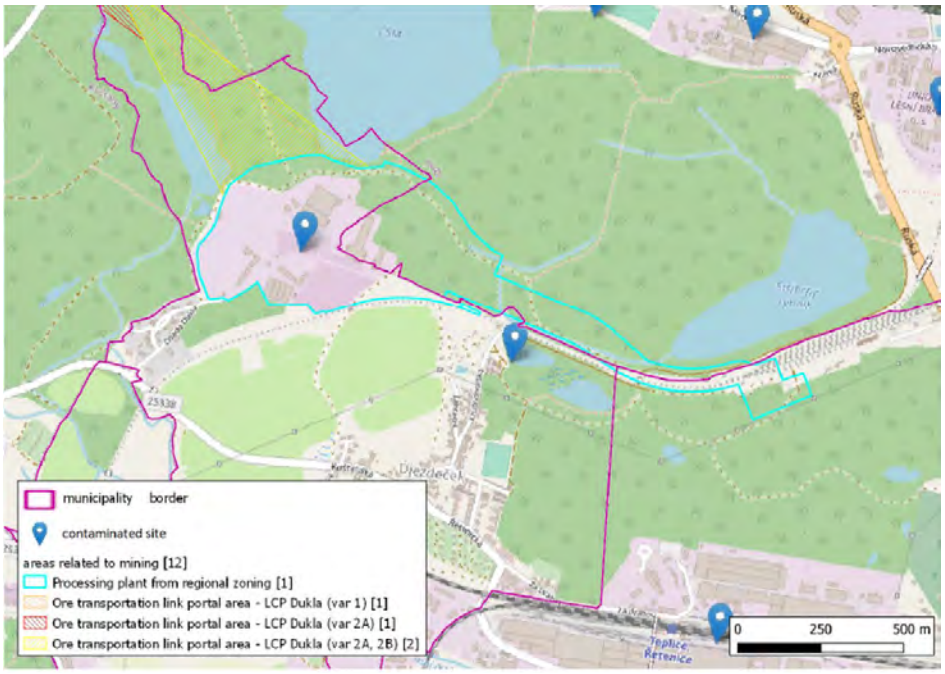
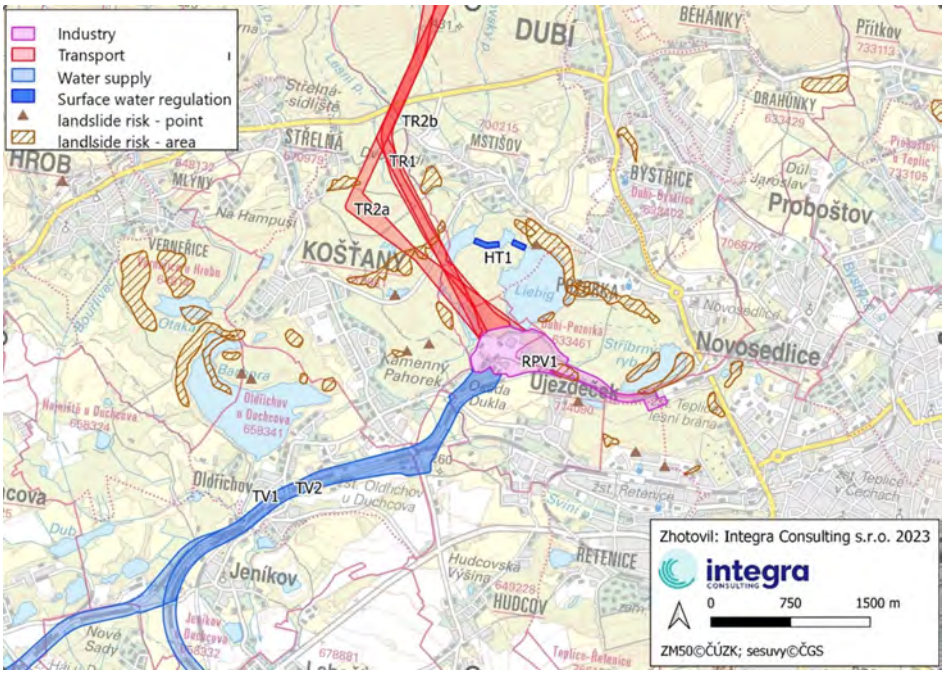


Figure 12. Proposed infrastructure corridors vs. landslide risk-prone areas. SEA for the updated regional territorial plan (Ustecky region, Czechia) (Integra Consulting, 2023)[63]



Data source and related legislation

- National reports on the State of the Environment of Georgia available for various periods at LEPL Environmental Information and Education Centre's website: https://eiec.gov.ge/En/NationalReports

62 *Ibid.*

63 *Ibid.*

4.4.2.7. Biodiversity

Note: for the Guidelines, flora and fauna are considered as complexes of the species of plants and animal, as well as fungi, i.e., part of the biological diversity.

Key indicators

1. **Indicators of the biodiversity status**: these indicators describe valuable biodiversity features and their state, and represent the description and boundaries of the areas:
   - Ranges of occurrence of the protected species of plants and animals (listed in the Red List of Georgia)
   - Ecotones
   - Ranges of occurrence of the endemic species
   - Wildlife congregation and migration important areas, long-distance migration corridors, barrier sites (obstacles) on long-distance migration corridors
   - Important Bird Areas (IBAs) (designated under the Birdlife International)
   - Special Protected Areas (SPAs) for Birds (designated for the avian species and sub-species that occur in Georgia listed in Annex I of the EU Birds Directive)
   - Habitats according to the EUNIS habitat classification (including habitats designated under the EU Habitats Directive Annex I habitat types, European Red List of Habitat types as well as the habitats valuable for Georgia)[64]
   - Key Biodiversity Areas (KBAs)
   - Sites and corridors identified by the Critical Ecosystem Partnership Fund (CEPF).[65]

Most of these indicators are defined at the small scale (at the national level), so it will be difficult to apply them at the larger scale (as, for example, for a municipality spatial plan). Also, some designated areas cover vast spaces including settlements (as the IBA spanning Batumi agglomeration); only separate spots within these areas may keep valuable biodiversity features and these spots may be interspersed by arable or urban land spots. In such cases, additional data or special research will be needed (as, for example, a large-scale geobotanical or habitat map of a planning area).

Additionally, an indicator such as "nature area fragmentation", if taken periodically, can show the dynamic of a nature area (or landscape) structure that is an integral part of the territorial ecological stability.

The European Environment Agency suggests measuring landscape fragmentation due to transport infrastructure and sealed areas based on the effective mesh size ('meff') method.[66] The meff value expresses the probability that any two points chosen randomly in an area are connected. Hence, meff is a measure of landscape connectivity, i.e. the degree to which movements between different parts of the landscape are possible. The value of meff is reported within the cells of a 1 km^2 area; scheme of calculation of the meff value is given.[67]

If it is needed to assess a nature area fragmentation within certain delineated boundaries, another approach may be suggested. A simple index of the fragmentation can be calculated based on the three figures – amount of the nature area fragments (f), total sum of the all distances between the fragments (L), and total area of the all fragments (S). The fragmentation index is obtained by multiplying f by L and dividing by S (f*L/S); reverse index shows the level of nature areas connectedness.

64 https://eunis.eea.europa.eu/habitats.jsp; https://biodiversity.europa.eu/europes-biodiversity/habitats

65 Ecosystem Profile. Caucasus Biodiversity Hotspot. CEPF. Final version, 31 July 2003 (Updated September 2004) https://www.cepf.net/sites/default/files/final.caucasus.ep_.pdf

66 https://www.eea.europa.eu/ims/landscape-fragmentation-pressure-in-europe

67 https://www.eea.europa.eu/media/infographics/landscape-fragmentation/view

2. **Response indicators**: these indicators "refer to responses by society and policymakers that attempt to prevent, compensate, ameliorate, or adapt to changes in the state of the environment".[68] They represent descriptions and boundaries of the legally protected areas (and their zones, where appropriate) including those protected according to the obligations under the international conventions to which Georgia is a party.
   - National Protected Areas (PAs):
     - State reserves, their protection zones
     - national parks
     - managed reserves
     - natural monuments
     - protected landscapes[69]
     - multiple-use territories – if these are established
   - UNESCO biosphere reserves
   - UNESCO Natural World Heritage sites[70]
   - Emerald Network sites – Areas of Special Conservation Interest (designated and protected under the Bern Convention)
   - Ramsar sites (wetlands of international importance designated under the Ramsar Convention).

Boundaries of the indicators of this second group will cover the valuable biodiversity territories (areas of the first group indicators) only partly (for example, by 2020 only 31 per cent of the country's KBAs were under protection[71]). Accordingly, the full spatial picture of the biodiversity values has to integrate sets of both groups and define limitations (see below) predominantly by outer boundaries of the overlapping territories.

Environmental limits of the land use

The land-use spatial limits in relation to biodiversity values are based on the described indicators and present the following ones:

- Protected Areas (all categories), including zonation
- areas (including wetlands) protected by international agreements
- habitats of specially protected species of plants and animals.

Besides these limits (that are legally obligatory and based on the indicators of the second group – i.e. 'response indicators'), there are legally non-obligatory limits which are based on the first group of indicators – i.e. indicators of the biodiversity status. It is important to consider them too, as currently only a part of the valuable biodiversity features is legally protected. For example, some Special Protected Areas for Birds can only partly fall within the boundaries of legally protected areas; thus, the habitats of the targeted birds that happen to be outside the "protected" part, are completely unprotected.

Text section

It is necessary to describe the biodiversity and natural values of the planning area, including values of the international importance, trends of the biodiversity changes, to give a description of the protected areas, emphasizing the reason (subject) for their protection and to define the factors (key drivers) threatening or potentially threatening their state. Description may be based on the DPSIR framework (driver, pressure, state, impact, response).

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68 Environmental Indicator Report 2012. Ecosystem Resilience and Resource Efficiency in a Green Economy in Europe. European Environment Agency, Copenhagen, 2012.

69 per 2023 – Tusheti protected landscape only.

70 per 2023 – Colchic Rainforests and Wetlands Site only, protected by the four national Pas.

71 Bitsadze, K. Manvelyan, E. Askerov et al. Chapter: Key Biodiversity Areas in the Caucasus Ecoregion. – Ecoregional Conservation Plan for the Caucasus, 2020 Edition: Supplementary Reports (pp.21-28) https://www.researchgate.net/publication/344297815_Key_Biodiversity_Areas_in_the_Caucasus_Ecoregion

The following structure of the section is suggested:

- Biogeographical breakdown of the area under consideration, including in phyto- and zoogeographical terms.
- Current status of the designated area's biodiversity including the main systematic groups of plants, fungi, and animals. Special attention must be paid to the endemic, protected species and species of international importance, their ranges and habitats.
- Description of the area in terms of its importance for mammal and avian migration (areas of migration importance, migration corridors, migration barriers).
- Characteristics of specially protected areas (of all categories) – both nationally protected and protected under international agreements.
- Characteristics of the biodiversity sensitivity (in terms of biodiversity values) (**Figure 13**).
- Description of the key drivers (factors) affecting biodiversity, critically affected ecosystems, and habitats in the planning area.
    - Five direct drivers of biodiversity loss in Georgia are given in the National Biodiversity Strategy and Action Plan of Georgia 2014–2020[72] and include: habitat loss, overexploitation of natural resources, pollution, invasive alien species and climate change.
    - According to the European Environment Agency, eight factors cause biodiversity loss in Europe:
        - urbanization and leisure activities
        - agriculture
        - forestry
        - modification of water regimes
        - pollution
        - illegal killing and hunting of birds
        - invasive alien species
        - climate change.[73]
    - Other relevant natural drivers, such as erosion, or landslides must be considered as well. These drivers may be caused or enhanced by anthropogenic factors, and it makes sense to describe such connections.
- Temporary trends of the biodiversity changes and their extrapolation to the future (forecasting). Trends analysis is provided by interpreting the key drivers and pressures, and reciprocal reaction of the state of biodiversity; its depth will depend on accessible data. Monitoring data will be of use here – and some relevant dynamic data can be obtained from the *Forest and Land-Use Atlas of Georgia*.[74]
- Special attention must be paid to climate change trends, both current and forecasted, and their impact on biodiversity.
- Description of any plans and programmes that are being implemented at the planning area – if they affect biodiversity (and how they affect it). It is useful to assess how the previous version of the spatial plan affected biodiversity, if at all.
- Implementing efforts to protect biodiversity (policy responses).

Forms of visualization

- Map(s) of biodiversity values of the territory.

The map presents location and concentration of biodiversity features and their conservation status. Such map can plot spatial distribution of biodiversity features and values, where coefficients of the different plots depend on biodiversity significance level and are marked by different colours (for example a range of the critically endangered species will have a higher coefficient than a range of the vulnerable species). Scale of the coefficients

72 The National Biodiversity Strategy and Action Plan of Georgia 2014–2020. Tbilisi, 2014.

73 https://www.eea.europa.eu/en/topics/in-depth/biodiversity

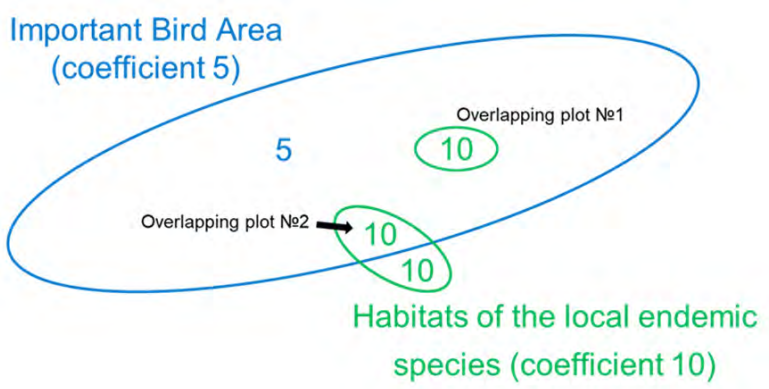
74 https://atlas.mepa.gov.ge

will be based on the key indicators (see above); the value of the coefficients increases from the less threatened to the more threatened species/habitats/areas.

In case of the overlapping of the areas, it is necessary to introduce a correction within a GIS analysis so that the overlapping part of the area (the plot) is valued only once. If the coefficients of the two areas have different values, the coefficient with the highest value is used for the plot (**Figure 13**).

Explanation: Important Bird Area is assigned coefficient 5, habitats of the local endemic species are assigned coefficient 10. Accordingly, overlapping plots №1 and №2 are assigned coefficient 10.

Figure 13. Overlay of valuable biodiversity areas with different coefficient values



If the layer of biodiversity values is further overlayed with the layer of protected areas, it is possible to define unprotected areas of the high biodiversity value (**Figure 31**). These areas are typically the most threatened and must be paid special attention during spatial planning and SEA.

To visualize biodiversity valuable areas sensitivity mapping approach may be applied. **Figure 14** shows the results of the Environmental Sensitivity Mapping (ESM) Webtool application for biodiversity in Ireland (for details about this tool refer to **section 4.4.2.12**). The Ireland-wide map is built based on aggregation of the four biodiversity datasets. Such maps help planners and SEA consultants to determine the areas of high biodiversity values.

- Drawing of effects on biodiversity.

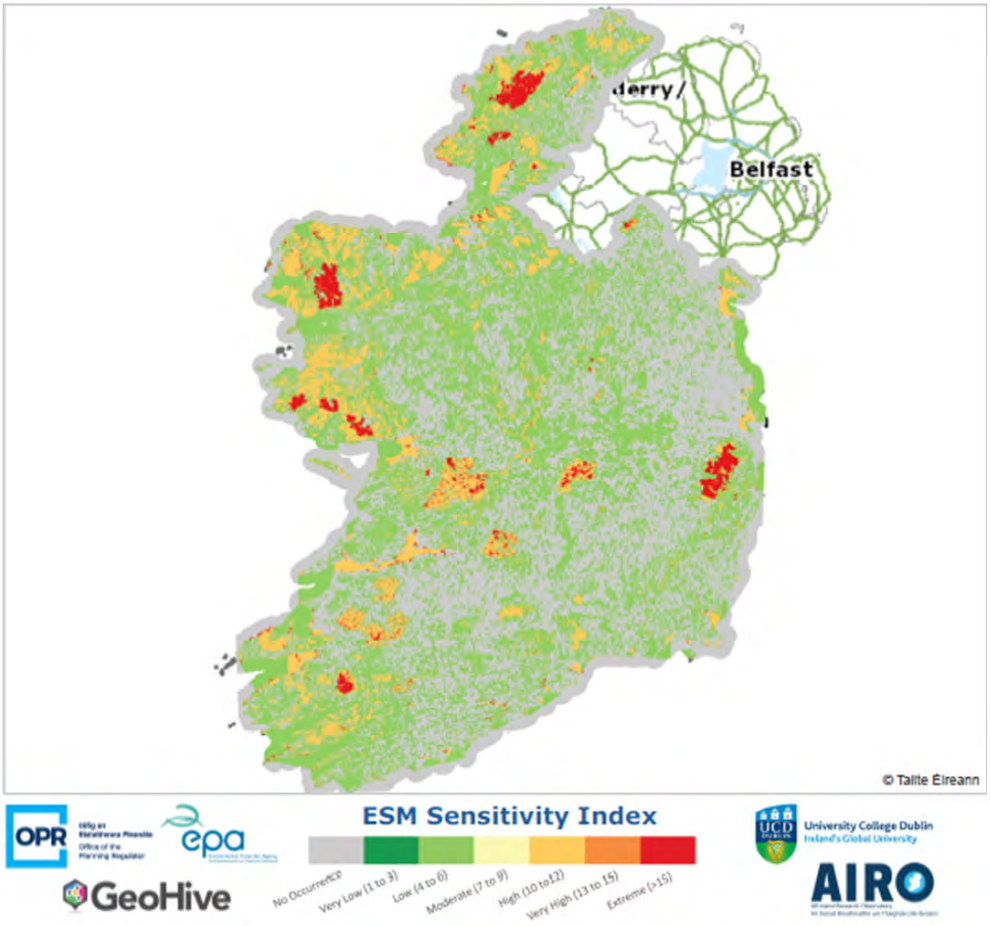
It is necessary to distinguish between natural and anthropogenic effects. If the map of biodiversity values is integrated with the layer of natural hazards, it is possible to obtain a vision of the biodiversity sensitivity to these natural hazards (see **Figure 24**). In this case, a total coefficient of each plot of the area will be calculated as a combination of the biodiversity significance coefficient and natural stability coefficient. Areas of the high biodiversity significance, but of low resilience to natural effects (for example, a habitat of the local endemic species located on a landslide), should be paid specific attention. Further, adding the layer of anthropogenic effects allows integrating all factors affecting biodiversity.

If existing data are presented in different scales, or there are too much data / too many overlaps, several maps may be needed.

So, development of the matrix of all affecting factors in relation to the biodiversity features is the first step. Second, the map of pressure on the biodiversity is produced as a result of the matrix spatial interpretation (**Figure 24**). Special attention is to be paid to the areas of high biodiversity values that are exposed to many effects and are legally unprotected.

