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Report on EU initiatives and polices related to urban development and climate change

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Identification of WB regional issues related to urban development

Project: 101081724 — SmartWB — ERASMUS-EDU-2022-CBHE

PROJECT INFO

Project title	Curricula innovation in climate-smart urban development based on green and energy efficiency with the non-academic sector
Project acronym	SmartWB
Project reference number	101081724
Funding scheme	Lump sum grant - ERASMUS-EDU-2022-CBHE
Web address	www.smartwb.ucg.ac.me
Coordination institution	University of Montenegro
Project duration	36

DOCUMENT CONTROL SHEET

Work package	WP2 Analysis of current status in climate-smart urban development
Ref. no and title of activity	T2.2 Analyse of EU initiatives and polices related to urban development and climate change
Title of deliverable	Report on EU initiatives and polices related to urban development and climate change
Lead institution	Technische Hochschule Ostwestfalen-Lippe (TH OWL), Germany
Author(s)	Martin Oldenburg, Anna Mues
Document status	Final
Document version and date	V.08, 15 May 2023
Dissemination level	Sensitive

VERSIONING AND CONTRIBUTION HISTORY

Version	Date	Revision description	Partner responsible
v.03	05.04.2023	List of policies	THOWL
v.04	11.04.2023	Policies, best practices	THOWL
v.05	14.04.2023	Germany, Croatia, text	THOWL
v.06	25.04.2023	Norway, format, input	THOWL
v.07	02.05.2023	Input	THOWL
v.08	15.05.2023	references, best practice Germany, national policies, evaluation	THOWL
v.09	19.05.2023.	Final revisions	UNIZG, UNI

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Executive Summary

This document represents D2.2 “Report on EU initiatives and polices related to urban development and climate change” of the SmartWB project funded by the European Commission's Erasmus+ Programme ERASMUS-EDU-2022-CBHE under grant agreement No 101081724. In this activity, EU initiatives and polices related to urban development and climate change as well as a brief interpretation of EU legislation and its implementation as best practices in project EU partner countries will be analyzed.

List of Abbreviation

ADB	Asian Development Bank
APC	Potentially polluting activities
BBSR	Federal Institute for Research on Building, Urban Affairs and Spatial Development
BMWSB	Federal Ministry of Housing, Urban Development and Building
BUKEA	Authority for the Environment, Climate, Energy and Agriculture
CCROM	Centre for Climate Risk and Opportunity Management
CEAP	Circular economy action plan
CFO	certificado final de obra (final work certificate)
COP21	21st Conference of Parties
CSUD	Climate smart urban development
VUT	Connected Urban Twins
CO_2	Carbon dioxide
DGNB	German Sustainable Building Council
ECCP	European Climate Change Programme
E^2MAS	Energy Efficiency Monitoring and Analysis System
EQS(D)	Environmental Quality Standards (Directive)
ERDF	European Regional Development Fund
ETS	Emission trading system
EU	European Union
GEG	Building Energy Act
GWD	Ground Water Directive
GWh	Gigawatt hours
ICLEI	International Council for Local Environmental Initiatives
INSPIRE	Infrastructure for Spatial Information in the European Community
IPCEI	Important Projects of Common European Interest
IPS	Preliminary status report
IR	Implementing rules
ISPU	Spatial Planning Information System
KfW	Credit Institude for Reconstruction
KTS	Coordination and transfer office (of MPSC)
LOE	Ley de Ordenación de la Edificación
MPSC	ModelProjects Smart Cities
NDCs	Nationally determinded constributions
NSDI	National spatial data infrastructure
OECD	Organisation for European Economic Co-operation
PRTR	Recovery, Transformation and Resilience Plan
RBMPs	River Basin Management Plans
RISA	Rain InfraStructure Adaption
RO	Republic of Croatia
SCOs	Simplified cost options
SDG	(UN) Sustainable Development Golas
SDI	Spatial Data Infrastructure
SUDS	Sustainable Urban Development Strategy
SUMP	Sustainable Urban Mobility Plan
TWh	Terawatt hours
UIA	Urban Innovative Platform
UNF-FCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive
WHG	Federal Water Act (Wasserhaushaltsgesetz)
WRA	Water Rights Act

1 Introduction

The produced report gives an overview of EU initiatives and polices related to urban development and climate change including Cohesion Policy focused on five policy objectives around (1) Smarter, (2) Greener, (3) Connected, and (4) Social Europe, and a new cross-cutting objective (5) to bring Europe closer to citizens by supporting locally developed investment strategies across the EU, New Urban Agenda as a paradigm shift based on the science of cities, programs and initiatives such as Urban Innovative Actions based on article 8 of ERDF as an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges, URBACT as a European exchange and learning programme promoting sustainable urban development, and the Urban Agenda for the EU.

Contributing partners from the EU Member States and third countries associated to the Programme countries are:

- University of Nis,
- University of Natural Resources and Life Sciences,
- Norwegian University of Life Sciences,
- University of Zagreb,
- Universidad Rey Juan Carlos,
- Technische Hochschule Ostwestfalen-Lippe

This report examines the different innovative technological solutions used in climate smart urban development (CSUD) initiatives in terms of regulatory frameworks, best practices, and emerging trends in the EU. It also inspects how European policies have been implemented at the national level in the EU Member States and third countries associated to the Programme countries and presents some examples of CSUD projects from the programme countries. Through the programme countries' contributions to national policies and best practices, this report provides valuable insights into the role of innovative technological solutions in promoting CSUD and creating a more sustainable, liveable, and resilient urban environment across Europe.

First, the EU initiatives and policies in the field of urban development are presented. Due to the breadth of the subject area, many initiatives and policies come into question. Therefore, this report is limited to the most important ones and does not claim to be exhaustive. Other policies and initiatives are presented in WP4 in D4.1.

After presenting the main objectives, data, target groups and some details on EU initiatives and policies, the national policies of the EU Member States and third countries associated to the Programme countries are presented and discussed. The contributions are provided by the programme countries and the authors are identified in each chapter. Following this, one best practice related to CSUD from each programme country is presented. These can be seen as motivational and innovative and may serve as inspiration for further sustainable projects.

The aim of this report is to provide an overview of existing and already implemented European policies and initiatives in the field of urban development and to examine how these have been implemented in selected countries. In this way, the potential for further projects or legislation in European countries can be identified.

2 EU initiatives and policies related to urban development

The European Union has set ambitious goals through the European Green Deal to address and mitigate the effects of climate change and promote sustainable development. As part of this effort, the EU has introduced a range of legislation and policies related to urban development and the urban environment to promote more sustainable, healthy, and competitive urban areas while addressing the challenges of climate change.

The EU has a long-term strategy to become climate-neutral by 2050 - an economy with zero net greenhouse gas emissions. As part of the European Green Deal, on March 4, 2020, the Commission proposed the first European climate law to enshrine in law the goal of climate neutrality by 2050. In the following subchapters, some regulations of the EU regarding urban development and sustainable development are considered and presented. To create a delimitation, mainly those topics are analyzed which are related to the curriculum and thus deal with planning, design, energy efficiency, water management and planning policies.

To get an overview of the previous legislation in the European Union, the initiatives and topics are tabulated in chapter 2.3. Topics such as the European Green Deal, the Paris Agreement, but also initiatives such as URBACT are addressed. In addition, chapter 3 gives national implementations and an example from the EU Member States and third countries associated to the Programme countries.

Further examples of best practices in the field of Climate-Smart Urban Development have been elaborated in WP 4.

The entire EU legislation is set against the background of the European Green Deal. The deal covers a wide range of action areas such as climate neutrality, smart cities, and sustainability in the areas of air, water, noise, green open spaces, waste management and circular economy. Various laws, policies and programs will be implemented to achieve the goals by 2050 and become the first climate-neutral continent.

2.1 Goals of EU initiatives and policies

The following report focuses on EU policies and initiatives related to urban development during climate change and the thematic areas listed below:

1) Spatial and urban planning,
2) Architecture and building design,
3) Material science,
4) Energy efficiency,
5) Road design and mobility,
6) Urban water management,
7) Geodesy and analysis,
8) Planning and participation procedures,
9) Governance and planning policies.

These nine thematic areas are those of the curricula, which will be examined in more detail and renewed within the framework of the project.

The main objectives of all the initiatives and policies listed are to reduce net greenhouse gas emissions, address the impacts of climate change and make Europe a smarter continent. Furthermore, the EU already supports small projects in EU Member States and third countries associated to the Programme countries to initiate further development.

2.2 List of EU initiatives and policies

In consideration of the very broad subject matter and the large number of policies and initiatives, only an excerpt of the most important them initiatives and policies (regulations and programs) are discussed below. The following list is not complete, but it covers a wide range of areas, especially the Green Deal.

