Review of status quo of integrated environmental management for FUAs in national policies

DELIVERABLE D.T1.4.1

version 1.0

11/2019

1. INTRODUCTION

This report is a base of information necessary for the development of the final document "Concept of regional strategy of integrated environmental management of small green spots in FUAs", which will be one of the most important outputs of the SALUTE4CE project. The material contained in this report will also be used to create a common methodological framework for Urban Environmental Acupuncture Action Plans to be created in the four FUAs covered by the SALUTE4CE project.

Of the four countries referred to in the following review, they have different political structures, both at the national level and at the regional and local level. Two of them (Germany and Italia) have a federal structure, and the other two (Poland and Slovak Republic) are unitary states. In each of these countries, there are different historical and urban conditions for shaping FUAs, and there are also different cultural conditions for self-government and civic initiatives to improve the quality of life in the city. Despite all the differences, cities and FUAs across Central

Europe face similar challenges, but also similar opportunities regarding the quality of public space and adaptation to climate change, by strengthening the Green Infrastructure system. All European regions and countries implement the same Community policies regarding urban sustainability, quality of life of urban residents, environmental security, environmental health, natural heritage, public accessibility and quality of information, as well as public participation in city/FUA development.

This report is based on materials provided by Partners who reviewed the status quo of integrated environmental management for FUAs according to the common template. However, European Commission reports containing information on the state of implementation of environmental policies and strengthening of Green Infrastructure (GI) and Ecosystem Services (ES) potential in Germany, Poland, Slovakia and Italy with particular emphasis on urbanized areas have also been widely used.

2. Instruments for integrated management in the FUAs or parallel urban/peri-urban structures with the focus on spatial development management and environmental management

2.1.Binding planning documentation (land use plan, regional development plan …)

2.1.1. POLAND

2.1.1.1. Law acts in Poland

Urban development planning, protection and building regulations law, regional and local government law, competence law.

Act on the Principles of Development Policy (Journal of Laws 2016, item 383) and Spatial Planning and Development Act (Journal of Laws 2016, item 778).

Sectoral planning, protection and regulation law including specific documents elaborated in accordance with these law acts

According to: Act no. 84/06 Coll. Law on Development Policy Principles: Development strategies - there are 3 main levels of development strategies in Poland:

- long-term country development strategy – a document defining the main trends, challenges and scenarios of social and economic development of the country as well as the national zoning lines, considering the principle of sustainable development, covering the period of 15 years at least;
- a mid-term country development strategy – a document defining the main conditions, objectives and lines of the country development considering social, economic, regional and spatial aspects, covering the period of 4 to 10 years.
- other development strategies – documents defining the main conditions, objectives and lines of development of the areas indicated in the mid-term country development strategy, referring to development of regions, spatial development, development of sectors or domains, pursued with help of various programmes

2.1.1.2. Integrated land management in Poland – Description

There is a hierarchical system of development strategies in Poland, differing in the time horizon and the degree of generality. Local spatial development plans shape future land development in the city. They provide detailed descriptions of the permitted land use, the scale of developments, rules and regulations for heritage protection, local infrastructure regulations, land readjustment rules and procedures and land parcellation.

Applications for new developments must be compliant with the rules and regulations outlined in the local spatial development plan, which is legally binding for the land owners and local municipality. This includes descriptions of the borders of zoned lands, building lines, heights,

maximum and minimum floor area ratio indicators, percentage of the required open space, number of location of the parking spaces.

Local plans need to include legally binding forms of environmental protection that may impact on the permitted land use of the particular development areas and include environmental impact assessment procedures. The plans can also be used to secure public right-of-ways. Should the local authority decide to zone the land for public use, it is obliged to purchase the land from the public owner once the plan has been approved.

2.1.2 SLOVAKIA

A.1.2.1. Law acts in Slovakia

Urban development planning, protection and building regulations law, regional and local government law, competence law.

- Act 50/76 Coll. Law on Territorial Planning and Building Code - principles, procedures, documentation and others issues dealing with land-use. This is the basic land-use matters law. Basic land-use documentation are: spatial development perspective of the Slovak Republic, land-use plan of the region, land-use plan of a municipality.

Sectoral planning, protection and regulation law including specific documents elaborated in accordance with these law acts

- Act 539/2008 on Regional Development Support - a framework law dealing with spatial development focused on social and economic development and its planning. The law defines the following documentation on regional development support at all levels: National regional development strategy, Program of social and economic development of the region, Program of social and economic development of a group of municipalities, · Program of social and economic development of a municipality
- Act no. 369/90 Coll. Law on Municipalities - the law defines only responsibilities for planning and land and environment management, but not for sustainable land-use.
- Act no. 221/96 Coll. Law on Territorial and Administrative Division of the SR and Act no. 222/96 Coll. Law on Organisation of Local Self Government - Division of responsibilities for land-use and environment the regeneration processes

2.1.2.2. Integrated land management in Slovakia – Description

- Spatial development perspective of the Slovak Republic - the document creating the conceptual framework for spatial development at the national level defining basic principles for the settlement development, centres and their gravitation areas (practically FUAs)
- Land-use plan of the region - mid-term up to long term comprehensive spatial planning document at the regional level focused on functional organisation of the space determining the basic elements of the settlement structure and interrelations between them.
- Land-use plan of a municipality - md-term up to long term Comprehensive planning document focused on optimisation of organisation of functional and structural elements and systems at the territory of the cadaster of a municipality (build up and surrounding areas)
- Program of social and economic development of the region – short-term up to mid-term planning and programming document of the comprehensive social, economic and environmental development of the region
- National regional development strategy - the document on the comprehensive social, economic and environmental development at the national level
- Program of social and economic development of a group of municipalities - short term up to mid-term planning and programming document of the comprehensive social, economic and environmental development of the group of communes based on their agreement to procure the program jointly
- Program of social and economic development of a municipality - Short term up to mid-term planning and programming document of the comprehensive social, economic and environmental development of the municipality.

- Landscape – ecologic plan at the regional and municipal plan - Landscape ecologic plan is the document elaborated as a part of the procurement of land-use plans at regional and municipal level with the focus on landscape ecologic analyses, assessment and optimidzsation of functional use in the harmony with landscape ecologic potentials and limits for the development

2.1.3 GERMANY

2.1.3.1 Law acts in Germany

Urban development planning, protection and building regulations law, regional and local government law, competence law.

- Federal Regional Planning Act (Raumordnungsgesetz, ROG), 22 Dec. 2008, last amended 20 July 2017;
- Spatial Planning Act of the Free State of Thuringia (Landesplanungsgesetz des Freistaates Thüringen), 11 Dec. 2012;
- Federal Building Code (Baugesetzbuch, BauGB), as amended on 3 Nov. 2017

Sectoral planning, protection and regulation law including specific documents elaborated in accordance with these law acts

- Federal Nature Conservation Act (Bundesnaturschutzgesetz), July 2009, last amended 13 May 2019 (including regulations about landscape planning:
- §§ 8 and 9: goals, contents, responsibilities
- § 10: landscape programs for the states, landscape masterplans on regional level (parts of the states)
- § 11: landscape plans for municipalities (local level), local green plans for parts of municipalities (sub-local level)

2.1.3.2. Integrated land management in Germany - Description

A land use plan must comply and take into account the regional plan which is of superior status. In case of the integration of environmental and spatial development takes place at a scale of 1:10.000 to 1:5.000. The land use plan should have integrated development information which is relevant for municipalities. Planning FUA development requires also integration of the regional scale with the city scale, however, it is difficult to identify documents that could serve as an example of success in this regard.

The regional development plan does not only provide information about areas that should be protected, but it also gives information about areas that should be developed or used in a specific way, e. g. as residential areas, as areas for the development of nature and landscape. The challenge is to reconcile two requirements: provide important information for lower planning scales, but at the same time fit into the planned higher order.

2.1.4. ITALY

2.1.4.1. Law acts in Italy

Urban development planning, protection and building regulations law, regional and local government law, competence law.

- Italian Constitution – art. 117
- National Law no. 1150, 17.08.1942 ("Town planning law")
- Regional urban law 5.12.1977, no. 56 (Protection and land use)
- National Act no. 56, 7.04.2014 (Provisions on metropolitan cities, the provinces, the unions and public mergers)

Sectoral planning, protection and regulation law including specific documents elaborated in accordance with these law acts

- Legislative Decree no. 152, 3.4.2006 (Environmental Regulations – SEA, EIA and EEA) - The consolidated act contains provisions relating to many environmental issues: Strategic Environmental Assessment, Environmental Impact Assessment, integrated environmental authorization; soil conservation and combating desertification, protection of waters from pollution and water management; waste management and remediation of contaminated sites; air protection and the reduction of atmospheric emissions; compensation claims against environmental damage.

- Landscape plan of the region (Regional urban law 5.12.1977, no. 56, "Protection and land use" and Leg. Decree 22.01.04 no. 42 "Code of cultural heritage and landscape"). The *regional landscape plan* (PPR) is a spatial plan formed by the Piedmont Region, approved in 2017. It is descriptive, prescriptive and proactive to promote and disseminate knowledge of the Piedmont landscape and its strategic role in the sustainable development of the territory. It provides prescriptive rules, directives and guidelines for land use of the entire region, with particular attention to the protection and enhancement of landscape elements.

- ***Regional regulation containing: "implementation of the Piedmont regional landscape masterplan (PPR)"***. Approved by the Regional Government on 22 March 2019, it is a provision that aims at the operational implementation of the Regional Plan, in particular it focuses on:
  - the adjustment of planning tools to the Landscape Plan of the Region;
  - the examination of the variations to the planning tools that do not constitute adaptation to the Landscape Masterplan of the Region;
  - verification of compliance with the provisions of the Plan of operations subject to the release of landscape authorization;
  - the implementation of strategic projects and programs envisaged by the Regional Landscape Masterplan.

  It includes the participation of the Italian Ministry of Cultural and Environmental Heritage in the proceedings for the variants of adjustment to the Masterplan and for the other variants to the planning tools.

2.1.4.2. Integrated land management in Italy – Description

According to the 117 article of Italian, Constitution, territorial and spatial planning represents a concurrent matter, thus Italian central government defines general principles while regions promulgate their own regional laws. The Law establishes the nationwide principles for spatial planning of supra-local area (provincial and regional) and for urban planning at municipal level. The "Town planning law" establishes the nationwide principles for spatial planning of supra-local area (provincial and regional) and for urban planning at municipal level.

Regional urban Act no. 56, 5.12.1977 defines the levels and the planning instruments at different administrative level: regional spatial plan and regional landscape plan; Provincial Spatial plan for coordination and Metropolitan general spatial Plan; sub-regional and sub-provincial plans for particular geographical areas or for the implementation of complex projects or policies; General regulatory plans of municipality. The objectives of the act are: limitation of the land use (goal of a zero consumption), the preservation and enhancement of the natural heritage and in particular of environment and landscape; the full and rational management of resources in order to maintaining their qualitative and quantitative overall level; the overcoming of regional imbalances, the transport system, installations and equipment of public interest etc.

National Act no. 56, 7.04.2014 Law contains provisions relating to metropolitan cities, provinces, unions and mergers of municipalities, in order to adapt their system to the principles of subsidiarity, differentiation and adequacy. There are introduction of two new tools for the development and the territorial government: the General Metropolitan Spatial Plan and the Strategic Plan.

Documents specifying spatial planning and land use on a regional and local scale are:

- Spatial plan of the region - regional spatial plan (PTR) is a spatial plan (such document was approved in Piedmont in 2011) defines strategies and objectives at the regional level. It defines the action to be taken by the various parties involved in territorial planning, in accordance with the principles of subsidiary and competence.
- Implementation of the plan is assigned to the administrations that operate at provincial and local level
- Land-use plans of municipalities - The General Municipal Plan is an instrument that regulates the transformation of the township and the construction activity. The task of the plan is to provide for the development of the population and for the economic development; based on these parameters the Plan dictate the guidelines for the interventions that it can be implemented either by the administration for the community, which by the private citizens
- Spatial plan of the Province - The Provincial Spatial plan for coordination (PTCP) aims to sustainable development of the territory and defines the portions of land to be subjected to special rules in order to protect the primary resources, the soil (from hydro geological problems), the historical and architectural heritage and environment, and to prevent pollution.
- The Metropolitan general spatial Plan (PTGM) was introduced by National Law n. 56/14. It includes communication facilities, service networks and infrastructure belonging to the competence of the metropolitan community, also setting constraints and objectives of the activity and performance of the municipalities.
- Metropolitan development strategy - The Strategic Metropolitan Plan (PSM) was introduced by National Law n. 56/14. It is a short term instrument (tree-years term, to be updated annually), on the economic metropolitan development

2.2. Indicators for defining the target quality of urban development and improving the condition of FUAs

2.2.1 POLAND

According to the 2030 Agenda on Sustainable Development the countries signatories have agreed on 17 Sustainable Development Goals (SDG). As one of the key goals, the 2030 Agenda recognizes the sustainable urban development (SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable). Additionally, the United Nations Human Settlements Program UN-Habitat adopted, during the Habitat III Conference in Quito, in October 2016 the New Urban Agenda.

