

Methodology for Mainstreaming Climate Change Considerations into Spatial Planning in North Macedonia

REPORT 1: Comparative Study:
Best Practices and Cases Studies
for mainstreaming Climate Change
considerations into Spatial Planning

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RECOMMENDED TASKS FOR CONCERNED PLANNING DEPARTMENTS/AGENCIES¹

This report is intended to inform and examine possible successful strategies that can be adapted into the new methodology that can mainstream climate change considerations into spatial planning. Also, this report (**Report 1. Comparative Study of Best Practices and Case**); should be seen as a call towards creating a repository of best practices, case study references and data to help evolve climate sensitive spatial plans. The following are recommendations to establish such a data and information repository. This will bring together multiple sources of data and information into one place. Identifying data gaps and need for updation of data will also be easier through this platform.

TASK 1: Creating and running a centralised data and information repository which is accessible to all decision makers, planners, concerned personnels and citizens

	RECOMMEDED SUB-TASKS	RESPONSIBILITY
T 1	Create a repository of curated Best Practice references: Guidelines, Toolkits, Technical Documents or papers/articles which mainstream Climate Change considerations into Spatial Planning	MoEPP, and Agency for Spatial Planning
	1) Identify all data and information sources in relation to planning, natural systems and climate change (from government, research institutions, and organisation (national, international etc.)) as well as its accessible links. Make an exhaustive list along with its accessible links organised	
	2) Identify and enlist all the sectoral and intersectional ministries, departments and government agencies	
	3) Identify and enlist all non-governmental organisations and institutions working in the field of environment, land, transport, energy, resources, etc that may have any implication in development planning in North Macedonia	
	4) Identify an appropriate hosting platform: The repository can be hosted in an open web-based or intra-net based platform that can be accessed by all departments	
T 2	Develop a data, information and reference management and organisation format for the proposed repository	MoEPP, and Agency for Spatial Planning

¹ These are tasks that can be taken up without delay as these are critical in the process of establishing infrastructure for Spatial Planning.

T 3	Adopt a Data and Information Repository Management mechanism. It is suggested that a cell be created within the MoEPP and Agency of Spatial Planning for this and capacity in terms of skilled manpower be assigned. The cell should contain staff from each of the responsible government entity (MoEPP and Agency for Spatial Planning as well as other govt. departments accessing and managing data)	MoEPP, and Agency for Spatial Planning
T 4	Agree upon a detailed Terms of Function which elaborates the functions and tasks of the proposed cell. (If such an information platform already exists within the purview of MoEPP and Agency for Spatial Planning, ensure that the existing cell can perform the proposed tasks)	MoEPP, and Agency for Spatial Planning

TASK 2: Continued collaboration with EU nations for knowledge exchange regarding Spatial Planning processes (Plan preparation, tools for implementation, land/territorial governance, management and revision)

	RECOMMEDED SUB-TASKS	RESPONSIBILITY
T 1	Connect with EU nations for continued knowledge exchange regarding the task. (Suggestions: Netherlands, Croatia, Finland, Denmark, Sweden, Germany)	MoEPP, and Agency for Spatial Planning
T 2	Partner with spatial planning departments of EU nations to conduct focus group workshops (remote and field based) with planning staff (Agency for Spatial Planning and MoEPP)	MoEPP, and Agency for Spatial Planning
T 3	MoEPP and Agency for Spatial Planning of North Macedonia facilitate partnerships with Spatial Planning Institutions of EU nations (Universities, Organisations such as IFHP, IHS) and Institutions in North Macedonia (universities, other relevant institutions)	MoEPP, and Agency for Spatial Planning

INTRODUCTION

UNDP and the Ministry of Environment and Physical Planning (MoEPP) are implementing the project “Macedonia’s Fourth National Communication (NC) and Third Biennial Update Report (BUR) on Climate Change under the UNFCCC (4th NC/3rd BUR)”.

The Ministry of Environment and Physical Planning is currently coordinating the revision of the Spatial Plan for the country for the period 2000 - 2020. The Agency for Spatial Planning is the only entity that has a mandate to develop such plans and is currently revising the methodology for development of special plans, which is rather old and outdated. One of the identified deficiencies of the current methodology is absence of climate change considerations as one of the guiding principles for spatial planning in the country.

Scenarios for expected climate change in Macedonia projected for 2100 have been developed. Scenarios for climate change induced extreme weather events are also being developed. The need to incorporate the nexus between climate change and spatial planning has been determined in several climate change strategies across the world. It opened a door for building climate resilience by mainstreaming climate change and climate variability as one of the guiding principles for spatial planning in the country.

Spatial planning also has a vital role to play in the move to a low carbon energy future and in adapting to climate change. To do this, spatial planning must develop and implement new approaches. To this end, this project aims to develop a “**Methodology for Mainstreaming Climate Change Considerations into Spatial Plans (Land Use Plans)**”.

Context

Climate Change has to be understood broadly as nexus of cause and consequence. The cause being an imbalance in the green house gases emitted into the atmosphere which has triggered a systemic and cyclic shift in normal atmospheric processes resulting in changes in Global weather patterns. Such rapid changes in weather patterns affect both regional and local landscapes/ecosystems/biodiversity. This is because the local systems struggle to adapt and evolve at the pace at which climate change is happening.

Hence any approach in spatial planning should address concerns related to climate change such as;

- Which factors of Global Climatic variables are going to affect the country and its regions ?
- How are these going to affect the country at large ?
- How will different geographic regions, different types of ecosystems, local landscapes be affected by the Global Climate Change Variables ?
- Which other local anthropogenic factors or entities could exasperate local impacts ?
- Which are the most vulnerable landscapes and regions ?
- How well-equipped are such landscapes in addressing such risks ?
- What preventive or mitigative measures can be taken to reduce the degree of impact ?
- What proactive measures can help regions and localities strengthen its resilience to such extreme and unforeseen risks ?
- How can communities and governments be prepared for extreme events ?
- How can new development choices be more climate change resilient ?
- How can existing landscapes and human habitats adapt to be more climate resilient ?
- How can the ecosystem services provided by natural systems be utilised to strengthen resilience of settlements and landscapes ?

A Note on Spatial Planning²

The concept of spatial planning originates from Europe and is as a generic term used to describe systems for managing spatial development. Healey (1997) defines spatial planning as a set of governance practices for developing and implementing strategies, plans, policies and projects, and for regulating the location, timing and form of development.

The EU compendium of spatial planning systems and policies defines the term simply as the “methods used largely by the public sector to influence the future distribution of activities in space” (Commission of the European Communities, 1997, p. 18). Over the past two and a half decades, spatial planning has come to represent a neutral and unifying terminology used globally to refer to different practices and systems, with little common understanding of what it means in practice. The ambiguous nature and malleability of the term, however, has allowed for easy transferability and widespread acceptance in different contexts (Allmendinger and Haughton, 2009).

There appears to be a general consensus on the objectives that spatial planning seeks to achieve, despite the different terminologies used across countries and the lack of agreement on the definition and meaning of the term in practice. Key objectives of spatial planning include:

- i) co-ordinating the spatial dimensions and impacts of other sectoral policies;

² Reference: OECD (2017), *The Governance of Land Use in OECD Countries: Policy Analysis and Recommendations*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264268609-en>

- ii) establishing the integrated and functional organisation of land uses and their regulation and;
- iii) balancing the demand for socio-economic development with the need to protect the environment

(Albrechts, 2004; Allmendinger and Haughton, 2009; Commission of the European Communities, 1997; Larsson, 2006; Owens and Cowell, 2011; Shaw, Nadin and Westlake, 1995).

Adapted from: Silva, E.A. and R.A. Acheampong (2015), "Developing an Inventory and Typology of Land-use planning Systems and Policy Instruments in OECD Countries", OECD Environment Working Papers, No. 94, <http://dx.doi.org/10.1787/5jrp6wgxp09s-en>.

Spatial Plans, its preparation and implementation has a critical role in addressing each of these queries. The new methodology for Spatial Planning will therefore be evolved to broadly integrate these climate change considerations. Various case studies and best practices are evaluated to inform the new methodology that will be evolved under the scope of this project.

Climate Change in North Macedonia

Climate Change assessments for the country are being taken up in collaboration with UNDP. The assessment underway includes; assessments related to flood vulnerability, drought and water scarcity among others. Other studies details Climate Change projections and vulnerability in terms of intensity, frequency and viabilities for specific location along with sectoral impacts³.

Once completed the assessments will be relevant to be used in the new methodology of spatial planning. Climate change is predicted to impact the different geographic regions of North Macedonia slightly differently in term of; intensity, frequency and duration of rainfall; temperature changes/variables in terms of duration, intensity. A major requirement is to translate these projected regional variables in terms of impacts and consequences to landscapes, ecosystems, human settlements, infrastructure etc., by examining local drivers that exasperate these climate change variables. Spatially identification and mapping of vulnerable areas and impact areas is critical to enable decision makers and spatial planners. Otherwise, the data or information on intensity and types of impacts become less tangible to integrate into spatial plans.

³ *First Biennial Update Report on Climate Change - MoEPP, Govt. of North Macedonia with Technical and Financial Support of UNDP and GEF, 3rd National Communication on Climate Change-MoEPP, Govt. of North Macedonia with Technical and Financial Support of UNDP and GEF, UNFCCC Portal of North Macedonia (<http://www.unfccc.org.mk/Default.aspx?LCID=207> , <http://www.unfccc.org.mk/Default.aspx?LCID=261>)*

The methodology will attempt to suggest how to use existing data as well as recommend various types of additional spatial assessments required.

Spatial Planning in North Macedonia

Types of Development Plans: Spatial Plans, Regional Plans and Special Plans, Urban Plans and City level Land use plans, Local Area Plans/Land use Maps.

Current Planning Process and Institutional Structures (Preparation-Approval-Implementation): Ministry of Environment and Physical Planning, Spatial Planning Agency, Municipal Governments

Existing Legal Instruments: Law on Spatial and Urban Planning, Law Implementing the Spatial Plan of the Republic of North Macedonia, with new amendments and revisions

Responsibility for dealing with CC at local or regional levels is not foreseen in the Law on Environment, nor is it provided by the Law on Local Self-Government. The authority which prepares the National Plan for CC is only entitled to give a mandate to municipalities for the implementation of measures and actions adopted at central level, but not for local policy-making on CC. In conclusion, the positive legislation of the Republic of Macedonia imposes no obligation on municipalities (or forms of inter-municipal cooperation) to adopt a local / regional planning document that refers solely to CC. Alternately, Norms associated with CC are included in several sectoral laws that focus on various aspects related to mitigation or adaptation.

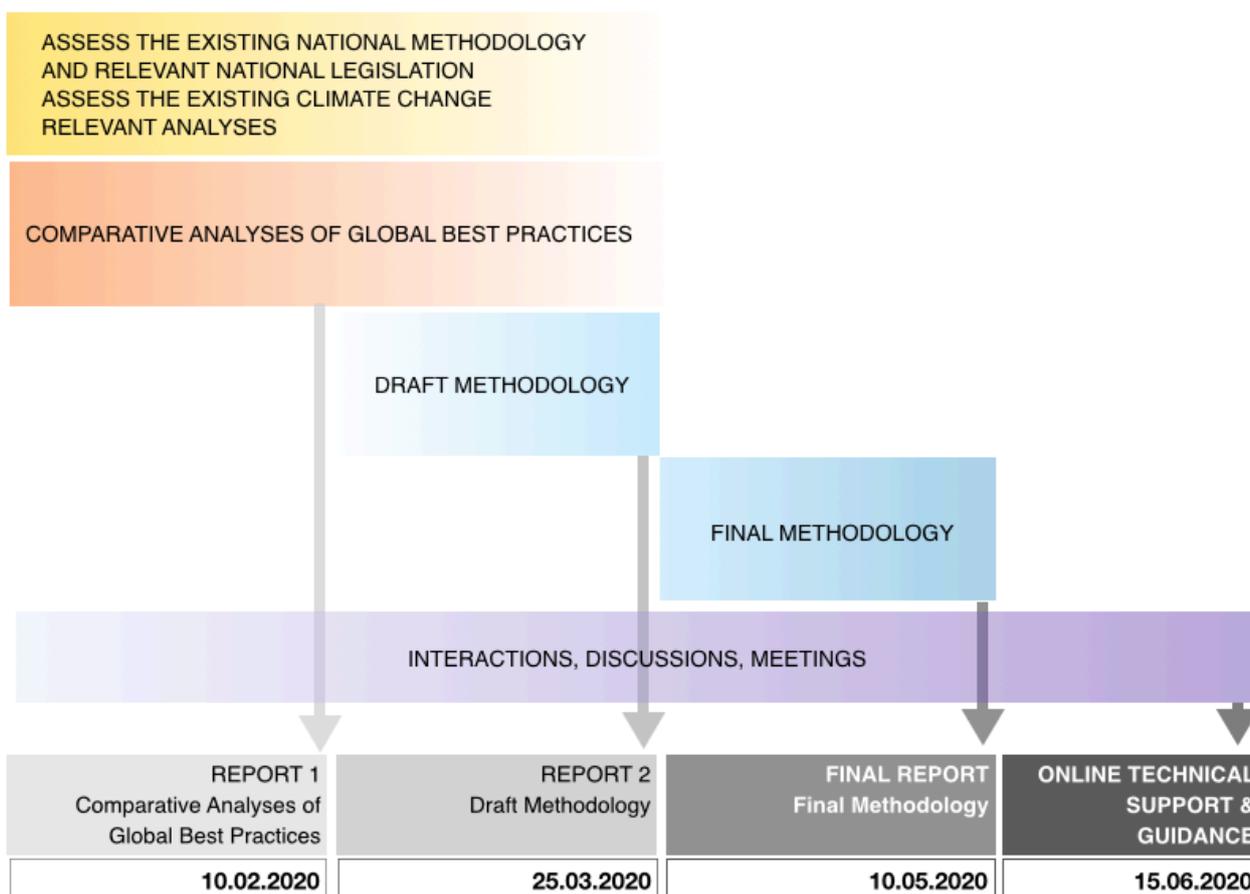
Source: ASSESSMENT OF LOCAL ACTION FOR MITIGATING AND ADAPTING TO CLIMATE CHANGE IN THE VARDAR AND SOUTHEAST PLANNING REGIONS, Authored by Biljana Puleska, PhD for MoEPP and MoLSG through UNDP (Skopje) and UNDP (Oslo)

Approach and Deliverables

The new methodology will be evolved to make natural capacity and vulnerabilities of land as the base for development planning and thus help decisions on urbanisation, agricultural, industrial, ecological protection or any other development. Such an approach will have a scientific basis for development and will be able to avoid inappropriate or non-compatible land uses or development activities. But the successful implementation of the Spatial Plan evolved through such a methodology will rely on its legal validity, institutional accountability as well as citizen participation and awareness.