EU initiatives:

- EU Mission 100 climate-neutral and smart cities by 2030
- European Climate Pact
- Urban Innovative Actions (UIA)

The examples of the EU policies, in terms of regulations and programs, are as following:

EU regulations:

- European Climate Law
- The Paris Agreement
- Urban Mobility Package
- 2020 Climate and Energy Package
- Directive 2007/2/EC establishing an Infrastructure for Spatial information in the European Community (INSPIRE)
- Water Framework Directive
- Cohesion Policy

EU programs:

- European Green Deal
- New Urban Agenda
- EU Adaptation Strategy
- Hydrogen Strategy
- European Climate Change Programme (ECCP)
- Urban greening platform
- URBACT
- Repower EU plan
- Circular economy action plan (CEAP)

2.3 Overview on initiatives and policies for issues related on SmartWB

The topics from the list of policies in 2.2 are explained in table form below. In each case, the date of entry into force, the topics affected, the objectives and the target group are discussed. This is followed by some explanations. The order is based on the list of policies.

Table 2.3-1: Proposal for a revised Urban Wastewater Treatment Directive

Proposal for a revised Urban Wastewater Treatment Directive
Date: 2023
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: The revision aims to: - Reduce pollution, energy use and greenhouse gas emissions; - Improve water quality by addressing remaining urban wastewater pollution; - Improve access to sanitation especially for the most vulnerable and marginalised; - Make industry pay to treat micro-pollutants, - Require EU countries to monitor pathogens in wastewater; - Lead to a more circular sector; - Achieve a pollution-free environment by 2050.
Target group: - Wastewater treatment plants in Europe - Communities, authorities
Detailed Information: Urban wastewater is one of the main sources of water pollution if it is not collected and treated properly. The Urban Wastewater Treatment Directive currently in force is more than 30 years old. Since its adoption the quality of European rivers, lakes and seas has greatly improved. EU countries have set up collecting systems and wastewater treatment plants with the help of EU funding. There is a high level of compliance with the Directive across the EU, with 98% of wastewater collected and 92% satisfactorily treated, according to the current coverage of the directive. Yet, pollution remains that is not covered by the current rules and needs to be addressed to achieve a pollution-free environment by 2050. This includes pollution from smaller cities outside the scope of the Directive and pollution caused by storm water overflows. At present, micropollutants such as residues from pharmaceuticals and cosmetics are also not covered. These residues are frequently found in all our water bodies and have a detrimental effect on nature. Yet, when these micro-pollutants end up in the environment, additional treatment is necessary to remove them again.

Wastewater treatment is one of the biggest consumers of energy in the public sector. The revised Directive therefore also sets an energy neutrality target for the sector.
Finally, recent experience has shown that viruses can be tracked with high reliability in wastewaters: this provides precious information for public health decisions. To be able to collect the necessary data has likewise required an update of the Directive.
The current revision of the Directive is in line with the results of a 2019 Evaluation, adapting it to the newest scientific knowledge.

The proposal for revising the rules on treating urban wastewater aims to protect better the health of Europeans and the environment. More specifically, the revision aims to:

- Make the wastewater sector energy-neutral and move it towards climate neutrality by reducing energy use, using the larger surfaces of some wastewater treatments plants to produce solar/wind energy, encouraging water reuse, and using sludge to produce biogas, which can substitute natural gas.
- Make industry responsible for treating toxic micropollutants ("polluter pays" principle) that are released into the environment from the use of their products, especially harmful residues from the pharmaceutical and cosmetics sector.
- Improve access to sanitation in public spaces and for the 2 million most vulnerable and marginalised people in the EU.
- Require the monitoring of health parameters in wastewater to enhance the EU's preparedness against pandemics or other major public health threats, as is currently being done for COVID-19.

The proposal has multi-faceted goals and requirements for municipalities and wastewater treatment providers. However, many experts already say that the requirements of the renewal of the Wastewater Directive are too high, and that the renewal cannot be adopted as it is.

Currently the proposal is introduced into the national discussion processes and it is intended to finalize is 2024.

Table 2.3-2: EU Mission - 100 climate-neutral and smart cities by 2030

EU Mission - 100 climate-neutral and smart cities by 2030

Date: 04/2022

Related topics:

☒ Spatial and urban planning
☐ Architecture and building design
☐ Material science
☒ Energy efficiency
☐ Road design and mobility
☐ Urban water management
☐ Geodesy and analysis
☒ Planning and participation procedures
☐ Governance and planning policies

Objectives:

- Deliver at least 100 climate-neutral and smart cities by 2030
- Ensure that these cities act as experimentation and innovation hubs to enable all European cities to follow suit by 2050
- Build a multi-level and co-creative process formalised in a Climate City Contract that will aim at the shared goal of the mission

Target group:

- Cities with at least 50.000 inhabitants
- High climate neutrality ambitions

Detailed Information:

Cities play a pivotal role in achieving climate neutrality by 2050, the goal of the European Green Deal. They take up only 4% of the EU's land area, but they are home to 75% of EU citizens.
Furthermore, cities consume over 65% of the world's energy and account for more than 70% of global CO_2 emissions.

Since climate mitigation is heavily dependent on urban action, we need to support cities in accelerating their green and digital transformation. European cities can substantially contribute to the Green Deal target of reducing emissions by 55% by 2030 and, in more practical terms, to offer cleaner air, safer transport and less congestion and noise to their citizens.

The Mission on adapting to Climate Change focuses on supporting EU regions, cities, and local authorities in their efforts to build resilience against the impacts of climate change. The Mission contributes to putting the EU's adaptation strategy in practice by helping the regions to:

- Better understand the climate risks they are and will be confronted with in the future,
- Develop their pathways to be better prepared and cope with the changing climate,
- Test and deploy on the ground innovative solutions needed to build resilience.

The Mission's objective is to accompany by 2030 at least 150 European regions and communities towards climate resilience.

So, the main aim of the mission is to support, promote and showcase 100 European cities in their systemic transformation towards climate neutrality by 2030 and make these cities into experimentation and innovation hubs for all cities, thus leading on the European Green Deal and on Europe's efforts to become climate neutral by 2050.

The Cities Mission will involve local authorities, citizens, businesses, investors as well as regional and national authorities to:

- Deliver 100 climate-neutral and smart cities by 2030;
- Ensure that these cities act as experimentation and innovation hubs to enable all European cities to follow suit by 2050.

As foreseen in its implementation plan, the Cities Mission takes a cross-sectoral and demand-led approach, creating synergies between existing initiatives and basing its activities on the actual needs of cities.

The 100 selected cities are now being invited to develop Climate City Contracts, which will include an overall plan for climate neutrality across all sectors such as energy, buildings, waste management and transport, together with related investment plans. This process will involve citizens, research organisations and the private sector.

The clear and visible commitments made by the cities in the Climate City Contracts will enable them to engage with the EU, national and regional authorities – and most importantly with their own citizens to deliver on this ambitious objective. Climate City Contracts will be co-created with local stakeholders and citizens, with the help of a Mission Platform (which is currently managed by the project NetZeroCities.

The Mission Platform will provide the necessary technical, regulatory, and financial assistance to cities. In total, Horizon Europe will invest around € 360 million in research and innovation actions linked to the Mission (e.g., in mobility, energy, urban planning) in the period 2021-23.

Table 2.3-3: REPowerEU Plan

REPowerEU Plan
Date: 2022
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Europe's dependency on Russian energy imports as soon as possible; - Rapidly reducing the dependence on Russian fossil fuels by fast forwarding the clean transition and joining forces to achieve a more resilient energy system and true Energy Union → energy transition.
Target group: - Authorities - EU members
Detailed Information: Russia's unprovoked and unjustified military aggression against Ukraine, has massively disrupted the world's energy system. It has caused hardship because of high energy prices, and it has heightened energy security concerns, bringing to the fore the EU's over-dependence on gas, oil and coal imports from Russia. High amounts paid for Russia's fossil fuels are helping Russia sustain its war against Ukraine. In March 2022, EU leaders agreed in the European Council to phase out Europe's dependency on Russian energy imports as soon as possible. Drawing on the Commission's communication, they invited the Commission to swiftly put forward a detailed REPowerEU plan. Coal and oil imports are now to be covered by the sanction's regime. The recent gas supply interruptions to Bulgaria and Poland demonstrate the urgency to address the lack of reliability of Russian energy supplies. REPowerEU is about rapidly reducing our dependence on Russian fossil fuels by fast forwarding the clean transition and joining forces to achieve a more resilient energy system and a true Energy Union. The EU can significantly reduce the dependency on Russian fossil fuels already this year and accelerate the energy transition. Building on the Fit for 55 package of proposals and completing the actions on energy security of supply and storage, this REPowerEU plan puts forward an additional set of actions to: - save energy; - diversify supplies; - quickly substitute fossil fuels by accelerating Europe's clean energy transition; - smartly combine investments and reforms.

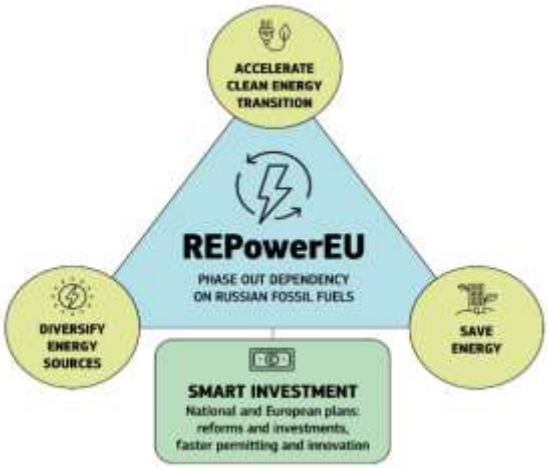

Figure 1: REPowerEU objectives

Taken together, these actions will structurally transform EU's energy system. They require effective coordination between European regulatory and infrastructure measures, as well as national investment and reforms and joined-up energy diplomacy. They also require coordination between action on the demand side, to reduce energy consumption and transform industrial processes to replace gas, oil and coal with renewable electricity and fossil-free hydrogen, with action on the supply side to create the capacity and framework to roll out and produce renewable.