2030 Agenda and the New Urban Agenda are crucial reference points for implementing urban policy in Poland. The report entitled *Implementation of Sustainable Development Goals in Poland* describes the system for SDGs' implementation and actions undertaken so far in this regard. It also includes the review of the implementation of each of the SDGs, including one on sustainable urban development. A number of dedicated targets and indicators are assigned to the goal SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

Regions, cities and rural areas. As the division of the functional urban areas into sub-types shows even Polish institutionalisation of the FUAs did not followed the OECD/EC concept of FUAs. The Polish typology refers to the functions of urban centres in the settlement system of the country. A functional urban area is a spatially continuous settlement system consisting of units separate in administrative terms. It covers a compact urban area with a functionally linked urbanized zone. Poland has well balanced urban structure with several large FUAs (the biggest are Warsaw agglomeration and Upper Silesia conurbation) and many medium-size cities.

2.2.2 SLOVAKIA

According to the 2030 Agenda on Sustainable Development the countries signatories have agreed on 17 Sustainable Development Goals (SDG). As one of the key goals, the 2030 Agenda recognizes

the sustainable urban development (SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable). A number of dedicated targets and indicators are assigned to the goal SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable. Statistic Office of the Slovak Republic publishes the indicator values in Chapter 11 "Sustainable cities and communities" of the document "Slovak Republic and the Sustainable Development Goals". https://agenda2030.statistics.sk/Agenda2030/en/home/, and of the 2030 AGENDA (https://slovak.statistics.sk/wps/wcm/connect/605fd33f-91b4-400f-a7c5-a18d3340c9cd/The_Slovak_Republic_and_the_Sustainable_Development_Goals_of_the_2030_AGENDA.pdf?MOD=AJPERES&CVID=mfev2OG&CVID=mfev2OG)

2.2.3 GERMANY

There are a lot of benchmarks which are binding (e. g. air quality, soil quality).
Indicators and target values for green space in cities**:** The German National Biodiversity Strategy (BMU 2007) demands as strategic aim for urban landscapes to enhance considerably the proportion of vegetated areas in all settlements until 2020. To meet these aims indicators and target values are essential. Some examples (but not used in all German cities and not binding) are for example: ***indicators:*** green space proportion, green space per capita, green space accessibility, degree of soil sealing; ***target values*** in Germany have been set already 100 years ago and updated by the conference of garden office directors (GALK 1973). [GALK – Gartenamtsleiterkonferenz (1973): Richtwerte der ständigen Konferenz der Gartenamtsleiter.]

2.2.4. ITALY

The most important is the Set of indicators to monitor the soil sealing - an instrument in regional planning for identification of areas with a high level of soil sealing (including soil sealing index). Other indicators:

- dispersion index,
- fragmentation index,
- socio-economic correlation Indicators

2.3. Data tools - databases, registers, data sources, laws.

2.3.1. POLAND

GeoINFO – a system for creation and conducting the LIS and GIS at level of municipality to the voivodeship level. The system is based on CAD software and MS SQL. The system is composed from the few modules.
The municipality has also data base for economic promotion of industrial sites – it is a separate base not integrated with the land register, although it would be very purposeful to have it integrated. Apart of this an investor can get information from the land use plan in order to know what purposes/function are planned in a particular area.
The contaminated land and postindustrial areas register is conducted at the Marshal Office of Silesia starting from 2007.
The cadastral register is a basis for the municipality to register areas containing some data (e.g. ownership data) but not all of them. This register is used for analysis, realization, concept and land use planning purposes. The regular cadastral system is composed only from land owner register and cadastral maps (register and maps). The Registry of Deeds (dealt with the registration of title deeds, mortgage documents and other documentation concerning unregistered land).

2.3.2 SLOVAKIA

Cadastre /land and property register/ Land Registry - Cadastre/land and property register/ Land Registry is a public list, which contains a set of data on real property matters containing their list,

description, legal functional use, their geometric and positional determination and registration rights to such property.
Act. no. 275/2006 Coll. Law on information systems of public administration in wording of later regulations - There is a framework for potential register of underused plots as public information system.
Geoportal https://www.geoportal.sk/en - system for creation and conducting the GIS at local and regional levels, made in accordance with the requirements of European Directive – INSPIRE
Spatial data registry (RPI) https://rpi.gov.sk/en - system built up in accordance with the National concept of informatization of the public administration as the basic state register. In the Slovak Republic is created and registered a large number of reference and assigned-thematic spatial data, distributed according to the needs of a specific interest (e.g., topography, altimetry, copyrights, environmental information, transport networks, geological information, etc.) from a variety of data sources characterizing objects and phenomena in nature and society in varying quality and timeliness.

2.3.3 GERMANY

There is plenty of information about state of environment, natural protection and landscape planning in Germany. Examples:
The Federal Agency for Nature Conservation provides several information systems (see: https://www.bfn.de/en/service/databases-and-data-collections.html), for instance:

- Central Literature Database for nature conservation and landscape management
- The WISIA-online is an online species protection database
- ZEET publishes a full alphabetical listing of the animal species contained in Annexes A and B of Regulation (EC)
- Artenvielfalt – Fauna in Deutschland (Biodiversity: Germany's Fauna) is a quantitative survey of all animal species in Germany
- FloraWeb is a web-based portal which focuses on plant species, plant communities and vegetation
- The Federal Information System of Genetic Resources (BIG) provides information on wild and cultivated plants in Germany
- Nature and Sport Portal focuses on the impact of sport and recreation on flora and fauna

Also other organisations provide relevant information, e.g. the IOER Monitor on settlement and open space development (see https://www.ioer-monitor.de/)

2.3.4. ITALY

- Socio-economic and territorial database (National level): SISTAN - The National Statistical System is the network of public and private entities that provide to the country and to international bodies the official statistical information. It consists of: National Statistics Institute (Istat); entities and statistical information public bodies (INEA, Isfol); statistical offices of government departments and other public authorities, local government offices, the regions and autonomous provinces, provinces, chambers of commerce (CCIAA), municipalities, individuals or associations and statistical offices of other public and private institutions that perform functions of public interest.
- Environment at national level: SINANET (Network of the National Information System). It collects data and information that are needed to describe and understand environmental phenomena in order to: provide support for environmental government integrating the environmental component into sector and territorial policies; regularly provide products and services based on indicators and indexes.
- Territorial and environmental databases (regional and local): "Geoportali" (e.g. Geoportale Piemonte, Geportale ARPA Piemonte) – there are infrastructures for integration of geographic information understood as "the set of technologies, policies, standards and human resources

necessary for the acquisition, processing, storage, distribution, and the best use of spatial data". The geoportals are made in accordance with the requirements of European Directive - INSPIRE. Region is still working to define an agreement with the aim to develop the integration between different geoportals. It is also being discussed a regional law about that .

- Cadastral databases: SIGMATER - It is part of a process of construction of a regional/national network for the establishment of e-government implementation in the small towns of Piedmont. It allows controlled access to the Territory Agency cadastral databases.

2.4. Legal bodies

2.4.1. POLAND

2.4.1.1. Responsibilities of legal bodies in Poland

National level:

- Chief Inspector for Environmental Protection - is the central state administration authority supervised by the minister for environment.
- Chief Office for Land Surveying and Cartography - is the central state administration authority competent for land surveying and cartography
- Chief Inspector for Building Supervision - supervision and oversight of observance of the provisions of the Construction Law and issue of administrative decisions on the matters defined by the Construction Law are the primary duties of architectural and building administration and building supervision bodies.

Regional level

- State administration in the voivodeship (corresponding to a province in other countries); Administrative authority at the voivodeship level is shared between a government - appointed governor called a voivode, an elected assembly called a sejmik, and an executive, headed by a voivodeship marshal. Voivodeships are further divided into powiats (counties) and gminas (communes or municipalities). State administration bodies are combined on the voivodeship level, like heads of combined forces, inspections or fire forces; independent state administration bodies; self-governmental bodies and their unions, if performance of state administration tasks by them results from other regulations or an agreement made; other entities, if performance of state administration tasks by them results from other regulations).
- Voivodeship Inspector for Building Supervision - supervision and oversight of observance of the provisions of the Construction Law and issue of administrative decisions on the matters defined by the Construction Law are the primary duties of architectural and building administration and building supervision bodies.
- Voivodeship Inspector for Environmental Protection - manages the activity of the Environmental Protection Inspection within the province. Province Inspector for Environmental Protection develops and carries through provincial programmes of environment monitoring and makes analyses and assessments of observance of regulations and of condition of the environment within the province.
- Regional Environmental Protection Manager - is an independent state administration body that reports to the General Environmental Protection Manager.

Local level

- Community – it should be understood as a self-governmental community along with the corresponding territory. In keeping with the law, community inhabitants form a self-governmental community. The system of the community is determined by the community charter.
- District – it should be understood as a local self-governmental community along with the corresponding territory. In keeping with the law, district inhabitants form a local self-governmental community. District is a corporate person and performs public tasks defined by the law on its own behalf and on its own account.

- District Inspector for Building Supervision - supervision and oversight of observance of the provisions of the Construction Law and issue of administrative decisions on the matters defined by the Construction Law are the primary duties of architectural and building administration and building supervision bodies

2.4.1.2. Professional organizations with legally or other regulated tasks in Poland

- Institute of Environmental Protection (IEP) - A research and development unit, the primary activities of which is to comprise establishing scientific and technical grounds for environmental protection and related state policy. IEP is supervised by the Ministry of Environment.
- Institute for Ecology of Industrialised Areas (IEUA) - a research and development unit. The general objective of the research and development activity of the Institute for Ecology of Industrialised Areas is to establish scientific grounds for the strategy oriented at environmental protection of urbanised and industrialised areas.
- Polish Agency of Entrepreneurship Development (PAED) - PAED is a government agency reporting to the Minister for Economy. The task of the Agency is to manage the funds from the state budget and the European Union, earmarked for supporting entrepreneurship and innovativeness and developing human resources.
- Association of Polish Architects (APA) - an association open for all Polish architects
- Association of Polish Urban Planners (APUP) – an association advocating the interest of the general public in developing and using Polish space
- Polish Association of Engineers and Construction Technicians (PAECT) - an autonomous research and technical association
- Coordination Committee for Development Policy - an advisory body established for the President of the Council of Ministers by law, to ensure that the development strategy is coordinated and programmed effectively and that the instruments used for its accomplishment are monitored and assessed strategically.
- Board of Building Design (BBD) - a business self-government body gathering business entities dealing with construction or technological design, organisation of investment processes and companies operating for the benefits of the construction sector

2.4.2 SLOVAKIA

2.4.2.1. Responsibilities of legal bodies in Slovakia

National level:

- Relevant Ministry offices
- Plenipotentiary of the Government of the SR for territorial management, integrated management of catchments areas and landscape
- Office for Geodesy, Cartography and Cadastre of the Slovak Republic
- State property fund - office representing the state in property issues,
  - Slovak Inspectorate of the Environment
  - Statistical office of the Slovak Republic

Regional level

- 8 Self governmental regions and subjects of territorial sovereignty and responsible for selected tasks of middle level of state government
- Cadastral offices (8 regional offices)
- Regional state specialised offices (e.g. building offices, regional and district environmental offices)
- Regional land offices, district land offices
- Regional building offices
- Regional forestry offices

Local level

- Municipalities - self governmental units and subjects of territorial sovereignty and responsible for lowest level of state government (e.g. building offices)

A.4.2.2. Professional organizations with legally or other regulated tasks in Slovakia

Non-profit organizations supporting the development of SME established as professional association of legal entities:

- National Agency for Development of Small and Medium Enterprises
- Slovak Environmental Agency
- Regional environmental advisory and information Centres of the Slovak Environmental Agency
- SARIO Slovak Investment and Trade Development Agency

Professional organisations with nationwide scope of powers, which focuses on the environment protection and landscape planning in accordance with principles of sustainable development:

- Centre of Environmental Policy Development,
- Centre of Environmental Informatics ,
- Centre of Environmental Education,
- Centre of the Urban Environment Protection,
- Centre of Environmental Management,
- Centre of Waste Management and Basel Convention,
- Centre of Assessment of Regions´ Environmental Quality,
- Centre of Landscape Planning, Natural and Energy Sources

Governmental institutions:

- SARIO Slovak Investment and Trade Development Agency – an organization that works under the supervision of the Ministry of Economy with the goal to support suitable investment and "business-friendly" environment
- National Association of Real Estate Agencies NAREA - integrates Slovak real estate agencies on the real estate market, promotes their interests, mutual cooperation, use the latest knowledge from the related fields, increase the quality of the services which they provide
- Association for Support of the Public-Private Projects - institution for private-public partnership projects

Non-governmental professional organizations:

- Slovak Chamber of Architects
- Slovak Chamber of Civil Engineers
- ZMOS - Association of Towns and Communities of Slovakia
- Regional Development Agencies - non governmental agencies supporting spatial development at local and micro-regional level

2.4.3 GERMANY

2.4.3.1. Responsibilities of legal bodies in Germany

Germany is a federal state composed of the federal government and federal states or Laender. The central government, the federal states, the regional government and the German municipalities have varying tasks and partially competing responsibilities, including spatial planning and natural protection.