Following the first mission to the city of Skopje to interact with MoEPP and Agency of Spatial Planning a broad understanding of the status of Spatial Planning has been arrived at. Presently, the existing legal instruments and the new spatial plan preparations are at its initial phase, hence it will be vital to examine and evaluate them as the project progresses. Therefore the approach and deliverables with respect to completion of this project/assignment has been modified slightly.

Project Timelines and Deliverables



BEST PRACTICES IN INTEGRATING CLIMATE CHANGE CONSIDERATIONS INTO SPATIAL PLANNING

Guidelines and Tools

UN-Habitat Guidelines and Tools

I. Planning for Climate Change: A strategic, values-based approach for urban planners⁴

“Planning for Climate Change: A Strategic, Values-based approach for Urban Planners” document is part of United Nations Human Settlements Programme (UN-Habitat), 2014, Tool Series. The document talks about strategies and ways to integrate climate change considerations into existing spatial plans. This section extracts some key pointers from this document.

Climate change planning can, and should, augment and be integrated and mainstreamed with existing city plans, planning processes and development activities across all sectors. Climate change is simply another piece of information that should be considered during every planning process, or when existing plans are modified and updated. Regardless of the planning capacity of local governments, almost any urban development or redevelopment initiative (policy, programme, strategy or plan) can, and should, consider climate change. This process where current plans, strategies and policies are reviewed and expanded to include climate change adaptation and mitigation considerations is commonly referred to as mainstreaming.

The tool series identifies some key guiding objectives to enable mainstreaming of climate considerations into Planning;

- Minimising risk and improving land development activities that occur in or near flood, slope or coastal hazard areas
- Improving infrastructure for storm water management, solid and liquid waste management, access to safe drinking water, and the movement of goods and people
- Protecting ecosystems and environmentally sensitive areas in and around towns and cities
- Improving disaster risk reduction, including the improvement of response capacities for disasters (particularly weather and climate-related events).
- Supporting local economic development to reduce poverty and improve quality of life.

⁴ Reference: *Planning for Climate Change: A strategic, values-based approach for urban planners*
Copyright © United Nations Human Settlements Programme (UN-Habitat), 2014

Important areas where planners can support and lead adaptation and mitigation activities in their traditional planning capacities include;

- Land use
- Environmental Planning
- Storm water management
- Building and site design
- Disaster preparedness
- Transportation plans and projects
- Local economic development strategies
- Solid Waste programmes
- Wastewater management
- Water supply management
- Community health programmes
- Public education programmes

It is critical to monitor vulnerabilities to climate change triggered events and this can be monitored only if there is a knowledge on the limits and thresholds beyond which there is disaster risks.

Climate Change considerations can be broadly classified under; Vulnerability and Impact Assessment for current and future scenarios, Mitigation measures to reduce future impact and future developments, Adaptation measures to built resilience and lower emissions.



The following tables from the reference document lists down some important decision making tools.

- 1) Table 01: Threshold limits with respect to different events and tie together, impact areas and sectors corresponding to possible climate change extreme events.
- 2) Table 02: Types of Plans and the potential climate change features

Table 01: Threshold limits with respect to different events and tie together, impact areas and sectors corresponding to possible climate change extreme events

Climate Change Hazard (Tool 3-I)	Primary / Secondary Impacts (Tool 3-I)	Thresholds (Tool 3-I)	Sensitive Features (people, places, institutions) (Tool 3-D)	Sensitive Sectors (Tool 3-D)	Exposure (Likely scenario for 20 year planning horizon) (Tool 3-A)	Potential Future Consequences (with no additional climate change planning)	Threat level: Sensitivity of people, places, institutions and sectors to each hazard (See Table 16)
Drought	<ul style="list-style-type: none"> - Reduced water supply - Reduced power generation - Reduced agricultural production 	<ul style="list-style-type: none"> - At river flows less than 100 m³/s, reservoirs cannot be filled - More than one month droughts will require investments in irrigation (or a change to new crops) 	<ul style="list-style-type: none"> - City reservoir, residents and businesses - Farmers (some subsistence), women (majority of farm workers and market sellers) 	<ul style="list-style-type: none"> - Water and Sanitation - Economy (formal & informal) - Agriculture - Economy (formal and informal) - Health 	<ul style="list-style-type: none"> - 1°C temperature increase - 15 mm precipitation decrease - 18% soil moisture decrease - Generally increasing trend in length of dry season - Rate of change is uncertain, but expected to rise over time 	<ul style="list-style-type: none"> - Subsistence farmers will have reduced incomes – decreased income per person, difficult to reach development goals - Increased rural to urban migration of farmers – potential stresses on city services and infrastructure - Agricultural plan already calls for research into drought resistance crops, could lessen the impact - More frequent power outages in dry season + more power outages as dry season lengthens – impacts on businesses and commerce 	High
Flooding	<ul style="list-style-type: none"> - Residential / Industrial area flooding 	<ul style="list-style-type: none"> - Dikes overflow with a river flow of greater than 100,000 m³/s, which causes an increase in river height of 1.5 m at Low Bridge, threatening the vehicle deck. 	<ul style="list-style-type: none"> - Flood plain - Bridges X, Y, Z - Informal communities A, B 	<ul style="list-style-type: none"> - Agriculture - Housing - Transportation - Economy (formal & informal) 	<ul style="list-style-type: none"> - 15 mm precipitation decrease - Generally stable – frequency of spring floods to remain consistent over time - Influence of new developments in formerly undisturbed watershed areas unknown, but development increasing 	<ul style="list-style-type: none"> - No large or frequent flooding predicted - New development plans require flood risk analysis prior to building 	Low
Heat Waves	<ul style="list-style-type: none"> - Community health: increased rates of heat stroke and respiratory problems 	<ul style="list-style-type: none"> - Clinics experience increased incidence rates (heat stroke, dehydration) at greater than 45°C for a week or longer. 	<ul style="list-style-type: none"> - Elderly and young - Power plant (air conditioning load leads to brown outs) 	<ul style="list-style-type: none"> - Health - Economy (formal) 	<ul style="list-style-type: none"> - 1.5°C temperature increase - Increasing trend in both the frequency and duration of heat waves. 	<ul style="list-style-type: none"> - Population trends predict more youth in coming decades -> greater number of high risk people during heat waves - Brown outs during heat waves impact commerce, safety – could impact development outcomes - Brown outs during heat waves would shut off air conditioning and could exacerbate public health issues 	Medium-High
Sea Level Rise	<ul style="list-style-type: none"> - Residential and commercial area flooding 	<ul style="list-style-type: none"> - At 0.5 m sea level rise – flood area is 10 ha - At 1 m sea level rise – flood area is 200 ha 	<ul style="list-style-type: none"> - Informal communities C, D - Fishing port - Estuary ecosystem 	<ul style="list-style-type: none"> - Fisheries - Environment/ Ecosystems - Housing 	<ul style="list-style-type: none"> - General increase in local sea level - Rate of change over time is highly uncertain - IPCC estimates of 5-20 cm in next 50 years 	<ul style="list-style-type: none"> - Not a major risk of residential flooding in the next 20 years - Informal community C (located on waterfront) already slated for relocation in the next 5 years (Housing Plan) 	Medium-Low

Source: Planning for Climate Change: A strategic, values-based approach for urban planners; Copyright © United Nations Human Settlements Programme (UN-Habitat), 2014

Table 02: Types of Plans and the potential climate change features

TYPE OF PLAN	GENERAL PURPOSE	POTENTIAL CLIMATE CHANGE FEATURES
Town Plan City Plan Physical Land Use Plan	<ul style="list-style-type: none"> - Identifies areas (zones) for different types of development (i.e. housing, commercial, industrial, etc.) - Identifies development hazard areas (steep slopes, flood plains, etc.) - Provides long-term policy direction on land use and development, transport and overall community development 	<ul style="list-style-type: none"> - Highlights development “hot spots” or “no development areas” where climate change impacts are likely to be most severe - Sets policy direction on “climate friendly” or “climate resilient” infrastructure and servicing (i.e. stormwater management) - Formally recognizes climate change and highlights related impacts (i.e. builds public awareness, political support) - Land capability, suitability and the feasibility of different development alternatives are analysed to determine appropriate spatial relationships that form the basis of generalized future land use maps
Storm Water Management Plan	<ul style="list-style-type: none"> - Improves storm water management, including drainage and infrastructure 	<ul style="list-style-type: none"> - Identifies climate change-related storm water or flooding hazard areas - Directs new infrastructure to “safer” areas not as exposed to climate change impacts (i.e. can attract or pull development to serviced areas) - Accelerates investment in existing coastal and river flood defence programmes to protect existing development in flood prone areas - Identifies options to increase permeability of paved areas in drought prone and flood affected areas
Transport Plan	<ul style="list-style-type: none"> - Improves road, pedestrian, transit and bicycle connections and infrastructure 	<ul style="list-style-type: none"> - Identifies and improves “weak links” in transport networks that are threatened by climate change impacts (e.g. bridges threatened by storm surges, roads subject to flooding) - Identifies and designates emergency transportation networks (e.g. roads and transport links that could be used during a climate change impact event to transport people, supplies and any required relief supplies) - Prioritizes transportation network improvements that improve transportation connections for climate vulnerable groups - Supports climate change mitigation through reduced traffic congestion, prioritizing non-motorized transportation
Local Economic Development Plan or Strategy	<ul style="list-style-type: none"> - Identifies and prioritizes economic sectors and opportunities - Identifies economic development priorities (e.g., jobs, capacity, infrastructure) 	<ul style="list-style-type: none"> - Reduces urban poverty levels for key climate change vulnerable groups (e.g. women, children, urban poor) - Promotes “climate friendly” and/or “green development” opportunities
Informal Settlement Upgrade Plans	<ul style="list-style-type: none"> - Develops policies and plans to improve services, infrastructure and sanitation - Formalizes property ownership 	<ul style="list-style-type: none"> - Identifies potential climate change impact risks (e.g. stormwater and flooding, slope failures, health) and responses to them (e.g. relocation, infrastructure improvements) - Identifies and relocates housing from high hazard areas and/or develops “planned retreat” or relocation strategy

Continuation of Table 02: Types of Plans and the potential climate change features

TYPE OF PLAN	GENERAL PURPOSE	POTENTIAL CLIMATE CHANGE FEATURES
Public Health Plan	<ul style="list-style-type: none"> - Typically focuses on disease prevention and public safety improvements 	<ul style="list-style-type: none"> - Identifies and prioritizes health risks (e.g. disease, accident) associated with climate change - Supports, facilitates and expedites infrastructure and planning improvements to reduce climate change related public health impacts (e.g. supports improved storm water and waste treatment facilities, supports urban greening to reduce heat island effects)
Disaster Risk Reduction Plan	<ul style="list-style-type: none"> - Improves disaster response preparedness - Improves early warning capacities - Identifies “hot spots” (i.e. areas and groups vulnerable to disasters) 	<ul style="list-style-type: none"> - Identifies climate change disaster risks, likelihoods and adaptive capacity - Supports, facilitates and expedites infrastructure and planning improvements to reduce climate change-related disaster impacts - Ensures provision of adequate community shelters and schools, access for emergency services, introduces regulations on back up sources of energy and water supply
Sewer / Liquid Waste Management Plan	<ul style="list-style-type: none"> - Improves waste water/sewer management, including and infrastructure 	<ul style="list-style-type: none"> - Identifies development or construction guidelines for “climate proof” facilities (i.e. facilities that are located and built to withstand and function during climate change impact events) - Identifies and prioritizes high risk areas where new facilities are most needed to reduce climate change impacts amongst vulnerable groups - Identifies options to reduce or reuse wastewater (grey water) for urban agriculture and horticulture
Energy Management Plan	<ul style="list-style-type: none"> - Improves energy generation options, distribution and conservation 	<ul style="list-style-type: none"> - Identifies climate change-related risks to energy generation and distribution facilities - Supports climate change mitigation (e.g. green energy, conservation)
Water Management Plan	<ul style="list-style-type: none"> - Improves water supply, management and distribution - Improves water conservation 	<ul style="list-style-type: none"> - Identifies climate change-related risks to municipal water supply, treatment and distribution and adaptive measures to counter them - Identifies water conservation and water demand strategies and tools to better manage and adapt to future potential water shortages
Solid Waste Management Plan	<ul style="list-style-type: none"> - Improves solid waste management, including collection, handling and infrastructure 	<ul style="list-style-type: none"> - Supports climate change mitigation through improved materials recycling or reuse and, where practical and feasible, landfill emissions capture

Source: *Planning for Climate Change: A strategic, values-based approach for urban planners*; Copyright © United Nations Human Settlements Programme (UN-Habitat), 2014

II. Guiding Principles for City Climate Action Planning⁵

“Guiding Principles for City Climate Action Planning”, is a document published by United Nations Human Settlements Programme 2015. This document provides a guiding framework for cities to develop and execute, stand alone Climate Action Plans.