Fairness and solidarity are defining principles of the European Green Deal. Our joint action to accelerate the clean energy transition therefore reinforces the need for effective employment, skills and social policies, in line with the European Pillar of Social Rights. Dependence amongst Member States on Russian energy sources differs as the energy situation and energy mixes differ from one country to the other. The approach taken in this REPowerEU plan reflects these differences and proposes a variety of balanced responses corresponding to the specific Member States needs whilst moving the EU towards climate neutrality by 2050.

Table 2.3-4: Cohesion Policy

New Cohesion Policy
Period: 2021 - 2027
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: Focused on five objectives around: - smarter, - greener, - connected, - Social Europe, and new cross-cutting objective to bring Europe closer to citizens by supporting locally developed investment strategies across the EU
Target group: - Authorities - Municipalities
Detailed Information: EU Cohesion Policy contributes to strengthening economic, social, and territorial cohesion in the European Union. It aims to correct imbalances between countries and regions. It delivers on the Union's political priorities, especially the green and digital transition. There will be 5 policy objectives. As horizontal measures, cohesion policy aims to build capacity and cooperation with partners inside and outside the MS. The following points show the changed and updated aspects of the Cohesion Policy for the period 2021 – 2027: - Support to EU priorities: 5 policy objectives focused on key objectives and thematic concentration on those most relevant for a competitive and future-proof Europe; - Climate targets: weighted climate and environmental contribution of investments, minimum targets for funds, climate adjustment mechanism; - Greater empowerment of local, urban & territorial authorities in the management of the funds: dedicated policy objective implemented only through territorial and local development strategies; - Simplification: The new cohesion policy introduces one set single of rules for the eight Funds and a significant reduction in the amount of secondary legislation. This entails notably: • Lighter and more frequent reporting, • Lighter controls for programs: sharp reduction of management verifications, "single audit principle", proportionate arrangements for audits, • Faster delivery: extended possibility to use simplified cost options (SCOs) and financing not linked to costs schemes,

- End of Commission approval for major projects,
- No more designation of management and control bodies;

- Creating conditions for success: streamlined and clear enabling conditions to be respected throughout the whole programming period for reimbursement from the Union budget.
- Flexible programming adjusted to new challenges and emerging needs: allocation of flexibility amount only after midterm review of socio-economic situation and possible new challenges;
- Reinforced visibility and communication provisions: requirements for beneficiaries and operations of strategic importance.

Table 2.3-5: Hydrogen Strategy

Hydrogen Strategy
Date: 2020
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Decarbonise the EU in a cost-effective way - Reduction of the dependence on imported fossil fuels in the EU - Supporting the uptake of renewable and low-carbon hydrogen
Target group: - Authorities - EU members
Detailed Information: The EU's hydrogen strategy and REPowerEU plan have put forward a comprehensive framework to support the uptake of renewable and low-carbon hydrogen to help decarbonise the EU in a cost-effective way and reduce its dependence on imported fossil fuels. In 2022, hydrogen accounted for less than 2% of Europe's energy consumption and was primarily used to produce chemical products, such as plastics and fertilisers. 96% of this hydrogen was produced with natural gas, resulting in significant amounts of CO_2 emissions. The European Commission has proposed to produce 10 million tonnes of renewable hydrogen by 2030 and to import 10 million tonnes by 2030. The EU strategy on hydrogen (COM/2020/301) was adopted in 2020 and suggested policy action points in 5 areas: investment support; support production and demand; creating a hydrogen market and infrastructure; research and cooperation and international cooperation. The full list of 20 key actions (https://energy.ec.europa.eu/topics/energy-systems-integration/hydrogen/key-actions-eu-hydrogen-strategy_en) was implemented by the first quarter of 2022. Hydrogen is also an important part of the EU strategy for energy system integration. The priority for the EU is to develop renewable hydrogen. Renewable hydrogen can be obtained via electrolysis using renewable electricity to split water into hydrogen and oxygen and is referred to as 'renewable fuels of non-biological origin'. It will play a key role in decarbonising sectors where other alternatives might be unfeasible or more expensive. It can be used to replace fossil-based hydrogen for transport and industrial processes and to start new industrial products, such as green fertilisers and steel. When produced at times when solar and wind energy resources are abundantly available, renewable hydrogen can also support the EU's electricity sector, providing long-term and large-scale storage. The storage potential of hydrogen is particularly beneficial for power grids, as it allows for renewable

energy to be kept not only in large quantities but also for long periods of time. This means that renewable hydrogen can help improve the flexibility of energy systems by balancing out supply and demand when there is either too much or not enough power being generated, helping to boost energy efficiency throughout the EU.

Since, the Fit-for-55 package (July 2021) has put forward several legislative proposals that translate the European hydrogen strategy into concrete European hydrogen policy framework. This includes proposals to set targets for the uptake of renewable hydrogen in industry and transport by 2030. It also includes the Hydrogen and decarbonised gas market package (COM/2021/803 final and COM/2021/804 final), which puts forward proposals to support the creation of optimum and dedicated infrastructure for hydrogen, as well as an efficient hydrogen market.

Furthermore, the recovery plan NextGenerationEU has been made available to EU countries to invest in hydrogen projects across the value chain. Investment support has also been provided through the Important Projects of Common European Interest (IPCEIs) on hydrogen. The first IPCEI, called "IPCEI Hy2Tech", which includes 41 projects and was approved in July 2022, aims at developing innovative technologies for the hydrogen value chain to decarbonise industrial processes and the mobility sector, with a focus on end-users.

Table 2.3-6: Urban Greening Platform

Urban Greening Platform
Date: 2020
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Provide guidance and knowledge to support of towns and cities in enhancing and restoring their urban nature and biodiversity; - Links to other relevant European Commission initiatives and policies.
Target group: - Cities/towns of at least 20.000 inhabitants - Communities
Detailed Information: Green urban spaces, from parks and gardens to green roofs and urban farms, provide a wide range of benefits for people and the planet. They provide vital space for physical and mental wellbeing and a very important habitat for nature, including for birds and pollinators. Green space helps reduce air, water and noise pollution, provides protection from flooding, droughts and heat waves and much more. While protection of some urban green spaces has increased, green spaces often lose out in the competition for land as the share of the population living in urban areas continues to rise. The Biodiversity Strategy for 2030 aims to reverse these trends, and to protect and restore our precious urban ecosystems. As part of the Biodiversity Strategy - in order to bring nature back to cities and reward community action - the Commission called on European towns and cities of at least 20,000 inhabitants to "…develop ambitious Urban Greening Plans" including "measures to create biodiverse and accessible urban forests, parks and gardens; urban farms; green roofs and walls; tree lined streets; urban meadows; and urban hedges." This guidance aims to support local authorities in achieving this objective. It has been developed in collaboration with Euro cities and ICLEI and is based on discussion with many local authorities that have already gone through the process of developing and implementing successful urban greening plans. It stresses the importance of the collaborative process of developing an urban greening plan, including the need for working with citizens and other stakeholders, and for cross-departmental working and integration of the greening plan with other aspects of urban development, from mobility and health, air, and water, to energy and climate adaptation.

An Urban Greening Plan is not a standalone document, it is a long-term framework and strategy to ensure that towns and cities grow greener in the future.

Figure 2: Urban Greening Plan

Urban greening plan cycle steps: (1) Political commitment; (2) Working structure; (3) Co-creation process; (4) Long-term vision and goals; (5) Current state of nature and biodiversity; (6) Indicators and targets; (7) Priorities, actions, responsibilities, timelines, and financing; (8) Communication, education, and public awareness strategy; (9) Monitoring, reporting, and evaluation system; (10) Adopt, publish and implement the plan

Table 2.3-7: European Climate Pact

European Climate Pact
Date: 12/2020
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Build a more sustainable Europe, - Movement of people united around a common cause, each taking steps in their own worlds, - The Climate Pact invites participants to make pledges, and provides a space to share stories, solutions, and suggestions, - A platform to work and learn together, to develop solutions and build networks for real change; - A platform that invites to connect and share knowledge, learn about climate change and to develop and scale up solutions to fight climate change.
Target group: - People (can become ambassadors) - Communities - Organisations
Detailed Information: The European Climate Pact is an opportunity for people, communities, and organisations to participate in climate action across Europe: - learn about climate change, - develop and implement solutions, - connect with others and maximise the impact of these solutions. As part of the European Green Deal, the Pact aims to become a lively space to share information, debate and act on the climate crisis, and offer support for a European climate movement to grow and consolidate. It shall help the EU to meet its goal to become climate-neutral by 2050. Everyone has a place in the Pact. You can get involved whether you are just starting out on your climate action journey or already working to make a difference in your world. You can take part as an individual or as an organisation – for example, a city, a community, or an association. As part of the European Green Deal, the Pact aims to become a lively space to share information, debate, and act on the climate crisis, and offer support for a European climate movement to grow and consolidate. As our community grows, so will the scope of the Pact's activities. Be sure to check in regularly to find out about our latest developments.