Federal State Ministries are responsible for federal planning legislation.

State ministries and state offices are responsible for:

- Laws, regulations of sustainable development
- planning legislation for funding and finances
- Communication of new targets
- Information local and regional scale e

Regional Planners and Regional Planning assemblies are responsible for regional development plan with regional targets
Institutions on municipal level/local level are responsible for land use plan with special municipality development and information in high levels of governance

2.4.3.2. Professional organizations with legally or other regulated tasks in Germany
Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN): German government's scientific authority with responsibility for national and international nature conservation. BfN is one of the government's departmental research agencies and reports to the German Ministry of Environment (BMU). The BMU provides with professional and scientific assistance in all nature conservation and landscape management issues and in international cooperation activities. BfN is also in charge of a number of funding programmes
Federal Environment Agency (UBA) and Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR): highest federal authorities for advisory and research on brownfields, sealing, land consumption, urban and environmental development
Nature and environmental conservation associations: non-governmental organizations (e.g. BUND, NABU) force initiatives against soil sealing and urban sprawl
Intermunicipal agencies (Zweckverbände) for common land developments: special purpose associations

2.4.4. ITALY

2.4.4.1. Responsibilities of legal bodies in Italy
National level
The Italian Constitution states that the Republic is constituted by Municipalities, Provinces, Metropolitan Cities, Regions, as autonomous entities with their own statutes, powers and functions according to the principles established by the Constitution. Protection of the environment, the ecosystem and cultural heritage are the exclusive legislative competence of the State (the Ministry of environment, land and see protection)

- The territorial government has a concurrent legislation between state and regions.

Regional level
Regions are responsible for local legislation (smart specialization strategy, regional strategic development program, general development plan) and also for environmental prediction, prevention and protection: this activity is carried out with the support of Regional Agencies for Environmental Protection (ARPA)
Provincial level
The National Law 56/2014 reduce the functions of Province. New Provinces' functions are:
- spatial planning coordination,
- protection and enhancement of the environment
- planning transport services, authorization and control in the field of private transport
- construction and management of roads and regulation traffic
- school network and school construction management;
- collection and processing of data, technical and administrative assistance to local authorities;
- control the phenomena of discrimination in employment and promotion of equal opportunities :

Municipal level
Municipalities (single or associated) exercise their powers in planning and land management drafting and implementing the land-use plan. The main objectives are:

- a balanced relationship between housing and services;
- make the housing stock and existing infrastructure available for social use;
- the defence and hydro geological protection, preservation of agricultural heritage, environmental resources, historical and artistic heritage and landscape;
- the requalification of peripheral and marginal building;
- limiting the consumption of soil;

- satisfy the need for social services, social housing and public facilities;
- the planned implementation of public and private interventions.

Territorial associations

- The LAW n. 56/14 "Measures on cities' subways, the provinces, the common" unions and mergers, rules metropolitan cities, provinces, partnerships and fusions of municipalities.
- Regional Law n. 11/2012 "Organic provisions on local authorities" reorganizes the system of local authorities for the purposes of administrative simplification and reduction of public spending. It rules the exercise of functions and services that the national law provides should be carried out by the municipalities in association. The law defines the dimensional requirements of the municipalities unions and the methods of aggregation.

2.4.4.2. Professional organizations with legally or other regulated tasks in Italy

- Regional Agencies for Environmental Protection (ARPA) - the Italian environmental agency, one for each region of Italy – are entitled to realize environmental controls , protection and prevention actions. They are public bodies with independent status for administrative, technical-juridical, asset management and accounting purposes. In Piedmont: http://www.arpa.piemonte.it/
- Italian National Institute for Environmental Protection and Research (ISPRA) - public legal entity subject to the vigilance of the Italian Ministry for the Environment, Territory and Sea, and provided with technical, scientific, organizational, managerial, administrative and financial autonomy. The ISPRA performs scientific, technical and research functions as well as assessment, monitoring, control, communication, training and education activities. Among other issues, ISPRA addresses the reclamation of polluted industrial sites and brownfields. The redevelopment potentialities are linked to the reuse of these areas, that are often located in strategic places in the urban framework.
- National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) – It promotes development, competitiveness and employment objectives and environmental protection. It leads activity research in the energy efficiency, renewable sources and technological innovation field. It has laboratories and test facilities in the environmental, health, cultural heritage, combating climate change, smart cities, eco-industry, circular economy, etc.

3. Detailed Structure of the instruments of integrated environmental management at the local level and identification of their potential to extend to supra-local level

3.1 Strategic environmental assessment (SEA) of land use plans and other strategic development plans including sectoral plans

3.1.1. POLAND

Act of Law of 3 October 2008 on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments (so called The EIA/SEA Act of Law). Official Journal of the Law 08.199.1227 as amended. List the types of plans and programmes that require SEA in your legislation (art. 4, para. 2).According to the article 46 of The EIA/SEA Act of Law a strategic environmental assessment shall be required for:

- draft concept of national spatial planning policy,
- a draft study on the conditions and directions of local spatial development,
- draft spatial development plans and draft regional development strategies;

- draft policies, strategies, plans or programmes in the fields of industry, energy, transport, telecommunications, water management, waste management, forestry, agriculture, fisheries, tourism and land use, drawn up or adopted by the administration authorities, setting out a framework for the subsequent implementation of projects likely to have a significant impact on the environment;
- draft policies, strategies, plans or programmes other than those listed in above the implementation of which is likely to have a significant impact on a Natura 2000 site, where they are no directly related to the protection of the Natura 2000 site or not result from such protection

The EIA/SEA Act of Law does not limit by no means the public participation. It means that every person may take part in the public participation and comment on. The non-governmental organizations take part in SEA within public participation.

3.1.2 SLOVAKIA

- Act no. 24/2006 Call., on EIA and SEA in wording of later regulations
- Standard procedures and documents in accordance with the EC directive on SEA

3.1.3 GERMANY

- Environmental Impact Assessment (EIA) according to Council Directive 85/337/EEC
- Strategic Environmental Assessment (SEA), according to the European Union Directive 2001/42/EC - assessment of the possible positive or negative impacts of a project, including soil sealing

3.1.4. ITALY

- Legislative Decree 3 April 2006, n. 152 "Environmental Regulations" (Consolidated) - Title II - Strategic Environmental Assessment - SEA
- Piedmont Regional Law n. 40 of 14 December 1998 "Provisions concerning the environmental compatibility and assessment procedures"
- Piedmont Regional law: Lr 56/77 Protection and land use

3.2. Execution of the acts at the local level in order to protect all aspects/objects of environmental management

3.2.1. POLAND

The principal regulations of environmental law are set forth in the Environmental Protection Law of 27 April 2001. Many environmental regulations are targeted to specific sectors, however, or address specific aspects of environmental protection, such as waste management, air, water and noise pollution, and so on. Some of these regulations are included in the Environmental Protection Law, but others are found in the Water Law of 18 July 2001, the Waste Act of 14 December 2012, and the Nature Conservation Act of 16 April 2004. These are just examples of some of the specific regulations; in the area of waste, for example, there are also legal acts devoted to particular types of waste, such as packaging waste, mining waste, used electronic equipment, vehicles taken out of service, used batteries, and so on.

Environmental regulations applicable to the real estate development process are particularly important to investors planning environmentally sensitive projects. These provisions are chiefly covered by the Act on Access to Information on the Environment and Environmental Protection, Social Participation in Environmental Protection and Assessments of Environmental Impact of 3 October 2008.

Environmental protection regulations are also found in the Construction Law, the Planning and Zoning Act, the Forestry Act, the Geology and Mining Law, the Nuclear Law, the Maritime Code, and elsewhere.

Environmental protection tasks within the state system are carried out by central and territorial administrative agencies. In the latter case, authority is vested in the heads of local communes, mayors of towns and cities, county executives and province marshals. At the central governmental level, administrative authority is exercised primarily by the General Directorate for Environmental Protection and regional directors, as well as the Minister of the Environment and the Inspectorate for Environmental Protection.

Jurisdiction in cases related to civil and criminal liability for offences against the environment is vested in the common courts. A major role is nonetheless played by the administrative courts, which review actions by the public administration and rule on appeals from decisions concerning environmental protection issued by public administrative agencies.

3.2.2. SLOVAKIA

Act no. 330/91 Coll. Land consolidation law - the law defines the land consolidation procedure, that is rational space ordering of plot ownership in certain zone and with it connected other immovable agriculture and forestry ownership ordering which is executed in public interest in harmony with requests and conditions of environment protection, in harmony with creation of territorial ecological stability system, in harmony with agricultural landscape functions, in harmony of operational – economical modern agriculture viewpoints and forestry management and with harmony of countryside development support.
Act no. 287/94 Coll. on Nature and Landscape Protection
Act no. 223/01 Coll. Law on waste -the law defines a general rule, the generator of waste is responsible for disposing of it.
Act no. 44/88 Coll. Law on the protection and utilization of mineral resources (The Mining Act) - This law also regulates regeneration after mining.

3.2.3. GERMANY

The concept of integrated landscape/environmental analysis and evaluation is missing

3.2.4. ITALY

The Municipal energy document (Inter-Ministerial Decree 06/26/2015) is an enclosure to the local building regulations laying down rules for the promotion of energy conservation and interventions of additional energy efficiency than its legal obligations. Its aim is the realization of ultra-high energy efficiency buildings.

The compliance costs are huge and the incentives are not enough (also due to the persistent economic and financial crisis)

There are many other sectoral plans and instruments of municipal level that complement and specify the General regulatory plan of municipality: eg. the Acoustic Zoning Plan, Masterplan municipal lighting,..
For technicians, administrators and citizens, it is very difficult have a comprehensive and coordinated view of all the different instruments.

3.3. Acts on spatial planning and building

3.3.1. POLAND

The existing legislation regulating spatial planning in Poland is the Spatial Planning and Development Act of 27 March 2003 [Dz. U. (Journal of Laws) 2003, Nr 80, poz. 717] together with implementing acts. The Spatial Information Infrastructure Act of 4 March 2010 [Dz. U. 2010 Nr 76,

poz. 489] is also worth noting, as it introduces into Polish law the provisions of the Directive 2007/2/EC of The European Parliament of 14 March 2007 'Infrastructure for Spatial Information in the European Community' (INSPIRE).

The Spatial Planning and Management Act defines two planning documents that are forming the basic tools implementation for communal spatial policy and management, i.e. the Study of the Conditions and Directions of Spatial Management, and the Local Spatial Management Plan.

Spatial planning at communal level is based on the obligating of the commune council to conduct a spatial planning policy. This policy and the directions of spatial management are to be defined – on the basis of established conditions (opportunities and limitations) – by the Study of the Conditions and Directions of Spatial Management (the Study). The Study is not a document legally binding citizens or economic units; in consequence it may not be used for justifying administrative decisions (in particular granting or refusing planning permissions). It constitutes an interior administrative act of information and guidelines for spatial management. Its elaboration and adoption is compulsory, and it should be the basis for the elaboration of Local Spatial Management Plans.

The Local Spatial Management Plan constitutes the essential tool to implement communal spatial policy. It is prepared as the need arises; there are but few exceptions when its preparation is legally required. The Local Spatial Management Plan is adopted as a byelaw; therefore it is legally binding for communal bodies and public institutions as well as for economic units and all citizens. The Local Spatial Management Plan outlines and determines the communal spatial policy.

3.3.2. SLOVAKIA

Act 50/76 Coll. Law on Territorial Planning and Building Code - The law defines principles, procedures, documentation and others issues dealing with land-use. This is the basic land-use matters law. Basic land-use documentation are: Spatial development perspective of the Slovak Republic, Land-use plan of the region, Land-use plan of a municipality.