Examples of visualization

Figure 14. Sensitivity map showing the areas of high biodiversity values in Ireland (it aggregates four biodiversity datasets: ancient woodlands, annex I habitats, contributions to potential ecological networks, and Special Protection Areas)[75]



Data source and related legislation

- The *Forest and Land-Use Atlas of Georgia* https://atlas.mepa.gov.ge/?l=ka
- European Environment Agency https://www.eea.europa.eu/en
- Databases of regional authorities on the occurrence of specially protected species (from surveys carried out within EIAs, SEAs, other)
- Scientific databases on the occurrence of specially protected species, habitats location
- Databases of international agreements[76]
- International nature conservation databases
- Law of Georgia on the System of Protected Areas https://matsne.gov.ge/ka/document/view/32968?publication=22

75 The map was prepared by the authors of these Guidelines using the ESM Webtool at https://airomaps.geohive.ie.

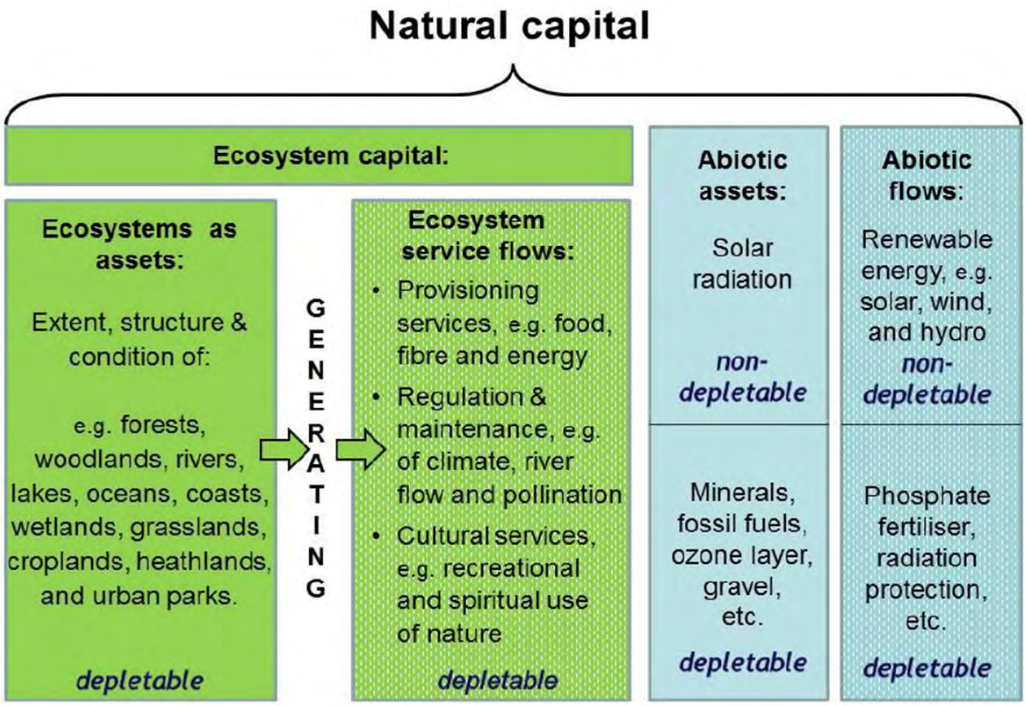
76 E.g. available at the https://treaties.un.org/ or else.

4.4.2.8. Ecosystem services

Note: an example of ecosystem services assessment is provided in annex IV.

Ecosystem services are considered as functions of the natural assets (and both are the components of the natural capital) (**Figure 15**). Supporting and protecting ecosystems (natural assets) provide for a stable generation of ecosystem services, but destruction of these ecosystems causes reduction in ecosystem services.

Figure 15. Components of natural capital. Developed from the natural capital figure in the EU MAES[77] report on Mapping and Assessment of Ecosystems and their Services (European Commission, 2013)[78]



All classification systems distinguish three groups of ecosystem services – provisioning (physical products), regulating (benefits from ecosystem processes) and cultural (non-material benefits that the people obtain from ecosystems). However, the Millennium Ecosystem Assessment (2005)[79] adds a new category, "supporting services", which support key processes in ecosystems, and thereby all other ecosystem services. Supporting services are described as intermediary services as they do not benefit humans directly in contrast to final services (all other services) that are consumed by humans (**Figure 16**).

Key indicators

The latest EU MAES report on Mapping and Assessment of Ecosystems and their Services (EU, 2020)[80] suggested four ecosystem service indicators depending on their offer and demand (**Figure 17**). **Ecosystem services' potential** is considered as a certain volume of the ecosystem services that is offered when an ecosystem lives in well-being (sustainable). If any natural or anthropogenic stresses on a given ecosystem appear, the potential may become reduced.

77 Mapping and assessment of ecosystems and their services. https://publications.jrc.ec.europa.eu/repository/handle/JRC120383

78 Common International Classification of Ecosystem Services (CICES) V5.1. Guidance on the Application of the Revised Structure by Roy Haines-Young and Marion Potschin, Fabis Consulting Ltd. January, 2018 https://cices.eu/content/uploads/sites/8/2018/01/Guidance-V51-01012018.pdf

79 https://www.millenniumassessment.org/en/Synthesis.html.

80 https://publications.jrc.ec.europa.eu/repository/handle/JRC120383

Figure 16. The cascade model of supporting ecosystem services[81]

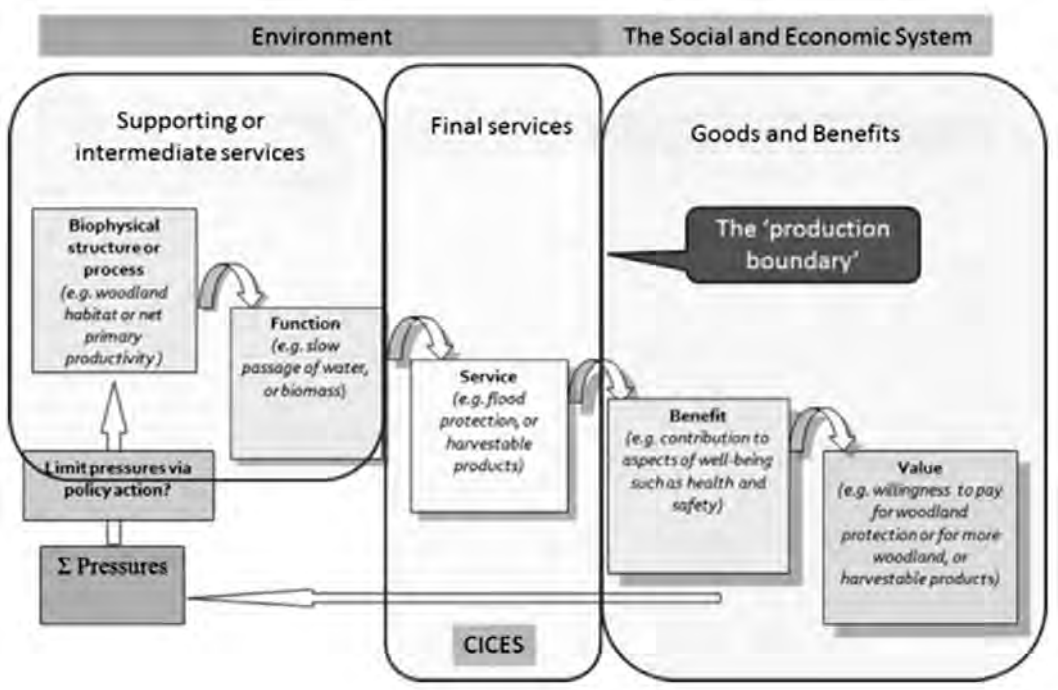
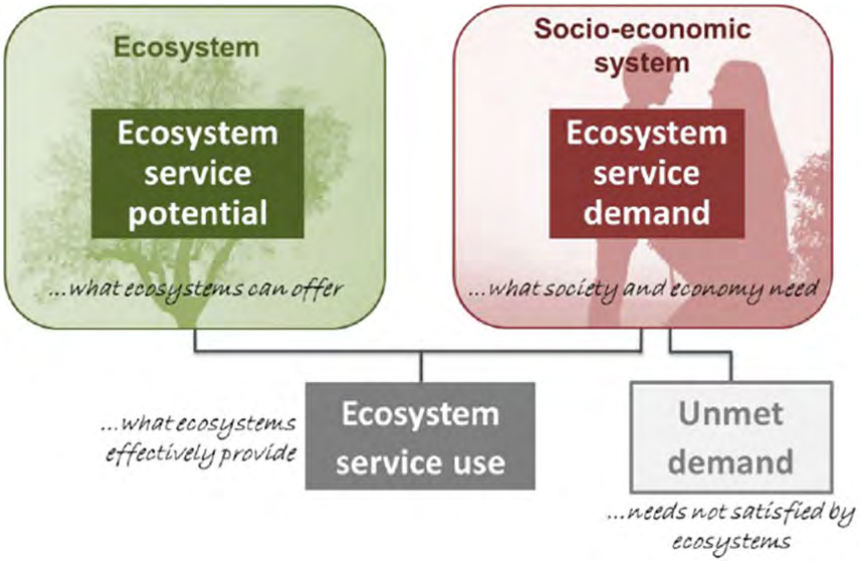


Figure 17. Scheme of the ecosystem services indicators[82]



81 Potschin, M. and Haines-Young. Defining and measuring ecosystem services. In: Potschin, M. Haines-Young, R., Fish, R. and Turner, R.K. (eds). *Routledge Handbook of Ecosystem Services.* – Routledge, London and New York, pp 25–44. Cited in: Common International Classification of Ecosystem Services (CICES) V5.1. Guidance on the Application of the Revised Structure by Roy Haines-Young and Marion Potschin, Fabis Consulting Ltd. January, 2018 https://cices.eu/content/uploads/sites/8/2018/01/Guidance-V51-01012018.pdf

82 EU MAES report, Mapping and Assessment of Ecosystems and their Services, 2020. https://publications.jrc.ec.europa.eu/repository/handle/JRC120383.

Environmental limits of the land use

The potential of ecosystem services (see above) is what matters. Accordingly, the spatial limits would be the boundaries of ecosystems producing ecosystem services. Any land use that breaks the boundaries will disturb the potential of ecosystem services.

In completely natural ecosystems (such as intact forests or strictly protected wetlands) the limit of the ecosystem services' potential must not be exceeded because of the threat of ecosystem disturbances. The same is valid for managed, used or semi-natural ecosystems (e.g. recreational zones of national or urban park). However, where the limits may be extended artificially – for example, if wood floorings for walkways are properly installed – more visitors are allowed. This would always be the result of managed efforts.

Text section

Baseline analysis of the ecosystem services consists of the following three steps.

1. **Identification and description**. Firstly, all potential ecosystem services (that are offered by ecosystems) falling within four above-mentioned groups need to be described. Secondly, it is necessary to estimate which of them are demanded and used (e.g. both by inhabitants of the planning area and by those living outside the area) and to define the appropriate consumers (stakeholders).
2. **Quantification**.[83] Based on the 'four indicators' scheme (**Figure 17**), each ecosystem service is quantified using relevant units in terms of specific values and for the whole planning area. For example, forest timber production can be calculated in m^3 per ha; recreational capacity – in number of visitors per ha per day, and carbon sequestration – in tonnes of carbon dioxide. Data will include, as a minimum, values of the *potential and used* ecosystem services, and, if possible to calculate, *demanded and unmet* ecosystem services.
3. **Defining existing and potential trends (forecasting)**. This part of the analysis is strongly bound with ecosystems trends (in other words, it depends on the tendencies in the state of the natural assets). Accordingly, the ecosystem analysis done in the Biodiversity or Landscape sections has to be considered from a point of view of the ecosystem services offered by the ecosystems. The main trends should be traced as affecting ecosystem services. The main drivers of ecosystem changes usually lead to changes in ecosystem services as well. However, changes in (or destructions of) one ecosystem do not always lead to "a net loss", as new ecosystem(s) may appear instead. For example, if a deforestation trend leads to losses of the forest, new arable lands that replace the forest will increase agriculture provision (and new ecosystem services will therefore emerge). Further, new ecosystem services may appear, as, for example, cropland habitat can be used by birds that prefer wintering on croplands in some regions.

Form of visualization

- Drawings of ecosystem services.

Examples of visualization

Analysis of ecosystem services may be presented in different ways based on the scheme of the four indicators (see **Figure 17**):

- as a line chart (**Figure 18**);
- as a bar chart (**Figure 19**);
- as a map (**Figure 20**).

83 Quantification of the ecosystem services (at least some of them) may also be done in monetary form.

Figure 18. Timber provision as an ecosystem service in the EU over time[84]

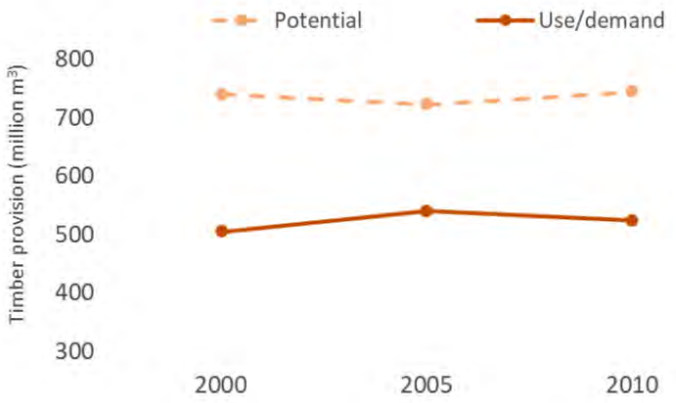


Figure 19. Demand, use and unmet demand for flood control in the EU[85]

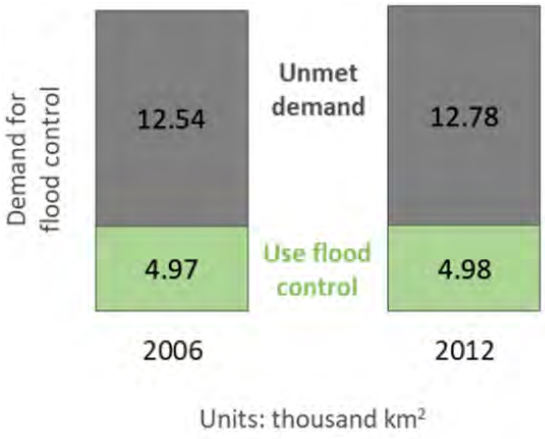
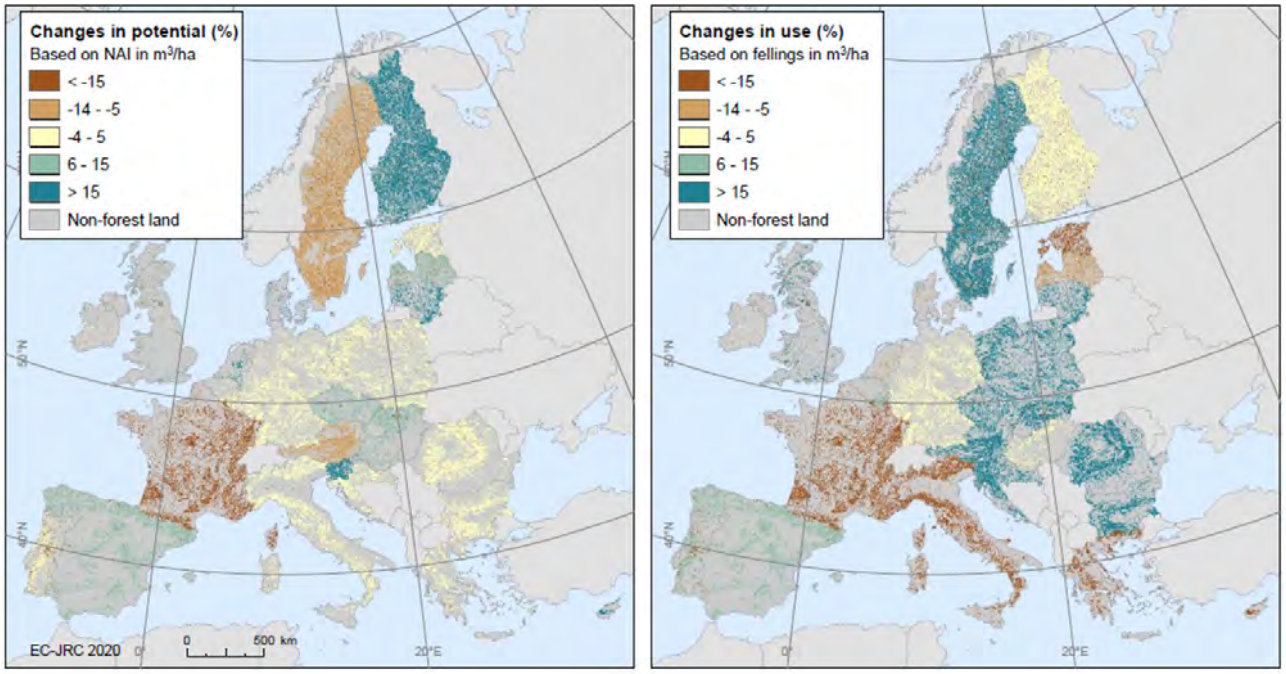


Figure 20. Maps of changes in the potential for and use of timber between 2000 and 2010[86]



84 EU MAES report on mapping and assessment of ecosystems and their services, 2020 https://publications.jrc.ec.europa.eu/repository/handle/JRC120383

85 *Ibid.*

86 *Ibid.*

The drawings allow trends and balances to be estimated. For instance, **Figure 18** shows that the total EU timber provision potential significantly exceeds its demand and use. Another example, in **Figure 19**, shows that flood control is a critical ecosystem service lacking in the EU. Comparing maps of ecosystem services of various areas over the years reveals different trends: in Sweden, for example, timber provision potential decreases while its use increases; whereas the opposite trends are observed in Finland (**Figure 20**).[87]

Data source and related legislation

- Databases of regional and national authorities on agriculture, timber production, resources of non-timber products of forests
- Scientific data on ecosystem services
- Climate change reports, databases on carbon sequestration and emissions
- *Forest and Land-Use Atlas of Georgia*, https://atlas.mepa.gov.ge/?l=ka
- Databases of the European Environmental Agency: https://www.eea.europa.eu/en
- The Economics of Ecosystems and Biodiversity for the Forestry Sector of Adjara Autonomous Republic, Georgia.[88]

4.4.2.9. Landscape

General remarks

Addressing landscape issues is not methodologically unified and often relies on the individual approach of the planner. According to the European Landscape Convention, "landscape" means an area, as perceived by people, and whose character is determined by the action and interaction of natural and/or human factors, while "landscape protection" refers to actions to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity.[89] Accordingly, the landscape can be understood as a certain set of typical natural and anthropogenic features that are perceived by people and identify a certain area for them. Landscape character is co-determined by a similar historical development. For the purpose of planning and protection, distinctive "landscape areas" are typically defined based on their characteristic qualities (natural and cultural-historical or other), and presence of natural landscape landmarks. The landscape areas are also distinguishable by a boundary. The boundary may be a horizon, natural features (ridges, crests, edges) or human-made features.

The spatial plan should define and delineate the individual landscape areas and define objectives, and principles to be respected, as well as target characteristics for future spatial development of the territory. It should preferably include a landscape-ecological assessment of the territory, using, for instance the "semaphore" principle. Within the planning area, it is desirable to distinguish between natural, cultural and historical landscapes and to evaluate the degree of their transformation.

The role of an SEA is to evaluate the planning proposal (draft plan) in terms of the extent the envisaged developments are in conformity with the objective of preserving the landscape values and landscape character, differentiated according to the defined landscape character areas. In particular, there is a need to protect the most valuable landscape areas while respecting the specifics of the defined areas through ensuring minimization or exclusion of urbanization activities capable of disturbing the landscape character.