The Pact shall be an open, inclusive, and ambitious initiative for everyone. To keep it so, people and organizations wishing to take part for example by becoming Ambassadors or registering a pledge must respect the Pact's values.

- Science, responsibility, and commitment: Participating in the Pact will entail positive climate action, inspiring or encouraging others to join. Participants will contribute with concrete, science-based, trustworthy actions with clear and, ideally, measurable outcomes to show impact.
- Transparency: Pact participants will commit to sharing relevant information on their actions, methodologies, and results with other Pact participants and with the public. This will help participants and others to track progress, make improvements, learn from or join each other's initiatives, and understand the overall impact of the action taken.
- No greenwashing: Pledges will be registered in such a way as to demonstrate that participants' commitments are concrete, public, and transparent. The Commission will develop an appropriate way to monitor progress, with different levels of scrutiny depending on the participant's capacity.
- Ambition and urgency: To achieve the climate and environmental aims we need to challenge long-standing behaviours and assumptions, quickly and decisively. While every little step counts, Pact participants will also aspire to transformative solutions, including visionary projects, experimentation, innovative ways to cooperate, and healthy competition for results.
- Action tailored to local contexts: Discussions and action will be adapted to local contexts and target groups. The closer to people's day-to-day reality, the better.
- Diversity and inclusiveness: Anyone, from any background or profession, will be able to take part. The Pact will aim to pull down barriers to climate action, including barriers resulting from personal characteristics, such as gender, age, and disabilities. This will help Pact participants to be at the centre of debates such as those on the future of Europe. In developing the Pact, the Commission will rely on the creativity and variety of views arising from democratic and participatory mechanisms.
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The European Union is taking action to fight climate change. But laws and targets won't be enough alone. Our everyday choices matter! Climate action is an opportunity for everyone to improve our lives, our economy, and our society.

Table 2.3-8: European Climate Law

European Climate Law
Date: 2020
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Set the long-term direction of travel for meeting the 2050 climate neutrality objective through all policies, in a socially fair and cost-efficient manner; - net zero greenhouse gas emissions; - Set a more ambitious EU 2030 target, to set Europe on a responsible path to becoming climate-neutral by 2050; - Create a system for monitoring progress and take further action if needed; - Provide predictability for investors and other economic actors; - Ensure that the transition to climate neutrality is irreversible.
Target group: - Authorities - EU institutions and national governments - Industry and investors - communities
Detailed Information: The European Climate Law writes into law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. Climate neutrality by 2050 means achieving net zero greenhouse gas emissions for EU countries, mainly by cutting emissions, investing in green technologies, and protecting the natural environment. The law aims to ensure that all EU policies contribute to this goal and that all sectors of the economy and society play their part. The European Climate Law sets a legally binding target of net zero greenhouse gas emissions by 2050. The EU Institutions and the Member States are bound to take the necessary measures at EU and national level to meet the target, considering the importance of promoting fairness and solidarity among Member States. The Climate Law includes measures to keep track of progress and adjust our actions, accordingly, based on existing systems such as the governance process for Member States' national energy and climate plans, regular reports by the European Environment Agency, and the latest scientific evidence on climate change and its impacts. Progress will be reviewed every five years, in line with the global stocktake exercise under the Paris Agreement.

The Climate Law also addresses the necessary steps to get to the 2050 target:

- Based on a comprehensive impact assessment, the EU has set a new target for 2030 of reducing net greenhouse gas emissions by at least 55% compared to levels in 1990. The new EU 2030 target is included in the Law.
- In July 2021, the Commission adopted a series of proposals to revise all relevant policy instruments to deliver the additional emissions reductions for 2030.
- The Law also includes a process for setting a 2040 climate target.

The Climate Law includes:

- a legal objective for the Union to reach climate neutrality by 2050,
- an ambitious 2030 climate target of at least 55% reduction of net emissions of greenhouse gases as compared to 1990, with clarity on the contribution of emission reductions and removals,
- recognition of the need to enhance the EU's carbon sink through a more ambitious LULUCF regulation, for which the Commission made a proposal in July 2021,
- a process for setting a 2040 climate target, considering an indicative greenhouse gas budget for 2030-2050 to be published by the Commission,
- a commitment to negative emissions after 2050,
- the establishment of European Scientific Advisory Board on Climate Change, that will provide independent scientific advice,
- stronger provisions on adaptation to climate change,
- strong coherence across Union policies with the climate neutrality objective,
- a commitment to engage with sectors to prepare sector-specific roadmaps charting the path to climate neutrality in different areas of the economy.

Table 2.3-9: A European Green Deal

A European Green Deal
Date: 12/2019
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☒ Material science ☒ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - 1st climate-neutral continent by 2050; - Reducing net greenhouse gas emissions > 55 % by 2030; - Deliver a low carbon, resource-efficient, sustainable, and resilient society; - Wide range of projects that focus on: • Air, • Water, • Noise, • Green spaces, • Waste management, • Circular economy; - Implementing laws, policies, and programs on pollution; - Transition to a fairer, healthier, and more prosperous society + healthy planet for future generations; - protect, conserve, and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts; - Transition of the EU to a fair and prosperous society that responds to the challenges posed by climate change and environmental degradation, improving the quality of life of current and future generations.
Target group: - cities in Europe, - people, communities, and organizations, - European Parliament and the European Council.
Detailed Information: The EU wants to be the first climate neutral continent by 2050. Climate change and environmental degradation are a threat to Europe and the world. To overcome these challenges, the European Green Deal will transform the EU into a modern, resource-efficient, and competitive economy, ensuring no net emissions of greenhouse gases by 2050, economic growth decoupled from resource use and no person and place left behind. The Green Deal will be financed by € 0.6 trillion investments from the NextGenerationEU Recovery plan.

The European Commission has adopted a set of proposals to make the EU's climate, energy, transport, and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

The European Green Deal will improve the well-being and health of citizens and future generations by providing:

- fresh air, clean water, healthy soil, and biodiversity,
- renovated, energy efficient buildings,
- healthy and affordable food,
- more public transport,
- cleaner energy and cutting-edge clean technological innovation,
- longer lasting products that can be repaired, recycled, and reused,
- future-proof jobs and skills training for the transition, and
- a globally competitive and resilient industry.

The European Green Deal resets the Commission's commitment to tackling climate and environmental-related challenges that is this generation's defining task. The atmosphere is warming, and the climate is changing with each passing year. One million of the eight million species on the planet are at risk of being lost. Forests and oceans are being polluted and destroyed. The European Green Deal is a response to these challenges. It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient, and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.

It also aims to protect, conserve, and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. At the same time, this transition must be just and inclusive. It must put people first, and pay attention to the regions, industries and workers who will face the greatest challenges. Since it will bring substantial change, active public participation and confidence in the transition is paramount if policies are to work and be accepted. A new pact is needed to bring together citizens in all their diversity, with national, regional, local authorities, civil society and industry working closely with the EU's institutions and consultative bodies.

The EU has the collective ability to transform its economy and society to put it on a more sustainable path. It can build on its strengths as a global leader on climate and environmental measures, consumer protection, and workers' rights. Delivering additional reductions in emissions is a challenge. It will require massive public investment and increased efforts to direct private capital towards climate and environmental action, while avoiding lock-in into unsustainable practices. The EU must be at the forefront of coordinating international efforts towards building a coherent financial system that supports sustainable solutions. This upfront investment is also an opportunity to put Europe firmly on a

new path of sustainable and inclusive growth. The European Green Deal will accelerate and underpin the transition needed in all sectors.

Figure 3: The European Green Deal

There is also a Green Deal Industrial Plan considering the industrial side of development. The Green Deal Industrial Plan enhances the competitiveness of Europe's net-zero industry and is accelerating the transition to climate neutrality. It does so by creating a more supportive environment for scaling up the EU's manufacturing capacity for the net-zero technologies and products required to meet Europe's ambitious climate targets.