The key content and steps of a stand alone city level climate action plan are;

- 1) A long-term vision statement, supported by clear objectives and targets, set in short, medium and long-term timescale and grouped into several strategic areas, sectors, or ‘pillars’.
- 2) An introduction, describing how the plan was developed, including public participation processes.
- 3) A description of how the climate action plan links with other existing/statutory plans in the city, and other local socio-economic and environmental goals.
- 4) A description of how climate action planning links to other national, regional goals, regulations, plans and processes.
- 5) A technical and scientific summary including a statement on the science behind climate change and projections of climate impacts, and baseline assessments such as a greenhouse gas emissions inventory, a vulnerability assessment and health implications, or a local renewable energy potential assessment.
- 6) An overview of existing adaptation or mitigation related initiatives.
- 7) A summary of how actions were prioritised and other decisions were made, including the criteria used.
- 8) Sets of actions, organised according to several strategic areas with corresponding goals, selected in accordance with criteria, and ensuring co-ordinated action.
- 9) A strategy for out-reach, education, communication and dissemination.
- 10) A framework for reporting results and ensuring accountability.
- 11) A monitoring and evaluation framework, along with key performance indicators, for measuring progress, updating actions.
- 12) A glossary to explain unavoidable technical terms.
- 13) Simple graphics used throughout to illuminate key findings, goals, and strategies

⁵ Reference: *Guiding Principles for City Climate Action Planning*, First published in Nairobi in 2015 by UN-Habitat, Copyright © United Nations Human Settlements Programme 2015

Findings from Relevant Policy Papers

I. Linking Land Policy with Climate Change: A Multi-dimensional Landscape Approach to Territorial Development with a Focus on the Europe and Central Asia (ECA) Region⁶

This paper suggests land policy, management and development strategies that are anchored on capacity and ecosystem services that are provided by landscapes. It suggests a shift from viewing land as a singular economic resource to a tangible entity that provides multiple resource and services that are vital to building resilience in settlements and mitigating climate change risks.

Some of the key suggestions are;

- 1) Adopt a multi-dimensional landscape approach that incorporates natural resource management (NRM) governance and tenure concerns within the design of land use policy for any given territorial area
- 2) Use geo-spatial tools and ICT technologies for risk and vulnerability evaluation, given the dynamic nature of rapidly changing scenarios. This will ensure that the spatial plans are less static or outdated and thus align closer with the changes on ground.
- 3) Systems modelling and spatially enabled information systems are key tools for managing territories in the face of climate and natural disaster risks.
- 4) Consider a system-level assessment of land values, risks and opportunities across multiple dimensions. Use this assessment to modify land and natural resource tenure arrangements, governance frameworks and management tools. Concepts of site value need to be expanded to consider the comprehensive value of ecosystem services (i.e., benefits) and costs from the site.
- 5) Shift from sector - oriented planning to location/territory specific strategising and planning using landscape-based territorial development approaches. This will present opportunities for social inclusion, transparency and innovation.

⁶ This Paper is authored by; Malcolm D. Childress (Senior Land Administration Specialist, World Bank), Paul Siegel (Consultant, Senior Natural Resource Management Specialist and Climate Change Economist, World Bank), Mika Törhönen (Senior Land Policy Specialist, World Bank)

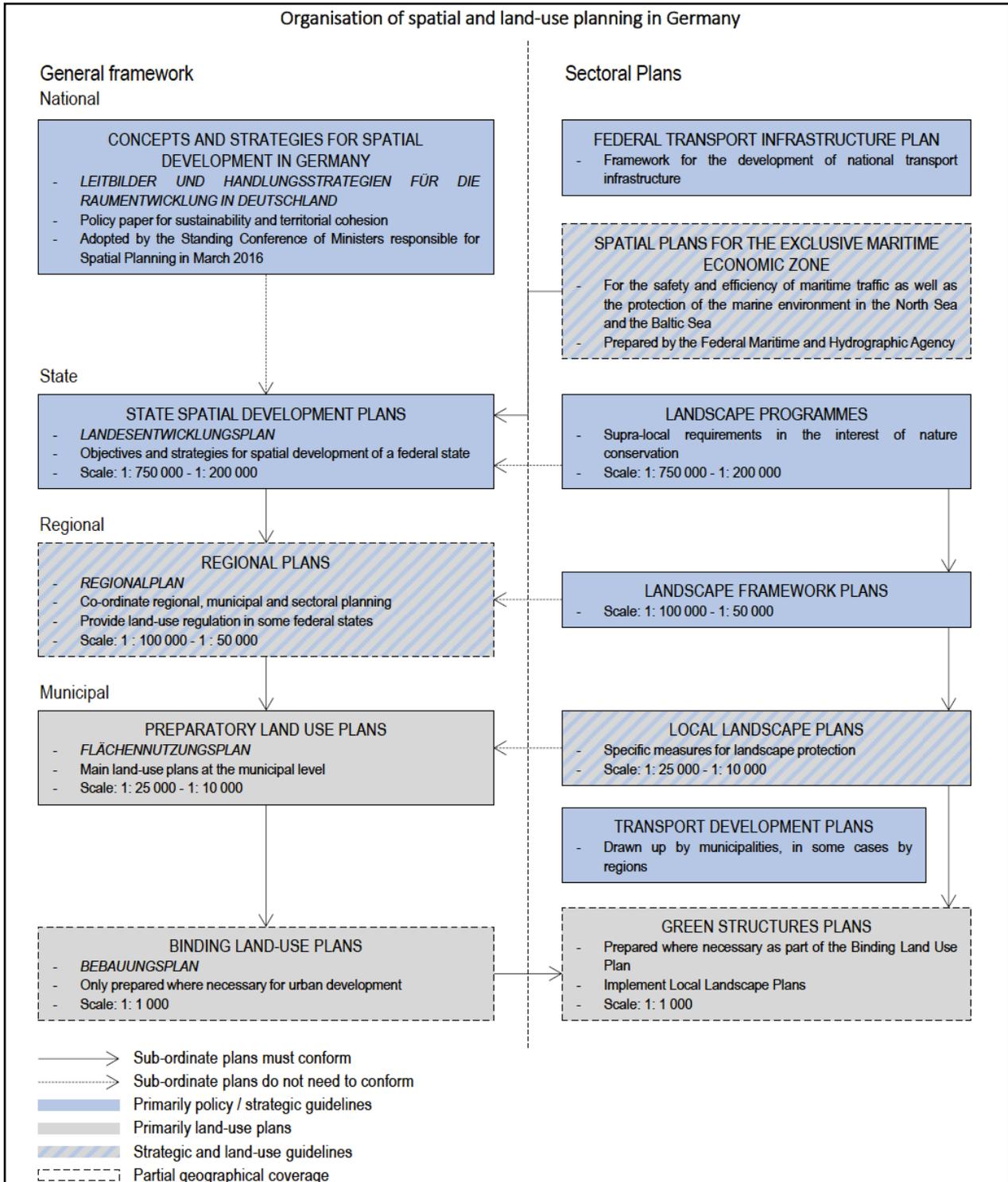
This paper was presented at the World Bank sponsored Second Central Asia Climate Knowledge Forum: Moving Towards Regional Climate Resilience, Almaty, Kazakhstan, May 13-15, 2014.

- 6) Trade-offs for sustainable and climate change sensitive development: The incorporation of payments for environmental services and full natural accounting for all of the elements in the landscape will help to manage the difficult trade-offs.
- 7) Provide incentives for land use practices that are less damaging to the environment than others
- 8) Given the complex and conflicting land use practices, claims to land and natural resources above and below the land surface, land tenure regimes and land use regulations over horizontal and vertical landscapes in any given territory, it is important to have a widened and inter-linked inventory of these data.
- 9) Linking land policies with climate change action calls for an integration of traditional land policy areas of concern with the broader fields of natural resource tenure (NRT) and natural resource governance (NRG)

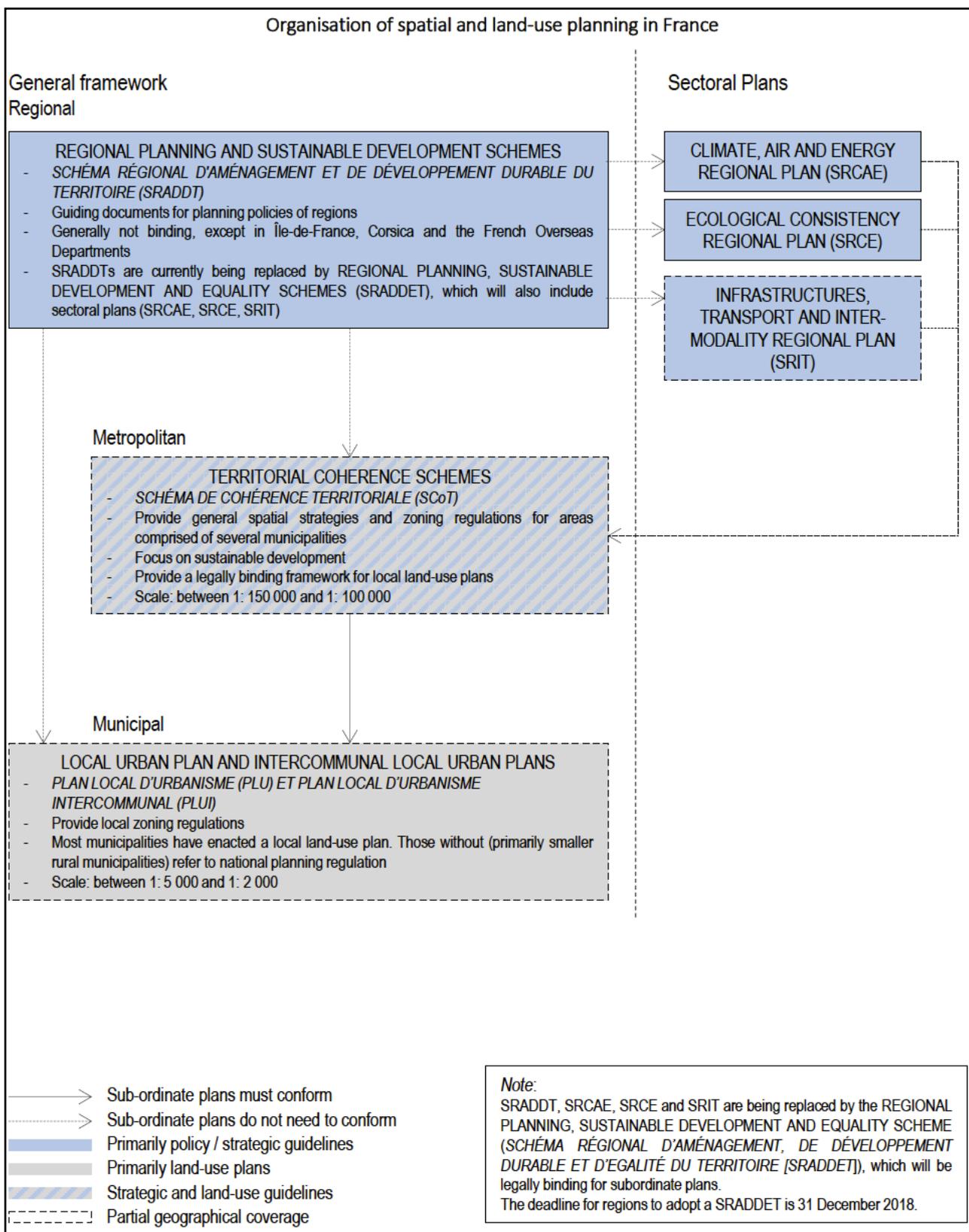
Case Studies

Case Studies from EU Nations

GERMANY



FRANCE



Source: The Governance of Land Use-Country Fact Sheet France; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017

Levels and Types of Spatial Plans:

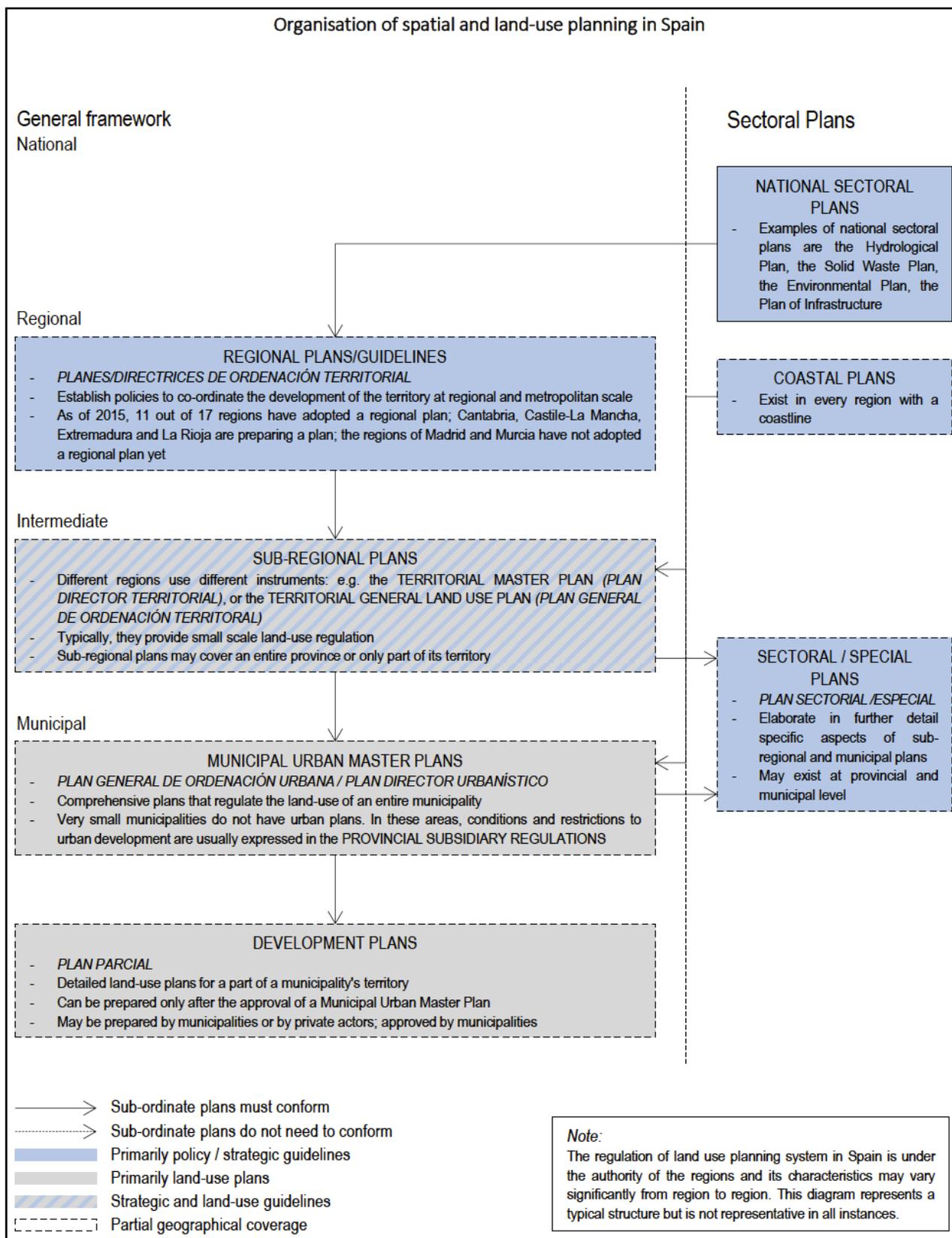
- I. **Regional Plans:** Regional plans (SRADDT) are guiding documents for regional spatial policies and can show political investment priorities. In most parts of the country, they are not binding for lower level plans. However, Île-de-France (i.e. the greater Paris region), Corsica and the French overseas territories have slightly different regional plans. These plans are more detailed, contain limited zoning regulations and provide binding frameworks for lower level plans. Currently, regional plans are supplemented by three additional plans; a Climate, Air and Energy Regional Plan (SRCAE), an Ecological Consistency Regional Plan (SRCE) and an Infrastructures, Transportations and Inter-modality Regional Plan (SRIT). In the future, these plans will be combined into a single regional plan.
- II. **SCoT (Intermediate level between Regional and Local Plans):** At an intermediate level, the SCoT is a type of plan located between regional plans and local land-use plans. They are prepared by inter-municipal associations and aim to guide local land-use plans. They provide strategic spatial development guidelines connecting the issues of housing, transport and urban planning. Furthermore, they contain small scale land-use plans (often at a scale of 1: 100 000) to steer local plans. SCoTs are legally binding for local plans. While it is not mandatory for municipalities to adopt a SCoT, municipalities without it are not allowed to approve development in undeveloped areas. Thus, especially municipalities in large urban areas have strong incentives to adopt a SCoT and most have done so.
- III. **Local Plans:** At the local level, local land-use plans (*PLU* or *PLUI*) provide detailed zoning regulations at scales that typically range from 1: 5 000 to 1: 2 000. They are prepared either by a single municipality or jointly by inter-municipal associations
- IV. **Inter-Municipal Plans:** As of 2017, a new law mandates the preparation of inter-municipal plans instead of plans for single municipalities unless more than 25% of the municipalities accounting for at least 20% of the population of an inter-municipal association veto the preparation of a joint plan.
- V. **Rural Areas:** While a large majority of municipalities in France are covered by a local land-use plan, a few mainly smaller ones in rural areas are not. Those municipalities refer to national planning regulations for land-use decisions.

Major Laws and Regulations: Four particularly important laws concerning land use exist in France. The law on solidarity and urban regeneration establishes metropolitan plans (SCoT) and local land-use plans (PLU). It aims at co-ordinating urban planning, housing and transport policies and sets the objective that cities of more than 50 000 inhabitants should have at least 20% social housing. In 2014, a new law introduced flexible rent ceilings and abolished previous legislation preventing the construction of small housing units. Two laws concern mountainous and coastal areas, respectively. They specify particular environmental protection standards for the covered areas and measures to stimulate tourism and other economic activity related to the specific landscapes.

Co-ordination mechanisms: Formal vertical co-ordination mechanisms between levels of government are limited and are primarily related to the hierarchical structure of the planning system, in which lower levels of government must align their plans to higher level plans. Plans at the same hierarchical level must take each other into consideration, which is less demanding and implies only that one plan does not block the measures foreseen in another plan. Horizontal co-ordination is provided by the newly created Public Action Territorial Conferences. These meetings assemble all regional and local authorities under the chairmanship of the regional council president and are supposed to facilitate an integrated and cross-disciplinary planning process.

Source: *The Governance of Land Use-Country Fact Sheet France; Land-Use Planning Systems in the OECD: Country Fact Sheets* © OECD 2017

SPAIN



Source: *The Governance of Land Use-Country Fact Sheet Spain; Land-Use Planning Systems in the OECD: Country Fact Sheets* © OECD 2017

Levels and Types of Spatial Plans:

According to a ruling of the Constitutional Court, the national government is not allowed to prepare a national-level spatial plan for Spain. However, it may prepare sectoral plans and does so for several policy fields (i.e. the Hydrological Plan, the Solid Waste Plan; Environmental Plans, the Plan of Infrastructure).

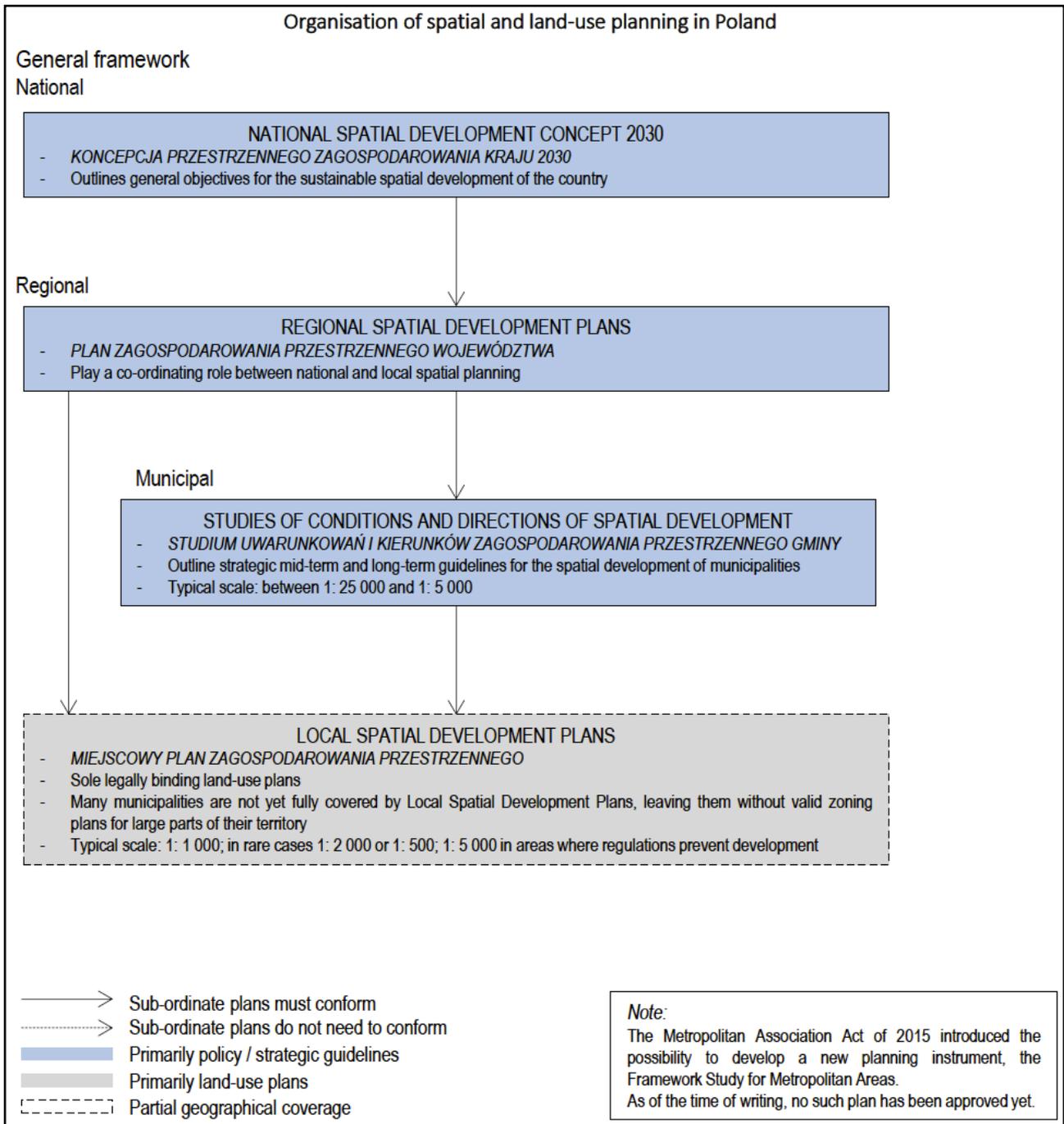
- I. Regional Plans:** Typically, a Regional Plan exists at the level of the autonomous community that guides and co-ordinates planning at the local level. Furthermore, all coastal regions have prepared a Coastal Plan in order to deal with the particular development pressures and environmental sensitivities along the coast.
- II. Sub-Regional Plans:** Hierarchically below the regional level, sub-regional Territorial Plans are prepared by intermediate levels of government (e.g. Comarcas) in some autonomous communities. Their content and geographical scope varies between autonomous communities. In some cases, they focus only on selected areas of high importance or on areas for which no local land-use plans exists, whereas in others they cover the entire jurisdiction of the subnational government.
- III. Local Plans (Municipal Urban Master Plans):** The main land-use plans at the local level tend to be Municipal Urban Master Plans – comprehensive master plans for municipalities. In all autonomous communities, these plans may contain legally binding regulation for land owners. In geographical sectors that have been designated as suitable for development by Municipal Urban Master Plans, the conditions for development are further elaborated on at the second stage by the sector's Development Plan, a detailed plan that shows permitted land use and regulates building conditions for each individual plot included in the sector.

Major Laws and Regulations: At the national level, the Law on Land and Urban Development contains the main legislative elements related to spatial planning that are within the competence of the national government. It is supplemented by varying framework legislation enacted by the autonomous communities.

Co-ordination mechanisms: All 17 Spanish regions use a hierarchical model of planning, in which lower level plans must comply with higher levels. Thus, co-ordination between levels of government in a narrow sense is provided by the requirement that local planning follows the plans established at the regional level. Co-ordination also occurs through administrative consultation requirements between levels of government. The hierarchical planning system guarantees that lower level plans are in accordance with higher level plans; at the same time, higher level plans may on purpose include ambiguous elements to ensure sufficient flexibility at the local level.

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POLAND



Source: *The Governance of Land Use-Country Fact Sheet Poland; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017*

Levels and Types of Spatial Plans:

Formally, Poland has a hierarchical planning system with plans at the national, regional and local level. In between regional and local plans, the legal possibility for the preparation of metropolitan plans exists, but no such plan has been adopted, yet. In practice, the influence of higher level plans on subordinate plans remains limited.