3.3.3. GERMANY

- Federal Regional Planning Act (Raumordnungsgesetz, ROG), 22 Dec. 2008, last amended 20 July 2017;
- Spatial Planning Act of the Free State of Thuringia (Landesplanungsgesetz des Freistaates Thüringen), 11 Dec. 2012;
- Federal Building Code (Baugesetzbuch, BauGB), as amended on 3 Nov. 2017

3.3.4. ITALY

- National Act no. 56, 7.04.2014 (Provisions on metropolitan cities, the provinces, the unions and public mergers) introduction two new planning instruments: the General Metropolitan Spatial Plan and the Strategic metropolitan Plan.
- DPR 380/2001 Ccontains the basic and general principles and provisions for the discipline
- of building.
- Regional urban Act no. 56, 5.12.1977 (Protection and land use) - Regional Law defines the levels and the planning instruments at different administrative level. At municipal level there is General Regulatory Plan. The objectives of the Law: limitation of the land use (goal of a zero consumption), the preservation and enhancement of the natural heritage and in particular of environment and landscape;

3.4. Official data sets, by law defined indicators

3.4.1. POLAND

The Spatial Information Structure Act of 4 March 2010 introduces into Polish law the notion of spatial data understood as data referring directly or indirectly to a definite geographical position or area [art. 3, p. 1, Dz. U. 2010 Nr 76, poz. 489]. Spatial data sets described by metadata, services for discovering, browsing, downloading and processing of these set [art. 9, p. 1, Dz. U. 2010 Nr 76, poz. 489], as well as technical tools, processes and procedures used and made available by government administration bodies and third parties, according the Act, form infrastructure for spatial information in Poland [art. 3, p. 2, Dz. U. 2010 Nr 76, poz. 489].

3.4.2. SLOVAKIA

Cadastre /land and property register/ Land Registry - Cadastre/land and property register/ Land Registry is a public list, which contains a set of data on real property matters containing their list, description, legal functional use, their geometric and positional determination and registration rights to such property.

3.4.3. GERMANY

- GeoMIS.Thüringen - creates transparency regarding existing geodata bases in Thuringia http://www.geoportal-th.de
- GIS - Geografisches Informationssystem https://stadt.weimar.de/stadtverwaltung/organisationseinheit/geoinformation-und-statistik-51/
- Geoportal Erfurt: https://geoportal.erfurt.de/gp/de/index.html

3.4.4. ITALY

GEOPORTALI (Geoportale Piemonte, Geportale ARPA Piemonte) - infrastructures for integration of geographic information built in accordance with the requirements of European Directive - INSPIRE. SINANET (Network of the National Information System – a system collecting data and information that are needed to describe and understand environmental phenomena in order to: provide support for environmental government integrating the environmental component into sector and territorial policies; regularly provide products and services based on indicators and indexes.

3.5. Legal bodies/Departments for Environmental protection at the Local Governments

3.5.1. POLAND

There are departments for environmental protection, water administration and geological resources within local government bodies. In general the competence in an environmental protection body is granted to Starosts (executive bodies at the powiat level) with certain responsibilities directed to other bodies. A Starost constitutes the relevant body in the majority of cases connected to industrial emissions. Executive bodies at the gmina level (gmina leaders, mayors) are responsible for matters relating to ordinary environmental use by natural persons.

Two groups of administration bodies are responsible for control and supervision in environmental matters, namely the general and special administration. In the first group these powers are vested in Voivodship marshals, starosts, gmina leaders and mayors. In the second group responsibility for control and supervision stays mainly with the EP inspection, which performs its activities pursuant to the Act on environmental protection inspection. In general, tasks of

executive character (e.g. the construction waste management or sewage treatment facilities) fall within the scope of competence of local government bodies.

3.5.2. SLOVAKIA

Responsibilities of local governments include environment management and protection (water supply, sewage, municipal waste) as well as open space management/maintainance (public greenery, recreation areas, playgrounds etc.)

3.5.3. GERMANY

On municipal level: normally, each German municipality has an administrative unit for environment, mostly called environmental department (including water, waste, immission questions a. s. o.) as well as for open space management/maintainance, mostly called green space department (e. g. Grünflächenamt, Gartenamt or Grünordnungsamt). Open space management includes public greenery like parks, playgrounds and trees

3.5.4. ITALY

ISPRA and the environmental protection agencies at the provincial and regional level monitor soil-sealing activity and land-take across Italy. This monitoring activity helps to shape and assess policies at national, regional, and municipal levels. Normally, each Italian municipality has an administrative unit for environment, mostly called environmental department

3.6. Voluntary organizations, professional organizations and environmental NGOs

3.6.1. POLAND

Alliance of Associations Polish Green Network (Polish Green Network – PGN) is a national alliance of 10 strongest environmental and sustainable development associations and foundations based in the largest cities of Poland and a few partners (Warszawa, Wroclaw, Gliwice). PGN regularly cooperates with about 30 civic society organizations.

PGN was created in 1995 and registered in 2000. It is headquartered in Krakow, with additional offices in Warsaw and Szczecin. The main areas of its activities are advocating for social and environmental justice within sustainable development, establishing social control mechanisms over public funds, increasing consumers impact on multinational corporations, building public support for development and providing development assistance in the Global South countries and Eastern Europe.

Since 2002 PGN has had experience in promotion of responsible consumption, Fair Trade and development education. PGN is a leading sustainable development network in Poland, making it one of the few NGOs in Poland able to work across all regions of the country.

3.6.2. SLOVAKIA

- WWF Slovakia
- Greenpeace Slovakia
- Friends of the Earth Slovakia http://www.priateliazeme.sk/spz

3.6.3. GERMANY

National organisations:
https://www.deutschland.de/en/topic/environment/earth-climate/environmental-organizations

- BUND (Association for the Environment and Nature Conservation)
- DUH (German Environmental Aid Association)

- DNR Association for German Nature Conservation, Deutscher Naturschutzring)
- NABU (German Nature Conservation Association)
- ROBIN WOOD
- WWF Germany
- Greenpeace Germany

National institutions: https://www.deutschland.de/en/topic/environment/earth-climate/environmental-institutions
There also exist a lot for regional and local organisations.

3.6.4. ITALY

- Eco Guardian's Volunteer Association - an organization Regional and Provincial based. The territory of competence is that of the Municipalities of the Provinces to which they belong, where through the establishment of "SECTIONS" they operate as Public Officials with functions of Administ/rative Police or Judicial Police, through the issuing of appropriate "Decrees" and have the task of monitoring compliance with laws and regulations to protect the environment, contributing to the development and activities related to the conservation of the natural and landscape heritage. There is also one section in the Alessandria Province.
- "Legambiente": a non-profit organization, the activities that we organize voluntary commitment are the result of thousands of citizens who with tenacity, imagination and creativity are committed to keep attention focused on environmental emergencies in the country.
- "Italia Nostra": a non-profit organization and the main objectives are the environmental rehabilitation of the cultural and environmental heritage, cities, parks, landscapes, land use and the promotion of sustainable development overall national territory.

4. Detailed structure of the instruments of integrated environmental management at the regional level (in addition to the instruments at local level) and identification of their potential to extend to urban/peri-urban level

4.1. Assessment of Regional Plans and programs

4.1.1. Poland

Strategic environmental assessment of documents for regional or metropolitan scale.

4.1.2. Slovakia

Landscape – ecologic plan at the regional and municipal plan - Landscape ecologic plan is the document elaborated as a part of the procurement of land-use plans at regional and municipal level with the focus on landscape ecologic analyses, assessment and optimisation of functional use in the harmony with landscape ecologic potentials and limits for the development

4.1.3. Germany

Strategic Environmental Assessment (SEA), according to the European Union Directive 2001/42/EC - assessment of documents for regional or metropolitan scale

4.1.4. Italy

There are many regional plans and instruments: e.g. Environmental Energy plan, Transport plan, Regional plan for management of municipal waste and sewage sludge, Ground Water Protection Plan Park Plan, Plan of mining activities, Air quality plan, Forest plans, Plan for establishments at risk of a major accident, etc.

4.2. Integrated Regional Operational/Investment Plans dedicated to environmental issues

4.2.1. Poland

Environmental protection programs at the regional and county (sub-regional) level. According to the environmental protection law (from 27.04.2001. Dz.U. No. 62 pos.627) it is an obligation to work out environmental protection program for the voivodeship, county and municipality(gmina).

4.2.2. Slovakia

Integrated regional territorial strategies – an implementation tool of relevant regional development supporting Operational programme "IROP"

4.2.3. Germany

See C.3.3.

4.2.4. Italy

The European Funds and national and regional co-financing (European Social Fund (ESF), the European Regional Development Fund (ERDF), European Agricultural Fund for Rural Development (EAFRD)) are divided into three Regional Operational Programmes (POR). The axes of investments on land issues, the environment, agriculture and forests are contained in POR ERDF and EAFRD.

The European Territorial Cooperation Programmes (ETC), unlike the POR, does not allocate resources to the Regions because the access is regulated by periodic calls for partnership projects between different countries, according to the specifications of each program rules.

4.3. Environmental issues in Regional Development Programs

4.3.1. Poland

- Regional Operational Programmmes (fund: ERDF/ESF OP) – priorities „Environment proctection & Resource efficiency", as well as „Climate adaptation & Risk prevention".
- Environmental protection is one of the priority areas both in the overall development strategy of the voivodship and in sectoral strategies regarding e.g. air protection, nature protection, transport, etc.
- Voivodship spatial development plan - its integral part is an ecophysiographic study documenting nature resources in the context of challenges, threats and opportunities

4.3.2. Slovakia

Program of social and economic development of the region - Short term up to mid-term planning and programming document of the comprehensive social, economic and environmental development of the region

4.3.3. Germany

- Regional development plan - itis covered by the integration of environmental and spatial development processes can take place at the scale of 1:200.000 to 1:100.000.Plan would provide sufficient information about: areas that are to be protected due to special landscape

qualities, visions and evaluation maps for environmental and spatial development aspects and integrated information within development plans.

- Landscape masterplans for regional level (focussing on landscape issues: nature and landscape protection, water protection, …) in most cases not legally binding

4.3.4. Italy

The Strategic Document Unit for the 2014-2020 programming of European Structural Funds provides a reference strategic framework for regional policy development and integrated planning of European, national and regional funds for the period 2014-2020. The approach used to define the priority lines of action forms part of the Europe 2020 strategy, Tree priorities for action: smart growth (developing an economy based on knowledge and innovation); sustainable growth (promoting a more resource-efficient, greener and more competitive economy); inclusive growth (promoting an economy with a high employment economy social and territorial cohesion)

4.4. Regional Inspectorate of Environmental protection

4.4.1. Poland

- Integrated environmental management in regional scale is supported by the institution of the Regional Director for Environmental Protection. His tasks include participation in EIA and SEA procedures, creation of nature protection forms, decisions on solid wastes management, counteracting and removing of environmental damages. It is a governmental specific administration.
- Regional Inspectorate for Environmental Protection is responsible for environmental quality checking and supervising an environmental performance of industrial and municipal objects. It is also undertaking actions in case of industrial and transport serious accidents with environmental negative consequences.

4.4.2. Slovakia

Slovak Environmental Inspectorate (SIE) – a specialized supervisory authority providing for the state supervision and imposing fines on the matters concerning environment protection and carrying out the municipal administration in the field of integrated pollution prevention and control.
Spheres of SIE activity include:

- integrated pollution prevention and control
- waste management
- water protection
- air protection
- nature and landscape protection
- biosafety

The administrative structure comprises headquarters located in Bratislava providing methodological support to the first-level decision-making regional inspectorates located in Bratislava, Banská Bystrica, Žilina and Košice.

4.4.3. Germany

- Federal Environment Agency (UBA) and Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) - Highest federal authorities for advisory and research on brownfields, sealing, land consumption, urban and environmental development

- Nature and environmental conservation associations - Non-governmental organizations (e.g. BUND, NABU) force initiatives against soil sealing and urban sprawl
- Agency for Environment and Geology of the Free State of Thuringia (Thüringer Landesanstalt für Umwelt und Geologie – TLUG)

4.4.4. Italy

- Province (agents of public security and judicial police) and Regional (ARPA inspector) works jointly for Environmental Protection
- Regional Agency for the Protection of the Environment - Regional Agencies for the Protection of the Environment are entitled to realize environmental controls , protection and prevention actions. They are public bodies with independent status for administrative, technical-juridical, asset management and accounting purposes.

5. Issues related to the urban GI and ES

5.1. Policy setting concerning GI

5.1.1. Poland

There is a hierarchical system of development strategies in Poland, differing in the time horizon and the degree of generality, consisting of documents drawn up on the basis of two acts: the Act on the Principles of Development Policy (Journal of Laws 2016, item 383) and Spatial Planning and Development Act (Journal of Laws 2016, item 778). At the national level, a long-term strategy is being developed - by 2030, the Spatial Development Concept, the mid-term strategy and 9 integrated strategies. The strategies in force are:

The concept of Spatial Development of the Country (KPZK 2030) (MP of 2012.252) is an act of the spatial policy of the state and as such is a spatial element of the Long Term National Development Strategy (DSRK), MP of 2013. 121. Provisions relating directly to green and blue infrastructure: ecological connectivity and coherence of the nature conservation area network, including the designation of ecological corridors at national level, and the interconnection between open space and urban areas are the content of objective 4 of spatial policy: Developing spatial structures supporting the achievement and preservation of Poland's high-quality natural environment and landscape; and maintaining high quality natural environment and landscape values of Poland. The KPZK 2030 monitoring indicators include, among others, the Farmland Bird Index (FBI) and the percentage of protected area in the Natura 2000 network and in large-area forms – National Parks, Landscape Parks and Protected Landscape Areas. Strategic monitoring indicators are available on the Central Statistical Office website (www.strateg.stat.gov.pl).