Table 2.3-10: New Urban Agenda

New Urban Agenda
Date: 10/2016
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - The strategy for sustainable urban development over the next twenty years; - clear demands for a modern city: compact settlement development with appropriate open spaces, economical use of resources, strengthening public transport and healthy living conditions for everyone in cities; - essential component for the implementation of the UN Sustainable Development Goals (SDGs) (in particular SDG 11 inclusive and resilient cities).
Target group: - cities, - Member states, - multilateral organizations, - intergovernmental organizations, - local governments, - municipalities - private sector, - civil society.
Detailed Information: Paradigm shift based on the science of cities, programs and initiatives; essential component for the implementation of the SDGs The New Urban Agenda was adopted at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in Quito, Ecuador, on 20 October 2016. It was endorsed by the United Nations General Assembly at its sixty-eighth plenary meeting of the seventy-first session on 23 December 2016. It is a non-binding agreement for the member states. It can be used as a guideline to use the power of urbanization in a sustainable way. The New Urban Agenda represents a shared vision for a better and more sustainable future – one in which all people have equal rights and access to the benefits and opportunities that cities can offer, and in which the international community reconsiders the urban systems and physical form of our urban spaces to achieve this. In this unprecedented era of increasing urbanization, and in the context of the 2030 Agenda for Sustainable Development, the Paris Agreement, and other global development agreements and frameworks, we have reached a critical point in understanding that cities can be the source of solutions to, rather than the cause of, the challenges that our world is facing today. If well-planned and well-managed, urbanization can be a powerful tool for sustainable

development for both developing and developed countries. The New Urban Agenda presents a paradigm shift based on the science of cities; it lays out standards and principles for the planning, construction, development, management, and improvement of urban areas along its five main pillars of implementation: national urban policies, urban legislation and regulations, urban planning and design, local economy and municipal finance, and local implementation. It is a resource for every level of government, from national to local; for civil society organizations; the private sector; constituent groups; and for all who call the urban spaces of the world “home” to realize this vision. The New Urban Agenda incorporates a new recognition of the correlation between good urbanization and development. It underlines the linkages between good urbanization and job creation, livelihood opportunities, and improved quality of life, which should be included in every urban renewal policy and strategy. This further highlights the connection between the New Urban Agenda and the 2030 Agenda for Sustainable Development, especially Goal 11 on sustainable cities and communities.

Cities are the central actors for the implementation of the New Urban Agenda, even if the signatories are the Member States of the United Nations. Municipal stakeholders were represented in large numbers and at a high level at the conference, and their contributions illustrated that urban development is a process that is continuously confronted with changing framework conditions, for which solutions must be found that are adapted to the location and situation. The New Urban Agenda can be a guideline and a source of inspiration, but it cannot claim to address all existing and upcoming fields of action in urban development in equal measure for the next 20 years. The networks of urban stakeholders continue to work continuously to fill out, concretize, and apply the requirements of the New Urban Agenda and to share and learn from their experiences. A good example of this is the "Quito Implementation Plan" launched with Habitat III, which includes commitments from a wide range of actors to implement the New Urban Agenda.

Table 2.3-11: Circular economy action plan

Circular economy action plan (CEAP)
Date: 2015
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Promote a circular economy in cities by reducing waste and increasing the use of renewable resources, - Make sustainable products the norm in the EU, - Empower consumers and public buyers, - Focus on the sectors that use most resources and where the potential for circularity is high, - Ensure less waste, - Make circularity work for people, regions, and cities, - Lead global efforts on circular economy.
Target group: - European cities - Communities
Detailed Information: The European Commission adopted the new circular economy action plan (CEAP) in March 2020. It is one of the main building blocks of the European Green Deal, Europe's new agenda for sustainable growth. The EU's transition to a circular economy will reduce pressure on natural resources and will create sustainable growth and jobs. It is also a prerequisite to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss. The new action plan announces initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value. The Commission will implement 35 actions listed in the action plan. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN

Table 2.3-12: The Paris Agreement

The Paris Agreement
Date: 12/2015
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - A legally binding international treaty on climate change - Limiting global warming to below 2°C (efforts: 1.5°C) - Strength countries' ability to deal with the impacts of climate change
Target group: - EU and its member states (190 parties)
Detailed Information: The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels." This requires economic and social transformation to face the climate challenges now and moving into the future based on the best available science. The Paris Agreement works on a 5-year cycle of increasingly ambitious climate action. By 2020, countries communicate their plans, known as "nationally determined contributions". Countries communicate actions they will take to reduce their greenhouse gas emissions to reach the goals of the Paris Agreement. Countries also communicate actions they will take to build resilience to adapt to the impact of rising temperatures. This may include information on adaptation and finance flows. The Paris Agreement also provides a framework for financial, technical, and capacity-building support to those countries who need it. Starting in 2024. Countries report transparently on actions taken. Collective progress under the Paris Agreement will be assessed through global stocktake. This will lead to recommendations for countries to set more ambitious plans in the next round. However, in recent years, world leaders have stressed the need to limit global warming to 1.5°C by the end of this century. That's because the UN's Intergovernmental Panel on Climate Change indicates that crossing the 1.5°C threshold risks unleashing far more severe climate change impacts, including more frequent and severe droughts, heatwaves, and rainfall. To limit global warming to 1.5°C, greenhouse gas emissions must peak before 2025 at the latest and decline 43% by 2030.

The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations together to combat climate change and adapt to its effects.

Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a five-year cycle of increasingly ambitious climate action -- or, ratcheting up -- carried out by countries. Since 2020, countries have been submitting their national climate action plans, known as nationally determined contributions (NDCs). Each successive NDC is meant to reflect an increasingly higher degree of ambition compared to the previous version.

Recognizing that accelerated action is required to limit global warming to 1.5°C, the COP27 cover decision requests Parties to revisit and strengthen the 2030 targets in their NDCs to align with the Paris Agreement temperature goal by the end of 2023, considering different national circumstances.

Table 2.3-13: Urban Innovative Actions (UIA)

Urban Innovative Actions (UIA)
Date: 2014
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Provide urban areas throughout Europe with resources to test innovative solutions to the main urban challenges and see how these work in practice and respond to the complexity of real life, - Offer urban authorities with the possibility to take a risk and experiment the most innovative, and creative solutions. - Grants to face multiple and interconnected challenges related to employment, migration, demography, water and soil pollution in urban areas.
Target group: - Urban authorities of more than 50.000 inhabitants, - Grouping of urban authorities with a total population of at least 50.000 inhabitants, - EU member states.
Detailed Information: UIA is an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Based on article 8 of ERDF, the Initiative has a total ERDF budget of EUR 372 million for 2014 – 2020. Approximately 359 million people – 72% of the total EU population – live in cities, towns and suburbs. Urban areas face multiple and interconnected challenges related to employment, migration, demography, water and soil pollution. But, they are also engines of new ideas and solutions, dynamic places where changes happen on a larger scale and at a fast pace. To answer the increasingly complex challenges they face, urban authorities need to go beyond traditional policies and services - they need to be bold and innovative. Although research on urban issues is well developed, potential solutions are not always put into practice because urban authorities are reluctant to use their money to test new, unproven and hence risky ideas. Urban Innovative Actions offers urban authorities with the possibility to take a risk and experiment the most innovative and creative solutions. The main objective of UIA is to provide urban areas throughout Europe with resources to test innovative solutions to the main urban challenges and see how these work in practice and respond to the complexity of real life. UIA co-finances 80% of your project's activities. In total, UIA can provide you with up to EUR 5 million ERDF to implement your innovative project, but also capturing and sharing the knowledge that your

project will generate: UIA wants to see how potential solutions work in practice. As in a scientific experiment, UIA is interested in understanding what worked in the implementation of your project and what did not work. So, draw lessons, capture the knowledge and share it with other urban policy-makers and practitioners across Europe.

UIA funds projects that are:

- Innovative: be bold, creative and propose a project that has never been implemented anywhere else in Europe. Demonstrate that your idea is experimental and not part of your normal activities.
- Participative: involve the key stakeholders that will bring expertise and knowledge to your project, both during the design and the implementation phase of a project.
- Of good quality: define realistic ambitions, coherent activities, and effective management. A logically interlinked work plan, a coherent and proportionate budget as well as effective management arrangements will make things happen.
- Measurable: how will you describe the change you want to see in your local situation if the project is successful? How would you measure this change? Defining clear results that can be measured and quantified is key.
- Transferable: address an urban challenge that can be relevant to other urban authorities in Europe, draw lessons on your experiment and share them with a wider audience of policy makers and practitioners.

Table 2.3-14: Urban Mobility Package

Urban Mobility Package
Date: 2013
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Sustainable urban mobility plans - Lower CO_2 emissions - Improve air quality and noise
Target group: - EU members - Communities - EU citizens
Detailed Information: Cities are home to over 70 % of the EU population and account for some 85 % of the Union's GDP. Most journeys begin and end in cities. In many urban areas, however, increasing demand for urban mobility has created a situation that is not sustainable: severe congestion, poor air quality, noise emissions and high levels of CO_2 emissions. Urban congestion jeopardises EU goals for a competitive and resource-efficient transport system. With the Urban Mobility Package, the Commission reinforces its supporting measures in urban transport by: - Sharing experiences, show-casing best practices, and fostering cooperation, - Providing targeted financial support, - Focusing research and innovation on delivering solutions for urban mobility challenges, - Involving the Member States and enhance international cooperation. The central element of the Urban Mobility Package is the Communication "Together towards competitive and resource efficient urban mobility".