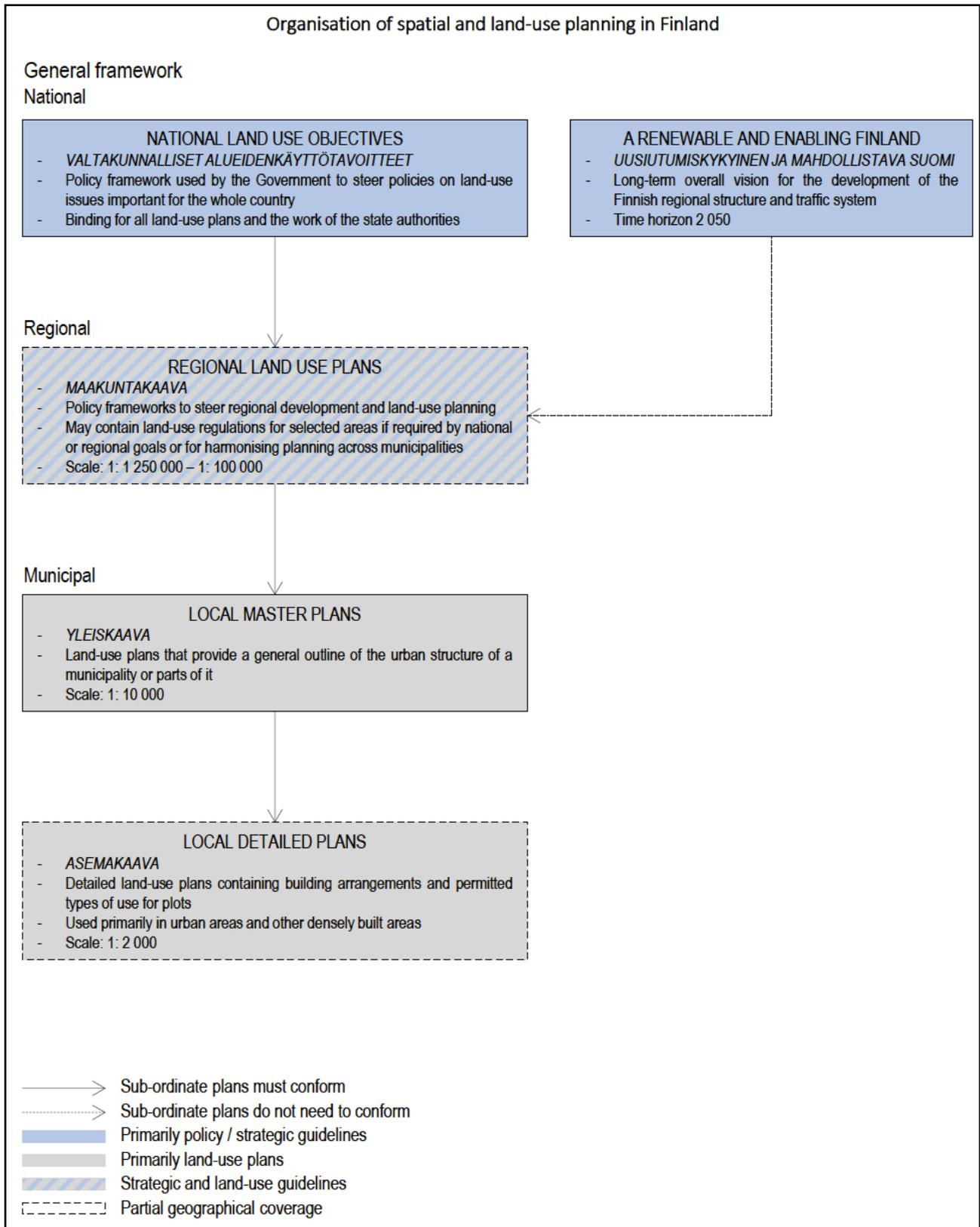
- I. National Plan:** The National Spatial Development Concept 2030 provides general policy guidelines primarily related to settlement patterns, transport and environmental aspects.
- II. Regional Plans:** At an intermediate level, Regional Spatial Plans spell out regional development strategies and provide guidelines for local land-use plans. They also demarcate restricted areas (for example military bases), flood prone areas and mining areas.
- III. Local Plans:** The only binding land-use plans in Poland are the Local Spatial Development Plans, which are typically drawn at a large scale of 1: 500 in densely built-up areas and at lower scales up to 1: 2 000 in less densely developed areas. Although Local Spatial Development Plans are supposed to steer development and urbanisation and municipalities are required to prepare them, the process to prepare plans has not been completed and there are still large gaps in plan coverage. Affected municipalities do not have any legally binding zoning plan for large parts of their territory. Legally, Local Spatial Development Plans are required to follow the Regional Spatial Development Plan. However, there are no enforcement mechanisms to ensure that local plans actually adhere to regional ones. As a consequence, Local Spatial Development Plans are in practice rarely constrained by the National Spatial Development Concept 2030 or by Regional Spatial Development Plans.
- IV. Other Supporting Studies:** Municipalities and regional governments may prepare a second planning document, the Spatial Study. It is a strategic document at the local level that outlines the main spatial development objectives of municipalities. It can, but does not necessarily, include detailed land-use plans at scales between 1: 5 000 and 1: 25 000. The main function of the Spatial Study is the development of a vision for the municipality. While it is not a statutory instrument, it must be considered in the preparation of Local Spatial Development Plans.

Major Laws and Regulations: The Spatial Planning and Development Act is the main framework law that spells out the responsibilities of the three levels of government and describes the legal requirements of the planning process. Importantly, it also provides the rules under which planning permission must be granted if an area is not covered by a Local Spatial Development Plan. As large parts of some cities are currently without such a plan, this procedure is an important element in the Polish land-use planning system. The Real Estate Management Act contains detailed rules for the management of plots of land. The Railway Transport Act and the Act on Special Rules for the Preparation and Implementation of Investment in Roads contain the major rules for transport infrastructure investment. In the absence of an overarching strategic framework that can steer development, a large number of sectoral acts have been approved to guide development in specific contexts. Among them are acts on the preparation of the UEFA Euro 2012, on investments in public airports, on a liquefied natural gas terminal, on telecommunication networks, on flood prevention infrastructure, and on nuclear power plants. As of the time of writing, similar acts are under preparation.

Co-ordination mechanisms: Vertical co-ordination of spatial planning policies is formally provided through the hierarchical relationship between the different levels of government. Furthermore, lower level plans are required to conform to higher level ones. However, in practice the National Spatial Development Concept 2030 and Regional Spatial Development Plans lack the instruments to shape local planning. Local Spatial Development Plans also have to be approved by the regional level of government (Voivodeship). Horizontal co-ordination occurs primarily on the local level during the planning process through a consultation process that requires public authorities in several sectors to approve local plans. Furthermore, a large number of bodies may issue opinions on local plans without having the power to veto them.

Source: The Governance of Land Use-Country Fact Sheet Poland; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017

FINLAND



Source: The Governance of Land Use-Country Fact Sheet Finland; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017

Levels and Types of Spatial Plans:

Finland uses a hierarchical system of plans. No spatial plan exists at the national level, but the government develops national land-use objectives to steer policy on land use and regional spatial structures that are important for the whole country. Lower levels of government are required to take them into account in their planning process. Furthermore, the Ministry of the Environment in co-operation with other ministries has developed a non-binding vision for the regional structure and the transport system of Finland in 2050 (named “A renewable and enabling Finland”). It envisions a polycentric regional structure for the country.

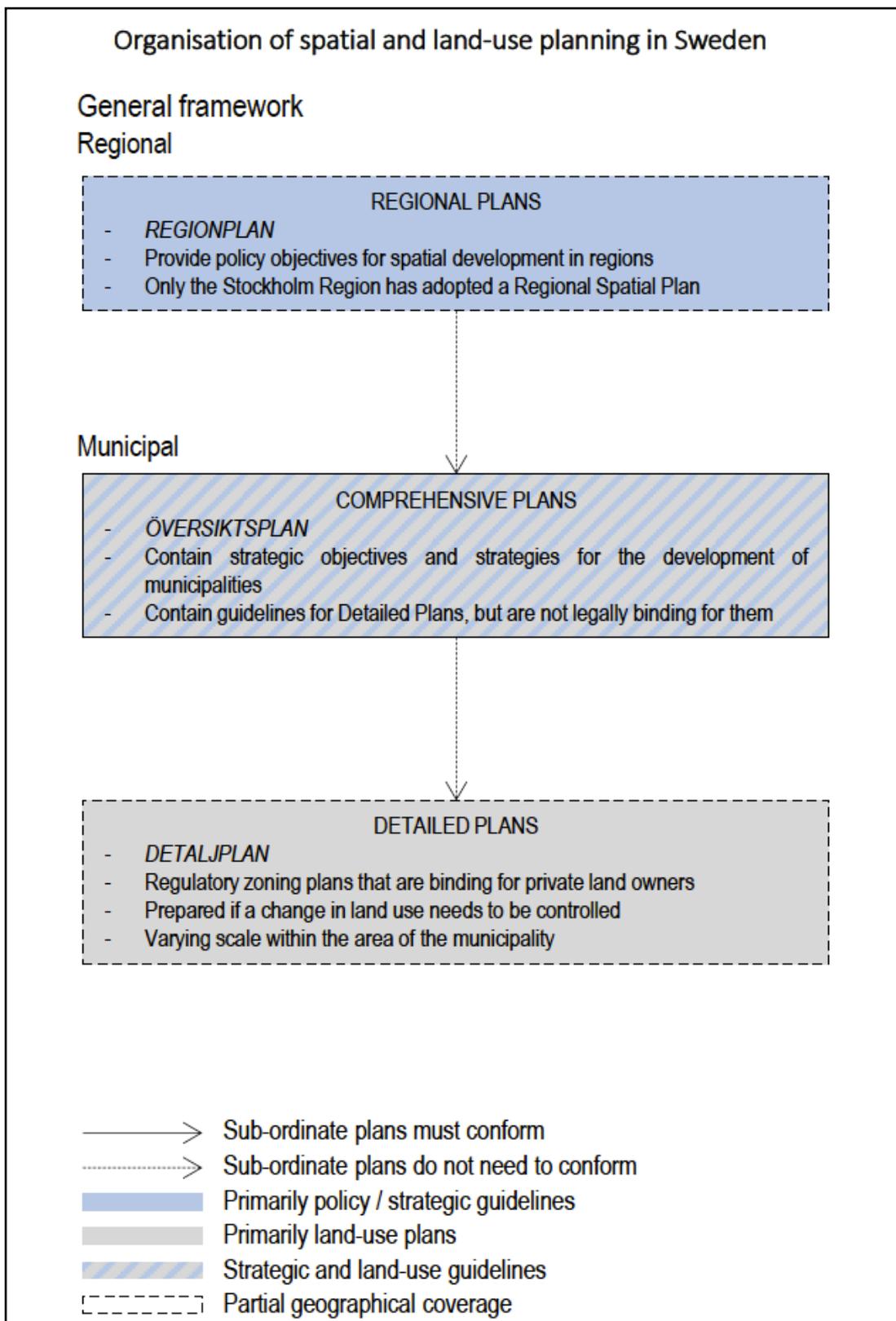
- I. Regional Plans are the highest-level plans.** They set out principles for land use and community structure, and designate areas that are needed for regional development. Such a designation occurs only if required by national or regional land-use objectives or in order to harmonise land use in several municipalities.
- II. Local Master Plans:** Municipalities prepare two types of plans. Local Master Plans contain a description of the urban structure of the municipality and contain general objectives for community development. They contain zoning regulation for the entire territory of a municipality (typically at a scale of 1: 10 000) and specify the areas for which Local Detailed Plans are required. Local Master Plans exist in all municipalities.
- III. Local Detailed Plans:** Local Detailed Plans are drawn up to guide development in particularly important or sensitive areas. They include detailed regulations on permitted development for individual plots. Maps are typically drawn at a scale of 1: 2 000. Local Detailed Plans must not impose unreasonable restrictions on land owners that could be avoided without disregarding the objectives of the plan and must ensure that they do not substantially reduce the quality of anybody’s living environment unless necessary to meet the objectives of the plan.

Major Laws and Regulations: The Land Use and Building Act structures the land-use planning system and contains provisions to ensure the environmental, economic, social and cultural sustainability of planning. Together with the Local Government Act, which outlines the responsibilities of municipalities, it forms the framework legislation for land-use planning. Further provisions regarding the planning process are provided by decree, ministerial decision and local building ordinances. Important restrictions on land use are also contained in the Nature Conservation Act and in the Environmental Protection Act.

Co-ordination mechanisms: Vertical co-ordination of land-use policies is one of the tasks of the above-mentioned Centres for Economic Development, Transport and the Environment. They monitor regional and local land-use policies to ensure that national objectives with respect to land use and building activity are taken into account. Horizontal co-ordination across policy fields is the responsibility of the Ministry of Environment, which harmonises regulations concerning building activities that are issued by other government authorities.

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SWEDEN



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Levels and Types of Spatial Plans:

National legislation makes regional spatial planning obligatory for the Stockholm region, but not for other Swedish regions. Although no regional spatial plans exist outside of the Stockholm region, the government requires that there is a regional development strategy in each county. This strategy may contain spatial elements and influences land-use decisions. No formal spatial plan at national level exists in Sweden.

Sweden's national strategy for sustainable regional growth and attractiveness 2015-2020 also focuses on spatial planning, emphasising the need to better co-ordinate local comprehensive planning and regional development efforts. The strategy emphasises that by 2020 each county should have integrated a spatial perspective in its regional development policies.