87 Other examples can be accessed at: UK National Ecosystem Assessment http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx; MAES: https://www.ipbes.net/policy-support/tools-instruments/mapping-assessment-ecosystems-their-services-maes-analytical.

88 Luke Brander et al. 2016. The Economics of Ecosystems and Biodiversity for the Forestry Sector of Adjara Autonomous Republic, Georgia https://www.teebweb.org/wp-content/uploads/2017/03/TEEB-Adjara-Final-Report.pdf.

89 Council of Europe Landscape Convention as amended by the 2016 Protocol https://rm.coe.int/16807b6bc7.

Key indicators

- Areas with protected landscape areas
- Areas with protected (historical) urban areas/zones.

Environmental limits of the land use

- Protected landscape areas
- Protected (historical) urban areas/zones.

Text section

- Natural characteristics of the area (relief, climate, hydrology, vegetation cover, distinctive vertical and horizontal structures of the landscape)
- *Modern* state of the landscape, potential, forms and scales of impact, sustainability, socioeconomic function
- Landscape (ecologically oriented territorial) planning
- Cultural and historical characteristics of the area.
- Preserved traces of the urban structure of historical forms of settlement, architecturally valuable buildings and ensembles including folk architecture:
  - Preserved traces of historical landscapes.
  - Spatial relationships, aesthetic attractiveness, aesthetic values, harmonious scale and relationships of landscape structures
- Significant long-distance viewpoints (viewpoints)
- Landscape fragmentation and other landscape disturbances
- Key drivers of change
- Anticipated development without the application of the proposed spatial/urban plan.

Form of visualization

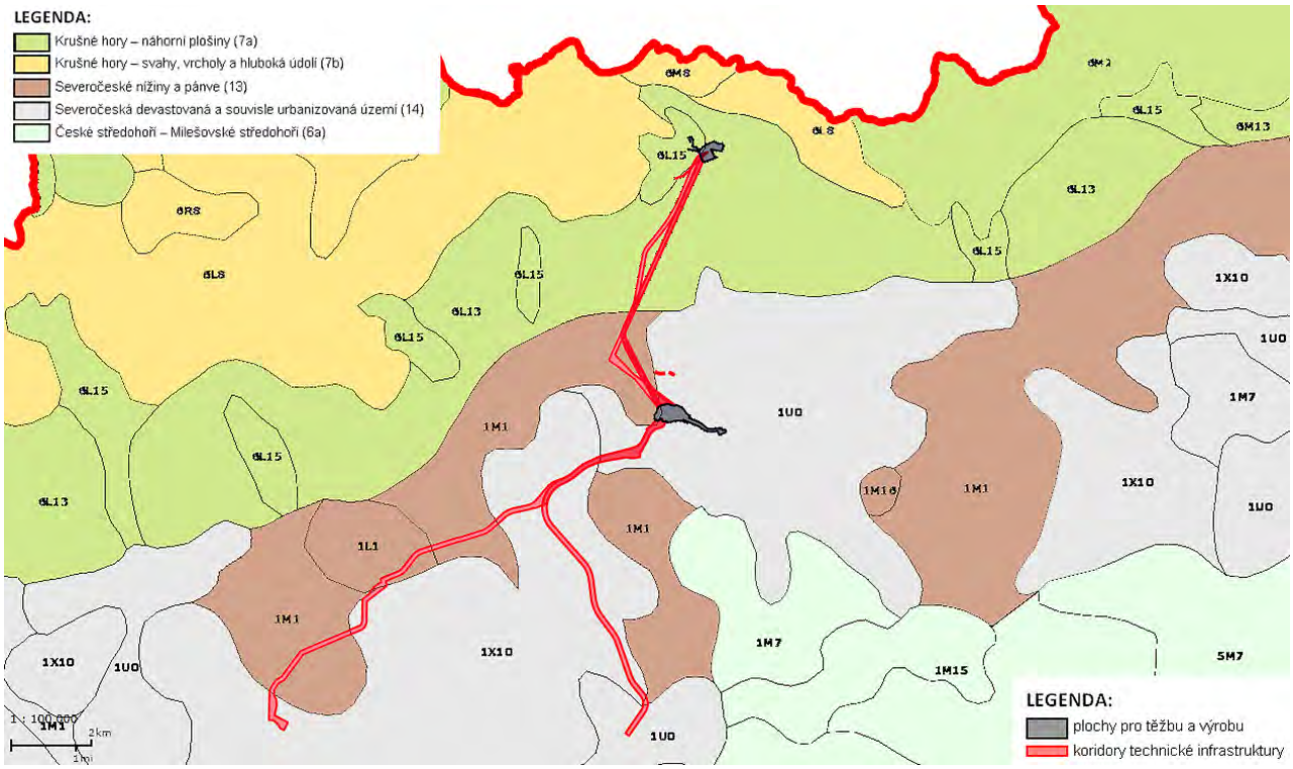
- Drawing of the delineated landscapes (landscape character areas).
- Compilation of landscape characteristics with geological hazards or other natural and/or human-made stressors (see **section 4.4.2.12**).

Data source and related legislation

- Beruchashvili N., 1979, Landscape Map of Caucasus. Tbilisi: TSU, 1979. Scale 1:1,000,000.
- Beruchashvili N., Landscape Map of Georgia, N., Types of Vertical Structure of Natural-territorial Complexes. Tbilisi: TSU, Fund material. Scale 1: 500,000.
- Akhalkatsi M., Tarkhnishvili D., 2012, Habitats of Georgia (Habitats of Natura2000 in Georgia are developed in the framework of the project of GTZ), Tbilisi, 118 pp.
- მაისურაძე, რ., ჯამასპაშვილი, ნ., სეფერთელაძე, ზ., ბერუჩაშვილი, ნ., ინაშვილი, ნ., & ხარძიანი, თ. 2012. საქართველოს ლანდშაფტური რუკა. თბილისი
- CORINE Land Cover (CLC): https://land.copernicus.eu/global/

Example of visualization

Figure 21. Planned spatial corridors of technical infrastructure in the context of delineated landscape character areas. SEA for the regional territorial plan (Ustí region, Czechia), Integra Consulting, 2023[90]



Left upper legend: Various colours represent different "Landscape character areas" delineated by the Regional Territorial Plan. Right bottom legend: Proposed infrastructure developments

4.4.2.10. Public health and socioeconomy

The approaches to integrating public health into an SEA are reviewed in detail in the Health Impact Assessment Guidelines developed for Georgia within the framework of the EU-financed twinning project.[91] These guidelines contain health indicators for baseline analysis, tools and flowcharts tailored to screening, scoping, preparation of the assessment report, review of the report and monitoring stages of SEA/EIA. The guidelines can be used by the Center and other stakeholders.

The guidelines also list several socioeconomic indicators to be included in the SEA report; similar and other socioeconomic indicators stem from the Rules for Development of Spatial Planning and Urban Planning Plans (2019). In addition to typical indicators,[92] it is essential that the SEA should contain transport and population densities for the area for which the spatial/urban planning document is prepared. The selection of socioeconomic indicators and depth of trends/baseline analysis should be relevant to a particular SEA and its spatial/urban plan.

In terms of visualization, in addition to the usual graphs (population (age-sex) pyramids, population density maps, etc.), overlay maps could be drawn to show the indicators that are important for the particular SEA and its spatial/urban plan, such as population density versus transport network distribution or area of publicly used green space versus planned developments.

90 https://portal.cenia.cz/eiasea/detail/SEA_MZP028J?lang=cs

91 https://eu4georgia.eu/projects/eu-project-page/?id=1673

92 Such as demography, gender, education, poverty, wellbeing, housing, social infrastructure, coverage by utilities, employment, socially protected population, internally displaced people and the criminogenic situation.

4.4.2.11. Cultural and archaeological heritage

Key indicators

- Area with cultural and archaeological value with protection status
- Number of cultural heritage monuments (with protected status).

Environmental limits of the land use

- Conservation area (urban or rural) including the protection zone
- Immovable national cultural monument, or a group of interrelated monuments, including the physical and visual protection zone (only selected features of supra-local importance, in the open countryside)
- UNESCO monument including the protection zone
- Significant building landmark (only selected objects of supra-local importance).

Text section

Localization and basic characteristics of the observed features:

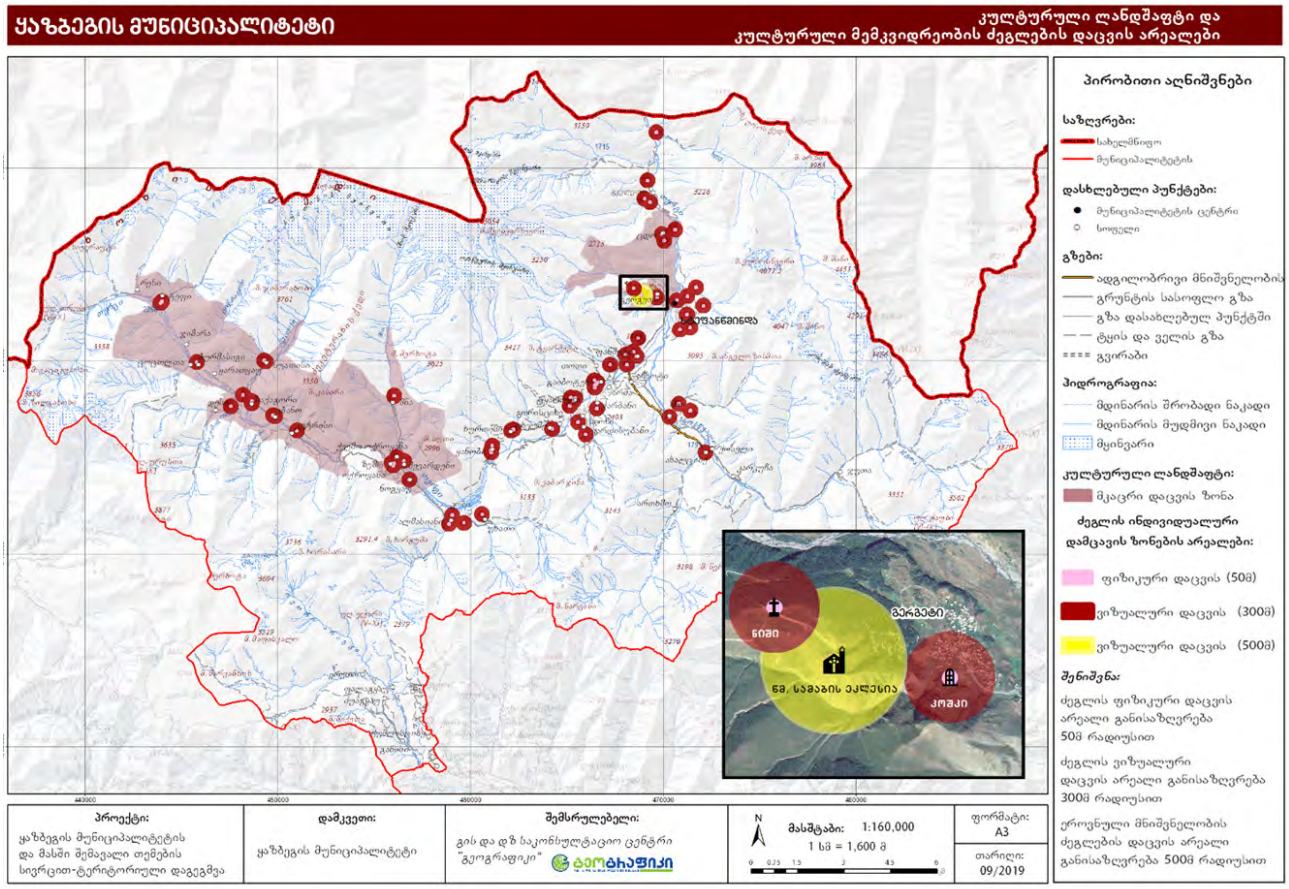
- Conservation areas (urban, rural)
- UNESCO monuments
- National cultural monuments
- Other urban or architecturally valuable complexes and buildings
- Archaeologically significant areas.

Form of visualization

The content of the drawing includes all the above-mentioned limits of land use displayable at the given scale.

Examples of visualization (see Figure 22)

Figure 22. Cultural landscape and cultural heritage protection areas. SEA scoping report of the spatial planning plan of the Kazbegi Municipality and its communities. Kazbegi Municipality. 2020[93]



Data source and related legislation

- Portal of Cultural Heritage of Georgia https://memkvidreoba.gov.ge/
- Law of Georgia on Cultural Heritage https://matsne.gov.ge/ka/document/view/21076?publication=19 (refer to discussion of links between cultural heritage and spatial planning in annex V).

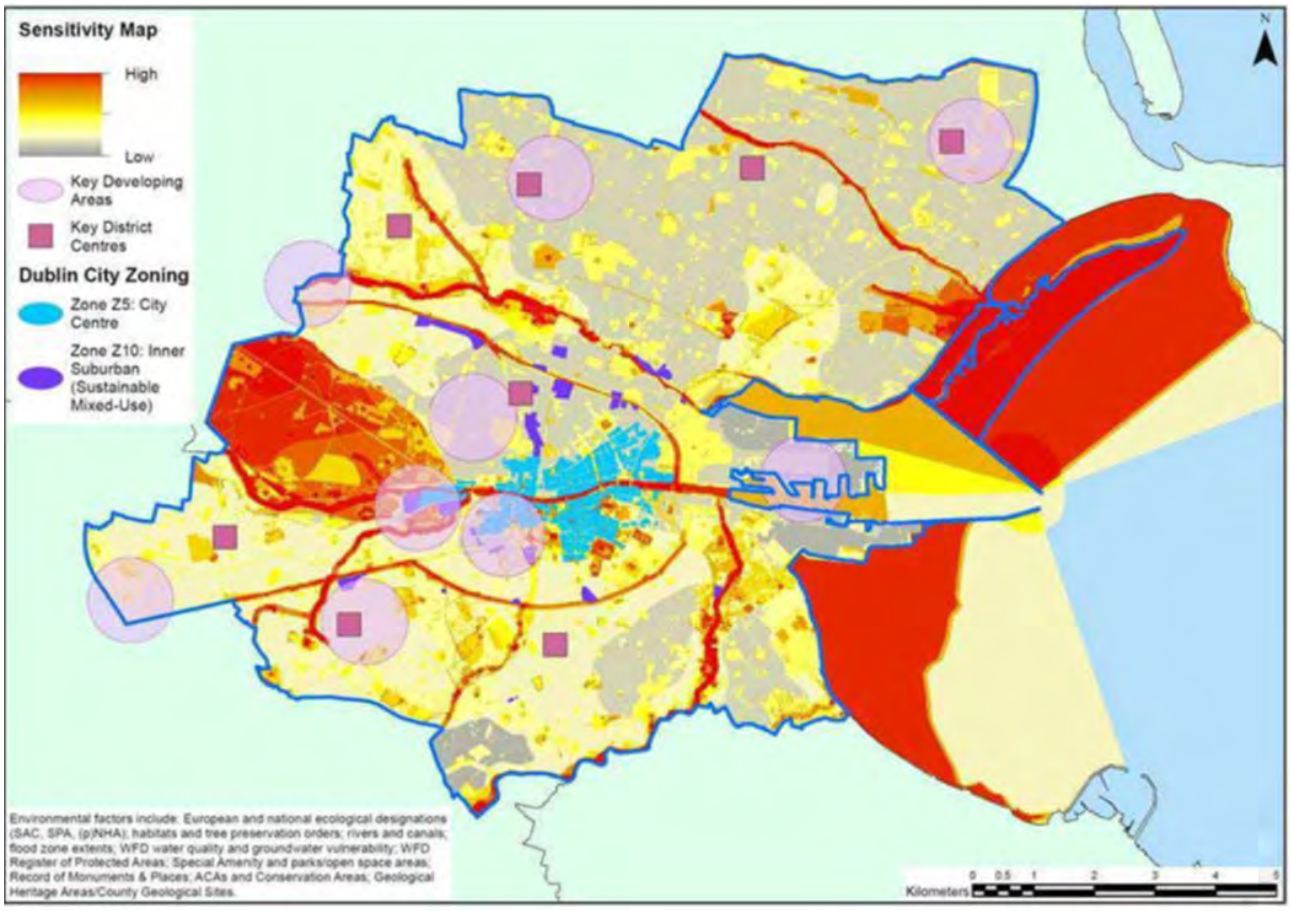
4.4.2.12. Possible graphical compilations of the baseline analysis data

Recommendations on, and examples of, visualization are proposed above for various environmental components. However, it is often necessary to overlay several layers of environmental data. As a result, maps of environmental sensitivity to certain development pressures are prepared that are user-friendly and also avoid the need for having large quantities of quantitative data in SEA reports.