Table 2.3-15: EU Adaptation Strategy

EU Adaptation Strategy
Date: 2013
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - support at least 150 European regions and communities to become climate resilient by 2030, - make adaptation smarter, swifter and more systemic, - step up international action on adaptation to climate change, - outlines a long-term vision for the EU to become a climate-resilient society, fully adapted to the unavoidable impacts of climate change by 2050, - enlarge and make more accessible a toolbox that adaptation actors can use in their work and adapt to their individual needs.
Target group: - 150 cities - Member States
Detailed Information: The new strategy sets out how the European Union can adapt to the unavoidable impacts of climate change and become climate resilient by 2050. The strategy has four principal objectives: to make adaptation smarter, swifter and more systemic, and to step up international action on adaptation to climate change. The strategy's four objectives are underpinned by 14 actions and the steps to be taken to deliver them. The Commission will discuss the strategy with the Member States in the Environmental Council. The Council is expected to agree to conclusions on the new strategy when it meets in June 2021. The European Commission announced the new, more ambitious EU Adaptation strategy in the European Green Deal in December 2019. The strategy builds on the 2018 evaluation of the 2013 EU Adaptation Strategy. The Strategy aims to reinforce the adaptive capacity of the EU and the world and minimize vulnerability to the impacts of climate change, in line with the Paris Agreement and the proposal for the European Climate Law. The new Strategy seeks to step up action across the economy and society in synergy with other Green Deal policies such as biodiversity protection and sustainable agriculture. This will be done by making adaptation smarter, swifter and more systemic, as well as stepping up international action on adaptation. This means improving our knowledge of climate impacts and adaptation solutions; stepping up adaptation planning and climate risk assessments; accelerating adaptation action; and

helping to strengthen climate resilience globally. This strategy sets out a whole-economy approach, with consideration for those among us who are most vulnerable to guarantee that resilience is achieved in a just and fair way.

Our climate change adaptation ambition must match our global leadership in climate change mitigation. The Paris Agreement established the global goal on adaptation and highlighted adaptation as a key contributor to sustainable development. Adaptation is a crosscutting element in the EU and Member States' external action, spanning development cooperation, migration, trade, agriculture, and security. The EU already has a history of cooperating with other countries on climate adaptation at all levels, but the strategy brings this into a coherent framework around three actions:

- Increasing support for international climate resilience and preparedness, for example in support of the development and implementation of Nationally Determined Contributions (under the Paris Agreement) in partner countries;
- Scaling up international finance to build climate resilience, for example through the EU instruments for external action and leveraging private sector investments;
- Strengthening global engagement and exchanges, learning from our international partners who have long been on the frontlines of climate change and have valuable experience that can help Europe become more climate resilient and sharing information for example from the COPERNICUS programme.

Table 2.3-16: Climate and energy package 2020

2020 Climate and energy package
Date: 2009
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Ensure the EU meets its climate and energy targets for 2020, - 3 targets: 20 % cut in greenhouse gas emissions, 20 % of EU energy from renewables and 20 % improvement in energy efficiency.
Target group: - Cities/towns of at least 20.000 inhabitants - Communities
Detailed Information: The targets were set by EU leaders in 2007 and enacted in legislation in 2009. The EU is taking action in several areas to meet the targets. The EU implemented an emission trading system (ETS) for cutting greenhouse gas emissions from large-scale facilities in the power and industry sectors, as well as the aviation sector. The ETS covered around 40 % of total EU emissions in 2019. In 2020, the target is for the emissions from these sectors to be 21 % lower than in 2005. Achieving the goals of the 2020 package should also help to: - Increase the EU's energy security – reducing dependence on imported energy and contributing to achieving a European Energy Union, - Create jobs, advance green growth and make Europe more competitive.

Table 2.3-17: Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
Date: 2007
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - lay down general rules aimed at the establishment of the INSPIRE. A European Union spatial data infrastructure, for the purposes of Community environmental policies and policies or activities which may have an impact on the environment; - requires that common Implementing Rules (IR) are adopted in several specific areas to ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context; - enable sharing of environmental spatial information, facilitate public access to spatial information across Europe and assist in policy-making across boundaries; - create an infrastructure for sharing spatial information between public authorities in EU.
Target group: - EU member states, governments, local authorities
Detailed Information: The INSPIRE Directive, establishing an infrastructure for spatial information in Europe to support Community environmental policies, and policies or activities which may have an impact on the environment entered into force in May 2007. INSPIRE is based on the infrastructures for spatial information established and operated by the Member States of the European Union. The Directive addresses 34 spatial data themes needed for environmental applications, with key components specified through technical implementing rules. This makes INSPIRE a unique example of a legislative "regional" approach. Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007. To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context, the Directive requires that common Implementing Rules (IR) are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting). These IRs are adopted as Commission Decisions or Regulations, and are binding in their entirety. The Commission is assisted in the process of adopting such rules by a regulatory committee composed of representatives of the Member States and chaired by a representative of the Commission (this is known as the Comitology procedure).

Table 2.3-18: Water Framework Directive

Water Framework Directive
Date: 2003
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Higher level of protection for water bodies and flood risk management, - Ensuring good qualitative and quantitative health, - Halt deterioration in the status of EU water bodies and achieve good status for Europe's rivers, lakes and groundwater.
Target group: - EU member states - Authorities
Detailed Information: The European Water Framework Directive (WFD) is a wide-ranging piece of legislation covering all water bodies including rivers, lakes, estuaries, coastal waters and ground waters. It was established in law in Northern Ireland in 2003 through the Water Environment (WFD) Regulations. The WFD is the primary legislation. It is supported by two so-called daughter directives on the quality and quantity of groundwater and on the quality of surface water. The WFD contains provisions regarding the deadlines for meeting the objectives of the Directive, as well as provisions on exemptions. The annexes to the WFD specify details as regards, for example, monitoring requirements, the criteria for assessing water body status, and the contents of the RBMPs. At present, the WFD includes in its Annex X the list of priority substances that Member States must monitor in surface waters, but the standards for them are set in the Environmental Quality Standards Directive (EQSD) and must be met to achieve good surface water chemical status in accordance with WFD Article 4 and Annex V point 1.4.3. The WFD also requires Member States to set and meet Environmental Quality Standards (EQS) for substances of national concern, i.e. river basin specific pollutants; the monitoring of which currently contributes to the assessment of ecological status. This list of priority substances needs to be reviewed, and updated, if necessary, every 6years Similarly, the list of pollutants and standards of EU-wide concern in Annex I to the Groundwater Directive (GWD) must also be reviewed every 6 years; these contribute to the assessment of chemical status in groundwater. That Directive also complements the WFD by including requirements as regards pollutant trends and quantitative status. Many European River basins are international, crossing administrative and territorial borders. Therefore, a common understanding and approach is crucial to the successful and effective implementation of the Directive.

Table 2.3-19: URBACT

URBACT
Date: 2002
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Helps cities to develop an integrated set of actions for sustainable change, - Enables the cooperation and idea exchange amongst cities within thematic network, by building the skills of local stakeholders in the design and implementation of integrated and participatory policies, and by sharing knowledge and good city practices, - Gender equality, - Planning and implementation of integrated and participatory measures with the help of the URBACT toolbox, - proposes capacity-building activities and tools for city representatives and urban professionals.
Target group: - City practitioners - Local stakeholder - Universities
Detailed Information: European exchange and learning programme promoting sustainable urban development, URBACT, is a European funding programme for sustainable urban development financed by the European Regional Development Fund (ERDF) and the 27 EU member states, Norway, and Switzerland. It supports participating city governments in networking with other European cities and a group of local stakeholders to develop and implement an Integrated Action Plan for their local challenge. The programme is open to all topics in the field of urban development. However, for this funding period of the URBACT IV programme, there is a special focus on the three themes of climate, digitalization, and gender equality. Funding is available to cities and other public bodies from the member states and partner states (Norway and Switzerland) of the European Union, as well as from countries covered by the Instrument for Pre-Accession Assistance (Albania, Bosnia and Herzegovina, Montenegro, Northern Macedonia, and Serbia). The URBACT Knowledge Hub brings together a series of thematic insights. It's the place where initiatives sparked by URBACT cities have room to grow and evolve. The content shared is accessible to urban enthusiasts across Europe and beyond. Cities can learn a great deal from each other's experiences, that's why URBACT funds and supports networks of cities. Partners share ideas around bottom-up initiatives and co-design long-term strategies and urban policies – all at European and local levels.

An URBACT Network is a safe space for a group of cities facing similar challenges to share experiences and to develop long-term solutions. Cities develop their activities with local stakeholders – change makers from the public and private sectors, academia, NGOs, and civil society – as part of their URBACT Local Group.

There are three types of Networks under URBACT IV, which cities and other bodies – metropolitan areas, specialised agencies, districts, and boroughs – can apply to join:

- Action Planning Networks – cities and local stakeholders co-produce an Integrated Action Plan to tackle their common challenges.
- Transfer Networks – cities share and adapt a successful Good Practice that has already been implemented in a Network's city. Discover how good practices can be transferred from one city to another here.
- Innovation Transfer Networks – cities adapt the experience of a successful Urban Innovative Actions' project and develop an investment plan to implement it.

Each Network can consist of between five and twelve partner cities, depending on the type of Network and in accordance with the methodological framework. A city – a municipality, city administration or local authority – can apply to become the Lead Partner, playing the main role of supporting other Project Partners and designing the exchange and learning journey.

Cities benefit from financial support for staff working on the network, for travel and accommodation to participate in Network meetings and for implementing pilot projects at local level. They also benefit from the guidance of at least one URBACT Validated Expert, who accompanies the Network along the way and advises cities on topics, methods, meeting facilitation and local plans.

Cities involved in an URBACT Network benefit from the extensive support of experts. These experts are approved, following an evaluation by an independent panel. Each Network selects a Lead Expert. All partners can also be supported by Ad-hoc Experts, whenever necessary. Equipped with URBACT tools and experience, these experts support cities in designing and implementing their activities, including setting up and maintaining their URBACT Local Groups.