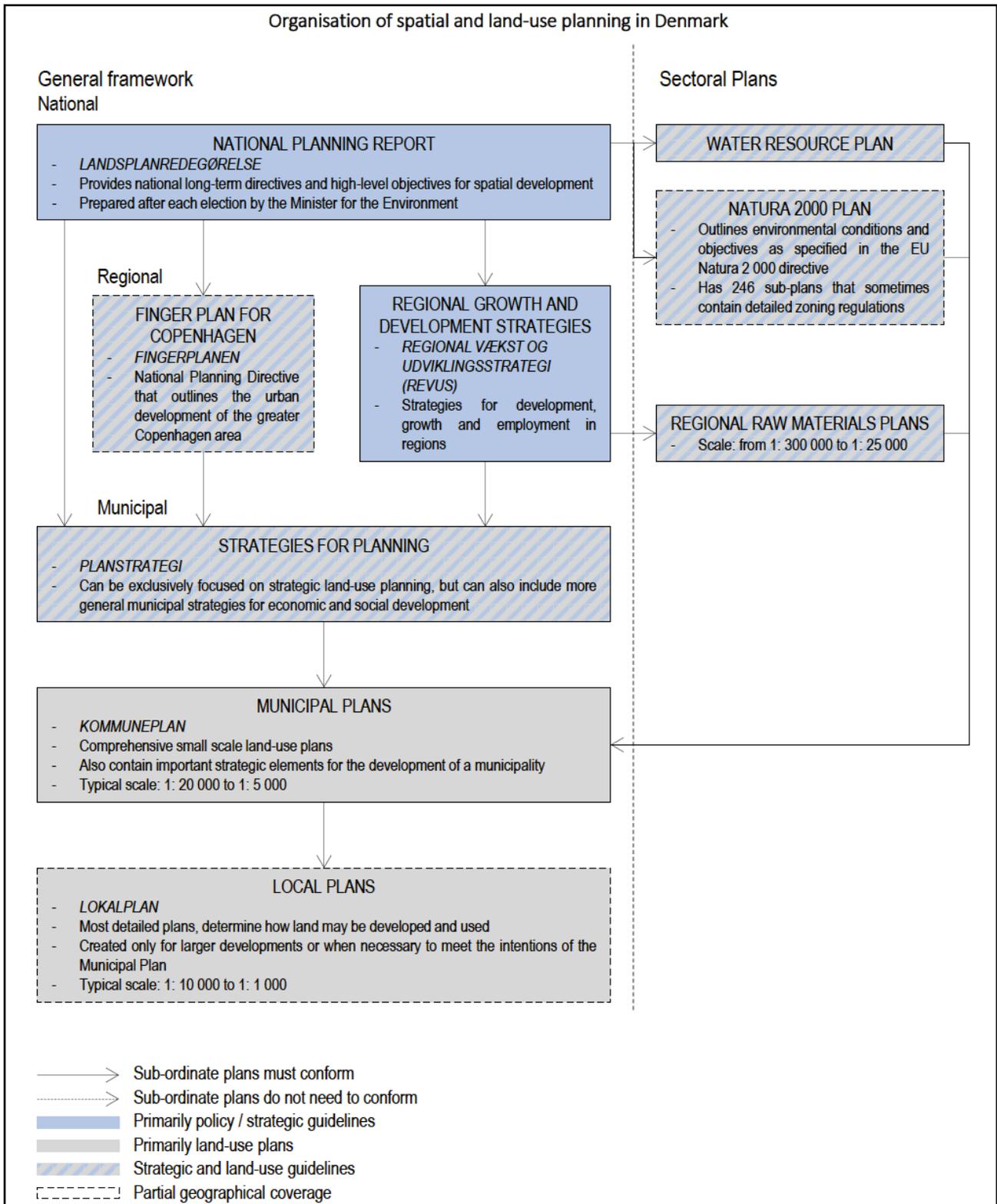
- I. Regional Plans are the highest-level plans.** At the regional level, the legal framework allows County Councils to prepare Regional Plans, but this is not mandatory, except for the county of Stockholm, which has produced a regional spatial plan for the greater Stockholm area.
- II. Comprehensive Plan at Municipality level:** Municipalities prepare two types of plans. The Comprehensive Plan is their main tool for strategic planning. It is legally required and covers the entire territory of a municipality, but it does not contain any legally binding provisions for land owners. It forms the basis of decisions on the use of land and water areas. Comprehensive plans must be reviewed by the municipal council at least once during each legislative period. Their compliance with national guidelines is checked by the County Administrative Boards. The statement of the county administrative board forms a compulsory planning document within the comprehensive plan. It reflects primarily considerations how to incorporate national interests in local planning.
- III. Detailed Development Plans:** The Detailed Development Plan is the statutory instrument to regulate land use at municipal level. It gives obligations and rights to land owners. These rights are protected during an implementation period that can vary between 5 and 15 years. Detailed Plans are only prepared in areas where it is necessary to control a change in land use and are valid until they are repealed or replaced. Special Area Regulations are more simple planning instruments that are also binding and are primarily used outside built-up areas.

Major Laws and Regulations: The Planning and Building Act is the main framework legislation that defines the land-use planning system in Sweden. It is complemented by the Environmental Code, which contains the most relevant regulations related to the permitted land uses. Other legislation relevant to land use can be found in the Roads Act, the Public Water and Wastewater Act and in the Real Property Formation Act, which provides the legal framework related to land ownership.

Co-ordination mechanisms: The main formal co-ordination mechanisms between levels of government and other relevant actors and stakeholders are mandatory consultations that occur in the plan-making process and before granting building permits. In practice, consultations are channelled through the County Administrative Boards, which play a co-ordinating role.

Source: The Governance of Land Use-Country Fact Sheet Sweden; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017

DENMARK



Source: The Governance of Land Use-Country Fact Sheet Denmark; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017

Levels and Types of Spatial Plans:

Denmark uses a hierarchical spatial planning framework that can be characterised as a three-tier system of development plans and strategies and a two-tier system of land-use plans. Each level of government prepares a strategic plan. The National Planning Report provides a vision for spatial development in Denmark.

- I. Regional Plans are the highest-level plans:** Regional Growth and Development Strategies focus on economic development with an emphasis on the inclusion of relevant stakeholders.
- II. Plan at Municipality level:** Municipal Strategies for Planning vary in their characteristics. Some are strictly focused on land use, but more and more municipalities use them to prepare broader local development strategies. Two types of land-use plans are prepared by the municipal level. The Municipal Plan is the most complex plan in the Danish planning system. It has the role of integrating the different objectives of higher level strategic plans into a comprehensive policy document that specifies overall objectives for development, includes guidelines for land use and provides a general land-use framework for the municipality.
- III. Local Plans:** Local Plans are the second type of land-use plans in Denmark. They provide detailed land-use regulations on varying topics at scales mostly from 1: 10 000 to 1: 1 000. Local plans have to be created for every major development project.
- IV. Sectoral Plans:** Three main types of sectoral plans exist in the addition to the above-mentioned plans. The Water Resources Plan, the Natura 2000 Plan and Regional Raw Materials Plans. Each of the types of plan contains strategic objectives but also zoning regulations for selected areas.
- V. Special Plans:** An important addition to the system of plans is the Finger Plan 2007 and 2013. It is a legally binding National Planning Directive for greater Copenhagen that contains a strategy for the growth and urban development of the metropolitan area. Planning in the Greater Copenhagen area must not conflict with the Finger Plan or other national planning directives for the area. Municipal planning in the Finger Plan area must ensure that urban development is planned with respect to a core urban region (“the palm of the hand”), the peripheral urban region (“the city fingers”), the green wedges (“between the fingers”) and the rest of the Greater Copenhagen area. Special attention is given to opportunities for strengthening public transport services and to avoiding urban growth in the green wedges.

Major Laws and Regulations: The framework legislation that defines the planning system in Denmark is contained in the Planning Act. Further important details regarding planning and development are contained in the Building Act that specifies requirements for building permits. Other important acts are the Nature Protection Act (the main environmental law) and the Land Registration Act that contains regulations on property ownership and registration and also specifies that a local plan must be registered in the land registry for each individual property. From a fiscal perspective, the Valuation Act is important for land use because it determines how property is valued and taxed.

Co-ordination mechanisms: Vertical co-ordination occurs through the legal requirement that lower level plans follow the guidelines in higher level plans. In particular, municipalities are required to align their planning documents with the above-mentioned national planning directives, water resource planning, Natura 2000 planning and raw materials planning. Also, municipal plans may not contradict the visions for spatial development in the Regional Growth and Development Strategies. However, enforcement of the latter is limited because of a lack of enforceable specific land-use regulation in regional strategic planning documents. Horizontal co-ordination is explicitly required by the Planning Act. Municipal plans must take a number of themes and policy sectors into account in a comprehensive manner. There are no formal provisions how this is achieved in the planning process.

A major reform to the planning system occurred in 2007 in parallel with the amalgamation of formerly 271 municipalities into 98. As part of the reform, regional land-use planning was almost completely abolished and municipalities were given the primary responsibility for land-use planning.

Source: The Governance of Land Use-Country Fact Sheet Denmark; Land-Use Planning Systems in the OECD: Country Fact Sheets © OECD 2017

NETHERLANDS

I. National Programme for Spatial Adaptation to Climate Change (ARK) (Netherlands)⁸

Overview: In 2006, under the initiative of the national government, the National Programme for Spatial Adaptation to Climate Change (ARK) was launched. For this programme several ministries worked closely with the umbrella organisations of the provincial authorities, municipal authorities and water boards. The Ministries of Housing, Spatial Planning and the Environment (VROM), Transport, Public Works and Water Management (V&W), Agriculture, Nature and Food Quality (LNV) and Economic Affairs (EZ) took the initiative to organise a National programme for Spatial Adaptation to Climate Change (ARK).

They formulated an adaptation strategy to climate-proof spatial planning in the Netherlands (over a time horizon of the next 100 years).

The strategy focused on climate proofing location options, spatial planning and building design. Resistance, resilience and adaptive capacity were key criteria.

Flood protection, living environment, biodiversity and the economy were the main social themes motivating spatial adaptation. The relationship between climate change and public health became a special attention point. The 2006/2007 policy already addresses some of the above mentioned tasks.

Flood protection policy (for the coast and major rivers) takes account of the effects of climate change for the next 50 to 100 years (rising sea levels, increased river discharge volumes).

Making use of the characteristics of natural systems has also already become a focal point of water policy. For example, a sand replenishment strategy was already used for coastal defences. And providing more space for water was already a cornerstone of river policy, including spatial reservations for higher standard flow rates in future. Flood protection was and still is a focal point of policy development and legislation, as are developments in the field of flood disaster management. The national adaptation strategy generated many local and regional initiatives focused on climate proofing regions.

A new Delta Commission was formed in 2008, as the previous approach taken to coastal defence was found to no longer be viable in future and the approach needed to be scaled-up. On September 3rd, 2008 the Delta Commission presented their advice to the Dutch Cabinet. The Delta Commission formulated twelve recommendations for the short and medium term. The Dutch government responded to the advice of the Delta Commission with the start of the Delta Programme in 2009/2010. With the Delta Programme the Dutch government formulated new priorities in the field of adaptation to climate change.

Netherlands also has an exclusive data and information platform dedicated to this programme and detailed research programmes under research, mitigation, adaptation, integration and communication. (<http://www.climatechangesspatialplanning.nl/>)

⁸ References: *ClimateADAPT* (<https://climate-adapt.eea.europa.eu/metadatas/guidances/national-programme-for-spatial-adaptation-to-climate-change-ark-netherlands>)
Report on National programme for Spatial Adaptation to Climate Change (http://www.climatechangesspatialplanning.nl/gfx_content/documents/documentation/National_Adaptation_Strategy_The_Netherlands.pdf)
Climate Changes Spatial Planning (<http://www.climatechangesspatialplanning.nl/research-themes/mitigation>)

CROATIA

I. Integrating climate change adaptation into coastal planning in for Buna/Bojana Area (Albania/Montenegro), the Coastal Plan for Reghaïa (Algeria) and Šibenik-Knin County⁹ (Croatia-2014)

In order to demonstrate the ICZM approach, two coastal management plans were developed within the MedPartnership project: the Integrated Resource Management Plan for Buna/Bojana Area (Albania/Montenegro) and the Coastal Plan for Reghaïa (Algeria), together with the Coastal Plan for the Šibenik-Knin County, Croatia, developed within the MedPartnership sister project ClimVar & ICZM. As the national strategies, plans were also developed based on the Article 18 of the ICZM Protocol, and through the participatory approach. These plans were aiming to capture the most relevant issues for the sustainable coastal development of the relevant coastal zone and providing innovative solutions by being forward-looking, proactive, comprehensive, and finally, truly integrated.

Integrated Resource Management Plan for Buna/Bojana Area

The Bojana/Buna area is a single natural system extending into Albania and Montenegro with transboundary issues and problems. The Buna/Bojana River, its catchment, the underlying aquifers and coastal waters provide the common physical threads linking the two countries.

The Integrated Resource Management Plan (IRMP) for Buna/Bojana was developed by PAP/RAC, GWP-Med and UNESCO IHP, to assist Albania and Montenegro to sustainably manage the natural and anthropogenic environment in the Buna/Bojana basin and coastal area. It was developed over a 5-year timeframe and completed in 2015.

The plan considers upstream impacts from the agriculture, tourism and urbanization on coastal and water resources, and marine impacts on the river delta and coastal aquifers. This multi-sectoral approach resulted with the measures for strengthening co-operation for restoration and safeguarding of the Area's ecosystems, increasing resilience to climate change as well as supporting creation of jobs and social welfare.

Adoption of the Plan: The central measures relate to establishment of a transboundary governance mechanism to ensure that relevant issues of transboundary importance are considered and acted upon bilaterally. Furthermore, the project resulted in drafting and initiating official consultations between two countries on Framework Agreement for the Sustainable Management of Skadar/Shkodra Lake Basin and Buna/Bojana Area. This is one of the few international examples of legal agreement for integrated approach in management of river basins, coastal and marine areas thus demonstrating the new water management paradigm - "source to sea" - on a transboundary level.

Reghaïa Coastal Plan

Following the Article 18 of the ICZM Protocol, the coastal plan for Reghaïa specifies the orientations of the national strategy, and enables its implementation at the local level. The fact the Plan was developed in parallel to the Strategy helped complying with this requirement.

The area of the Plan, which covers the municipalities of Reghaïa and Herraoua together with their marine part encompassing a future protected area, was chosen as a pilot area because most of

⁹ Reference: *ClimateADAPT*; <https://climate-adapt.eea.europa.eu/metadata/case-studies/integrating-climate-change-adaptation-into-coastal-planning-in-sibenik-knin-county-croatia>

Further Reference: Protocol On Integrated Coastal Zone Management In The Mediterranean; https://pap-thecoastcentre.org/projects/coastal_plans.html#skc

the problems encountered on the Mediterranean coast have been concentrated there: it has a wetland of international importance (Ramsar); one of the largest industrial areas in the region of Algiers; a fertile agricultural plain; and a tourism development zone stretching up to the dunes along the sea.

The major problems encountered in the area are illegal and precarious urbanization; domestic and industrial discharges; siltation and pollution of the lake; water pumping for irrigation; sand mining; and degradation of the sandy beach. Therefore, a cross-sectoral approach is highly required for an integrated management of this area. A particular emphasis was put on participation, with the use of the “Imagine” methodology which allowed stakeholders to agree on the vision for the area, to define sustainability in concrete domains, and to decide in which direction the zone should go in the future, and how to reach desired outcomes.

Adoption of the Plan: In September 2015, the Plan was officially adopted by the Intersectoral Committee established in the framework of this activity

Coastal Plan for the Šibenik-Knin County

Building coastal resilience for the Mediterranean, where coasts have always been attractive for living and leisure has emerged to be important. The challenge of coastal urbanization in Šibenik-Knin County, results in pressures on space, water resources, landscape values and sustainable development in general. Above all, climate variability and change (CVC) are expected to have profound impacts on coastal urbanization, economy and natural resources of the County. In order to tackle those issues, a Coastal Plan for the Šibenik-Knin County was developed according to Article 18 of the Mediterranean ICZM Protocol, which requests for making of coastal plans.