The Strategy for Responsible Development (SRD) is the basic development strategy (to 2030), adopted by the Council of Ministers on 14.02.2017. The main objective is to create conditions for increasing incomes of the inhabitants of Poland, while increasing cohesion in the social, economic, environmental and territorial spheres. The strategy treats environmental resources as an important part of development capital, requiring an active approach in the pursuit of the country's development goals. It takes into account the management of the development of the impact of anthropogenic factors on the environment, indicating the need for adaptation of production techniques and technologies and the operation of ecosystem sustainability. It also supports the adaptation of cities and agricultural areas to climate change through the development of green and blue infrastructure (able to absorb rainwater) in cities and their surroundings, indicating the need for spatial connectivity of open natural space to urban areas and changes in spatial management.

The Strategy for Energy Security and Environment (ESE) sets the objective of halting the decline of biodiversity and ensuring a good conservation status for as many species as possible and natural habitats To achieve this, it is essential to define, introduce and design a green infrastructure

system that encompasses rich mosaic landscape areas, and a high proportion of natural / semi-natural ecosystems, river valleys with floodplain areas, areas with high retention rates, and refugee biodiversity. The document emphasizes the importance of space ordering for the quality of life in cities, including the maintenance of their cultural and aesthetic qualities and the protection of cultural landscapes and historic buildings. It is particularly important to preserve green areas that not only serve as aeration for cities, but also for biological, health and recreational functions for urban residents, and increase the retention of precipitation water. One of the priorities of urban space management should be to protect green areas from being built.

Over the course of 2017, the existing development strategies were aligned with the SRD the Strategy of Responsible Development. The ESE strategy will be replaced by two documents: The 2030 National Environmental Policy and Energy Strategy/ State Energy Policy 2040

The Operational Programme Infrastructure and Environment 2014-2020 (Ministry of Economic Development) aims to support low carbon economy, environmental protection, adaptation to climate change, transport and energy security. The development of green infrastructure, including the increase in the capacity of land and water wildlife corridors, is included in the programme.

The Urban and Construction Code (KUB address the topic of GI by means of introducing the possibility of creating large scale land use standards concerning, for example, the ratio of GI in urban areas. In some Polish cities in recent years local urban standards have been set out specifying the requirements for the GI. One of such cities is Chorzów.

5.1.2. Slovakia

The responsibility for environmental matters lies with the Ministry of Environment or Regional Authorities. Local authorities are typically responsible for sectorial policies.

National conservation system of nature in Slovakia is based on species and area protection (Act. No. 543/2002 on Nature and Landscape Protection). The State Nature Conservancy of the Slovak Republic (SNC) is responsible for territorial, species and cave protection (CBD, 2009). The objective of the Nature and Landscape Protection Act is to 'support preservation of diverse living conditions and life forms on the Earth, to create conditions for sustainability, restoration and rational use of natural resources, preservation of natural heritage, characteristic landscape features and to reach and maintain ecological stability'. Five levels of nature protection are distinguished:

1) the whole area of Slovakia (unless designated as an especially protected area)- this represents the least strict level of protection;

2) Protected Landscape Areas;

3) National Parks;

4–5) Protected Sites, Nature Reserves, Natural monuments and Protected Landscape Elements - these generally cover areas of less than 1000 ha (with many exceptions) and represent the strictest level of protection. They are often located within National Parks or Protected Landscape Areas, representing their core zones (CBD, 2014).

The Territorial System of Ecological Stability in the Slovak Republic, approved in 1991, represents a type of ecological network and one of the approaches to building green infrastructure in Slovakia. According to Act No. 543/2002 on Nature and Landscape Protection, the Territorial System of Ecological Stability is a spatial structure of ecosystems related to each other that ensure a diversity of conditions and forms of life in the landscape. The main components of this system are 'bio-centres', 'bio-corridors' and 'interaction elements'. The Territorial System of Ecological Stability forms an obligatory basis for preparing Documents of Territorial Systems of Ecological Stability (at regional level) and all planning and project documents pertaining to spatial organisation and land use (at all levels). It is a tool for the regulation of landscape development and starting base for other sectors, especially nature conservation, spatial development, agriculture and forestry.

The National Biodiversity Strategy to 2020 set the goal of stopping the loss of biodiversity, ecosystems and the degradation of ecosystem services in the Slovak Republic by 2020 and

formulated steps required to achieve biodiversity and ecosystem services targets, such as integrating the concept of GI into spatial planning and economic and social development at the regional level; establish a legal and financial mechanism to support the construction and maintenance of GI; and map, assess and valuate ecosystem services.

Action Plan for the implementation of measures following the Updated National Biodiversity Strategy to 2020 (Slovak Republic, 2014), in particular goal no. 3: ensure the conservation and enhancement of ecosystems and their services through the establishment of green infrastructure and the restoration of at least 15 % of degraded ecosystems.

The Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change includes a few measures that can be considered GI, such as ensuring vegetation cover on vulnerable areas to prevent landslides, creating water retention areas, applying good agricultural practices to decelerate water runoff, strengthening natural regeneration of natural forests and their sustainable use, diversification of landscapes, and increasing landscape connectivity by means of GI (Ministry of Environment of the Slovak Republic, 2014).

5.1.3. Germany

Germany has many policies related to improving biodiversity, ecosystem services and the connection of habitats. GI is integrated into several policy areas, including also urban policy.

The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) is responsible for many policies relevant for Green Infrastructure. The Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN) is the scientific authority with respect to national and international nature conservation. The ministries for Environment of the 16 Länder are coordinated within the Conference of Environment Ministers (Umweltministerkonferenz).

The most important legal basis for nature conservation in Germany is the Federal Nature Conservation Act (BNatSchG), which includes, among other things, the transposition of European Nature Conservation Directives, in particular the Directive 92/43 /EEC) and the Directive 2009/147 / EC into national law. Also various other regulations across policy areas are of importance for GI. These include regulations on landscape planning, compensation for nature and landscape impacts, ecosystem defragmentation and connectivity, recreation in nature, as well as the participation of recognized nature conservation associations in relevant decision-making procedures. These federal regulations are then further supplemented by national regulations of the 16 states (Länder).

According to the division of powers under the German basic law (Grundgesetz), the implementation of nature protection related laws and regulations falls within the exclusive competence of the Länder with few exceptions. According to Article 83 of the Basic Law, this is the case when implementing the federal laws, such as the Federal Nature Conservation Act. This is based not least on practical considerations, as the state authorities can best assess the special circumstances on the ground. The nature conservation law (§§ 13 - 18 BNatSchG) regulates the handling of interventions in nature and landscape and thus pursues a comprehensive approach.

The landscape planning law (Landschaftsplanung, §§ 8-12 BnatSchG) was, like the intervention regulation (Eingriffsregelung), implemented in 1976 with the nature conservation law (Bundesnaturgesetz). It is the central planning instrument of nature conservation and landscape management and spatially defines the aims of nature and landscape conservation/management as the basis for acting in a precautionary way at local and regional levels. Requirements and measures to achieve these aims must be presented and justified, and should contribute to their implementation. The concrete objectives, requirements and measures that are formulated in landscape planning on the national, regional and local level are adressed to nature conservation administration, regional and land use planning authorities, specialist administrative departments, municipalities (also besides their responsibility for land use planning), associations and also indirectly to land users and citizens.

The content of landscape planning needs to be taken into account in all planning and administrative procedures whose decisions have an effect on nature and landscape. If it cannot

be taken into consideration, this must be justified. The analysis of the issues concerning conservation and development of species and biotopes is just an start point for assessing the functions and services of water bodies, soil, climate, landscape-related recreation, scenery and for developing measures for its sustainable development. It takes many regulating and cultural ecosystem services for humans into consideration. In this way, landscape planning can contribute to the establishment of GI.

The National Biodiversity Strategy (Nationale Strategie zur biologischen Vielfalt, 2007) is the basis for the protection and restoration of biodiversity and the integration of biodiversity and ecosystems into various sectors, among others building and infrastructure.

The Federal Biodiversity Programme (Bundesprogramm Biologische Vielfalt launched in 2011 supports the implementation of the National Strategy with projects that are particularly exemplary and benchmarking. Projects are assigned to four funding priorities: National responsibility species, biodiversity hotspots, ecosystem services, and other measures. Some of measures that are considered important are: creating more green spaces in the city and connecting ecosystems.

The Nature Conservation Initiative 2020 (Naturschutz-Offensive 2020, 2015) has the aim of improving and accelerating the implementation of the National Strategy for Biodiversity. Some actions and measures are directly oriented on increasing GI in cities. Concrete measures to reach these aims are: give room to the rivers to mitigate floods and to restore nature; to increase wilderness area; to interlink better urban development with landscape/green space planning; to support municipalities with the development of urban GI.

The importance of urban green infrastructure is outlined in “Green in Cities - for a liveable future” (Grünbuch Stadtgrün: “Grün in der Stadt – für eine lebenswerte Zukunft”, 2015). It discusses the multiple functions of urban GI, current challenges and perspectives and recommends action to be taken to improve GI in the German urban areas. The publication of the Grünbuch was the start of a longer process with which new integrated strategies for urban green were developed and implemented. In a ‘white book process for city green’ (Weißbuchprozess zum Stadtgrün), a wider dialogue was encouraged about the future status of green and open spaces in German cities. The Weißbuch Stadtgrün (2017) contains 10 action areas with concrete measures that the national government will support to strengthen urban green infrastructure. The implementation follows in consultation with Länder, municipalities, associations, civil society, scientific and practical experts and additional actors.

5.1.4. Italy

National Law 221/2015 “Environmental measures for promoting green economy and limiting the excessive use of natural resources” established the Italian Natural Capital Committee (INCC), the mandate of which is to provide arguments for consideration of the Natural Capital within public policy in Italy. The INCC published in February 2017 the 1st Report on the State of Natural Capital in Italy. The aim is to deliver environmental information and data expressed in both physical and monetary units, following the methodologies defined by the United Nations and the European Union, as well as ex ante and ex post assessment of the effects of public policies on Natural Capital and Ecosystem Services

In 2013, Italy adopted the National Law on the Development of Green Urban Areas(Law n. 10, 14.1.2013) aimed at promoting green areas for the provision of ecosystem services (air quality, hydrological risks, soil protection and cultural dimensions). The law identifies a set of measures including green urban planning and monitoring, support to local-level initiatives, safeguarding trees and tree lines as significant features for landscape, heritage, nature, history and culture (Italian Ministry for the Environment and the Protection of Land and Sea and Italian Botanical Society, 2016).

Law 10/2013 establishes, in Art. 3, the Committee for Green Public Development, which has to prepare a report to be forwarded to the Chambers by 30 May each year, with the results of the monitoring and the interventions necessary to ensure the full implementation of sectoral

legislation. Art. 3 also provides that the Committee should propose, in agreement with the Unified Conference, a National Green Plan. The Committee, in its function, is supported by Italian National Institute for Environmental Protection and Research (ISPRA) and the Ministry of the Environment as set out in the Ministerial Decree 18/02/2013. The Committee for Green Public Development has prepared, in collaboration with ANCI (National Association of Italian Municipalities) and ISPRA, guidelines for management of urban green areas and first indications for a sustainable planning that provides local governments with technical, scientific and socio-cultural orientation criteria, useful for planning, cultivation and management of public green.

Despite the heterogeneity of the urban planning tools in the different Italian regions, there are some sector tools that the municipal authority can adopt for the regulation of urban and peri-urban green systems. These include the Green Census and the Green Plan. Another important operating tool for planning, maintenance, protection and utilization of public green is the Green Regulation, which by 2015 was adopted in 52 Municipalities, mostly located in the Central-North Regions. Finally, the Green Plan – an urban planning instrument – identifies how to enhance and increase areas for urban green or recreational activities.

Several regions have established Regional Ecological Networks (Ministry for the Environment, Land and Sea, 2014) as more or less prescriptive tools in land planning. Similarly, several Provinces and municipalities adopted the Land Ecological Network model to promote sustainable development at the different administrative levels.