Table 2.3-20: European Climate Change Programme

European Climate Change Programme (ECCP)
Date: 2000
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Help identify the most environmentally and cost-effective policies and measures that can be taken at European level to cut greenhouse gas emissions.
Target group: - Authorities - Municipalities
Detailed Information: The immediate goal was to help ensure that the EU meets its target for reducing emissions under the Kyoto Protocol. The programme built on previous emissions-related activities at EU level, such as the first Community strategy to limit CO_2 emissions and improve energy efficiency (1991) and initiatives in the field of renewable energy and energy demand management. It also dovetailed with the EU's Sixth Environmental Action Programme (2002-2012) and Sustainable Development Strategy. The programme was coordinated by a Steering Committee and developed through a multi-stakeholder consultative process involving the Commission, Member States, industry, and environmental groups. The first ECCP (2000-2004) examined an extensive range of policy sectors and instruments with potential for reducing greenhouse gas emissions. There were different working groups (e.g. energy demand, energy supply, transport, agriculture, …) and each working group identified options and potential for reducing emissions based on cost-effectiveness, as well as impacts on other policy areas and potential co-benefits, for instance in terms of energy security and air quality. One of the most important and innovative initiatives that resulted from the first ECCP is the EU Emissions Trading System. The second ECCP launched in 2005 explored further cost-effective options for reducing greenhouse gas emissions in synergy with the EU's Lisbon strategy for increasing economic growth and job creation. There were also some working groups, e.g. CO_2 and cars, carbon capture and storage and adaptation to the effects of climate change. Additional measures were investigated on flexible mechanisms, agriculture, sinks in agricultural soils and forest-related sinks. Several specific actions identified during the first phase were also further developed – e.g. the E^2MAS energy audit and management scheme, the Motor Challenge Initiative and promotion of renewables in heating applications.

2.4 Outlook

In summary, the EU is currently pursuing major goals regarding sustainability and sustainable urban development. However, the implementation of the projects and regulations must be taken over by the countries and needs some support. Therefore, projects like URBACT can help to enable communication and use of the relations between the countries. It is important that all countries of the EU work together to pursue the big goal of sustainability with the help of many small projects and - according to the planning of the EU - to become the first climate neutral continent by 2030.

It is clear that no country or city will be left behind for lack of resources or for any other reason. All countries shall move forward and develop further. There must be a sustainable and intelligent future for all EU citizens.

The EU has set itself the clear goal of becoming climate-neutral and more sustainable by 2030 under the umbrella of the Green Deal Project. To achieve this goal, there are numerous initiatives aimed at smarter living, less traffic and more cooperation between EU countries and municipalities.

The selected policies and initiatives presented in detail make it clear that the EU has a multitude of regulations and ideas. It quickly becomes difficult to maintain an overview and, from a national perspective, to do justice to all policies and implement all laws correctly. Nevertheless, it becomes visible that EU will accelerate the development achieving a carbon neutral environment mainly in urban areas and fosters the cooperation between the member states as well as associated countries.

How the EU Member States and third countries associated to the Programme countries manage to do this is described in the following chapter.

3 National implementation in the EU Member States and third countries associated to the Programme

The following tables show examples for national implementation of EU policies in the EU Member States and third countries associated to the Programme countries. Each partner of the EU Member States and third countries associated to the Programme country has provided examples of guidelines or laws and elaborated it in terms of objectives, the target group and detailed information.

The national policies were provided directly by the partner countries in a survey. Authors are named in each chapter and sources or references can be found in the appendix.

3.1 Austria

The following tables were filled by Florian Reinwald and Julian Binder.

Table 3.1-1: Austria - Austrian strategy for adaptation to climate change

Austrian Strategy for Adaptation to Climate Change
Country: Austria
Date: 2017
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: The Austrian Adaptation Strategy aims at avoiding adverse effects of climate change on the environment, society and economy, and taking advantage of opportunities which arise. The adaptation strategy aims at strengthening the natural, social and technical capacity to adapt.
Target group: - Regional authorities (states and municipalities) - Ministries - Administrative institutions - Interest groups (e.g. Chamber of Agriculture, Federation of Austrian Industries) - Environmental organizations - The general public

Detailed information/explanation:

The strategy is based on the obligation to develop a national adaptation strategy based on United Nations Framework Convention on Climate Change (UNFCCC 2007) and the Kyoto Protocol (Art. 10 (b)). The European Commission presented the EU Strategy for Adaptation to Climate Change in 2013 (EC 2013). Based on the Article 15 of the Monitoring Regulations for the EU Member States (Regulation No 525/20137) the member states have to provide information on national adaptation plans and strategies by 2015 and forced to regularly update their policies every 4 years.

The Austrian strategy for adaptation to climate change was first published in 2012 and update 2017 which is the current valid strategy. Two progress reports have been published in the meantime (2015 and 2021). The strategy comprises a strategic part (Context) and an Action Plan with concrete recommendations for action in 14 fields of activity:

- Agriculture
- Forestry
- Water resources and water management
- Tourism
- Energy
- Construction and Housing
- Protection against natural hazards
- Disaster Management
- Health
- Ecosystems and biodiversity
- Transport infrastructure including aspects of mobility
- Spatial planning
- Business/Industry/Trade
- Cities – urban green and open spaces

For each sector overarching objectives and general principles for action are named. In addition, concrete goals and measures are specified for the fields of action, for each of which the following points are presented:

- Objective
- Significance
- Connections to other sectors
- Connections to existing instruments
- State of implementation
- Recommended further steps
- Possible resource requirements
- Possible conflict potential
- Actors
- Time Horizon

References:

FEDERAL MINISTRY FOR SUSTAINABILITY AND TOURISM (2017): The Austrian strategy for adaptation to climate change. Part 1 – Context. Available online: https://www.bmk.gv.at/dam/jcr:a97fb5f2-85c5-4027-b377-383f80eee354/NAS_Context_2017_en.pdf, last accessed on 31-03-2023.

FEDERAL MINISTRY FOR SUSTAINABILIYT AND TOURISM (2017): The Austrian strategy for adaptation to climate change. Part 2 – Action Plan. Available online: https://www.bmk.gv.at/dam/jcr:3b304e0f-bae9-4cc8-a934-ae8d212f7fe4/NAS_Action_Plan2017_en.pdf, last accessed on 31-03-2023

Table 3.1-2: Austria - General Wastewater Emission Ordinance

General Wastewater Emission Ordinance
Country: Austria
Period: 1996, last amendment 2019
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: The General Wastewater Emission Ordinance defines for wastewater in general parameter-related threshold values, which have to be generally required by the authority as an emission limit within the framework of the authorization of an introduction into a running water or a public sewerage system.
Target group: - Regional authorities (states and municipalities) - Ministries - Administrative institutions - Interest groups (e.g. Chamber of Agriculture, Federation of Austrian Industries) - Environmental organizations - Planning offices - The general public
Detailed Information/Explanation: The existing system of emission provisions, which is oriented according to these principles, consists of the General Wastewater Emission Ordinance and branch-specific special provisions. The Ordinance on the general limitation of wastewater emissions in running waters and public sewerage systems (General Wastewater Emission Ordinance - Allgemeine Abwasseremissionsverordnung - AAEV, Federal Law Gazette No 186/1996) regulates all general requirements in terms of water management as far as waste water treatment is concerned, in particular the general principles of waste water treatment, the limitation of wastewater emissions and their field of application as well as the monitoring of emission limits. References: https://info.bml.gv.at/en/topics/water/water-in-austria/water-law/general-wastewater-emission-ordinance.html

Table 3.1-3: Austria - Water Rights Act 1959

Water Rights Act 1959 (WRG 1959)
Country: Austria
Period: 1959, last amendment 2018
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: The Water Rights Act 1959 (WRG 1959) includes the legal basis for a great number of water management measures, as well as for the legal instruments, which are required for their implementation, in particular for the following three fields of topics: - The utilization of waters - The protection of waters and keeping waters clean - The protection against the hazards of waters
Target group: - Regional authorities (states and municipalities) - Ministries - Administrative institutions - Interest groups (e.g. Chamber of Agriculture, Federation of Austrian Industries) - Environmental organizations - Planning offices - The general public
Detailed Information/Explanation: The Water Rights Act 1959 constitutes a comprehensive legal framework for the evaluation of the most different living conditions relevant from the point of view of water management. Water is of extraordinary importance for humans and their social and economic development. Apart from the supply with drinking and process water the use of the motive power of the water, in particular for energy generation, has been playing an important role for a long time. Settlement activities and industrialization can, on the one hand, cause water contamination, and, on the other hand, they require the protection against flood risks. At the same time, it is important to preserve the resource water sustainably for future generations by measures aiming at keeping waters clean - in particular also in consideration of aquatic-ecological requirements. The Austrian water law is thus a resource management law, which comprises also long-term planning in the field of water management. References: https://info.bml.gv.at/en/topics/water/water-in-austria/water-law/water-law-1959-wrg1959.html

3.2 Croatia

The following tables were contributed by Željko Bačić.