The Coastal Plan aims towards sustainable coastal development, but in this case it also has a strong focus on adaptation to CVC. The Plan primarily deals with spatial planning, water management and coastal protection but also with regional development and biodiversity management.

The Plan's participatory nature was reflected in parallel “Climagine” workshops where local stakeholders discussed and agreed on a vision of County's future coast. The impact of the Plan on public awareness is evident - an interest for the Plan was shown by stakeholders around the Mediterranean when presented at many national and international conferences and workshops. The need for a systematic approach to increase coastal resilience is now recognised by many coastal regions and this Plan presents an example to follow.

Adoption of the Plan: The Plan was adopted in April 2016. It will feed into local spatial plans, a regional development strategy and other sectoral policy documents. The Plan offers a number of recommendations, but also opens a number of questions, especially with climate change opening new levels of uncertainty.

Although there is no direct synergy in terms of geographic similarity given that these are cases of coastal plans, these plans are relevant case studies as these adopt an integrated approach as well as collaborative techniques and tools for plan preparation.

Case Study: USA

I. Guidance on Low Emission Land-Use Planning¹⁰

The guidance document is intended to help land use planners at the sub-national level respond to this question. It provides a general framework that is flexible, scalable and adaptable to a variety of different contexts with the goal of producing a low emission land use plan. Steps involved in low emission land use planning are;

Step 1: Understanding the Enabling Environment

- Context Assessments (Integrated Jurisdictional and Cross-Sector Assessment): Document the jurisdictional and sector planning frameworks that will guide the low emission land use plan, Identify limitations and boundaries within which the low emission land use plan must be developed.
- Stakeholder Engagement, Roles and Responsibilities: Identify all stakeholders that need to be involved in the planning process and will be impacted by the plan; Identify vulnerable groups at risk from the implementation of a plan and possible mitigation strategies to avoid. Effective participatory stakeholder engagement is critical to a successful planning process.
- Development of Goals and Objectives: Stakeholders need to define goals (desired long-term status) and objectives (desired short to medium term outcomes) for the planning area based on an accepted vision. Goals are formal statements that detail the desired impact of the plan and are: Linked to targets; impact orientated; measurable; time limited (generally 10 years or more) and specific. Objectives are formal statements detailing the desired outcomes of the plan and are: Result orientated; measurable, time limited (generally three to 10 years); specific and practical⁸

Step 2: Assessment of Historic and Current Conditions

- Environmental, Social and Economic Data Needs and Methods Compilation: Land based (area based) and Activity based accounting of carbon emissions, w.r.t environmental, social and economic data (eg; emissions in relation to specific sectors,

¹⁰ Reference: “Guidance on Low Emission Land Use Planning”

The guidance is developed by the USAID Lowering Emissions in Asia’s Forests (USAID LEAF) program and the United States Forest Services (USFS) International Program in support of USAID LEAF’s regional effort to build capacity for substantive and meaningful emission reductions in the forest and land use sector.

Authors : Jim Barber, Peter Stephen, David Saah, Phuong Chi Pham

Further details can be referred at: <https://ledsgp.org/wp-content/uploads/2015/08/Guidance-on-low-emission-land-use-planning2015.pdf>

livelihoods etc.) This will depend on the scope of interventions of the Land use plan developed.

- Understanding Historical Land Use Change and Current Condition: Determine historical emission trends from the forest and land use sector, Determine drivers or causes of forest and land use change and the 'actors' involved, Determine current land and natural resource condition
- Data and Capacity Gap Assessment: Determine what limitations there are in the data collected, data precision and accuracy levels, and develop appropriate plans of action to overcome these data limitations, Establish a multi-disciplinary team that has the knowledge, skills and capacity required to develop the plan (Eg: Geographers/spatial analysts specialists; Agriculture, forestry and carbon specialists; Economists; Hydrologists, biologists, wildlife ecologists, and other such specialists; Rural sociologists; and Policy makers and administrators)

Step 3: Analysis of Future Options

- Modelling Future Trends: Reach agreement with stakeholders on the most appropriate method to project GHG emissions, socio-economic and environmental parameters into the future.
- Business as Usual Construction: Establish Business as Usual baselines upon which future scenarios can be compared.
- Scenario Assessment: Develop future greenhouse gas emission scenarios and related social, environmental and economic benefits and risks for each of these emission scenarios, Establish assessment criteria for which the benefits and risks of each scenario can be assessed against the agreed BAU scenario and the goals and objectives of the planning process

Step 4: Negotiate and Prioritise Implementation Plan

- Negotiate Preferred Development Pathway: Once scenarios have been developed and the trade-offs for each scenario are clearly documented, a negotiation process is required to select one scenario, or development pathway that will meet most of the needs of most stakeholders.
- Prioritise and Sequence Implementation Activities: The prioritisation and sequencing of activities determines the "what, where and how" and may involve a different set of stakeholders than those who participated in the negotiation process. This is also the

time to consider integration both vertically (decisions and actions above or below the current planning level) and horizontally (across different sectors).

- Implementation and Financing Needs: Budget allocation from line ministries or even municipal allocations should be considered as the primary source of funds. This will engender ownership and integration with other planning processes.

Step 5: Monitoring, Evaluation, and Adaptive Management

- Define the Monitoring and Evaluation Framework: Monitoring is a continuing function that focuses on the implementation process and progress towards the achievement of land use planning objectives. Evaluation is a selective exercise done at specific time intervals to determine how well the planning activities have met expected objectives and/or the extent to which changes in outcomes can be attributed to the low emission land use plan.
- Monitor, Measure, and Evaluate Progress (w.r.t the indicator and framework developed for evaluation): Many inventory frameworks currently exist to monitor and measure (see section on 'Useful References, Tools and Resources') and those methodology frameworks should be leveraged to help provide useful information that can be applied across sectors and jurisdictions. Stakeholders should assist in the gathering and analysis of the monitoring information when possible and monitoring data should be stored in a transparent format that is accessible to all stakeholders. An information management system should be constructed for the storage, retrieval, and distribution of data and derived information.
- Adaptive Management: Once monitoring results have been reported and discussed among stakeholders, there may be a need to make adjustments to the plan or tactical implementation of activities if monitoring targets are not being met. This final part of the planning process is essential to build learning and knowledge among a broad range of stakeholders and further adapt and modify the low emission development plan as needed.

Case Study: Canada

I. Land use planning tools for local adaptation to climate change¹¹

The report, “Land use planning tools for local adaptation to climate change by the Government of Canada“ elaborates the different types of land use planning tools used in Canada along with case examples where these tools have been successfully applied in the country.

These planning tools are designed with the objectives of;

- Limiting development in hazard-prone areas
- Ensuring that the built environment can withstand a range of environmental stress
- Helping to preserve natural environments that protect communities against hazards (for example, dunes that absorb coastal storm effects)
- Educating stakeholders and decision makers about risks and opportunities and fostering dialogue about adaptation

A summary of the important tools is captured in this table.

	LAND USE PLANNING TOOLS	SCALE	EXAMPLE
1)	<p>Official Plans</p> <p>Official plans serve as guiding documents for subsequent local policies, programs and bylaws (such as zoning codes and subdivision controls).</p> <p>Climate change adaptation can be incorporated directly into a municipality’s official plan, either in a dedicated section or embedded throughout the document. Such texts normally detail local climate change risks and opportunities, an overarching adaptation vision and policy, as well as priority adaptation needs.</p> <p>Adaptation strategies and actions in official plans include mainstreaming adaptation into all or selected municipal operations, undertaking a comprehensive municipal risk assessment process to prioritize risks and opportunities, developing a comprehensive municipal adaptation action plan, or obtaining critical information or technical data for making effective and appropriate adaptation decisions.</p>	<p>District level/ Administrative Area level/ Community level (Official Plans); Through (Formal Planning Process)</p>	<p>Iqaluit’s General Plan</p> <p>Iqaluit (population 6200), the capital of Nunavut, is one of the first Canadian communities to integrate climate change adaptation into its General Plan. One of the five priority vision statements identifies Iqaluit as “a community that adapts to climate change.” The plan sets out two high-level objectives to realize this vision: (1) to study the impacts of climate change on the community and (2) to adopt policies that recognize the long-term impacts of climate change. The plan includes more detail on the climate change issues of concern to the community (for example, increases in temperature and precipitation, permafrost thaw, decreases in sea ice, and accelerated coastal erosion) and priority adaptation actions related to municipal infrastructure.</p>

¹¹ Reference: Richardson, G.R.A. and Otero, J. (2012). *Land use planning tools for local adaptation to climate change*. Ottawa, Ont.: Government of Canada, 38 p.

<p>2)</p>	<p>Local Plans on Special Matters</p> <p>A growing number of Canadian municipalities have adopted plans that specifically address the need to adapt to climate change. Some communities have chosen to develop stand-alone adaptation plans. Those documents typically outline the climate change impacts of concern to the community, the associated risks and opportunities, and the community’s vision and proposed actions for dealing with those changes. Many other communities have integrated consideration of climate change adaptation into local plans that address other issues.</p>	<p>Local Community Level Plans or Community Adaptation Plans; Both through (Formal Planning Process)</p>	<p>imagineCALGARY Calgary (population 1 096 833) is situated in southern Alberta. The impact of climate change on water quality and quantity is of particular concern in the area. Local rivers are expected to experience decreased flow because of decreased precipitation and reduced glacial coverage in the headwaters of the river basins.</p> <p>The City commissioned scoping reports to investigate how four major trends might impact the city: demographic changes, resource scarcity, technology transformation and climate change. Since publishing the imagineCALGARY plan in 2007, the City has implemented its vision and targets in subsequent land use plans and strategies. Numerous local partner organizations in the private, non-profit and public sectors have also committed to achieving the vision by changing their policies and practices.</p>
<p>3)</p>	<p>Zoning</p> <p>Zoning codes can be used by municipalities to limit new development in hazard-prone areas (for instance in areas subject to wildfires, landslides or coastal erosion) or to prescribe building standards that reduce vulnerability to environmental stress.</p>	<p>Region, Cities (official)</p>	<p>For example, in areas of high flood risk, all development may be prohibited, while in areas where the risk is lower, the ground floor of new buildings and structures may be required to be built above a minimum height to avoid flood damage. Given that climate change often magnifies existing hazard risk, municipalities could respond by modifying existing zoning restrictions to factor in the greater intensity, frequency or duration of certain hazards as climate changes.</p>

<p>4)</p>	<p>Land Subdivision and Development Controls</p> <p>Subdivision controls – which apply when a developer wants to divide a parcel of land, often for residential development. Generally, subdivision plans must demonstrate good access and efficient utility service for all the proposed lots and also address concerns about financial, environmental and other impacts.</p> <p>Site plan controls, development permits, development agreements and similar tools – which require developers to submit detailed designs to be assessed against specified criteria. For example, a proposal may be reviewed for the quality of the design of public areas, the fit with the historic character of the neighbourhood, or the extent of disturbance to ecologically sensitive land.</p> <p>Comprehensive development zones, planned unit developments and similar instruments – that apply to large sites in which non-standard or innovative designs and techniques are to be used, and a customised approach to zoning and site design is appropriate. As part of the evaluation of proposals under these types of regulations, local officials may seek changes to projects prior to approval. Further, the developer may be required to pay development charges, dedicate a portion of the site for public use or provide some other concession or amenity. These project-based, discretionary development controls can be very useful for adapting to climate change at the neighbourhood scale.</p>	<p>Smaller Sites/ New Development Areas for Approval from Municipalities; Project based and collaborative with approving authorities and project developers through incentives/ leverages for agreements</p>	<p>The Toronto Green Standard (TGS) is a set of performance measures for site and building design, covering energy and water efficiency, air and water quality, ecological services and solid waste management.</p> <p>Although adaptation is not explicitly mentioned, the TGS addresses several climate change impacts of concern to the city. For example, one provision, applicable to non-residential development of three stories or less, requires the use of light-coloured materials, open-grid pavement or shading on at least 50 percent of the site to reduce urban heat. Another provision requires that new developments retain at least the first 5 millimetres (mm) from each rainfall through rainwater reuse, plantings and other practices, thereby reducing storm water runoff.</p>
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<p>5)</p>	<p>Covenants and Easements</p> <p>Covenants and easements (known as real servitudes in Quebec) are formal agreements that place restrictions on the use of land or grant a person (or the public) the right to use land owned by another. For example, a covenant may prohibit building a structure that casts a shadow on a neighbouring property. An easement may allow the public to pass through private land to reach a beach. Both covenants and easements are said to “run with the land,” which means they bind current as well as future owners. There are strict and complex legal requirements that apply when creating easements or covenants.</p>	<p>Mutual agreements or resolution based, between govt/ municipality and individuals or as based on trusts</p>	<p><u>Island Trust’s NAPTEP Covenant</u> The Islands Trust (population 25 000) is a federation of local governments in the Gulf Islands and Howe Sound islands of British Columbia. The Islands Trust Fund acts as the conservation arm of the federation, charged with protecting the ecosystems in the region through land acquisition, conservation covenants and education programs. Since 1990, it has protected more than 1073 hectares (ha) of land on 84 properties. Under the Trust Fund’s Natural Area Protection Tax Exemption Program (NAPTEP) Covenant, land owners receive a 65 percent reduction in property taxes on the protected portion of their land. The Trust Fund is developing a tool to estimate the biodiversity value of properties to prioritize future acquisitions.</p>
<p>6)</p>	<p>Design Guidelines</p> <p>Design guidelines describe preferred practices in the design of certain aspects of a development project (for example, buildings, public areas, infrastructure, mechanical systems, landscaping). Municipalities may develop design guidelines for several reasons: to improve environmental performance, reduce infrastructure costs, enhance aesthetics, increase public safety or create more accessible public spaces.</p>	<p>Often by the Municipality, other Research institutions in collaboration with authorities</p>	<p><u>Regina’s Xeriscape Workbook44</u> Regina, Saskatchewan (population 193 100), is situated in the middle of the southern prairies, the driest major region of Canada. The city has very little local access to water. For the Canadian prairies, increases in water scarcity and drought are one of the most serious risks presented by climate change. Xeriscape is an alternate form of landscaping that relies on drought-tolerant plants to reduce outdoor watering requirements during the summer.</p>