A comprehensive initiative for the implementation of both the EU Biodiversity and GI Strategies is carried out by the Italian Ministry for the Environment with the support of the Italian Botanical Society (SBI). This initiative represents important progress in terms of ecosystem mapping, assessment of ecosystem condition and restoration prioritisation, mapping and assessment of ecosystem services (for selected pilot case studies), and promotion of GI. Regarding the last point, which is specifically aimed at defining a framework for the development of GI according to the land ecological network approach, some pilot proposals have been developed for the metropolitan area of Rome.

5.2. Examples of implemented projects for GI

5.2.1. Poland

There are a number of projects at regional level financed from EU Funds and national funds: Regional Funds for Environmental Protection and Water Management (VFEPWM). They aim at supporting the restoration and conservation status of key populations and sites in Natura 2000, as well as other ecosystems. Actions focus on promoting ecological functions of existing infrastructure. Financial support includes several groups of tasks, in line with developing green infrastructure, among others:

- restoration of historic parks, often combined with restoring park ponds, implemented in urban and rural areas and restoring historic tree alleys;
- planting native species of trees along roads;
- management of green spaces in urban and rural areas through planting;
- broad, complex tasks co-funded from European funds and linking active protection measures with ecological education.

Functional elements of green infrastructure also included in many actions funded by the VFEPWM as regards projects involving flood protection and water retention, including urban areas.

Specific local projects:

- GI activities funded by the Regional Fund for Environmental Protection and Water Management in Gdańsk include: construction or renovation of urban parks, protection of water-dependent ecosystems and technical solutions for biodiversity, such as retaining ecological corridors, and adapting existing architectural and engineering solutions to the needs of species of specific flora and fauna and their habitats.

- The Silesian Park is a unique "green oasis" located in Chorzów, in the heart of the Upper Silesia agglomeration of several million people in the most industrialized region of the country. Located on the border of Siemianowice Śląskie, Chorzów, and Katowice, the Silesian Park takes up 620 hectares, of which 250 ha are forest areas, and 100 ha constitute nurtured park areas. For more than 20 years the Fund has been implementing measures based on strengthening biodiversity and raising environmental awareness of the region's residents.
- Functional elements of green infrastructure are also covered by many activities funded by the VFEPWM in Wrocław, in the Water Management section, which carries out projects involving natural flood protection through modernisation of flood embankment, restoration and embankment and riverbed reconstruction.

Cross-border and international

- The city of Łódź developed a Blue and Green Network, aiming to harmonise the functions of urban rivers while restoring the valley's potential for self-regulation and integrating planning and management of green and blue areas. This network was an outcome of the European Project SWITCH (2006-2011), which aimed to achieve more sustainable urban water management in the "City of the Future". The city was also involved in the Biodiversa-funded ENABLE project (2017-2019), which, among other objectives, aimed to identify and mainstream green and blue infrastructure solution designs for a European urban-rural context.
- The city of Poznań participates (2017-2022) in the Horizon 2020 project COproductioN with NaturE for City Transitioning, INnovation and Governance (CONNECTING) which aims to co-develop the policy and practices necessary to scale up urban resilience, innovation and governance via nature-based solutions. An open innovation ecosystem approach bringing together city governments, SMEs, academia and civic society is being used to co-produce usable and actionable knowledge in all cities.
- Wroclaw participates in the Horizon 2020 project Green Cities for Climate and Water Resilience, Sustainable Economic Growth, Healthy Citizens and Environments (GrowGreen) which aims to deliver systemic changes to the long-term planning, development, operation and management of seven cities through the use of nature-based solutions (NBS), in order to deliver quantified improvements in climate and water resilience, social, environmental and economic performance.

5.2.2. Slovakia

- The city of Bratislava is implementing several climate adaptation measures, such as a green roof of 1000 m^2 on a home for elderly people, and the planting of trees along two avenues to provide cool corridors. A new 1000 m2 park was realised in an area without green public spaces and it contains a variety of water retention measures. On the Námestie hraničiarov square of about 1 ha, the pavement was replaced by grass areas, trees and flower beds and a water capturing and irrigation systems ensures resilience to drought. In the Nové Mesto district, a former industrialised area, a former velodrome (about 3 ha) on a brownfield was transformed into a multifunctional leisure area and a new green space was created on a former chestnut plantation.
- Zvolen town proposed the project 'Biotechnological innovations to reuse rain water', which has been carried out by the town in cooperation with the Technical University in Zvolen in 2014 – 2017. The project was financed by the Financial Mechanism of the European Economic Area and the national government and consists of ecosystem-based adaptation to climate change. As part of the project, the city is building elements of green and blue infrastructure such as rain gardens, green walls and planting trees in the town area.

5.2.3. Germany

- In the Ruhr-area they are developing GI on regional scale. The multifunctionality of nature and its value is recognized and therefore needs to get priority over grey infrastructure. The

basis for the implementation of GI are 5 fields of action: 1) the urban landscape with the Emscher landscape park at the centre, 2) the water in the city with the transformation of the Emscher system as a backbone, 3) green city development with nature-based solutions in cities and neighbourhoods, 4) zero-emission transportation with the regional biking road network, 5) climate mitigation in combination with increased energy efficiency.

- The Emscher valley restoration project has been a successful and inspiring example of ecological restoration. Redirecting wastewater to treatment plants through a new subsurface sewer system has helped re-naturalise the surface hydrology of the Emscher catchment and its tributaries, converting many former industrial sites to green spaces in the process. The Emscher development has given rise to over one thousand jobs and has provided the focal point for the economic and social renewal of the entire region.
- Leipzig has implemented a series of interventions, which cumulatively comprise its green infrastructure approach. Examples of projects include the creation of green corridors, the "Green Ring", the "Parthe Floodplain" and investments in developing parks and converting derelict areas into green urban spaces.
- The city of Ludwigsburg participates in the Horizon 2020 project URBAN GreenUP which aims to obtain a tailored methodology to support the co-development of Renaturing Urban Plans focused on climate change mitigation and adaptation and efficient water management, and to assist in the effective implementation of Nature-Based Solutions.

5.2.4. Italy

- "Corona Verde" (Green Crown) is a strategic project implemented in the metropolitan and surrounding (hilly) area of Turin, involving 93 municipalities. It was launched by the Piemonte Region and the "Politecnico di Torino" University. The project aimed to set up a Green Infrastructure that integrates the "Corona di Delitie" (Crown of Delights), a system of royal residences from the sixteenth and seventeenth century spread out across the city of Turin, with the city's green belt including metropolitan parks, rivers and rural areas. The project covers an area of 164,883 ha and includes 1,865 ha of special protected areas; EUR 13,147,665 was invested by different parties including the EU. The "Corona Verde" has the objective of providing – in a cost-effective manner - the metropolitan area of Turin with many social, environmental and economic benefits for the city and its population such as protection against soil erosion, reduction of adverse impacts of grey infrastructure projects, enhancement of tourism and, in particular, reduction of pollution since Italian cities are among the most polluted in Europe. The latter is achieved by newly planted trees.
- The tree database of Padua: The city of Padua has been collecting information on street trees since 1999. Since 2013, data collection also includes trees that grow inside public green areas (urban parks and gardens). Data are collected on the ground by trained and experienced surveyors using mobile devices and paper forms, and all records are checked for accuracy. Each tree is spatially identified and fully characterised by data on size, health status and maintenance operations needed. This information has many potential applications related to MAES and urban management. Using information about ecological traits (species specific data such as tree height and stem diameter) is a commonly used method for mapping ecosystem services. This information combined with the size of every tree species population delivers sound estimates for services such as air quality regulation and micro-climate regulation. The data are also very useful for validating models based on land cover and land use alone and thus help reduce uncertainty (European Commission, 2016).
- The city of Mantova participates in the Horizon 2020 project URBAN GreenUP which aims to obtain a tailored methodology to support the co-development of Renaturing Urban Plans focused on climate change mitigation and adaptation and efficient water management, and to assist in the effective implementation of Nature-Based Solutions.
- Genoa participates in the Horizon 2020 project Urban Nature Labs (UNaLab) which aims to develop a robust evidence base and European framework of innovative, replicable, and

locally-attuned nature-based solutions (NBS) to enhance the climate and water resilience of cities. UNaLab focuses on urban ecological water management, accompanied by greening measures and innovative and inclusive urban design.
- Modena participates in the Horizon 2020 project Green Cities for Climate and Water Resilience, Sustainable Economic Growth, Healthy Citizens and Environments (GrowGreen) which aims to deliver systemic changes to the long-term planning, development, operation and management of seven cities through the use of nature-based solutions (NBS), in order to deliver quantified improvements in climate and water resilience, social, environmental and economic performance.
- Examples of best practices on urban green (available from GELSO, the database of environmental best practices of ISPRA, http://www.sinanet.isprambiente.it/gelso/banca-dati#b_start=0) that constitute recovery works and environmental requalification: the public park of "Norma Parenti" (Massa Marittima), Park Fratelli Michelin (Municipality of Trento) Park of Santa Teresa (Municipality of Verona), Park San Lorenzo (Municipality of Pegognaga), Requalification of a green roof area (Municipality of La Spezia).

5.3. Mainstreaming GI

5.3.1. Poland

Examples of urban policies

- The Municipal Management and Environmental Protection Policy of the City of Lodz 2020+ and the Masterplan focus on preserving the natural system of the city and suggest that “to protect biodiversity, the city preserves relics of natural ecosystems and prevents further urbanization in areas which provide important ecological functions”. These relics and areas have been indicated in the Masterplan as well as in the concept of the Blue-Green Network. Identifying an area or an object as a relic translates into its formal protection. The main focus of the Blue-Green Network is on green and blue areas as a key factor influencing quality of life in the city, e.g. by improving the micro-climate and providing public space for recreation. However, this concept is only loosely integrated into urban planning. The Masterplan also refers to the Green Circle of Tradition and Culture (GCTC), which consists of green spaces being shaped by cultural processes such as palace gardens, rivers used in a specific way, or cemeteries that are considered as a type of cultural heritage to be protected. A main theme is also connected to water and sewage management to retain stormwater and restore water courses (Greensurge, 2015).
- Each year the Voivodship Fund for Environmental Protection and Water Management in Krakow co-finances the furnishing of green areas, maintenance of historic parks and gardens, as well as natural monuments. Most of this assistance is provided to local government authorities, parishes, schools and universities, hospitals.
- The Fund Voivodship Fund for Environmental Protection and Water Management in Łódź co-financed activities aiming at enlarging green areas. These funds were intended for planting new trees, bushes, and other plants, to improve the usable and aesthetic values of green areas managed by the Beneficiaries.

Spatial planning

- The Land Use Planning and Development Act (DZ.U.2016.778) requires that environmental requirements, including water management and protection of agricultural and forestry land and landscape requirements, are taken into account as a basis for spatial order and sustainable development. According to art. 72 of the Environmental Protection Act, the substantive basis of these actions are the relevant substantive laws and their implementing regulations – e.g the Nature Conservation Act, and at the level of local and regional planning eco-physiological development. The content of these publications is governed by the Ordinance of the Minister of the Environment (Dz.U.2002.155.1298). The boundaries of existing areas of nature

conservation as defined in the Nature Conservation Act are the reference layer for land use planning.

- The national level (NSAC 2030) introduces general guidelines which are passed on to the regional level and government administration. The form of transferring content to the local level is addressed to the municipal boundaries, which are part of the spatial development plans of the voivodships. All voivodships have current spatial development plans that include green and blue infrastructure - both existing and planned. Likewise, the coverage of the conditions and directions of the spatial development of the municipality is presented.
- At the local level, two planning documents are produced: a study and a local spatial development plan, which is an act of local law. The study defines the areas and principles of environmental protection and its resources, the protection of nature, landscape, including cultural landscape and spas. The special form of the municipality study is a framework study on the conditions and directions of spatial planning of the metropolitan union, which expresses the definition of transregional and regional ecological corridors relevant for the whole metropolitan area. Environmental protection, nature and landscape protection, including the minimum percentage of biologically active area in relation to the area of the building parcel, are defined in the surface of building plots.
- At the regional level there are regional spatial planning offices. The national level introduces general guidelines which are then passed on to the regional and local level. Eventually the municipal local level is responsible and autonomous in its spatial planning policies.
- Before preparing land-use plans, so called “physiographic studies” which describe natural conditions are to be prepared in accordance with strategic environmental assessment procedures. The same procedure is used for local spatial development plans and spatial development plans of voivodships.
- Legal instruments still need to be harmonised with integrating spatial planning processes; these are currently limited as local plans are carried out for distinct projects, but spatial planning is not coordinated across a district or county area.

Water management

- The National and Voivodship Funds financially supports activities related to enabling and restoring retention capacity of water reservoirs and restoring aquatic ecosystems, including urban areas. For example, several projects have been implemented in the last years in the city of Łódź.