93 https://mepa.gov.ge/Ge/PublicInformation/25659

Such environmental sensitivity maps can bring together the spatial data on issues such as flooding, surface and groundwater sensitivity, biodiversity, cultural heritage or landscape. **Figure 23** presents an example of environmental sensitivity mapping in Ireland using a dedicated webtool.[94]

Figure 23. Example of environmental sensitivity mapping (based on ecological designations, flood zone areas, water quality and groundwater vulnerability, cultural heritage and other features)[95]

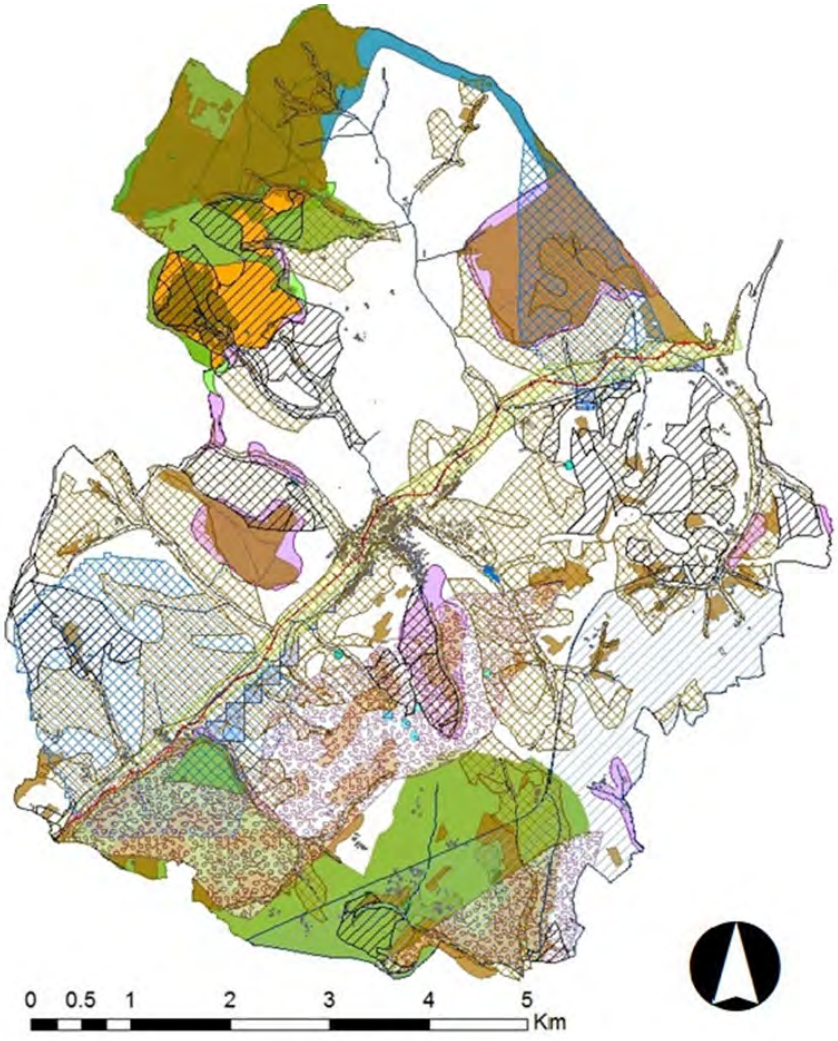


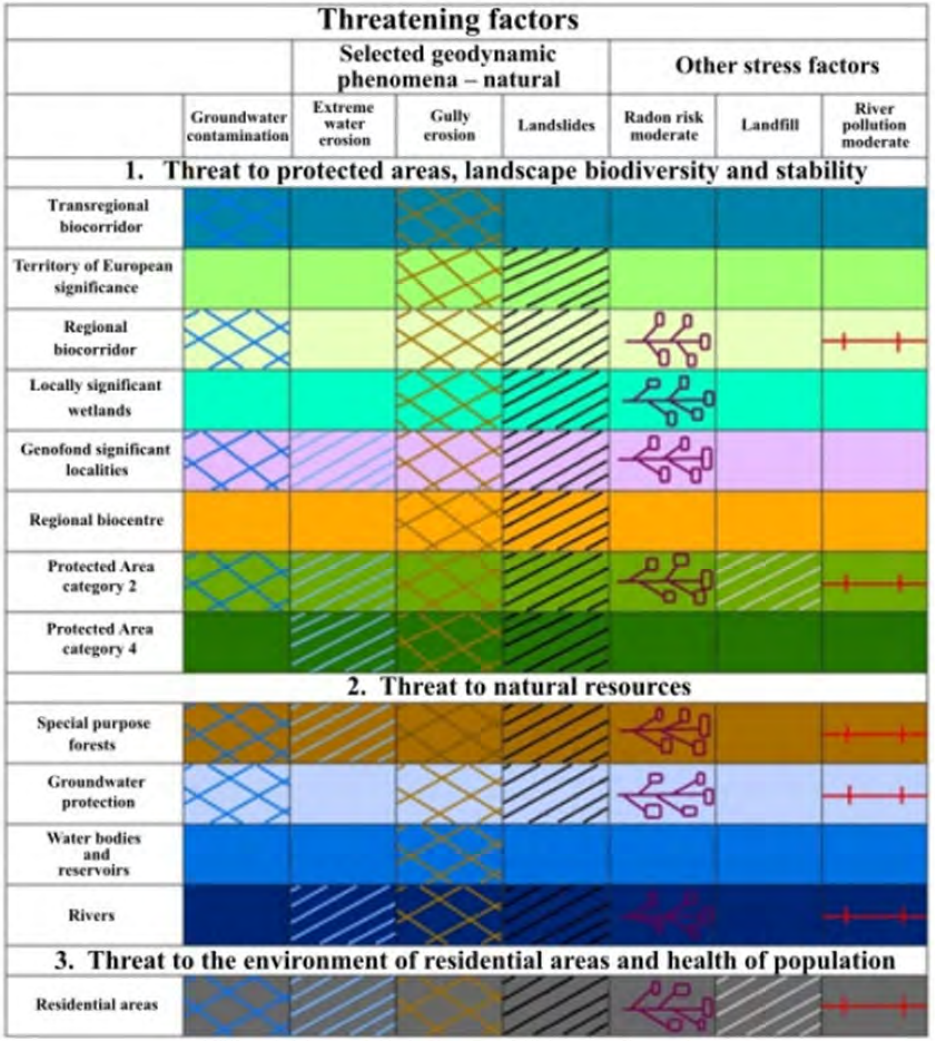
Another example of visualizing environmental data is presented in **Figure 24**. It demonstrates the areas where the environmental components/elements of the landscape are exposed to natural and human-caused impacts (stresses) within a certain administrative unit.

94 The Environmental Sensitivity Mapping Webtool (https://enviromap.ie/) was developed to combine environmental datasets to provide environmental sensitivity maps in support of SEAs in Ireland. The tool embraces over 130 spatial datasets combined under 8 themes: air and climatic factors; biodiversity – flora – fauna; cultural heritage; landscape; material assets; population and human health; soils and geology; and water. Each dataset (layer) is assigned one of three scientific scores (1 – Low, 2 –Medium, 3 – High) that take into account quality, risk and protection status of the sensitive factor of the dataset (for example, aquifer or ancient woodland) in a certain area of the country. The scores are embedded into the raster files and cannot be modified. In turn, users can select the theme significance – "weight" (1 or 2) to assign. In the end, the tool integrates all selected datasets taking into account the scores and weights to produce the sensitivity map for the target area.

95 Strategic Environmental Assessment - Guidelines for Regional Assemblies and Planning Authorities. Government of Ireland. 2021. https://assets.gov.ie/201773/5e53fc9e-10cd-42dd-8caf-907638e03749.pdf

Figure 24. Analysis of the clashes between positive and negative landscape-ecological factors,[96] Vrbovce village, Slovakia





96 An Assessment of Changes in Ecological Stability and Landscape Management Practices over the Last Centuries: A Case Study from Vrbovce, Slovakia. Roman Vyleta et al. 2019 IOP Conf. Ser.: Mater. Sci. Eng. 603 022083 https://iopscience.iop.org/article/10.1088/1757-899X/603/2/022083.

4.4.3. Objectives-led assessment

This assessment aims to identify likely synergies or conflicts between the objectives of the spatial plan and the relevant environmental, health and social objectives identified in the baseline analysis (at the scoping stage, see **section 4.3**(2)). This assessment should not only generate assessment opinions, but also suggest opportunities for enhanced integration of environmental, including health, and social considerations into the spatial plan. The evaluation will be based on the judgement of the SEA team experts and verified through the SEA consultations. A format for such assessment is proposed in **Table 3**. Another format used in the SEA of the master plan of Orhei Town is provided in **annex VI**, as a reference.

The analysis can be prepared using the following legend:

+ Likely synergy between a priority of the spatial/urban plan and given environmental/health objective (i.e. implementation of the plan's priority will help to achieve the environmental/health objective);

0 No link between a priority of the plan and given environmental/health objective;

– Likely conflict between a priority of the plan and given environmental/health objective (i.e. implementation of the plan's priority may slow down or even make impossible achieving the environmental/health objective);

? – uncertain.

Table 3. Possible format for policy-objectives-led assessment

Environmental and health objectives

Environmental and health objectives		Priorities /objectives of the spatial/urban plan					Recommended changes to the proposed priorities/ objectives of the plan
		No. 1	No. 2	No. 3			
Water		+	–	–			
Soil and geological hazards							
Atmospheric air quality							
Climate change							
Biodiversity and Protected Areas (PAs)							
Public health							

Environmental and health objectives		Priorities /objectives of the spatial/urban plan					Recommended changes to the proposed priorities/ objectives of the plan
		No. 1	No. 2	No. 3			
Waste (incl. institutional)							
Socioeconomic and cultural							
….							

If some potential conflict or risk of negative impact associated with a particular component of the plan is found, then recommendations are proposed in the right-hand column. Recommendations can be formulated along the following lines:

- Reformulate the priority as follows ...
- Prioritize activities such as...
- Implement it only in the following areas...
- Avoid interventions related to ...
- Avoid implementation of XXX activities in the XXX areas, etc.

4.4.4. Assessment of impacts/effects

For the assessment of effects, the spatial plan is always considered as a whole. A different approach may, however, be needed, based on the nature of its individual components (i.e. assessment of only verbally defined measures vs. assessment of measures with both verbal and graphically depicted spatial projection). In all cases, these are anticipated (potential) effects, which may subsequently materialize through implementing downstream spatial planning instruments, and most importantly through planning and implementing specific projects (with technical specifications not known in the time of spatial planning and SEA).

The assessment must be carried out through evaluating individual proposed areas and corridors, or their clusters (wherever the aggregation will not compromise the transparency of the assessment), with a conclusion comprising:

1. A clear statement on whether the area or corridor is in terms of environmental effects acceptable as proposed (delineated).
2. A proposal for measures to prevent, reduce or compensate for any detected environmental effects.

It should be noted that in the spatial planning sector, most of the impacts are identified via overlaying maps and investigating spatial conflicts. Wherever a risk/effect or an opportunity is identified, it is necessary to try to characterize it, to the extent possible, in terms of:

- geographical scale of the effect (national, regional, municipal, local considering the number of the affected people)
- probability of the effect (low, medium, high)
- duration of the effect (short-term -1-3, long-term -4-6-7 and more, permanent)
- reversibility (whether changes in the baseline are permanent or temporary, reversible or irreversible)
- direct or indirect
- frequency of the effects
- direction of change (positive, adverse, or neutral).

The assessment can be presented in tabular format (**Table 4**).

Following this, the significance value can be assigned to each effect/impact using for instance the following evaluation scale:

-2	significant negative effect
-1	moderate negative effect
0	no effect expected
+1	moderate positive effect
+2	significant positive effect
?	Effects cannot be specified due to a high uncertainty

Mitigation measures/recommendations are proposed to avoid or minimize identified risk (e.g. to indicate what shall be taken in consideration in the subsequent steps of the planning (specific problems, areas, technologies, economic considerations, priorities to be given to certain steps etc.), what specific environmental and health data/analysis shall be prepared prior to implementation of given action, etc. Wherever possible, enhancement measures are proposed as well.

Proposed mitigation measures have to reflect risks and opportunities identified. The following types of mitigation measures can be considered:

- Identification of areas/locations which should not be used for certain plan's developments and/or of areas/location which can be recommended to be utilized
- Proposed modification of the plan and/or proposal for further planning of specific actions (e.g. to conduct socioeconomic studies at municipal level; to conduct waste inventory locally)
- Conditions for implementation of specific projects (e.g. buffer zones).

Explanation why particular action has no relevance for given environmental and health issue (health, biodiversity, water, etc.), explanation of uncertainties, indication of challenges for environmentally sound implementation, etc.

Table 4. An example of the impact assessment matrix

Components / actions of the plan	**Evaluation** (symbols)	**Environmental risks** (description of likely negative impacts on receiving environmental and social components, details and supporting analyses can be presented in narrative following the table)	**Environmental benefits** (description of likely positive impacts)	**Mitigation measures** (suggested improvements of the plan and measures preventing or minimizing potential negative effects)
Action 1				
Action 2				
Action 3				
...				

In addition to the effects on individual environmental and social components, cumulative effects are also evaluated. Cumulative effects in the SEA for spatial planning could be the effects of two or more proposals in the plan on a particular environmental or health issue or characteristic within the given environmental component. Cumulative effects should be examined not only in the case of a larger number of proposed projects, but also when even a single project is conceived in an area in which there are already existing projects and whose combined effects with the proposed plan could have a cumulative effect.

A precise and quantitative assessment might not be always feasible, however, at least a rough expert estimate of pressures and effects must be completed. The results of the cumulative assessment can be presented in a tabular form using the same evaluation scale (see **Table 5**).

Table 5. An example of the cumulative impact assessment matrix

Environmental or social component / receptor	Likely evolution without the plan (to year 20xx)	Impacts of the plan (to year 20xx)	Description of cumulative impacts of the plan and other actions	Mitigation measures
Atmospheric air quality				
Soil and land use				
Biodiversity, flora and Fauna				
…				

For detailed guidance about cumulative effects assessment, see the *2020 Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment* at https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA-Good-Practice-Guidelines-SEA.pdf.

4.4.5. Analysis of alternatives

4.4.5.1. Introduction

If the planners have proposed any alternatives, then these should be assessed. If no alternatives are proposed, then the SEA formulates the 'zero' or 'business-as-usual' scenario (what will happen if the plan is not implemented), and conducts the comparison of the 'zero' alternative with the spatial plan.

SEA can recommend that alternative(s) should be elaborated by the planning team. Moreover, SEA can propose additional alternative options. Any alternatives and relevant recommendations from SEA have to be properly justified and linked to likely impacts.

Alternatives can be defined as different ways to achieve objectives of a plan or program. Proposed by the planning team the alternatives may be different ways addressing economic, social or even technical issues. SEA considers the alternatives in relation to environmental issues they affect.

Dealing with alternatives is recommended to be divided into three stages: (1) identification and development; (2) assessment and comparison; and (3) selection and reporting of alternatives. Appropriate recommendations are developed for each stage.[97]

97 Developing and assessing alternatives in Strategic Environmental Assessment. EPA Research Report No. 157. EPA Research Programme 2014–2020. Published by Environmental Protection Agency, Ireland. – 2015 https://www.epa.ie/publications/research/biodiversity/EPA-157_web.pdf

4.4.5.2. Identification and development

It is optimal if alternatives are shaped and considered at the earliest steps of the planning and SEA (for example, when drafting a new plan concept, at the SEA scoping phase). The earliest consideration keeps "windows of decisions" maximally broad. If a detailed description of the identified alternatives is unavailable at the scoping stage, the scoping report should include specific questions to induce comments and analysis of the alternatives at the later stages.

When an SEA is conducted, the alternatives can already exist (proposed by the planning team, revealed during the baseline study); they have to be identified and described properly. Also, the SEA can develop new alternatives dealing with significant environmental issues/problems determined at the scoping stage. In both cases, they are to be based on sound baseline data.

Key criteria for the development of alternatives are presented in **Figure 25**.

Figure 25. Key criteria for the development of alternatives[98]

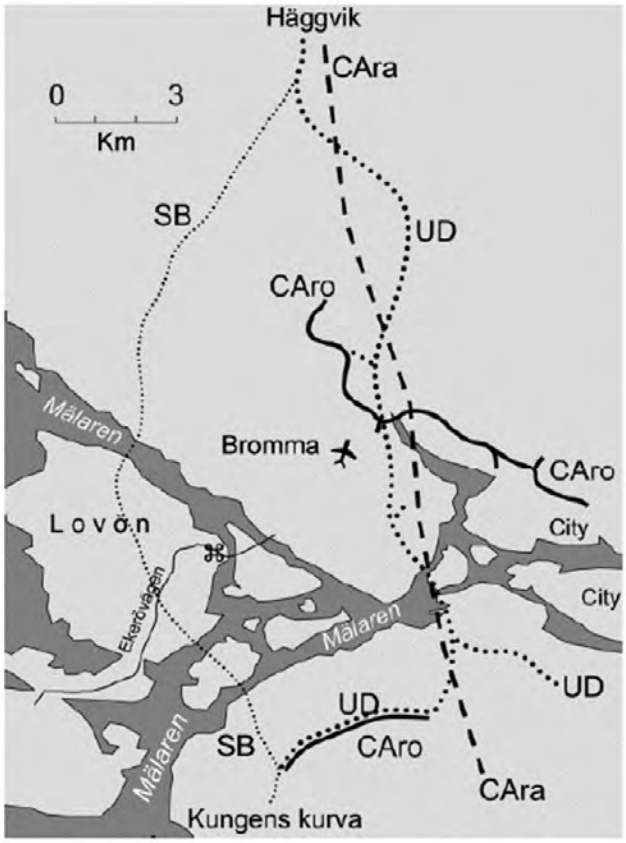
Generally, alternatives should not conflict with higher-level (superior) plans. On the other hand, some drafted plan's objectives or alternative solutions may not be aligned with higher-level plans. In such cases, well-grounded alternatives might be proposed to the higher planning tiers (it is SEA's standard approach to redirect proposals to the most appropriate policy or management level). Horizontally, plans of neighbouring regions (communities) have to be taken into account.

A structured approach is to be followed to frame alternatives around certain themes or levels. For example, **spatial alternatives** show different locations to achieve the plan's objectives; **sectoral alternatives** in land use would propose different zoning; **capacity alternatives** would present different loads on residential areas depending on quantity or number of block-houses.

In land-use planning the best way to present alternatives is to do it spatially, beginning with the plan's options (e.g. proposed different transport routes, **Figure 26**). Most importantly, it provides spatial assessment of alternatives (see below). Besides it facilitates consideration during consultations and SEA/planning team meetings. Spatial modelling tools assist to form and explore alternative scenarios.

98 *Ibid.*

Figure 26. The corridor alternatives in the transport infrastructure mega-project, More Efficient North–South Communications in Greater Stockholm[99]



It is important that the planning team tries to not only describe the alternatives in a narrative form, but also to map them (if possible), as presented in the Kazbegi scoping report (see **annex VII**).

4.4.5.3. Assessment and comparison

Different methods and tools are used for assessing alternatives being applied individually or in combination; among them are expert judgement, matrix-based assessment, multi-criteria assessment, environmental resource mapping, environmental sensitivity mapping, modelling.[100] A lot of widely used SEA instruments might be useful. To note, as climate change is a critical issue it is important to assess alternatives in terms of their potential to affect both mitigation and adaptation issues.

A two-level approach can be used to support an effective assessment of alternatives. A general evaluation of alternatives against some thresholds (e.g. regulatory) or already made decisions will sieve a part of alternatives remaining a limited number of the most appropriate ones. Further, these remained ones undergo comprehensive comparative examination.

Each alternative has to be assessed applying the same set of tools and to the same level of detail; this comparative approach is important to guarantee the following selection is valid. All alternatives are assessed in terms of their environmental and, if applicable, social and economic significances or limitations. Both negative and positive impacts are assessed. If possible, the impacts are quantified (e.g. in a matrix assessment).

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99 SB = Stockholm Bypass, UD = the Ulvsunda Diagonal, CAro+CAra = the Combination Alternative (road+railway). ⌘= the Royal Castle of Drottningholm. ✈ = Bromma Airport. Road corridors lie between the dotted lines (source: Antonson, H. (2011). The Treatment of Landscape in a Swedish EIA Process. Environmental Impact Assessment Review, 31 (3), pp. 195–205, https://www.researchgate.net/publication/236120449_The_Treatment_of_Landscape_in_a_Swedish_EIA_Process)

100 *Ibid.*

When a land-use plan is assessed or maps are used, it is reasonable to contrast defined specifically zones with environment sensitivity maps. These overlapped layers show zones of potential land-use conflicts (see examples in **section 4.4.2**). Quantification, where possible, allows to compare different alternatives regarding their effect on sensitive environmental areas.

Based on Georgian practice, a suitable approach to assessing alternatives is presented below in Georgian (**Figure 27**).

Another example of assessing and comparing alternatives drawing upon the SEA of the Orhei Town master plan is presented in **annex VIII**.