<p>7)</p>	<p>Environmental Review of Development Projects</p> <p>An environmental assessment (EA) is a structured process used by governments to evaluate the environmental, social and economic impacts of development. It can be applied to a specific project, such as the construction of a bridge or to a plan or policy intended to guide future projects. Many kinds of developments are required to undergo an EA.</p>	<p>Conditionality for development Approval for large projects which may be in CC risk zones or may cause any environmental cost/risk</p>	<p><u>Town of Ajax environmental review of land development and infrastructure projects</u> Ajax, Ontario (population 109 600), is located on the north shore of Lake Ontario. Climate change is expected to bring Ajax more frequent and more severe extreme weather. This, plus proposed urbanization in the region, could increase local risks such as flooding, fouled beaches and decreased water quality in Lake Ontario, the primary source of water for Ajax. Ajax proactively uses EAs and EISs in its efforts to address climate change concerns. For example, to improve the quality of water discharged into Lake Ontario, Ajax is developing a master plan for the retrofit of its storm-water system. As part of that process, the Town conducted a Municipal Engineers Class EA to evaluate various retrofit measures.</p>
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	DECISION SUPPORT TOOLS	EXAMPLE
<p>8)</p>	<p>Assessments of Community Vulnerability and Risk</p> <p>A vulnerability assessment is a structured process for identifying the vulnerability of human and natural systems to climate change.⁵⁸ The more exposed and sensitive an individual or community is to climate change, the higher its vulnerability. Vulnerability is also a function of adaptive capacity; the higher a community's capacity to undertake adaptive actions, the less vulnerable it is.</p> <p>Risk management is a process widely used by businesses, governments and non-governmental organisations to identify and manage the adverse impacts of a change in conditions. The magnitude of a risk is calculated by examining the probability of the occurrence of an event and the severity of its impact. Risk management helps decision makers evaluate multiple threats and prioritise policy responses under conditions of uncertainty.</p>	<p><u>Heat and health vulnerability assessment in Windsor, Ontario</u> Windsor (population 210 891) is Canada's most southerly city and has summertime temperatures that are among the highest in Canada.</p> <p>The vulnerability assessment proceeded in five steps:⁶² (1) an initial assessment of the scope, objectives, work plan and stakeholders involved; (2) the collection and analysis of data, including an examination of the relationship between temperature and mortality; (3) the projection of future climate for the Windsor region; (4) a literature review to provide background information about the impacts of heat on health, vulnerability assessment methods, and best adaptation practices; and (5) workshops to consult with stakeholders and the community about existing vulnerabilities, adaptive capacity and potential adaptation actions. The vulnerability assessment provided information that allowed public health officials to develop more effective adaptation interventions.</p>

<p>9)</p>	<p>Climate Projections</p> <p>A climate projection is a representation of the climate in an area at some specified time in the future. Projections indicate plausible changes in a set of climate variables. Examples include changes in average and extreme precipitation and temperature, the number of frost-free days, sea level, and the length of the growing season. This information may be presented in numerical, visual (graphs or maps) or narrative form.</p> <p>Climate projections are generated from the outputs of one or more climate models.</p>	<p><u>Halifax Harbour plan for sea level rise^{68,69}</u></p> <p>City planners partnered with a team of scientists to develop projections of future sea levels and storm water levels in Halifax Harbour under three climate scenarios for 2100: (1) a continuation of the historical rate of change, (2) the upper-limit projection for mean sea level rise from the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC) and (3) a projection based on more recent scientific literature. High-resolution mapping of possible future flood levels was then produced for each scenario.</p>
<p>10)</p>	<p>Scenario Planning</p> <p>A scenario is a plausible, simplified description of how the future may develop. Scenario planning is a strategic medium- to long-term planning tool in which planners develop multiple scenarios describing potential social, economic and environmental conditions in a community and then formulate strategies and measures to achieve planning goals under one or more of those scenarios.</p> <p>The development trajectories are based on a few key variables expected to drive change, such as population growth, technological shifts or energy demand. Different narratives about how climate change may unfold in the community are derived from scientific projections, expert assessments and other sources.</p>	<p><u>Whitehorse Community Climate Change Adaptation Project</u></p> <p>Whitehorse (population 25 690) is the capital of Yukon and, like other northern communities, already faces many climate-related impacts, including forest fires, flooding and ecosystem changes. To help the community prepare for future climate changes, a scenario planning project was conducted in 2009, led by a local college in collaboration with the territorial government, local and First Nations governments, private sector firms and community groups.</p>

<p>11)</p>	<p>Visualising Climate Change Impacts</p> <p>Maps and other landscape visualizations can illustrate, in a simple and effective manner, the nature and extent of the changes expected in the local climate, the severity of possible impacts, and what proposed adaptation responses might look like. Such visualizations support decision making by translating scientific concepts into maps or images that have clear and practical meaning to non-scientists and the public. They can facilitate dialogue during the planning process.</p>	<p><u>Toronto’s heat vulnerability mapping tool</u></p> <p>As the climate changes, Toronto is expected to experience more intense and prolonged heat waves. Extreme heat is a public health issue of particular concern to the city’s senior citizens, to persons suffering from respiratory illnesses and to other vulnerable populations. Toronto Public Health (TPH) has developed a mapping tool to visualize areas of elevated human vulnerability to extreme heat. The maps incorporate numerous indicators of vulnerability, including surface temperatures, green space coverage, housing and social characteristics of at-risk populations, access to air conditioning, and the location of cool places. The tool helps TPH and community partners identify and prioritize geographic hot spots for delivering resources during a heat alert. The City also plans to use the tool for long-term climate adaptation planning.</p>
<p>12)</p>	<p>Adaptation Planning Guidebooks</p> <p>The guidebooks are typically based on the experience and insights of pilot communities and may include case studies and prepared worksheets, as well as tips and practical information. The other decision-support tools described in this document – visualizations, vulnerability and risk assessments, and scenario planning – may be included within the adaptation planning process described in the guidebooks.</p>	<p><u>Nova Scotia’s Municipal Climate Change Action Plan Guidebook: Yarmouth pilot project</u></p> <p>In 2010, the Government of Nova Scotia required municipalities to prepare and submit a climate change action plan by 2013 as a condition for receiving federal gas-tax funds. In November 2011, the Province published the Municipal Climate Change Action Plan Guidebook to help municipalities prepare their action plans. Yarmouth was one of three pilot communities to work through the Guidebook. The lessons learned were used to assist other municipalities in undertaking similar initiatives.</p> <p>Steps to develop an action plan</p> <ul style="list-style-type: none"> - Build an adaptation team/committee. - Assess impacts and hazards. - Identify affected locations. - Identify and evaluate the impacts to affected facilities, infrastructure and services. - Identify local social, economic and environment considerations. - Determine priorities for adaptive actions

Source: *Referred and Adapted from the Report. "Land use planning tools for local adaptation to climate change" by Government of Canada*

Key Takeaways

The various case studies and global best practices are throw light in a variety of approaches that directly and indirectly consider climate change aspects in Spatial Planning processes.

When we speak of a methodology for mainstreaming climate change considerations into Spatial Planning, it is evident from the various examples that it is critical to address the entire spatial planning framework, from plan preparation, legal and institutional capacity, implementation mechanisms/tools to management and monitoring.

While the different case studies reflect different aspects of spatial planning with regard to integration of climate change considerations, any methodology evolved for North Macedonia will need to bring together as many different aspects into its new methodology and framework. Most of the EU nations, USA, and Canada have certain components in their spatial planning system that integrate strategies for building resilience and reducing vulnerabilities. On the other hand, Netherlands as early as 2007 adopted a more direct and explicit agenda and programme called, “National Programme for Spatial Adaptation to Climate Change (ARK)”.

The table below list down some key takeaways that can inform the development of the Methodology Framework which will be developed in the next stage.

No.	KEY TAKEAWAYS	ASPECTS AND PHASES OF SPATIAL PLANNING*	CHARACTERISITCS
1	The four pillars that are fundamental to integrate climate change considerations into spatial planning are; - Vulnerability and Risk Assessment for existing and future scenarios - Mitigation measures to reduce/prevent risks - Adaptation measures to enhance Resilience - Adaptation measures to lower emissions	Guiding Pillars for every phase of spatial planning process	Inter-sectoral Spatial and non-spatial
2	Shift from sector - oriented planning to location/territory specific strategising and planning using landscape-based territorial development approaches.	Guiding principle for spatial planning process	Spatial (translate and identify spatial characteristics in data/information)

3	There is a need for coherence and integration between various levels of Plans (National/Regional/Local Plans). Larger Plans should be able to inform local plans and local plans should align with the larger spatial guidelines and mandates suggested in the larger plans (Both Top-Down and Bottom Up)	Guiding principle to enable integration in the spatial planning system	Spatial Planning process and governance (applicable to the entire process and every phase)
4	It is important to have an indicator based framework to examine and read, specific threats, thresholds and consequences. This is an important decision making tool for active and continued assessment of vulnerabilities, risks and threats	Active Vulnerability and Risk Assessment (Relevant to all phases of planning)	Spatial (Real-time and geospatial) and Non-Spatial (Checklist)
5	Use geo-spatial tools and ICT technologies for risk and vulnerability evaluation, given the dynamic nature of rapidly changing scenarios. This will ensure that the spatial plans are less static or outdated and thus align closer with the changes on ground	Active Vulnerability and Risk Assessment (Relevant to all phases of planning)	Spatial (translate Non-Spatial data into spatial wherever viable)
6	Data (qualitative, quantities, spatial) and information (references, guidebooks, or decision making tools) repository that is organised and curated and which can be easily accessed by all parties/stakeholders (government and non-government)	Data and Information repository for Planning, governance and knowledge sharing	A repository that is web-based or otherwise, accessible to all (a one stop point to other data sources as well)
7	There is a need to adopt a multi-dimensional landscape approach that incorporates natural resource management (NRM) governance and tenure concerns within the design of land use (This is reflected in the best practices and most of the country case studies)	Preparation, Implementation and management phases	Spatial Maps that can inform Policy and land governance
8	Mapping areas of impacts for climate change scenarios based on scenario projections	Data for Plan Preparation phase	Spatial Maps that can fed into spatial assessments

9	Land Vulnerability, Land Suitability and Capability assessment methods has to be evolved to guide Land use plans, urban plans, sectoral plans and local plans (These spatial assessments have to be informed by global, regional and local factors/drivers of climate change and geographic conditions and should be done for the different regions)	Plan Preparation Phase Applicable at National and Regional levels	Spatial (geo-referenced and enabled by geo-spatial tools)
10	Land based and activity based mapping of emission s (carbon and other pollutants) is important in informing Spatial Plans (including decision making tools/outputs of plans such as; maps, design and regulations)	Plan Preparation Phase Applicable at local level to inform local plans and sectoral plans	Spatial data supported by non-spatial qualitative and quantitative data
11	Landscape Structure Plans at national, regional and local levels should hold precedence and inform all sectoral development plans as well as land use plans	Plans and Plan Preparation component	Spatial Maps that are geo-referenced and accessible to all decision makers
12	Visualising impacts and risk areas for awareness and capacity building	Decision making supplementary tools	Spatial and Three-Dimensional)
13	All spatial planning phases (especially plan preparation, implementation tools/ mechanisms, management and monitoring tools/guidelines) has to be evaluated based on terms and conditions for climate change considerations and sustainable development before been approved for use.	Applicable to Plan Preparation, Implementation tools/ mechanisms, Management and monitoring tools/ guidelines and can be used as the approval mechanism	Evaluation for Quality assurance of various aspects of spatial plan preparation
14	Some important Plan Implementation and management tools/mechanisms are; Zoning codes and regulations, land sub-division codes and controls, incentive based covenants and easements, development and design regulations and controls	Plan Implementation tools and mechanisms for land governance	Policy, regulation and rules that are obligatory, guidelines that are non-obligatory and incentivising mechanisms
15	Natural resource based valuation of land to inform land tenure and governance is critical to ensure that ecosystem services and natural capacity of landscapes in mitigating risks/building resilience/reducing impacts etc. are protected and valued	Land tenure and governance	Land valuation techniques and methods

16	Clarity in roles and responsibilities of various government departments/agencies for every stage of planning process (plan preparation, approval, implementation, monitoring and management). Each of these phases and its outputs has to be evaluated by an independent set of experts (guided by a set of evaluation criteria/parameters/terms/conditions)	Governance	Governance related protocols and institutional mandates
17	Collaborate and partner with counterparts in other countries; <ul style="list-style-type: none"> - Between government departments and agencies - Between expert institutions and non-government organisations-local and international (to facilitate community engagement, to be updated about best practices etc.) 	Developing and iterating Plans (Plan Preparation phase)	Collaborative efforts (formal and informal) through conferences, workshops, combined exercises
18	Capacity building (skills and man-power) to enable better planning practices and adoption of new methodologies is important.	Institutional development	Training exercises
19	Community/citizen engagement and awareness is vital in realising various plans on ground. this is fundamental as they are the key stakeholders and beneficiaries of any planning intervention.	Community Awareness	Participatory and representative
* Aspects of Spatial Planning Framework referred to here are; Plan Preparation Phase, Plan Approval Phase, Plan Implementation Phase, Plan Management and Monitoring Phase			