Education, sport and culture

The National Fund for Environmental Protection and Water Management, in the framework of ecological education, implements a priority programme which aims to strengthen the activities of local communities for sustainable development. Funding for local green initiatives can be financed under the following key areas that are directly linked to green infrastructure:

- active protection of ecosystems and their habitats and species;
- counteracting the disappearance of pollinating insects;
- ex situ conservation of endangered species;
- limiting the human impact from the development of tourism through the construction and modernization of small tourist / educational infrastructure;
- rebuilding the population of endangered and valuable tree species, preserving and maintaining valuable roadside paths;
- setting up, restoration, maintenance of stands - tree bushes and bushes;
- establishment, maintenance and management of small water reservoirs;
- development, restoration and maintenance of gardens, urban parks, natural forests;
- flood prevention activities - counteracting local floods, supporting small water retention.

5.3.2. Slovakia

Slovakian GI resources have been systematically managed in several thematic areas, but not always related to urban spaces. They relate to the NATURA 2000 network, sustainable forestry, and transport policy. Water management projects supported by the Ministry of Environment, such as restoration of water courses, bank vegetation and functionality of wetlands (e.g. flood protection) may be of greater importance for GI in urban space.

The importance of GI has been reflected in the spatial planning system since 2014. One objective of the biodiversity strategy is to integrate GI into spatial planning in the form of a "spatial system of ecological stability", to ensure better functional linking of ecosystems and securing ecosystem functions and value for humans (including job creation and support for development).

5.3.3. Germany

Spatial planning

Since 2016 new models and action strategies for spatial planning are under implementation in Germany The models and action strategies are committed to the guiding principle of sustainable spatial development, which reconciles social and economic claims on space with ecological functions. For this purpose, connections shall be made between large-scale open spaces for the expansion of the ecological network, flood protection and recreation. Also, contributions to the defragmentation program and the national concept of green infrastructure shall be made. These models are to be taken into account when drawing up land use plans at Landes and regional level.

Urban development

The National Urban Development Policy (Nationale Stadtentwicklungspolitik) is a common initiative of the Federal government, Länder and Municipalities and translates the Leipzig Charter on Sustainable European Cities to German policy since 2007. According to the National Urban Development Policy (2015), there are three pillars of 'Green urbanism'; energy and materials, water and biodiversity, and urban planning and transport, although the focus is mostly on energy and resource efficiency. Increasing vegetation, especially in densely populated neighbourhoods, is seen as an opportunity to improve quality of life. Not only open spaces should be used for vegetation, but also next to streets, on roofs and walls, and to connect leisure areas. The creation of water retention basins and reduction of sealed soil are seen as important measures for adapting the city to climate change.

In 2015, the 'green book' "Green in Cities - for a liveable future" was published which acknowledges the many functions of nature (health, well-being, climate adaptation and risk reduction, environmental conditions, biodiversity, social, cultural and educational functions, production of food and resources) in different forms and shapes (from natural areas to green roofs, as separate building blocks or connected), hereby fully integrating GI into urban policy

5.3.4. Italy

Urban policy

The national law on the development of green urban areas (Law no. 10, 14.1.2013) aims to promote green areas for the delivery of ecosystem services .

Tourism and leisure

In the context of the Strategic Plan for development of tourism (2017-2022), Italy is promoting a slow mobility network through the realization of projects aimed to equip the country system with a "Greenways" intermodal infrastructure. In a wider context, Italy is promoting a "Sweet Mobility Network" through the recovery and reuse of infrastructures such as: disused railways, rural roads or plain and mountain trails.

5.4. Financing GI

5.4.1. Poland

- The National Fund for Environmental Protection and Water Management (and similar voivodship funds) and the EU LIFE Programme provide financial contributions for implementation of green infrastructure projects.
- The National Fund for Environmental Protection and Water Management is also implementing projects supported under the Operational Programme Infrastructure and Environment, such as measure 2.5 "Taking action to improve the urban environment". As part of this measure, projects are supported that aim to halt the decline of green areas in cities, which is achieved by increasing the surface area of green spaces in urban areas (including parks, lawns, and green estate) or regeneration of degraded greenery.
- The National Fund for Environmental Protection and Water Management (NFEP&WM) ensures absorption of foreign funds allocated for environmental protection, for example, from the Cohesion Fund, the European Regional Development Fund, the LIFE Programme, the Norwegian Financial Mechanism and the European Economic Area Financial Mechanism. It also supports activities undertaken by the Minister for the Environment in fulfilling Polish obligations under, for example, the Climate Convention, the Convention on Biological Diversity, or the NATURA 2000 programme.
- The National Fund, in addition to the specific conservation measures implemented to protect biodiversity, also finances educational activities aimed at raising public awareness. Many activities are carried out at the local level due to the high effectiveness of direct involvement of the local communities in protective actions.

5.4.2. Slovakia

There are no separate financial mechanisms specifically for the preservation and development of green infrastructure. Certain GI elements such as protected areas and Natura 2000 sites are financed by the state budget and/or regional authorities' budget complemented largely by various EU sources, most importantly by the European Agricultural Fund for Rural Development (EARDF) and Operational Programmes. Project funding usually covers only restoration/designation costs, but not maintenance. Designation, management and maintenance of urban green spaces or locally relevant sites (e.g. parks, tree lanes, etc.) are covered from the local authorities' budgets, while the maintenance and management of artificial or semi-natural assets, such as ecoducts or fish-passes, are often covered by the owner of the assets (e.g. railway/roadway managers and water plant owner).
The programming period 2014-2020 provides for support to green measures, through:

- Operational Programme Quality of the Environment (2014 – 2020) Primary Axis 1: Conservation and Restoration of Biodiversity and Soil and Support for Ecosystem Services including through Natura 2000 and Green Infrastructure; Priority Axis 2: Adaptation to Climate change with focus on flood protection.
- Integrated Regional Operational Programme - Regional Integrated Strategies (2014-2020), especially Regionally Integrated Territorial Strategies and Sustainable Urban Development.
- Interreg V-A Cross-border Coopeeration Programmes (SK-CZ, PL- SK, SK-HU, SK-AT).

5.4.3. Germany

Since 2017 the German government is implementing a program "Future of city green" (Zukunft Stadtgrün) as part of its urban development assistance program. The urban development assistance program is one of the most important instruments for the financing of sustainable urban development in Germany. Besides the specific city green program within the urban development assistance program, there are also options to finance green infrastructure measures within the

existing programs such as ‘Soziale Stadt’ and ‘Stadtumbau’. The financial support for municipalities within the program are intended to promote urban green infrastructure through the installation, refurbishment or improvement and connecting publicly accessible green and open spaces within the framework of the structural preservation and development of neighbourhoods. In this way, liveable and healthy cities shall be developed, which leads to better living conditions, increased participation, improved city climate and environmental justice by a fair distribution of high quality city green, as well as preservation of biodiversity and enhanced nature experience.

5.4.4. Italy

Several regions use ERDF and EAFRD funding to increase green infrastructure and wildlife corridors. Some regions are allocating own funds for supporting GI planning and implementation.

5.5. Assessing, maintaining and restoring ecosystems and their services

5.5.1. Poland

In 2015, the Ministry of Environment completed the mapping and assessment of ecosystems and their services (MAES) process8 and mapping and assessment of urban ecosystems. An ecosystem services approach in environment management was adopted in 2018, but the extent to which MAES has been integrated into national policies remains largely undocumented. Methods for ES economic accounting have not yet been developed in Poland.

Green infrastructure projects in Poland benefit from various sources of finance, including EU, national and regional funds. However, Further efforts are needed to deploy green and blue infrastructure and mainstreaming it in other policies consistent with the framework for mapping and assessment of ecosystems and their services (MAES).

5.5.2. Slovakia

According to the assessment updated every 6 months by the ESMERALDA EU project, Slovakia has been making significant progress in MAES implementation. In 2019 work was completed on detailed map of Slovakia’s ecosystems which identifies individual ecosystems and their spatial distribution, status, and selected properties . It is a good base for assessment of ecosystem services, however, methods for ES economic accounting have not yet been developed in Slovakia.

Slovakia has a range of policies and strategies in place to develop and improve green infrastructure. The Act on Nature and Landscape Protection defines a coherent European network of protected areas and sets conditions for the management and protection of these areas. It sets out that the Territorial System of Ecological Stability (TSES) is a spatial structure of interrelated ecosystems that ensure diverse conditions and life forms in the landscape. Under this system, documents must be prepared at regional level. The Slovak Environment Agency has developed 22 of these documents in addition to methodological guidance for regional TSES development. The national biodiversity strategy to 2020 and related action plan set green infrastructure-related objectives. However, with the significant delay in the adoption of the Natura2000 management plans, the impact of other tools — despite benefiting green infrastructure — is marginal as they have no formal status for actual landscape management. There are no specific financial tools to preserve and develop green infrastructure. Certain green infrastructure elements, such as protected areas and Natura 2000 sites, are financed through the state budget and/or the budgets of regional authorities and complemented by various EU funds.

5.5.3. Germany

According to the assessment updated every 6 months by the ESMERALDA EU project, Germany has been making regular progress for several years and is one of the leading European countries in implementing MAES.

In Germany, green infrastructure (GI) is implemented through the Federal Nature Conservation Act (Bundesnaturschutzgesetz), which regulates the national ecological network, and other strategies and programmes in sectors such as landscape planning. The national GI strategy (Bundeskonzept Grüne Infrastruktur (BKGI)), adopted in 2017, takes a spatial, integrated approach that helps to incorporate existing nature conservation and landscape management practice and models into national planning processes, such as floodplain development, national road planning, defragmentation and expansion of ecological networks.

GI is integrated in several policy areas – mainly flood protection, urban policy and (to a lesser degree) agriculture. Funding for GI comes from the EU, but also from the Federal Government, the Länder, municipalities and the private sector.

5.5.4. Italy

According to the assessment updated every 6 months by the ESMERALDA EU project, Italy completed its 'biophysical evaluation', which resulted in a map of Italy's ecosystems, and is currently conducting an assessment of its ecosystem services. An initial framework on economic accounting was elaborated for some ecosystem services in Italy, including crop pollination, recreational services, and water purification, carbon sequestration. Attention has also been dedicated to ex-ante and ex-post evaluations of the impact of public policies on the natural capital

The 2013 national law on the development of green urban areas aims to promote green areas for providing ecosystem services (air quality, reduction of hydrological risks, soil protection and culture). The law identifies a set of measures to accomplish this. These measures include green urban planning and monitoring; support to local level initiatives. The 2014 Charter of Rome on Natural and Cultural Capital highlighted the importance of green infrastructure for the green economy and for its natural, cultural, social and economic benefits. In 2017, the Italian Natural Capital Committee published the first report on the state of natural capital in Italy. This first report collected information on the conservation status of water, soil, air, biodiversity and ecosystems. It also contained a map of ecosystems and an assessment of their conservation status to serve as the first step in identifying restoration priorities to restore, maintain and improve ecosystem services.

In some regions ecological network policies are being developed at regional level and municipal level which regulate spatial planning at various degrees. Various Italian cities participate in Horizon 2020 projects. For example, Mantova is part of the URBAN GreenUP project, which aims to support the co-development of 'renaturing' urban plans. These plans focus on climate-change mitigation and adaptation; efficient water management; and the implementation of nature-based solutions.

6. Increasing urban sustainability and strengthening environmental governance

6.1.Efforts for increasing urban sustainability

6.1.1. Poland

Poland has assigned EUR 8.963 billion of its allocation under the ERDF (2014-2020) and EUR 14.832 billion of its allocation under the Cohesion Fund (2014-2020) to sustainable urban development. Successful projects in greener cities have also received funding under the Horizon

2020 programme. For example, the Grow Green international project, with the city of Wrocław as a front-runner, aims to make cities climate- and water-resilient, healthy and liveable, by investing in nature-based solutions.

Poland participates in the European Urban Development Network (UDN), which includes more than 500 cities across the EU responsible for implementing integrated actions based on sustainable urban development strategies. Within the UDN initiatives, the ERDF is supporting urban innovative actions (UIA) as a way of testing new and unproven solutions to address urban challenges. The UIA has a total ERDF budget of EUR 372 million for 2014-20. Poland has not obtained actions in the first two calls for projects.

6.1.2. Slovakia

Slovak municipalities are generally less involved in EU initiatives than municipalities in other EU countries. With the exception of Zilina city's involvement in the CIVITAS network and Hnusta city's involvement in the 'ReNewTown' network, Slovak cities' involvement in EU urban networks is low.

In 2018 Slovakia Slovakia updated its urban development strategy (the new name is "The Urban Development Policy of the Slovak Republic by 2030"), which is consistent with the Urban Agenda for the EU.

6.1.3. Germany

Germany has assigned about EUR 885 million, from the ERDF (2014-2020) excluding technical assistance, to sustainable urban development .