Figure 27. Example approach to assessing alternatives (Geographic, 2021, SEA of the development plan of land plots within Gudauri recreation territory[101])

მაგალითისთვის, განაშენიანებული ტერიტორიის გარემოს ხარისხის მდგომარეობა შემდეგი ქვეინდიკატორების ხარისხობრივი მაჩვენებლებით შეიძლება განისაზღვროს: გამწვანება, ხმაური, განიავება, სიცხე, ზედმეტი განათება, ჰაერის ხარისხი, განაშენიანების ინტენსიობა. ინდიკატორული შეფასება რანჟირებულია დარგებისთვის შემდეგი მატრიცით:

+2	ძალიან მაღალი
+1	მაღალი
0	საშუალო
-1	დაბალი
-2	ძალიან დაბალი

სტრატეგიული ალტერნატივების სივრცითი ანალიზი კლასტერული რანჟირებით იქნება შესრულებული შემდეგი დარგობრივი ინდიკატორებისთვის:

	დარგობრივი ინდიკატორები	**ალტერნატივა 1:** გრგ-ს პროექტით შემოთავაზებულ განვითარება	**ალტერნატივა 2:** ნულოვანი ალტერნატივა (პროექტის გარეშე)
1	გარემოს ხარისხი (ჰაერის ხარისხი, ხმაური, ვიბრაცია)	-1	1
2	რესურსების მოხმარება (ბუნებრივი, ენერგო)	-1	0
3	საზოგადოებრივი ჯანმრთელობის დაცვა	1	0
4	სოციო-ეკონომიკური ეფექტიანობა	2	1
5	ტურისტული მიმზიდველობა	2	0
6	კულტურული და ბუნებრივი მემკვიდრეობა	0	0
7	გეოსაფრთხეები	-1	0
8	ცხოვრების დონე	1	0
9	განაშენიანების სიმჭიდროვე	-1	0
10	საინჟინრო-ტექნიკური ინფრასტრუქტურის მდგომარეობა	1	0
11	ტრანსპორტი და პარკირება	-1	0
	საშუალო მაჩვენებელი	0.2	0.2

101 https://mepa.gov.ge/Ge/PublicInformation/33318

პოტენციური ზემოქმედების ფაქტორები / ალტერნატივები	გეგმარებითი ალტერნატივა 1		გეგმარებითი ალტერნატივა 2		გეგმარებითი ალტერნატივა 3		ნულოვანი ალტერნ. (გეგმარების გარეშე)	
	განვითარება	ოპერირება	განვითარება	ოპერირება	განვითარება	ოპერირება	განვითარება	ოპერირება
მიწის გამოყენება, ნიადაგები, გეოლოგია								
მიწის რესურსების ათვისება/კარგვა	-2	-2	-1	-1	-2	-2	0	0
ნიადაგების დაბინძურება ავარიული დაღვრების ან არასწორი განშენდის გამო	-2	0	-1	0	-1	0	0	0
საკანალიზაციო წყლებით დაბინძურებული ნიადაგი (ცუდად დაგეგმილი გამწმენდი ნაგებობები ან არასწორი ექსპლუატაცია)	-1	1	-1	1	-1	1	0	-2
გრუნტის დესტაბილიზაცია მიწის სამუშაოების გამო	-2	0	-1	0	-2	0	0	0
ზვავების და სხვა გეოდინამიური პროცესების ზემოქმედება გეგმარებით არეალზე	-1	-1	-1	0	-1	0	0	0
წყლის რესურსები								
წყლის გარემოს დაბინძურება ავარიული დაღვრების ან არასწორი განშენდის გამო	-2	0	-1	0	-2	0	0	0
წყლის გარემოს დაბინძურება ცუდად დაგეგმილი გამწმენდი ნაგებობების ან არასწორი ექსპლუატაციის გამო	-2	-2	-1	-2	-1	-2	0	-2
არასათანადო სანიტარიული პირობები განვითარება-მშენებლობისას	-2	0	-1	0	-1	0	0	0
გრუნტის წყლის წყაროების დაბინძურება განვითარება-ოპერირებისას	-2	0	-2	0	-1	0	0	0
ჰიდროლოგიური რეჟიმის ცვლილების ზემოქმედება მაღალმთის ალპურ ეკოსისტემებზე	-2	-2	-1	-1	-2	-2	0	0
ბიომრავალფეროვნება								
ზემოქმედება ეროვნულ პარკზე და ზურმუხტის საერთაშორისო საიტებზე	0	0	0	0	0	0	0	0
ზემოქმედება მაღალმთის ეკოსისტემებზე	-2	-2	-1	-1	-2	-2	0	0
ზემოქმედება ჰაბიტატებზე - ფრაგმენტაცია და მცენარეულ საფარზე	-1	-1	-2	-2	-2	-2	0	0
ზემოქმედება ხმელეთის ფაუნაზე	-2	-2	-2	-2	-2	-2	0	0
ჰაერის ხარისხი								
ავტოსატრანსპორტო საშუალებების მოძრაობით გამოწვეული გამონაბოლქვი და მტვერი	-2	2	-1	1	0	1	0	-2
განვითარების საქმიანობებით გამოწვეული გამონაბოლქვი და მტვერი	-2	2	-1	1	0	1	0	-2
ნარჩენების გენერირება								
სამშენებლო ნარჩენები და მათი არასწორი განთავსება	-2	0	-1	0	-1	0	0	-1
სახიფათო ნარჩენების წარმოქმნა და არასწორი განთავსება	-2	0	-1	0	-1	0	0	-2
სამედიცინო ნარჩენები	-2	0	-1	0	-1	0	0	-2
ნარჩენების ზემოქმედება გარემოზე და მის ბინადრებზე	-1	-2	-1	-2	-1	-2	-1	-2
ორგანული ნარჩენები	-2	1	-1	0	-1	1	0	-1
ადამიანის ჯანმრთელობა								
შესაძლო ინციდენტების განვითარების-მშენებლობის პროცესში (სამუშაო ძალა)	-2	0	-1	0	-1	0	0	0
შესაძლო ინციდენტების განვითარების-მშენებლობის პროცესში (ადგილობრივები)	-2	0	-1	0	-1	0	0	0
სახიფათო ნარჩენების არასწორი განკარგვა (მაგ. აზბესტი, სამედიცინო ნარჩენები)	-2	0	-1	0	-1	0	0	-2
სასმელი წყლის ცუდი ხარისხით გამოწვეული ზემოქმედება ჯანმრთელობაზე	-2	2	-1	1	-1	2	0	-2
სათხილამურო ტრასებზე წარმოქმნილი ნარჩენების ზემოქმედება ადამიანის ჯანმრთელობაზე	-1	-2	-1	-2	-1	-2	0	-2
სოციო-ეკონომიკური								
არაადგილობრივი სამშენებლო ძალის შემოდინება	-2	-2	-1	-1	-1	-1	0	0
დამსვენებლების და ტურისტების დიდი რაოდენობა	0	-2	0	-1	0	-1	0	0
ადგილობრივი მაცხოვრებლების და დამსვენებლების შეშფოთება	-2	-2	-1	-1	-1	-1	0	0
დასაქმების შესაძლებლობა განვითარებისას და ოპერირებისას	2	2	1	0	2	2	0	0
ადგილობრივი შინამეურნეობების განვითარება და შემოსავლები	1	1	0	1	1	1	0	-1
არაადგილობრივი ბიზნესების განვითარება და შემოსავლების გადინება	-2	-2	-1	-1	-1	-1	0	0
საშუალო მაჩვენებელი (გადაანგარიშებული ნორმირებით ინტერვალზე -1-დან 1-მდე)	-1.50	-0.41	-0.94	-0.38	-0.94	-0.34	-0.03	-0.72
	-0.75	-0.20	-0.47	-0.19	-0.47	-0.17	-0.02	-0.36

შენიშვნა: რანჟირების დონეებია ძლიერი უარყოფითი ზემოქმედება (-2), უარყოფითი ზემოქმედება (-1), ზემოქმედება ცვლილების გარეშე (0), დადებითი ზემოქმედება (+1), ძლიერი დადებითი ზემოქმედება (+2)

4.4.5.4. Selection and reporting of alternatives

During the selection of the preferred alternative the key foci are on whether the alternatives provide environmental benefits, and are viable and resilient to future environmental and development trends (e.g. climate change or population growth).

In some cases, a preferred alternative of the plan (selected by the planning team) can be different from what the SEA recommended as an alternative (because the former is not assessed by the SEA as environmentally appropriate). In that instance, a clear justification of the alternative recommended by the SEA has to be described in the SEA report.

All steps of the dealing with alternatives have to be described clearly in the SEA report. Special attention must be paid to explaining why some alternatives were excluded, the assessment process, why preferred alternative was selected, and what the data gaps and uncertainties were. If prepared, the assessment matrices and sensitivity maps with descriptions are included in the SEA report.

Table 6 presents the 'SEA alternatives checklist' that can be used for verification of whether the alternatives have been well considered and assessed.

For detailed guidance about the analysis of alternatives refer to the Environmental Protection Agency's 2015 Research Report No. 157, Developing and assessing alternatives in Strategic Environmental Assessment, at https://www.epa.ie/publications/research/biodiversity/EPA-157_web.pdf.

Table 6. SEA alternatives checklist[102]

Key considerations	Yes/No	Comments / remarks
Identification/development of alternatives		
Were alternatives developed early in the SEA process (e.g. at the scoping stage)?		
Were the alternatives developed in consultation with key stakeholders?		
Do the alternatives take into account the geographical scope, hierarchy and objectives of the plan/programme (= realistic)?		
Are the alternatives based on socioeconomic and environmental evidence (= reasonable)?		
Can the alternatives be realized within the plan/programme timeframe and resources (= implementable)?		
Are the alternatives technically and institutionally feasible (= viable)?		
Do the alternatives address the potential for environmental adverse effects identified during scoping?		
Are the alternatives distinct and clearly described/presented? (If appropriate)?		
Are the alternatives spatially specific? If so, have they been mapped?		
Assessment of alternatives		
Are all the alternatives adequately/effectively assessed?		
Are all the alternatives assessed against the same criteria?		
Does the assessment of alternatives refer to the environmental baseline and policy analysis?		
Are significant adverse (cumulative) effects of alternatives adequately identified and described?		
Are the potential effects of each considered alternative quantified in a meaningful way, where appropriate?		
Where the alternatives are assessed as having different effects in different (spatial) areas, have these been identified?		

102 Developing and assessing alternatives in Strategic Environmental Assessment. EPA Research Report No. 157. EPA Research Programme 2014–2020. Environmental Protection Agency, Ireland. 2015 https://www.epa.ie/publications/research/biodiversity/EPA-157_web.pdf

Key considerations	Yes/No	Comments / remarks
Where the effects of the alternatives are unclear or ambiguous, has any further analysis been proposed? If so, would this analysis occur at a time when any significant strategic impacts could still be mitigated? Are measures proposed to prevent, reduce or offset significant adverse environmental effects for specific alternatives possible?		
Comparison of alternatives Are beneficial and/or significant adverse (cumulative) environmental effects of different alternatives compared? Are environmental criteria (e.g. vulnerability of Natura 2000 sites) used to establish whether an alternative is reasonable?		
Selection of alternatives Is the selection of alternatives clearly informed by the SEA findings? Does the selected alternative avoid or reduce significant environmental effects of implementing the plan/programme? Has the alternative been selected in consultation with key stakeholders?		

4.5. Consultations on draft spatial planning document and SEA report

Integrating public consultations during the SEA and planning-making procedures is feasible and useful when the SEA report and the draft plan are disclosed. This is the stage of the second public hearings during the plan-making process and the first (and only) public hearing during the SEA procedure (see **Table 1**). The advantages of combining the SEA public hearing with the second plan-making public hearing are not only about saving resources, but also about allowing for more informed public consultations due to the fact that the Environmental Assessment Code requires to publicly disclose the draft plan, whereas the Code of Spatial Planning does not.

The description of requirements for consultations during the SEA procedure, as well as the practical advice on their implementation are provided in the '**Guidelines on Strategic Environmental Assessment' (see section VII. Public Participation)**.

In should be noted that in practice public hearings and public review of the draft plan are not conducted until the comments of SUDA and other administrative bodies / agencies are taken into accounted and addressed in the draft plan.

4.6. Review of the draft spatial planning document and SEA report

The preparation of recommendations on the draft version of the spatial / urban plan and the SEA report by the Agency and the Centre must precede the adoption/approval of the plan. The recommendations should summarize the outputs of the SEA process and be considered when adopting the plan.

Practical advice about issuing the SEA recommendation and a case example are provided in the Guidelines on Strategic Environmental Assessment (see sections IV.4 and IV.5).

4.7. Monitoring the significant environmental impacts of the implementation of plans

4.7.1. Designing monitoring

A proposal for the monitoring of significant environmental effects of the implementation of the plan is a standard element of the SEA. The proposal for monitoring includes a set of proposed indicators for both monitoring impacts on individual environmental components and for monitoring potential cumulative impacts, if identified as significant in the assessment.

The environmental indicators for the purposes of the monitoring, shall as far as possible be based on the data and indicators already used in the analytical part of the spatial plan, i.e. the SEA should avoid unnecessary introduction of new indicators and data collection requirements unless it is well justified with concerns for potential significant negative environmental effects identified within the assessment.

In order to monitor cumulative effects, or to interpret whether the observed condition or undesirable development of a specific environmental component or part of the territory is due to the cumulation of various effects, it is necessary, in addition to environmental indicators, to continuously evaluate selected indicators aimed at monitoring the territorial conditions for economic development and social conditions in the territory (e.g. change in the number of completed houses, change in the number of migrant inhabitants, changes in the extent of the road network, traffic intensity). It is logical that the importance of individual indicators will vary in different areas, depending on the nature and characteristics of the territory for which the plan is being developed. It therefore remains within the remit of the SEA team to modify or supplement the set of indicators used in the analytical part of the spatial plan, if necessary, based on the SEA team's own findings for the area in question.

If any mitigation measures were proposed by SEA the monitoring has to allow tracking the measures' effectiveness (for example if wildlife corridors are proposed to be established during the spatial development, their use by target animals has to be monitored).

4.7.2. Defining indicators

The indicators shall cover all relevant environmental issues included withing the Scope of the given SEA analyses, in particular where potentially negative effects or risks of undesirable trends were identified in the course of the assessment.

Each indicator shall be clearly defined, with identified source of data (in case of regularly used indicators with accessible databases) or methods of data collection.

The following table contains an example of selected indicators from the monitoring proposed by the SEA for the regional territorial plan of the Ustecky region in Czech Republic (**Table 7**).

Table 7. Selected monitoring indicators from the SEA for the regional territorial plan for the Ustecky region, Czechia (Integra Consulting, 2023[103])

Air
Indicator: NOX emissions
Sum of NOX emissions from stationary sources
Monitoring/data source: Hydromet
Unit: t/year

103 https://portal.cenia.cz/eiasea/detail/SEA_MZP028J?lang=cs

Indicator: GHG emissions
Sum of GHG emissions from stationary sources
Monitoring/data source: Hydromet
Unit: t/year
Climate
Indicator GHG emissions (see above)
Indicators in terms of adaptation to climate change are not proposed
Population and public health
Indicator: Concentration of suspended particulate matter PM2.5
Monitoring/data source: Hydromet
Units: µg/m^3/year
Indicator: Five-year moving averages of suspended PM2.5
Data source: Hydromet
Units: µg/m^3/year
Water
Indicator: Quality of surface water in watercourses
Indicators monitored: BOD5, CHSKCr, N-NH4+, N-NO3-, Ptotal
Monitoring / data source: Ohře River Basin administration
Unit: classification of individual profiles into quality classes according to ČSN 75 7221
Indicator: Ecological status of surface water bodies
Monitoring/data source: Ohře River Basin administration
Unit: classification of a water body into a status category
Forests
Indicator: Extent of new forest land conversion (loss)
Monitoring/data source: Czech Geodetic and Cadastral Office, Czech Statistical Office, documentation of plans
Unit: ha
And so on

4.7.3. Implementing monitoring

For the SEA-proposed environmental monitoring to be effective, it is necessary to align it with the overall regular monitoring of the implementation of the given spatial plan (or master plan, etc.). The responsibility to carry out the environmental monitoring (and related costs) lays with the implementing authority, typically the municipality adopting and implementing the spatial plan. It is therefore necessary that the SEA proposal should realistically reflect the capacities of the responsible authority and existing mechanisms for reviewing and updating spatial planning documents – i.e. if the spatial planning regulations define periodical evaluation and reporting on the progress of implementation of the spatial plan, it is rational to align the environmental monitoring with established processes.

The results of the monitoring should be regularly published (ideally annually, but some other period can be acceptable) with interpretation of the monitoring results namely in the context of the original SEA findings (i.e. identified risks and potential negative impacts). The periodic evaluation of the monitoring results shall identify any unwanted development or acceleration of negative trend and generate recommendation for corrective action and/or formulate issues/problems to be addressed during the next spatial plan update.

5. SELECTED GREEN CONCEPTS THAT ARE LINKED WITH PLANNING TOOLS AND SEA

There are a lot of tools and approaches being developed for tackling environmental challenges which have been escalating in the last decades. A large cluster of them is aimed at achieving sustainable development combining capacities of nature and human knowledge to meet the interests of both stakeholders – nature and society.

The following tools could be useful when SEA recommendations are being developed. At the same time the planning teams could use them to integrate environmental considerations into spatial / urban plans per se.

5.1. Nature-based Solutions (NbS)

The term "Nature-based Solutions" (NbS) was first used in the late 2000s in relation to finding new solutions for tackling climate change issues and, at the same time, safeguarding biodiversity protection and social sustainability.[104] IUCN referred to the term in its position paper for the United Nations Framework Convention on Climate Change after which the term came to be broadly used in international policy as a set of new tools for achieving a green economy.

The IUCN presents the NbS structure as a set of ecosystem-based approaches aimed at addressing societal challenges resulting in benefits to human well-being and biodiversity (**Figure 28**).

Major societal challenges presented in the drawing (**Figure 28**) include climate change mitigation and adaptation, disaster risk reduction, economic and social development, human health, water and food security, environmental degradation and biodiversity loss.

104 Hilde Eggermont, Estelle Balian, José Manuel N. Azevedo et al. Nature-based Solutions: New Influence for Environmental Management and Research in Europe // GAIA 24/4 (2015): 243 – 248. https://www.biodiversa.org/898/download.

Figure 28. The NbS structure[105]

The IUCN distinguishes three approaches that are nature-connected: NbS, nature-derived and nature-inspired solutions.[106] The NbS are based on functioning ecosystems, while the other two are not. Nature-derived solutions, for example, include using solar and wind energy, that derives from natural sources but not directly from the functioning ecosystems. Nature-inspired solutions are technical decisions used to produce materials, structures and products that mimic natural ones (as some towers, parachutes and others).

The IUCN launched the NbS definitional framework and adopted eight principles in 2016[107]. The IUCN definition of the term is slightly different from that of the European Commission (see **section 1**). Yet both reflect two key features of NbS, namely that they represent actions (or practical solutions) that are based on natural relations and regularities. Combining engineering approaches with the knowledge of ecosystem structures and functions allows fitting in natural systems and supporting human well-being and environmental resilience.

In relation to spatial planning, the NbS approaches facilitate the development of urban green spaces, systems of flooding and coast breaking prevention, water drainage, collection and purification, road infrastructure and other. Because of the complexity of the issue, not all solutions can be considered as NbS. If, for example, a stream is arranged into a concrete channel and lawn grass is seeded on the watercourse slopes it can hardly be called a NbS because of the shortage of the biodiversity. To ensure a robust screening of whether a proposed solution is NbS or not, the IUCN has developed a specific standard and guidance for using the standard.[108]

105 IUCN. 2020. Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN. https://portals.iucn.org/library/sites/library/files/documents/2020-020-En.pdf.

106 https://portals.iucn.org/library/sites/library/files/documents/2020-021-En.pdf

107 *Ibid.*

108 *Ibid.*

5.2. Ecological network

Protected areas are the basis of nature conservation as they retain intact ecosystems that support biodiversity and natural evolutionary processes. However, such areas (as well as the others managed for nature conservation, for example, OECM[109]) are no longer considered sufficient in many parts of the planet.[110] Highly fragmentated natural landscape in such densely populated regions as, for example, Central and Eastern Europe did not allow for establishing large protected areas. Instead, relatively small protected areas are created to conserve remaining intact natural plots dispersed between human-changed territories.

Ecosystems in such small protected areas are unsustainable especially in the long term. The scientific background of these findings is rooted in two theories – island biogeography and metapopulation theories.[111] Isolated ecosystems (protected areas) look like "islands" in a human-changed landscape; and the island biogeography theory states that "*the rates of* new species arrival and species extinctions depend on the size and shape of the island and its distance from the mainland".[112]

The findings of the metapopulation theory are that spatially distinct subpopulations can be reconnected by movement of individuals providing genetic exchange and re-establishing previously vanished subpopulation. In other words, the larger and well-connected natural areas are, the more sustainable and with higher biodiversity they remain over time.

What is stated above applies to much of the world where natural ecosystems are fragmented or degraded. But in such vast spaces as the North of Canada and Eurasia the remaining large natural areas can still live independently from humans (if climate change impacts are not taken into account).

Other conservation conclusions are derived from landscape ecology emphasising that landscape patterns emerge from interactions between human and natural processes.[113] Such integrity of different plots of the landscape demands its integral management and special conservation measures (as establishment of buffer zones around protected areas).

Four components of ecological networks were presented in the Pan-European Biological and Landscape Diversity Strategy[114] and include core areas, corridors or stepping stones, restoration areas and buffer zones (**Figure 29**). The Natura 2000[115] became a coherent European Ecological Network planned by the Pan-European Biological and Landscape Diversity Strategy.

An effective ecological network consists of, at least, two essential components – core areas and corridors. The former is aimed to protect biodiversity and the latter – to support connectivity.

Many countries integrate ecological networks developed specially for nature conservation in their spatial plans of different scaling.

The Caucasus is one of the biologically richest regions in the world and recognized internationally (it is one of the World Wildlife Fund's 200 Global Ecoregions). The region's key targets for conservation (sites, species and corridors) were defined by the CEPF in its publication "Caucasus Biodiversity Hotspot. Ecosystem Profile" (**Figure 30**).[116]

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109 OECM – a geographically defined area, other than a protected area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and, where applicable, cultural, spiritual, socioeconomic and other locally relevant values are also conserved (source: IUCN World Commission on Protected Areas (2019). Guidelines for Recognising and Reporting Other Effective Area-based Conservation Measures. Gland, Switzerland: IUCN. Cited in: Hilty, J. et al. (2020). Guidelines for conserving connectivity through ecological networks and corridors. Best Practice Protected Area Guidelines Series No. 30. Gland, Switzerland: IUCN).

110 *Ibid.*

111 *Ibid.*

112 *Ibid.*

113 https://www.nature.scot/doc/ecological-networks-protected-areas-review-ecological-networks-think-piece

114 https://www.cbd.int/doc/nbsap/rbsap/peblds-rbsap.pdf

115 https://ec.europa.eu/environment/nature/natura2000/index_en.htm

116 Caucasus Biodiversity Hotspot. Ecosystem Profile. CEPF. Final version. 31July 2003, updated: September 2004. https://www.cepf.net/sites/default/files/final.caucasus.ep_.pdf

Figure 29. Typical components of a terrestrial ecological network[117]

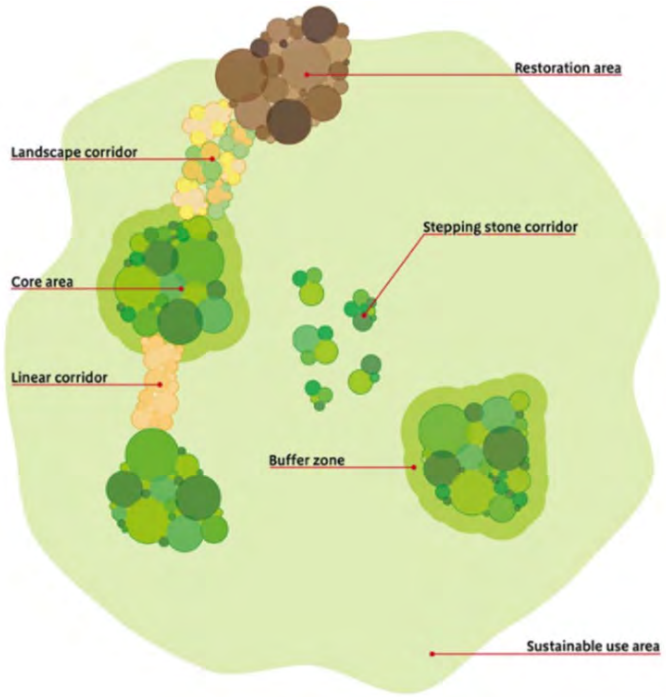
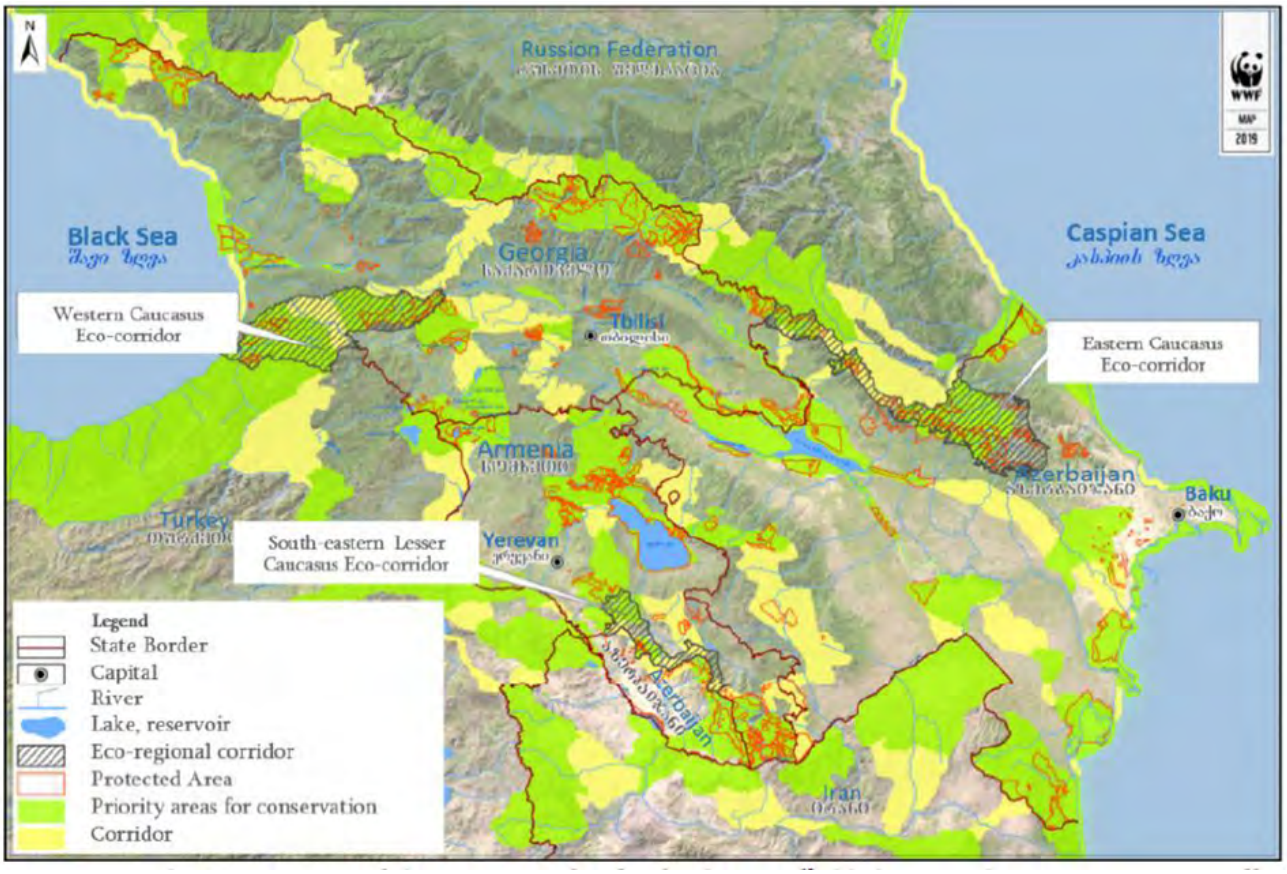


Figure 30. Site and corridor outcomes in the Caucasus hotspot

117 Lawton, J. H., Brotherton, Wynne, G. R. 2010. Making space for nature: A review of England's wildlife Sites and ecological network. Report to Defra, 107. Cited in: https://www.nature.scot/doc/ecological-networks-protected-areas-review-ecological-networks-think-piece

A similar set of conservation priorities is presented in the 2012 revised version of the Ecoregion Conservation Plan for the Caucasus[118] published by the Caucasus Biodiversity Council (**Figure 31**).

Figure 31. Priority areas for conservation and eco-corridors in the Caucasus ecoregion[119]



Finally, it can be concluded that the regional ecological network for the Caucasus has been prepared on a good scientific basis. Moreover, some steps have already been made in Georgia to scale the network to the regional and local levels.

In 2015, within the framework of the Eco-Corridors Fund for the Caucasus programme, the formation of the Eco-Corridor was initiated in the western part of the Lesser Caucasus.[120,121] This area connects the Borjomi-Kharagauli National Park with the Protected Areas of Adjara (**Figure 32**).

The main objective of the programme is to introduce sustainable land and forest use practices within the environmental corridors, to conserve biodiversity at the landscape level, and to promote sustainable social and economic development in the region. The programme envisages active involvement of local people in preserving and developing the existing landscape, and conserving species populations and protecting their habitats. There are about 10 conservation agreements (with the duration of up to 10 years) in Adigeni Municipality.

118 Ecoregion Conservation Plan for the Caucasus. 2012 revised and updated edition. https://cec77150-7f5a-43a4-91d3-1d851f58ad06.filesusr.com/ugd/1a66e5_18f54af390ed4f2cb23ab4d58ffa383a.pdf

119 Ecoregional Conservation Plan for the Caucasus, 2012, WWF Caucasus programme office. http://wwf.panda.org/?205437/ecoregion-conservation-plan-for-the-caucasus-revised. Cited in: National Report on the State of the Environment of Georgia. 2014–2017 https://eiec.gov.ge/En/NationalReports.

120 National Report on the State of the Environment of Georgia. 2014–2017 https://eiec.gov.ge/En/NationalReports.

121 https://www.ecfcaucasus.org/georgia

Figure 32. Pilot ecological corridor in Georgia[122]

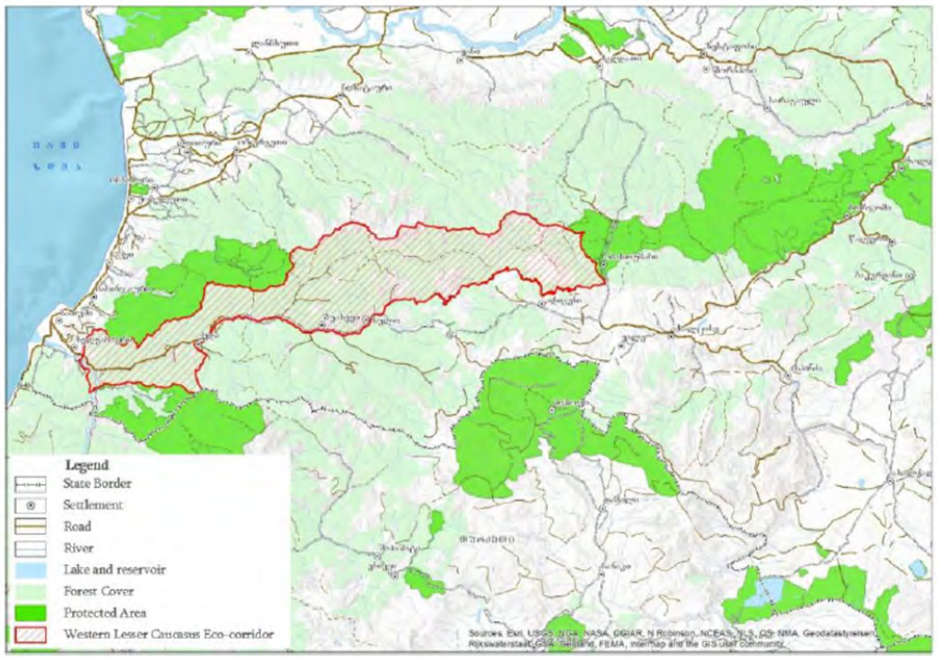
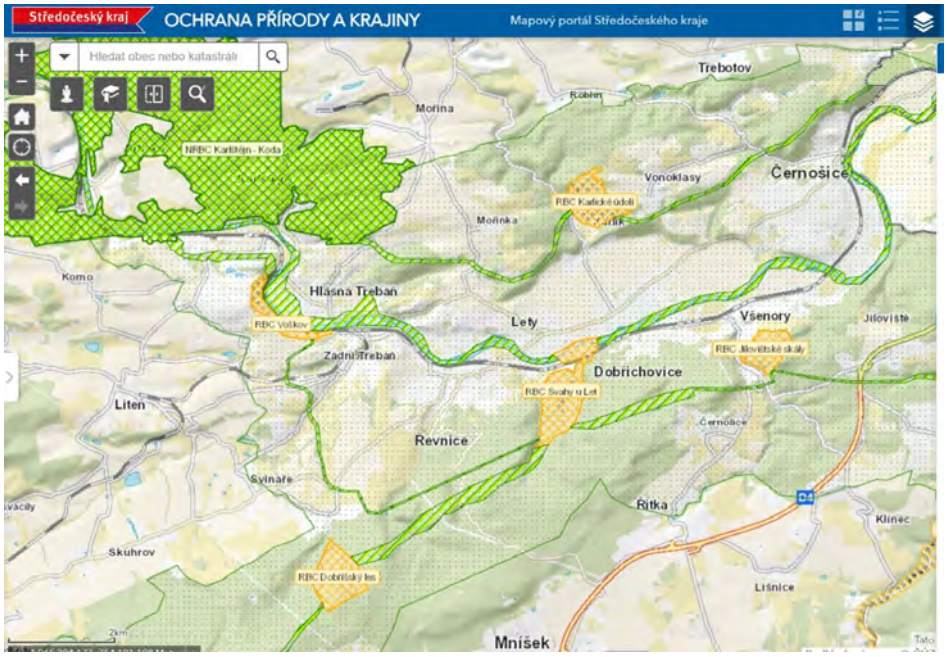


Figure 33 presents an example of the spatial data concerning a territorial system of *Ecological Stability* of Czechia using the web interface of a regional planning authority. The country-wide system of local and regional bio-centres (yellow) that is connected through the system of bio-corridors (green) has become the statutory spatial limits that have to be respected in the planning documents.

Figure 33. Map application of central Bohemia, Czechia[123] **(yellow: local and regional bio-centers; green: bio-corridors)**



122 Caucasus Ecosystems Foundation, https://www.ecfcaucasus.org/georgia Cited in: National Report on the State of the Environment of Georgia. 2014–2017 https://eiec.gov.ge/En/NationalReports

123 https://gis.kr-stredocesky.cz/js/ozp_opk/

5.3. Green (and blue) infrastructure approach

As part of its post-2010 biodiversity policy, the European Commission (EC) has been developing a strategy for an EU-wide Green Infrastructure. In May 2013, the Commission published a Communication on Green Infrastructure (GI)[124] (as a concept of the Strategy) in which it defined GI and outlined its essential contributions to the EC policy.

GI is defined as "a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services" the EC focused on GI as a tool to enhance Europe's natural capital. In fact, GI combines several nature-based approaches.

GI is a network but in contrast to the ecological network covering not only natural areas, but also man-made ones – from parks to green walls and rooftops, artificially re-established wetlands and reedbeds, green lines along arable lands, etc. Thus, it extends an ecological network approach to human-changed areas.

The idea of GI is to reconnect existing nature areas and improve the overall ecological quality of the broader countryside and urban areas while continuing to deliver valuable services to society (fresh water, clean air, healthy soil etc.). So the key GI focus is on supporting natural capital capable of delivering a wide range of environmental and quality-of-life benefits (ecosystem services) for people and nature.

GI can provide many social, economic and environmental benefits,[125] including:

- space and habitat for wildlife, with access to nature for people
- places for outdoor relaxation
- climate-change adaptation – for example, flood alleviation and the cooling of urban heat islands
- environmental education
- local food production
- improved health and well-being.

A key example of GI in the EU is the Natura 2000 network – the largest coordinated network of protected areas in the world.[126] The network covers over 18 percent of the region's land area and 9 percent of its marine territory.

At the same time, if GI application tries to seek for biodiversity conservation on human-changed areas it can result in competition between different ecosystem services (e.g. crop production or recreation versus biodiversity conservation). Accordingly, it demands rigorous spatial planning and integrated policy measures.

In the context of urban planning, GI can be understood as consisting of areas that can fulfil or contribute to various ecosystem services in a given territory. The following ecosystem services are of particular interest for spatial planning:

- A set of microclimatic and hygienic ecosystem services: balancing temperature extremes, capture of fugitive dust, absorption of CO_2, dispersion of pollutants.
- A suite of ecosystem services/water management functions: water diversion, retention, and spill, self-cleaning of water, transfer of surface water to subsurface and groundwater. The focus is on standing and flowing water ecosystem services and landscape water retention services.
- A set of ecosystem services related to cultural benefits (aesthetic, perceptual, recreational, and educational). The intensity of provision of such services is related to the condition and quality of the environment. Increased recreational attractiveness is often linked to the valuable landscape character of the area.

124 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52013DC0249

125 https://www.europeangreenbelt.org/european-green-belt/ecological-network

126 https://environment.ec.europa.eu/news/new-research-explores-how-green-infrastructure-policy-applied-sweden-2023-06-27_en

- Ecosystem services providing protection of land from degradation: elimination of spatial preconditions for soil loss and loss of soil fertility.
- A set of ecosystem services for maintaining and enhancing species diversity and ecological stability.

Key elements of GI are usually spatially defined in the zoning plan as areas that by their nature directly fulfil the functions of green infrastructure: these are selected green areas, water areas, natural areas, etc.

In addition, various elements contributing to the provision of ecosystem services can be identified in areas with different land-use designation (functional category), which is important within the built-up area of a settlement, where they serve to ensure spatial connectivity of the green infrastructure system.

For analytical purposes as well as for setting planning objectives towards achieving urban development while ensuring optimal conditions for utilization of the ecosystem services, various planning tools are applied, such as green space coefficient, built-up area coefficient, a Biotope Area Factor (BAF), or maximum permissible value of surface runoff. The BAF approach is briefly outlined below and illustrated in **Figure 34.**

Figure 34. Map application example of using the BAF indicator in the master plan of Pisek, Czechia[127]

The BAF formula calculates the proportion of an area that needs to be a green space: BAF = Ecologically Effective Surface Areas/Total Land Area.

BAF targets depend on the specific uses of an area.

The Ecologically Effective Surface Areas is a weighted sum of the areas belonging to the different categories foreseen in the measure, where weighting factors capture the different "ecological values" of these categories.