Germany participates in the European Urban Development Network, which consists of more than 500 cities across the EU implementing integrated actions in 2014-2020 on the basis of ERDF-financed sustainable urban development strategies. German municipalities are generally involved in EU initiatives on environment protection and climate change. German cities are also actively involved in initiatives such as Eurocities and (more than 70 German Cities) the EU Covenant of Mayors.

More than 30 municipalities take part in the URBACT initiative to support sustainable urban development, through various thematic networks.

Several Horizon 2020 network projects have contributed to the sustainability of cities. The Civitas initiative brings together nine German municipalities in a common effort to achieve cleaner and better transport in cities.

6.1.4. Italy

Italy has allocated 5 % of its ERDF budget for 2014-2020 to sustainable urban development. It also has a national ERDF operation programme dedicated to metropolitan cities for the period 2014-2020. In addition, Italy participates in the Urban Development Network. Italian cities are involved in 26 thematic networks dealing with urban issues through the ERDF-supported URBACT initiative to promote sustainable urban development. Italian cities are coordinating various URBACT networks; for example, San Donà di Piave is coordinating the 'CityCentreDoctor' network to revitalise city centres; Turin is coordinating the 'Building Healthy Communities' network; Venice is leading the 'MILE' network for regions seeking to promote economic change.

6.2. Public participation

6.2.1. Poland

In Poland, public participation is regulated mainly by the Act of 3 October 2008 on access to information about the environment and its protection and public participation in environmental protection and environmental impact assessments.

Although there are individual examples of efforts to encourage public participation, but no information was available on a central information portal about any initiatives to support or encourage public participation across policy areas or in the environmental field.

6.2.2. Slovakia

In Slovakia, public participation is mainly regulated through Act no. 24/2006 Coll. on Environmental Impact Assessment and through Act No. 39/2013 Coll. On Integrated Prevention and Control of Environmental Pollution. A Methodological Guidance of the Ministry of the Environment covering both the EIA and the SEA process was issued in 2017. The guidance includes a description on the roles of different actors in the EIA process, including the role of the public.

There is little to no information on how Slovakia ensures public participation in practice in the decision making procedures and whether it covers all environmental policies.

6.2.3. Germany

In Germany, a number of cross-cutting and sector-specific laws regulate public participation. The Öffentlichkeitsbeteiligungsgesetz aligned several pieces of legislation so as to streamline the provisions. Federal and Land-level administrative procedure acts (VwVfGs) complement the legal framework by requiring public authorities to advise parties to proceedings and inform them, inter alia, of their rights and obligations.

Informal consultation mechanisms have been tested for some years in various areas of environmental policymaking and new forms of early public participation are currently being tested, i.e in the area of project planning and implementation processes.

In 2017, the Federal Government launched its first support programme for urban development – Zukunft Stadtgrün ('green urban future'). The programme is one of the most important instruments for the financing of sustainable urban development in Germany. The 10 fields for action cover a variety of measures to make German cities greener and help to implement the UN SDGs. In addition, there are options to finance GI measures under existing programmes such as Soziale Stadt96 and Stadtumbau.

6.2.4. Italy

In Italy, public participation is regulated by general provisions (law on administrative proceedings, n. 241/1990), and also by sectoral environmental ones which include stronger rules on public participation as compared to the general ones. The Italian Environmental Code includes provisions in relation to environmental assessments (EIA/SEA) and industrial permits.

The Italian government and local authorities, normally, do not use procedures other than those required by law to involve the local population interested in environmental issues. In exceptional cases, due to the strong popular protests, an Observatory has been set up that mainly involves local authorities and only indirectly the affected populations.

6.3. Challenges concerning environmental governance

6.3.1. Poland

Centralised governance of information is weak, owing to limited access, the existence of different portals and difficulties with managing environmental information. The environmental information that is publicly available is fragmented and distributed among different databases, and there seems to be no single unified environmental portal. Individual portals provide information on specific topics. One example is the air quality portal,150 another the GIOSInspire Geoportal.

There is room for improvement as regards Poland's performance in the implementing the INSPIRE Directive on infrastructure for spatial information in Europe. The accessibility of spatial

data through view and download services is poor, although in recent years data sharing and reuse, data identification and the documentation of data have made good progress and show good implementation levels. Further efforts are needed to make data accessible through services and to prioritise environmental datasets in implementation, especially those identified as spatial datasets of high value in implementing environmental legislation.

Poland needs to strengthen environmental governance. Institutional changes that could weaken implementation and enforcement of environmental legislation should be avoided. Access to information and judicial review is needed for environmental NGOs in cases such as those covered by the Aarhus Convention.

6.3.2. Slovakia

Information governance in Slovakia is a mixed picture, although most of the main policy areas are accessible from the national web portal on the environment which links to the other specialised environmental information systems' portals. Slovakia's implementation of the INSPIRE Directive leaves room for improvement. The accessibility of spatial data through view and download services is poor, however, Slovakia has made good progress in data identification and documentation. Additional efforts are needed to make the data accessible through services and to improve the conditions for data reuse. Slovakia also needs to make additional efforts to prioritise environmental datasets in the implementation of environmental legislation. In particular, it needs to prioritise data sets identified as high-value spatial data sets.

Although citizens became more vocal in raising environmental problems, stronger environmental governance through transparent and efficient development consent and Strategic/Environmental Impact Assessment (SEA/EIA) processes are needed to balance the different interests and needs.

6.3.3. Germany

There are two main central websites in Germany for accessing environmental information: the website of the Ministry of the Environment (BMU) and the national geoportal. Information on legislation is easily accessible and all geodata are available on the geoportal, for monitoring and historical datasets; in some cases, similar Land-level websites need to be consulted to get a complete picture. That it is spread over many different sites, however, all sites are completely available in English, and are in a clear, user-friendly format. These main portals are very comprehensive on all types of environmental information.

Germany has been making regular progress in implementing the INSPIRE Directive, concerning levels for coordination, dataset identification and data documentation. Additional efforts are needed to improve data access through services, streamline the conditions for data reuse and prioritise environmental datasets in implementation, in particular highvalue- spatial datasets for the implementation of environmental legislation

Germany can further improve its overall environmental governance (such as transparency, citizen engagement, compliance and enforcement, further streamlining as well as on e-government).

6.3.4. Italy

Italy has a main National Environmental Information System portal that carries out all the information functions of the national node of the SINAnet network. The information is generally easily obtained through the national environmental portal and is adequately disseminated. Generally there are links to European legal base documents and also links to national policies and programs related to the main environmental domains. The system is generally centralized, with links to related environmental portals with some limitations on search functionalities.

Italy's performance on the implementation of the INSPIRE Directive leaves room for improvement. The accessibility of spatial data through view and download services is poor,

however, good progress and implementation levels exist for data identification and documentation of data. Additional efforts are needed to improve data sharing and reuse, making the data accessible through services and to prioritise environmental datasets in the implementation in particular those identified as high-value spatial data sets for the implementation of environmental. There are several hundred different conditions applying to the access and use and different applicable limitations on public access documented in metadata published by Italy.

The Ministry of Environment maintains a public database (the Portal for Environmental Assessments), which has detailed information on projects requiring EIAs and SEAs (environmental impact assessments and strategic environmental assessments). The database contains technical background and documentation, which allows the public to analyse the projects in detail. The portal is accessible in English and Italian and is recognised as an example of EU best practice. However, with the exception of a few regions (Emilia-Romagna, Lombardy), user-friendly databases of this type are not widespread at the regional level for EIA and SEA procedures.

Italy can further improve its overall environmental governance (such as transparency, citizens engagement, compliance and enforcement, as well as administrative capacity and coordination). Continuation is also needed to address the fragmented implementation of environmental policy at regional and local levels by developing better national-level coordination mechanisms for the environment.

7. Knowledge base for GI and ES

7.1. Poland

The General Director of Environmental Protection runs an interactive map of Geoserwis, (geoserwis.gdos.gov.pl) where spatial data is presented including forms of nature conservation in Poland. Within Geoserwis, two services have been created by open standards Open Geospatial Consortium in accordance with Directive 2007/2/EC

- browsing service WMS: http://sdi.gdos.gov.pl/wms
- download service WFS: http://sdi.gdos.gov.pl/wfs

These services are compatible with most GIS systems such as ESRI ArcGIS or QGIS.
The Environmental Law Act, consolidated text: Dz.U.2019.1396, (2001) introduced the obligation to develop eco-physiographic studies in order to provide the conditions for maintaining the natural balance and rational management of environmental resources.

Poznan was one of the cities participating in the EnRoute project (2017-2018) (Enhancing Resilience Of Urban Ecosystems through Green Infrastructure) in the framework of MAES. The project aimed to introduce the MAES approach into the local policy arena, connecting the governance levels horizontally and vertically, with a view to contribute to the further deployment of GI in cities and in urban contexts.

7.2. Slovakia

The Slovak Environment Agency produced “Methodological guide for Regional Territorial system of Ecological Stability Development” (Slovak Environment Agency, 2014): http://www.sazp.sk/public/index/go.php?id=2583

Project APVV-0591-07 ‘Waste Lands and Abandoning of Landscape in Slovakia’ – the project focused on the management of abandoned agricultural landscapes and “white areas” using elements of GI.

In 2016, the National Indicator Set of Biodiversity State and Protection (ISOB) has been updated and evaluated based on the Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011 – 2020, the EU Biodiversity Strategy to 2020, as well as the objectives and measures of the Updated National Biodiversity Strategy by 2020. The ISOB consists of 64 indicators directly or indirectly

related to biodiversity issues, including indicators related to GI. The set of indicators is updated continuously and its evaluation is every 5 years.

7.3. Germany

Within the scope of the National Green Infrastructure Concept (BKGI), existing technical concepts of nature conservation at the federal level were processed in an integral way, such as protected areas, flood plain development, the national ecological network and defragmentation. The resulting important GIS data on green infrastructure in Germany were made available for third parties. Data and information on natural resources was already available on different levels, but it was difficult to combine data from different sources for different actors. With the BKGI the data is arranged in a more efficient way and can be used more easily by users for various tasks.

The Federal Agency for Nature Conservation funded extensive research on habitat corridors in Germany from 2012-2020, providing the scientific basis for the Federal Defragmentation Programme. Four indicative maps were compiled: the dry biotope habitat network, the wet biotope habitat network, the habitat network of valuable forest biotopes and the corridor system for larger mammals. Combined, these four maps represent the network of habitat corridors in Germany.

Germany is currently in the process of assessing national ecosystem services, covering several ecosystems ranging from forest to coastal areas, urban areas, grassland, etc., across the whole country from lowland to mountain areas. Link to the work on "Mapping and Assessment of Ecosystems and their Services": MAES-related developments in Germany.

The research and implementation project WiNat investigated how the ‘naturalness’ of national natural heritage sites and Natural Forests Reserves can be measured and how the development towards naturalness can be shaped efficiently.

Leipzig was one of the cities participating in the EnRoute project (Enhancing Resilience Of Urban Ecosystems through Green Infrastructure) (2017-2018) by MAES. The project aimed to introduce the MAES approach into the local policy arena, connecting the governance levels horizontally and vertically, with a view to contribute to the further deployment of GI in cities and in urban contexts.

7.4. Italy

Padova, Rome, Trento and Verona participated (2017-20018) in the EnRoute project (Enhancing Resilience Of Urban Ecosystems through Green Infrastructure) implemented in the framework of EU MAES, which runs from 2017 until 2018. The project aimed to introduce the MAES approach into the local policy arena, connecting the governance levels horizontally and vertically, with a view to contribute to the further deployment of GI in cities and in urban contexts

8. FINAL REMARKS

This review provides structured, key information about national and regional conditions for regional and local strategies of integrated environmental management of small green spots, as well as for UEA Action Plans in the four FUAs covered by the SALUTE4CE project. Conditions for each of the four regions, in particular formal, legal, planning, organizational and information conditions for spatial management, for the implementation of environmental policy and for the management of urbanized areas in individual countries and regions. In this document, a lot of space is devoted to Green Infrastructure (GI) and to those aspects of urban space management that are dedicated to GI and related ES.

Relations between the local, regional and national level of environmental or space management are shaped differently in individual SALUTE4CE countries. Cities and FUAs in individual countries

are also at various stages of implementing the principles of sustainable development and spatial order. There are also differences in the state-of-the-art in planning, arranging and managing urban GI, and in methods for measuring and strengthening ES potential in cities. The scope of using digital data in shaping spatial and ecological order in urbanised areas of particular SALUTE4CE countries is also different.

Understanding interregional similarities and differences in conditions for the implementation of integrated management of small green spots, as well as for the implementation of UEA Action Plans in individual FUAs will facilitate mutual learning. It will also help to understand the nature of barriers and restrictions for management strategies and Action Plans in individual FUAs, and thus - avoid planning errors. The comparative material can also be a good source of inspiration for such solutions that will allow you to effectively implement strategies and Action Plans despite all restrictions existing in a given FUA.

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