127 Mendel University of Brno, VÚ Sylva Taroucy, Löw & spol. and Ateliér Fontes (2023): Defining Green infrastructure in spatial planning documentation, especially in the land-use plan, as a tool for strengthening ecosystem services in the territory. Publication of TAČR Research Project Beta2 No. TITBMMR805. See the website of the Ministry of Regional Development of the Czech Republic: https://mmr.gov.cz/cs/ministerstvo/stavebni-pravo/publikace-a-odborne-texty/vymezovani-zelene-infrastruktury-v-uzemnim-planu

Different types of green spaces are weighted differently according to these "ecological values", which are based on evapotranspiration capacity, permeability, possibility to store rainwater, relationship to soil functioning and provision of habitat for plants and animals.

For example, the weighting factor of a sealed asphalt surface is 0; that of extensive green roofs is 0.5; that of surfaces with vegetation connected to soil below is 1. For planning purposes, the desired target values of the BAF can be indicated by the plan, e.g. the residential and public areas need to achieve a BAF target of 0.6, while commercial, business and administrative areas are requested to achieve a lower target of 0.3.

Where such analytical underpinning of the planning process exists, the SEA can provide feedback to the planning proposal, in particular regarding the identification of GI supporting elements, or areas with additional ecosystem functions. It can also contribute to determining the conditions for the acceptable use of areas and the conditions for their spatial arrangement. The aim of defining the green infrastructure areas and corridors and setting the conditions of their use is to protect the existing elements of green infrastructure and to supplement the missing elements, always with taking into account the needs of the specific area, the maximum multifunctionality of the elements and the solution of private and public interests in the territory of their mutual coordination.

LIST OF USEFUL INTERNATIONAL GUIDANCE DOCUMENTS

Guidance on the implementation of Directive 2001/42/EC (https://wayback.archive-it.org/12090/20151221015216/http://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf)

Environmental Protection Agency. 2020. Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment (https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA-Good-Practice-Guidelines-SEA.pdf)

European Commission. 2003. Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment. Commission of the European Communities, Brussels (http://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf)

UNECE. 2016. Good Practice Recommendations on Public Participation in Strategic Environmental Assessment (http://www.unece.org/index.php?id=42234)

Developing and Assessing Alternatives in Strategic Envronmental Assessment. EPA Research Report No. 157. EPA Research Programme 2014–2020. Published by Environmental Protection Agency, Ireland. – 2015 https://www.epa.ie/publications/research/biodiversity/EPA-157_web.pdf

Report for the European Commission by Sheate, W., Dagg, S., Richardson, J., Aschemann, R., Palerm, J., and Steen, U. 2001. SEA and Integration of the Environment into Strategic Decision-Making (http://ec.europa.eu/environment/archives/eia/sea-studies-and-reports/pdf/sea_integration_main.pdf)

Government of Ireland. 2021. Strategic Environmental Assessment – Guidelines for Regional Assemblies and Planning Authorities. (https://assets.gov.ie/201773/5e53fc9e-10cd-42dd-8caf-907638e03749.pdf)

Office of the Deputy Prime Minister, London. 2005. ODPM: A Practical Guide to the Strategic Environmental Assessment Directive. Practical guidance on applying European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment'. (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf)

Dalkmann, H., Herrera, R.J. and Bongardt, D. 2004. Analytical strategic environmental assessment (ANSEA) developing a new approach to SEA. Environmental Impact Assessment Review, 24(4): 385-402. (https://www.researchgate.net/publication/223469710_Analytical_strategic_environmental_assessment_ANSEA_developing_a_new_approach_to_SEA)

OECD. 2006. Applying Strategic Environmental Assessment: Good Practice Guidance for Development Co-operation (DAC Guidelines and Reference Series). Organisation for Economic Co-operation and Development. (http://www.oecd.org/environment/environment-development/37353858.pdf).

Northern Ireland, Department of the Environment. 2015. Development Plan Practice Note: Sustainability Appraisal incorporating Strategic Environmental Assessment, https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/dppn-4-sa-incorporating-sea-v1-april-2015_0.pdf

Scottish Government. 2013. Strategic Environmental Assessment Guidance, www.scotland.gov.uk/Resource/0043/00432344.pdf

ANNEXES

ANNEX I.

Administrative bodies involved in the review of concepts and drafts of spatial and urban development plans according to the spatial planning code

- **Ministry of Economy and Sustainable Development of Georgia**, if the concept/draft of spatial planning and urban development plans i) is connected to the energy system and/or electricity production; ii) provides for installation of main oil pipelines, main (high pressure) gas pipelines, funicular railways, aerial cableway, buildings with special safety protection requirements due to hazardous production process or the storage / use of hazardous substances; iii) provides for placement of airfields, navigation facilities and/or the determination of protection zones around them.
- **Ministry of Environment Protection and Agriculture of Georgia**, if the concept / draft of the plan: i) requires a SEA; ii) includes protected and other conservation areas, key areas for biodiversity (such as Special Protection area (SPA), Important Bird Area (IBA), Key Biodiversity Area (KBA), Important Plant Area (IPA)), forest areas, water bodies, waste disposal areas and others.
- **Ministry of Education, Science, Culture and Sports of Georgia**, if the concept / and/or draft of the plan include cultural heritage protection zone/zones and/or cultural heritage monuments.
- **Ministry of Internal Affairs of Georgia**, if the concept / draft of the plan i) includes a border strip and/or a border zone; ii) relates to civil safety, including fire safety issues, etc.
- **Ministry of Defence of Georgia**, if the concept / draft of the plan includes the territories of the Ministry of Defence of Georgia and institutions within its system.
- **Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia**, in the cases stipulated by the legislation.
- **Bodies determining the construction activities policy in the Autonomous Republics of Abkhazia and Adjara**, if the concept / draft of the plan is within the administrative borders of the autonomous republics.
- **Executive body of the municipality**, if the concept / draft of the plan is within the administrative boundaries of the municipality and/or the planning is carried out adjacent to it;
- **Other administrative bodies** stipulated by legislation and by-laws.

ANNEX II.

Provisions for public participation and consultations[128]

During the development and review of the concept and draft of spatial plans, the planning authority (otherwise, the initiator) shall ensure public participation and, for this purpose, inform the public, provide access to public information, and hold public discussions. On a par with this, when SUDA receives a spatial/urban development plan for its review, SUDA ensures the participation of other interested ministries/agencies and the submission of SUDA's expert conclusion to the planning authority based on the collected comments and opinions.

The initiator, within five working days from the start of administrative proceedings regarding the consideration of the concept/draft of spatial plans, is obliged to publish information about this concept/draft on its official website (together with the plan's concept/draft and information on the possibility of submitting opinions/ remarks).

It is mandatory to hold a public hearing at the concept/draft review stage of the spatial planning/urban development plan – except for the detailed development plan. Any person has the right to participate in the public hearings organized at the review stage.

Information[129] about the public hearing must be published on the initiator's official website at least 30 working days before the public hearing. The public hearing should be held no later than 40 working days after the publication of the information about the hearing.

At least within 15 working days after the end of the public hearing for the spatial/urban development plan (but 10 working days in case of a detailed development plan), any person has the right to submit his/her comments and opinions to the initiator in writing.

The initiator is obliged to consider the submitted comments and opinions and, if there is a corresponding basis, to make corrections. It is not clear from the Rules for Development of Spatial Planning and Urban Planning Plans (2019) whether the initiator should provide written responses to the received comments. Therefore, it is recommended that all comments, whether considered or not, must be responded to by the initiator. If a comment is considered, the initiator should clearly identify the text changed due to the comment and provide an explanation thereof; if a comment is rejected, the initiator should provide a justification and make it available to the author of the note and to the public in a public and accessible form (e.g. via disclosure on its website).

The initiator is obliged to involve other administrative bodies in the process of reviewing the spatial plan concept/draft.[130] The initiator is obliged to send the concept/draft of the plans and related documentation to other administrative bodies no later than six working days after the start of administrative proceedings regarding the concept/draft. Other administrative bodies are obliged to submit a conclusion regarding the concept/draft of spatial planning and/or urban development plan to the initiator within 15 working days.

After public discussion and the involvement of other administrative bodies, the final concept / draft of the spatial planning plan and/or urban development plan should be developed and approved by the relevant authorized bodies defined by the Spatial Planning Code.

128 This annex largely draws on the Rules for Development of Spatial Planning and Urban Planning Plans (2019).

129 The information should contain at least: (a) the name of authorized administrative body; (b) boundaries of the planning unit; (c) plan's concept/ draft summary; (d) time and address of the public hearing; (e) means of familiarization with documents; and (f) information on the possibility of attending the public discussion and submitting opinions/remarks.

130 Article 18, Rules for Development of Spatial Planning and Urban Planning Plans (2019).

ANNEX III.

Example of the workplan for a parallel preparation of the Grigoleti and Kvavilnari coastal development plan and its SEA (Lanchkhuti Municipality, 2020)[131]

ლეგენდა: x პროცესი x ქმედება o დოკუმენტი ^ გადაწყვეტილება	თვე I				თვე II					თვე III				თვე IV				თვე V					თვე VI				თვე VII				თვე VIII					თვე IX				...
№ პროცესი და საქმიანობები	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	...
1. სგშ სკრინინგი და სკოპინგი	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																
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1.2 სკოპინგის ანგარიშის პროექტი		^	x	x	x	x	x	x	o																															
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2. სგშ ანგარიში										x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	>
2.1 საბაზისო კვლევები (მათ შორის ალტერნატივების განხილვა)										x	x	x	x	x	x	x	x	x																						
2.2 სგშ ანგარიშის და არატექნიკური რეზიუმეს მომზადება										x	x	x	x	x	x	x	x	x	x	x	x	o																		
2.3 სგშ-ის და არატექნიკური რეზიუმეს წარდგენა-გამოქვეყნება																						^	o																	
2.4 სგშ-ის პროექტის ექსპერტიზა და წინადადებების მიღება																								^	x	x	x	^												
2.5 სგშ-ის საჯარო განხილვა და შეხვედრის ოქმის მომზადება																													^	o										
2.6 სგშ-ის წინადადებების და შენიშვნების გათვალისწინება																															x	x	o							
2.7 უფლებამოსილი ორგანოების რეკომენდაციები სგშ-ზე																																	x	x	^	o				
2.8 სგშ-ის ანგარიშის და რეკომენდაციების გამოქვეყნება																																					x	^	o	>
3 სტრატეგიული დოკუმენტის კონცეფცია	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	X																
3.1 განაშენიანების გეგმის კონცეფციის მოსამზადებელი კვლევები	^	x	x	x	x	x	x	x	o																															
3.2 განაშენიანების გეგმის კონცეფციის პროექტი		^	x	x	x	x	x	x	x	o																														
3.3 განაშენიანების გეგმის კონცეფციის შეთანხმება										^	x	x	x	o																										
3.3 განაშენიანების გეგმის კონცეფციის დამტკიცება														^	x	x	x	o																						
4 სტრატეგიული დოკუმენტი										x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	>
4.1 განაშენიანების გეგმის მოსამზადებელი კვლევები										^	x	x	x	x	x	x	x	x	x	x	x	x	x	o																
4.2 განაშენიანების გეგმის პროექტი										x	x	x	x	^	x	x	x	^	x	x	x	x	x	x	^	x	x	x	x	x	x	x	o							
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131 https://www.mepa.gov.ge/Ge/PublicInformation/33232

ANNEX IV.

Specific examples: ecosystem services (ES) model

According to spatial planning, the recreation area adjoining the national park will be expanded (resulting in new facilities, roads, etc.).

The current load (ES used/demanded) on the national park recreational zone is up to 60 visitors per km^2 per day, but a calculated maximum potential of the zone ecosystems' capacity is up to 100 visitors per km^2 per day (see table A, Baseline column).

During the SEA process it was assessed that the planned recreation extension will double the current load on the national park– up to 120 visitors per km^2 per day (table A, Planning scenario, ES demanded). So, ES unmet will be 20 visitors per km^2 per day.

If the plan is realized, the load will exceed the ecosystems' capacity by 20 visitors per km^2 per day. It will lead to gradual disturbances of the ecosystems and, finally, to their degradation. Such degraded ecosystems will not be attractive to visitors and the number of visitors will drop drastically.

Another option would be for these additional visitors (20 per km^2 per day) to be redirected to another recreation place. But the SEA has found no such place.

The SEA therefore proposed the following two scenarios to avoid degradation of the national park:

(a) The first is to limit the planned recreation extension that results in not exceeding the ecosystems' capacity (table A, scenario 1 column), and ES demanded reaching the capacity (100 visitors per km^2 per day);

(b) The second, a more difficult one, is to increase the recreational zone capacity / ES potential (table A, scenario 2 column). It might be possible, for example, by changing directions of hiking trails or their wooden flooring, expanding the capacity of the visitor centre or recreational area near the lake to keep the visitors there, etc. This method would require involving the national park authority, doing scientific research, testing and monitoring, and making new management arrangements. However, it might not work because of the fragility of the ecosystems.

Having done a cost/benefit analysis, the SEA team proposed to the planning authority to follow the first proposed scenario. The team also recommended that the planning authority should engage with the national park authority so that the latter would install wooden flooring on hiking trails for raising the recreational area's capacity to some extent.

Table A. Load on ecosystems of the modelled national park's recreation area, per scenarios and ES indicators, visitors per km^2 per day

	Baseline	Planning scenario	SEA proposed scenario 1	SEA proposed scenario 2
ES potential	100	100	100	120
ES used	60	-	-	
ES demanded	60	120	100	120
ES unmet	0	20	0	0

ANNEX V.

Insights into links between the spatial planning and cultural heritage consideration

According to the requirements of the Law of Georgia on Cultural Heritage, the development plan or detailed development plan in the historical protection zones should be based on a **historical-cultural reference plan**, the principles of which must be taken into account when preparing the spatial-territorial planning documentation.

The historical-cultural reference plan is a special complex scientific-research document developed on the basis of a multidisciplinary approach, which includes informative and analytical material reflecting the historically formed environment of cultural heritage protection zones and the monuments in them, and contains recommendations on the urban planning regulations necessary for their protection.

The historical-cultural reference plan consists of complex information bases about the current situation obtained as a result of the coverage inventory and analytical and concluding parts.

Comment: the historical-cultural reference plan is not clearly required by laws for spatial plans, although it is mentioned that it is generally used in the preparation of spatial-territorial planning documentation. Therefore, spatial-territorial planning documentation can become a subject of legal interpretation, and as practice shows, this is often not prepared. Yet, such documentation includes useful elements for planners and SEA developers, such as:

- ***Cultural layer** – the layers of land or the area covered by water (bottom), which has traces of human life and activities;*
- ***Urban fabric** – a combination of city-building structures, including a network of streets, squares, gardens, buildings, yards or engineering communications;*
- ***Historically formed environment** – a set of artistic-architectural, spatial, landscape or socioeconomic contexts formed 100 or more years ago.*

ANNEX VI.

Example of policy-led-objectives assessment: abstract from the evaluation of compliance of the objectives of the Orhei master plan with the objectives of strategic documents

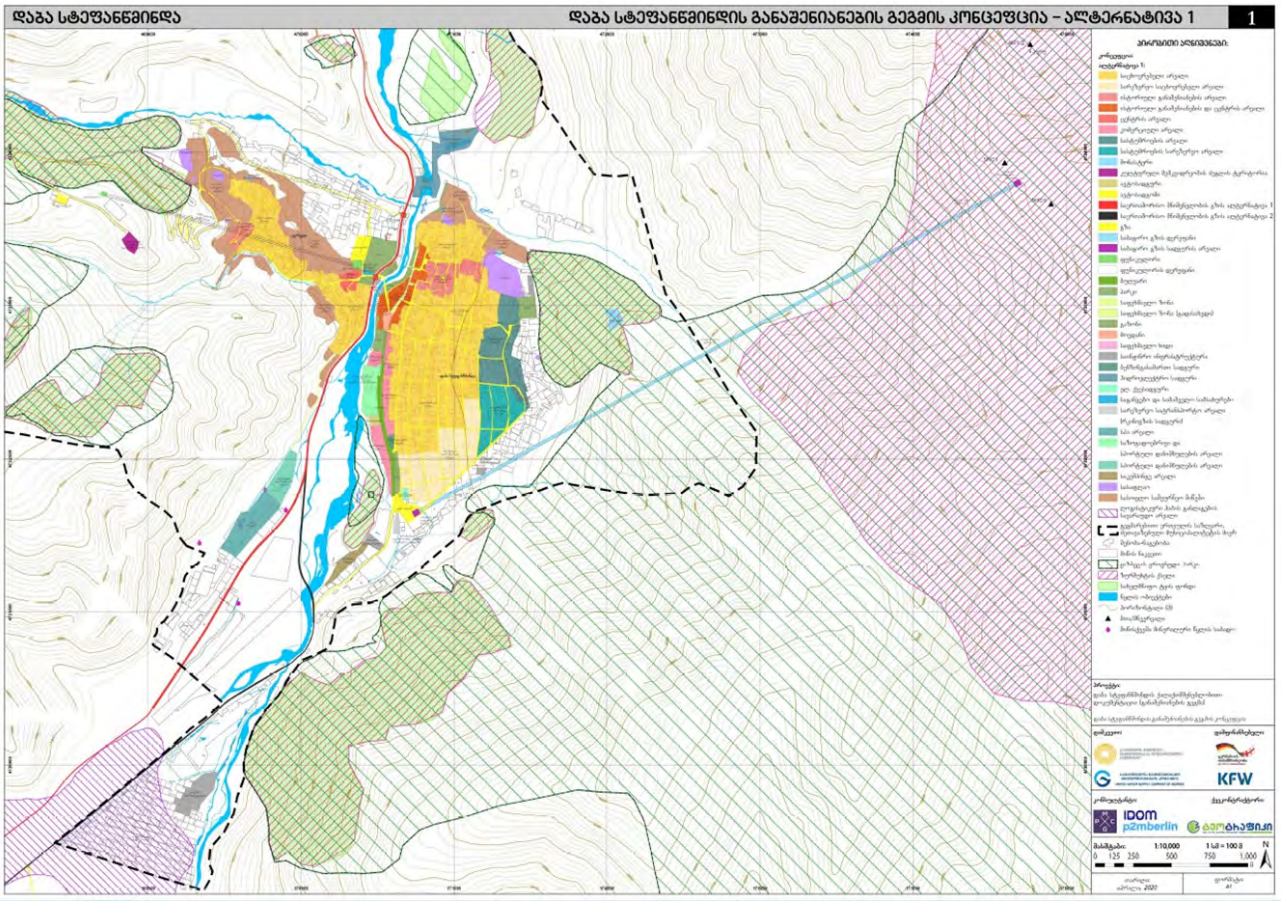
Objectives of the national strategic documents	Objectives of the strategy for the socioeconomic development of Orhei City for 2014–2020 (no. 13.20 of 27 December 2013) and other documents	Objectives, as stated in the draft Orhei master plan	Level of compliance
Atmospheric air Major goals in the field of protection of atmospheric air are set up in: The National Environmental Strategy 2014–2023 (Governmental Decision no. 301 of 24 April 2014) and the Strategy for adaptation to climate change (GD no.1009 of 24 December 2014): (a) to establish an integrated system of atmospheric air quality management; (b) to reduce the emissions of pollutants by 30 percent until 2023 and of greenhouse gases by not less than 20 percent by 2020. The Energy Strategy (GD no.102 of 5 February 2013) and the National Programme on energy efficiency for 2011–2020 (GD no. 833 of 10 November 2011): (a) to increase energy efficiency for the reduction of energy use by 20 percent until 2020; (b) to achieve until 2020 a 20 percent production level of energy from renewable sources and 10 percent from bio fuel.	To increase the potential for obtaining energy from alternative sources: • Use of wind potential; • Installation of solar panels (for electricity and water heating).	To transfer the national highway, which crosses the city, onto the by-pass road. To close the stone mines in the city and recultivate the territory. To assess and optimize the autonomous heating systems and implement them further. To plant green zones, and expand them (as a measure to prevent erosion).	Partial. In the master plan there is not foreseen the establishment of the units of production or use/ application of alternative sources of energy. The potential for the enlargement of the green zones is not indicated. No measures or indicators to reduce and measure air pollution set up at the local level.

Objectives of the national strategic documents	Objectives of the strategy for the socioeconomic development of Orhei City for 2014–2020 (no. 13.20 of 27 December 2013) and other documents	Objectives, as stated in the draft Orhei master plan	Level of compliance
Water resources The National Environmental Strategy 2014–2023 (Governmental Decision no. 301 of 24 April 2014) and the Strategy for water supply and sanitation for 2014–2028, (GD no.199 of 20 March 2014) set out the following specific objectives: (a) to improve the quality of at least 50 per cent of surface waters by implementing hydrographic basins management system; (b) to ensure access of about 80 percent of the population to safe water supply systems and services and of about 65 percent to sanitation systems and services; (c) to ensure integrated water resources management on the base of hydrographic river basin; (d) to reduce the risks and adapt to climate change (in relation to water resources).	To take measures for cleaning the River Raut.	To conduct hydrogeologic investigation and identification of the limits and areas of flooding. To take measures for flood protection during the construction of objects on this territory (to raise the level of soil on the potential construction places, etc). To construct a rainwater collection system. To construct (extend) the canalization network on the territories/ households not covered by this services.	Partial. There is no decision on placement of permanent monitoring stations for the water quality. Measures to reduce the pollution from the old landfill not specified. No measures to address potential pollution sources and to work with authorities upstream to avoid/reduce the flow of polluted water from upper stream of the river
Land resources The National Environmental Strategy 2014–2023 (Governmental Decision no. 301 from 24 April 2014) and the National Programme on the establishment of the national ecological network for 2011–2018 (GD no. 593 of 1 August 2011) set out the following specific objectives: (a) to improve the state of the 880,000 ha of eroded lands and of the 21,57,000 ha of lands affected by landslides; (b) to remediate 1,588 territories, contaminated by POPs; c) to increase the share of territory covered by State-protected areas; (d) to identify and map by 2018 the elements of the national ecological network (corridors, core areas and buffer zones); (e) to establish green belts on the river basin and water body banks on a total surface of 30,400 ha by the end of 2018.	To take measures to reduce erosion (planting trees and green zones)	To restore the degraded lands – to close the mines and recultivate them. To rehabilitate the territory and take measures against erosion and landslides.	Partial. There are no indicators or measures/timing set up to further monitor the state and evaluate the efficiency of proposed actions. Decisions at the local level did not correspond to the ones adopted at national level (authorizations for mining are issued at national level).

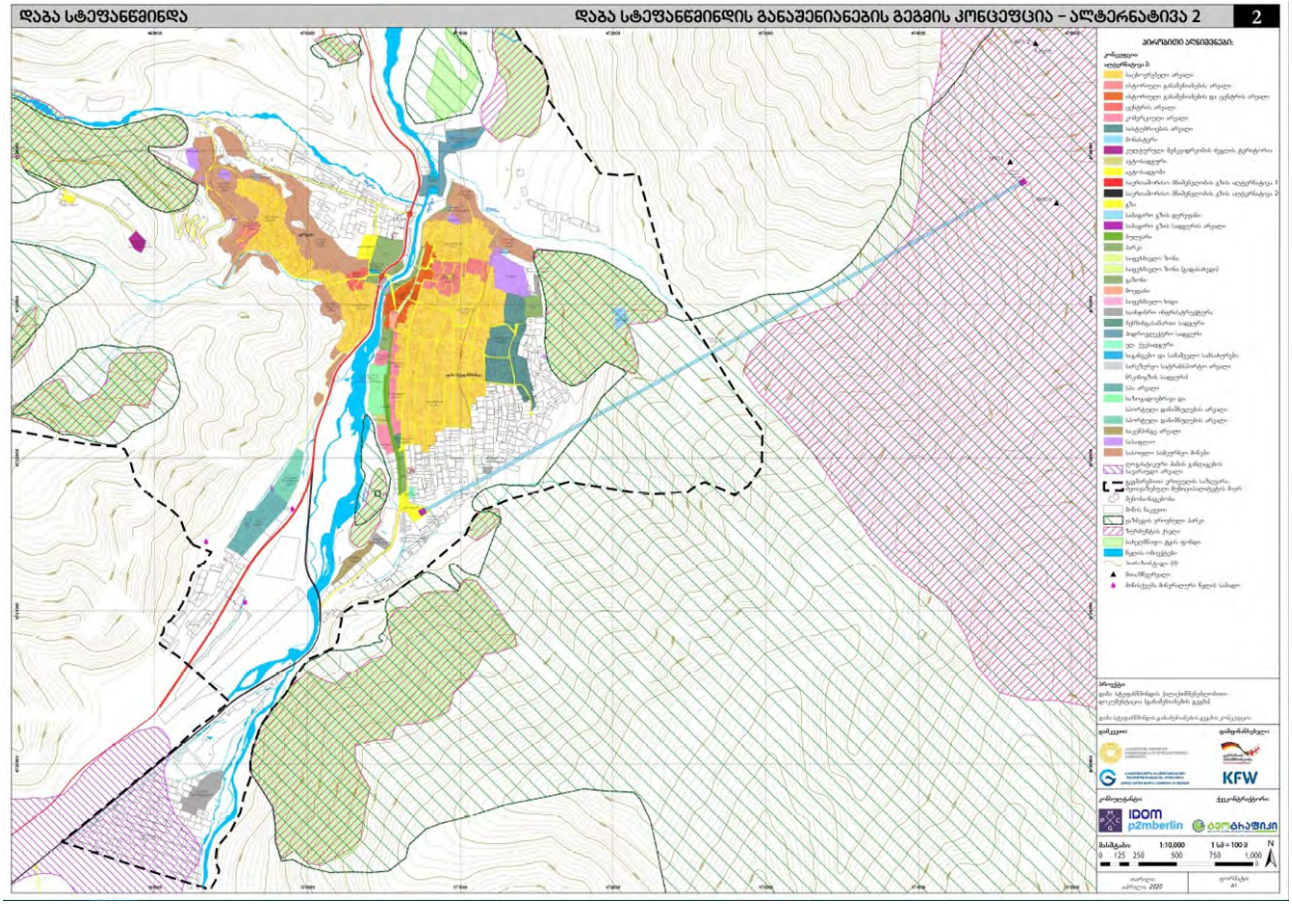
Objectives of the national strategic documents	Objectives of the strategy for the socioeconomic development of Orhei City for 2014–2020 (no. 13.20 of 27 December 2013) and other documents	Objectives, as stated in the draft Orhei master plan	Level of compliance
Wastes The National Environmental Strategy 2014–2023 (Governmental Decision no. 301 of 24 April 2014) and the Strategy for waste management in the Republic of Moldova for 2013–2027 (GD no. 248 of 10 April 2013) set out the following specific objectives: • to establish a system of integrated wastes management and of the management of chemicals; • to contribute to a 30 percent reduction in the amount of landfilled waste and a 20 per cent increase in recycling rate until 2023. In relation to municipal waste management: • to promote and implement separate waste collection systems in localities, at household and industry level, of the installations for waste separation; • to improve the system of waste transportation and develop intermediary transportation stations (four to seven stations in each rayon); • to develop the potential for municipal wastes elimination (construction of seven polygons for solid municipal wastes at the regional level and of two stations for mechanic-biological treatment); • to increase of the volumes of the recycled and recovery of packaging by 20 per cent in 2027.	To set up parameters for the permitted landfill, and set up indicators. To organize separate waste collection in the city. To purchase and install bins and containers. To organize ecological hours and information for schools and the general population.	To close unauthorized landfill. To establish a system for waste management. To select a place for the separation and temporary storage of non-separated wastes.	Partial. No indicators, time frame or monitoring measures proposed. Solutions for the old landfill not set up, and the separation station still remains in the same place.
Biodiversity conservation The National Environmental Strategy 2014–2023 (Governmental Decision no. 301 of 24 April 2014) and the Strategy on biological diversity conservation for 2014–2020 set out the following specific objectives: • to ensure measures for enlargement of the State- protected natural areas to 8 per cent of the territory of the country; • to establish a national ecological network and 44 plans for the management of the State-protected natural areas; • to enlarge the forest areas by 15 percent of the territory of the country by 2020; • to create 2,000 ha of green areas in the cities and villages.	To ensure the sustainable management of the green areas.	To establish recreation areas, based on the proposals in the master plan. To develop schemes for green areas in the city, integrating them with the Orhei National Park. To enlarge the surface of the green areas	Partial. No indicators or zoning of planned green zones set up.

ANNEX VII.

Example of presenting spatial alternatives. SEA scoping report of the spatial planning plan of the Kazbegi Municipality and its communities, 2020[132]



132 https://mepa.gov.ge/Ge/PublicInformation/25659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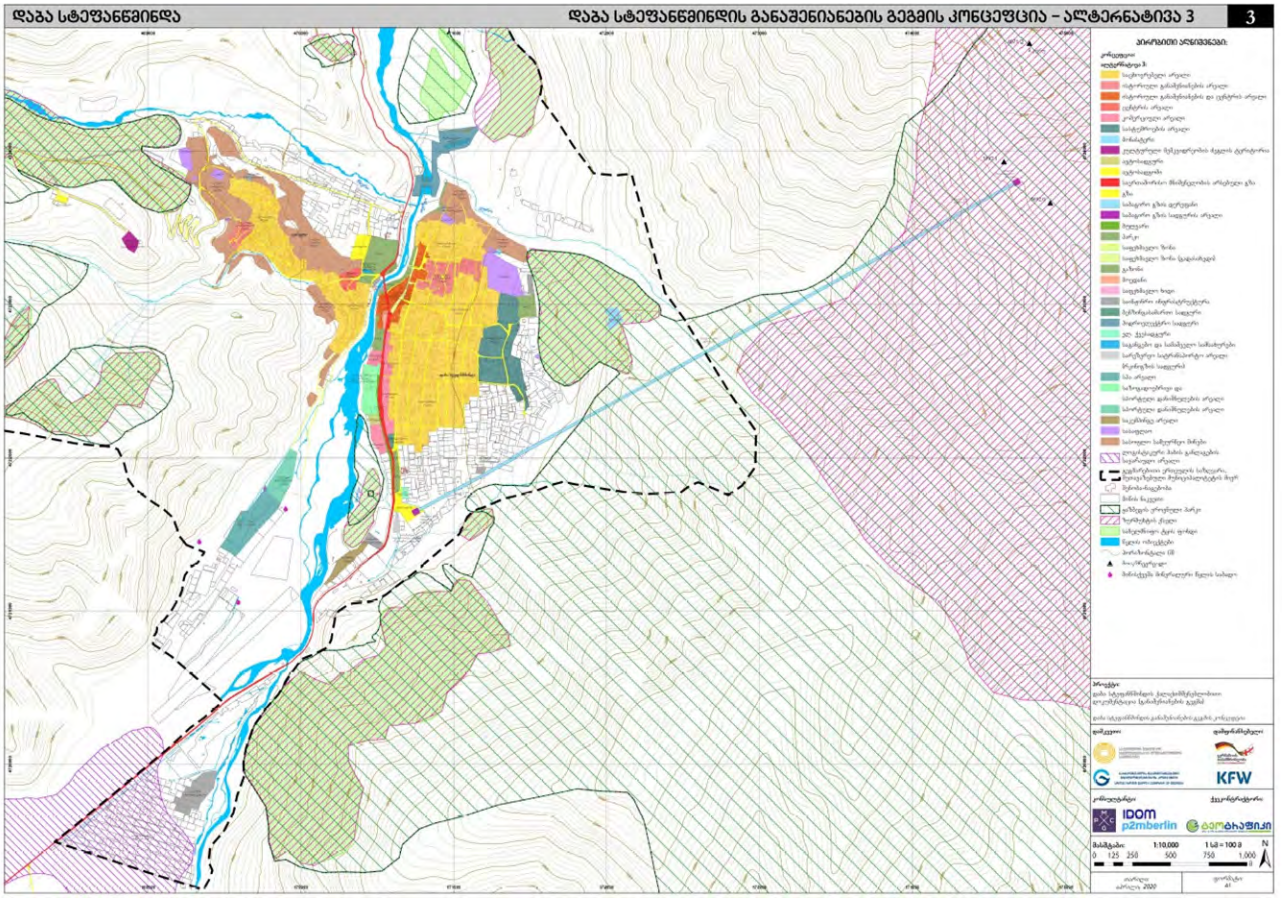
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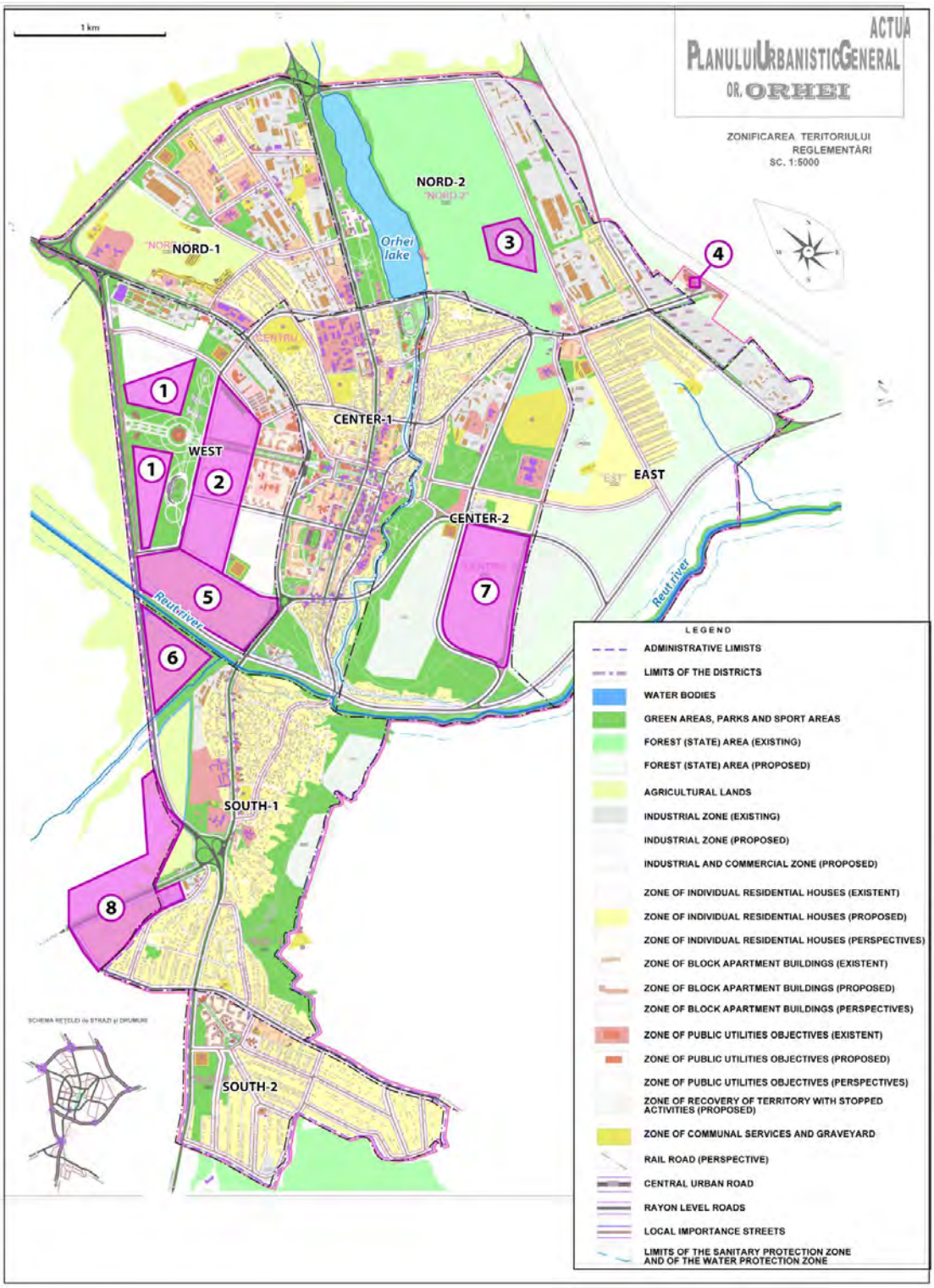
ANNEX VIII.

Example of assessing and comparing alternatives

Alternative decisions of the Master Plan of Orhei 2015 in comparison with the Master Plan of 2008, UNECE, 2015[133]



133 https://unece.org/DAM/env/eia/meetings/2015/June_Chisinau_17.05_SEA/RAPORT_SEA_ENG_FINAL.pdf

Comparison of alternatives: Orhei – Master Plan 2015 and Master Plan 2008

No. of the zone	Functional designation of land of the previous Master Plan 2008	Functional designation of land of the current Master Plan 2015	Impact on the environmental components				Comments (arguments for the selected level of impact (-2,-1,0,+1,+2,?))
			Air	Water	Soil	Bio-diversity	
1	Industrial production zone	Complex recreation zone with sport and touristic elements and water bodies	+2	+1	+1	+2	**+1,+2** Elimination of the impact of the pollution from the industrial units on the atmospheric air, reduction of floods, reduction of pollution of water bodies. Due to the collection of funds from the recreation sites improvement of landscape and of recreational functions of the area
2	Zone of living areas with block apartments buildings	Complex recreation zone with sport and touristic elements and water bodies	+1	+1	+1	+1	**+1** Elimination of the impact of the pollution from the industrial units on the atmospheric air, reduction of floods, reduction of pollution of water bodies. Due to the collection of funds from the recreation sites improvement of landscape and of recreational functions of the area
3	Industrial Zone North 2, East	Zone exposed to the ecological restoration and planting forests	+2	+1	+1	+2	**+2** Elimination of the impact of the pollution from the industrial units on the atmospheric air, improvement of the landscape, merging this zone with the existing green areas
4	Railway station	Green zone	+2	+2	+2	+2	**+2** Elimination of potential impact of the rail road transport (diesel) on the atmosphere air, soil and water resources. Improvement of the landscape and recreation functions
5	Agricultural lands	Complex recreation zone with sport and touristic elements and water bodies	?	?	-2	+1	**-1** Taking agricultural lands out of the agricultural activities At the same time will take place the improvement of the landscape and of the recreation functions
6	Agricultural lands	Zone of protection of the Raut River	0	+1	-2	+1	**-1,+1** Taking agricultural lands out of the agricultural activities Elimination of impact of agricultural soil erosion, contamination with pesticides and fertilizers
7	Living areas	Agricultural areas	-1,+1	0,-1	+2	?	**0,+1** Re-allocation of lands for agricultural use: reduction of the potential impact of housing development, but increase of the risks of impact of agricultural practices, use of chemicals etc.
8	Green areas	Zone of the commercial units, small industry and storages	-1	?	-1	-1	**-1** Reduction of the green area surface, impact of emissions and pollution of soil and water

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