Table 3.2-1: Croatia - Recovery and resilience plan for Croatia 2021-2026

Recovery and resilience plan for Croatia 2021-2026
Country: Croatia
Period: 2021-2026
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: The pandemic caused by the coronavirus that suddenly hit the world in 2020, including Europe, caused the biggest economic crisis since World War II. In order for the member states of the European Union to get out of this situation as soon as possible and create the foundations for even more resilient societies and sustainable economies, the European Commission, the European Parliament and European leaders reached an agreement in February 2021 on the establishment of a special Recovery and Resilience. The first purpose of this package worth 1.8 trillion euros is to mitigate the economic and social consequences of the coronavirus pandemic, but also to make the economy more sustainable and resilient, and society more ready for challenges and new opportunities. In order to use part of the funds provided by the Recovery and Resilience Mechanism, member states should prepare their own recovery and resilience plan, which is an action plan of projects, measures and reforms. Taking into account the main objectives of the Mechanism, in the preparation of the Croatian Recovery and Resilience Plan, the Government paid special attention to reforms and investments, especially those related to green and digital transition and transformation, which are the backbone of the Plan. The measures and activities of the Plan will contribute to achieving smart, sustainable and inclusive growth, while increasing the number of jobs, productivity and competitiveness of the economy, as well as strengthening the economic, social and territorial cohesion of Croatia. The plan is structured in 5 components and 1 initiative.
Target group: - Authorities - Business stakeholders - Society in all
Detailed Information/Explanation: …

Table 3.2-2: Croatia - Water act

Water act
Country: Croatia
Period: 2019-2021
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: This Law regulates the legal status of water, water assets and water structures, management of water quality and quantity, protection against the harmful effects of water, detailed melioration drainage and irrigation, activities of public water supply and public drainage, special activities for the needs of water management, the institutional structure of the performance of these activities and other issues related to water and water resources.
Target group: - Water supply companies - Water users
Detailed Information/Explanation: This Law regulates the legal status of water and water assets, the manner and conditions of water management (use of water, protection of water, regulation of watercourses and other waters and protection from the harmful effects of water), the way of organizing and performing tasks and tasks that are used to achieve water management; basic conditions for performing water management activities; powers and duties of state administration bodies and other state bodies, local self-government and administration units and other legal entities, and other issues significant for water management.

Table 3.2-3: Croatia - Law on state survey and real-estate cadaster + Law on performing geodetic activities

Law on state survey and real-estate cadaster + Law on performing geodetic activities
Country: Croatia
Period: 2018-2022
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: …
Target group: - Geodetic profession - Physical and legal persons having any activity related to cadastre or official cartography, location or other state survey issues
Detailed Information/Explanation: Those two laws regulate geodetic profession and geodetic activities, especially those of the state interest. The Law on state survey and real-estate cadaster regulates the state survey, real estate cadaster, infrastructure cadaster, register of buildings, register of spatial units, register of geographical names, jurisdiction over the tasks of the state survey, real estate cadaster, infrastructure cadaster, register of buildings, register of spatial units, register of geographical names and performance of these tasks , affairs of the State Geodetic Administration, storage and use of data and supervision of affairs regulated by this Law. The provisions of this Act also apply to the performance of tasks prescribed by this Act and to other geodetic tasks if they are performed within the framework of hydrographic surveys, land surveying and other similar procedures. The Law on performing geodetic activities regulates the performance of geodetic activity and professional geodetic work in the field of state surveying, real estate cadastre, building cadastre and infrastructure cadastre, as well as other professional geodetic work performed as services to legal and natural persons, professional examination and professional training, and conditions for foreign persons who perform professional geodetic work. This Law regulates the basic structure, scope, public powers and membership of the Croatian Chamber of Certified Geodetic Engineers (hereinafter: the Chamber) in such a way as to regulate the publicity of the work of the Chamber, the bodies of the Chamber, general acts passed by the Chamber, entries in the Directory, registers and records of the Chamber, suspension and termination of membership in the Chamber, disciplinary bodies and disciplinary proceedings, and supervision over the implementation of this Act.

Table 3.2-4: Croatia - Law on national spatial data infrastructure

Law on national spatial data infrastructure (NSDI)
Country: Croatia
Period: 2018 - 2022
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☒ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: NIPP includes: a) spatial data sources, b) metadata system, c) networking services and technologies, d) implementation rules, agreements on sharing, exchange, access and use of spatial data, e) conditions of use, f) coordination and supervision mechanisms, g) processes and procedures, h) NIPP geoportal, i) human capacities, which are defined in accordance with the provisions of this Act
Target group: - All creators of official spatial data sets
Detailed Information/Explanation: NSDI is a set of technologies, measures, norms, implementation rules, services, human capacities and other factors that enable the effective unification, management and maintenance of the sharing of spatial data determined by this Law for the purpose of meeting needs at the national and European level, which will be an integral part of the European spatial data infrastructure defined by the INSPIRE directive.

Table 3.2-5: Croatia - Strategy of spatial development of Republic of Croatia

Strategy of spatial development of Republic of Croatia
Country: Croatia
Date: 2017
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: In order to achieve balanced and sustainable development, raise the quality of life and mitigate negative demographic processes, the postulates of the concept of spatial development are: - affirmation of polycentricity, - mitigating of the depopulation rate of the most vulnerable areas, - preservation of the identity of the Croatian territory, - taking advantage of the favorable traffic position within main international traffic routes, - sustainable development of the economy and infrastructure systems, - connecting with the European space, - integrated approach to physical planning and - active adaptation to the dynamics of change.
Target group: - Physical planner, urban developer - Local and regional self-governments - Governmental institutions
Detailed information/explanation: The Spatial Development Strategy of the Republic of Croatia is a fundamental state document for directing spatial development. Based on the established core values of the Croatian space and the spatial development management system, as well as the established state and process in the space, it established the general goal (vision) of spatial development in 2030 with development starting points, priorities, directions and a framework for implementation. The core values of the future development of the system of planning, protection and spatial arrangement of the Republic of Croatia (RO) are: - the values of the Croatian space that result from the mosaic nature of the spatial basis and spatial identity, which is determined on the basis of natural, cultural, landscape and social values, as well as the culture of building, arranging and shaping the space; - achievements of previous models of planning and implementation of spatial development: the tradition of urban and spatial planning that is legible in Croatian space and the spatial planning system built on the basis of the direction of the Spatial Planning Strategy of the Republic of Croatia (SPURH) from 1997,

- the international context, above all the one that the Republic of Croatia accepted in the pre-accession period and together with the status of the 28th member state of the European Union (July 1, 2013);
- the recognition, preservation, promotion and sustainable use of the values of the Croatian space, especially those on which its identity is based, is promoted by the concept of spatial development and the realization of priorities and directions of spatial development, as well as the creation and implementation of all plans, programs and projects related to the implementation of this Strategy and affect the Croatian space.

Strategy available in English Spaltial.Development.Strategy.pdf (gov.hr)

Table 3.2-6: Croatia - Law on energy efficiency

Law on energy efficiency
Country: Croatia
Period: 2014-2021
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: This Act regulates the area of efficient energy use, adoption of plans at the local, regional (regional) and national level for improving energy efficiency and their implementation, energy efficiency measures, energy efficiency obligations, obligations of the energy regulatory body, transmission system operator, distribution system operator and energy market operators in connection with the transmission, i.e. transport and distribution of energy, obligations of energy distributors, energy and/or water suppliers, and especially energy service activity, determination of energy savings and consumer rights in the application of energy efficiency measures.
Target group: - Energy producers - Energy distributors
Detailed Information/Explanation: This Act transposes Directive 2012/27/EU of the European Parliament and the Council of October 25, 2012, on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directive 2004/8/EC into Croatian legislation and 2006/32/EC (OJ L 315, 14/11/2012) as last amended by Directive (EU) 2019/944 of the European Parliament and of the Council of June 5, 2019, on common rules for the internal electricity market and amending Directive 2012/27/EU (OJ L 158, June 14, 2019)

Table 3.2-7: Croatia - Law on spatial planning

Law on spatial planning
Country: Croatia
Period: 2013 - 2019
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: This Law regulates the spatial planning system: objectives, principles and subjects of spatial planning, monitoring of the situation in space and the area of spatial planning, spatial planning conditions, adoption of the Spatial Development Strategy of the Republic of Croatia, spatial plans including their creation and adoption procedure, implementation of spatial plans, planning of construction land, property institutes for development of construction land and supervision.
Target group: - Physical planner, urban developer - Civil engineers-constructors, undertakers - Physical and legal persons intending or starting construction - Local and regional self-governments
Detailed information/explanation: In Croatia, the central institution dealing with physical planning is the Institute for Spatial Development operating within the Ministry of Construction and Physical Planning. Among other things, the Institute for Spatial Development develops and coordinates the development and implementation of the National Physical Planning Strategy and other plans adopted by Parliament and the Government, managing and developing the physical planning information system, performance of expert tasks and assistance in the development of physical plans in cooperation with different state aministration bodies. In addition to the Institute, on the lower levels (in the counties and cities/towns) there are offices dealing with physical plans (HZPR 2020). The strategic plans give guidelines, while the implementing plans provide a specific building purpose and conditions and serve as the basis for issuing permits. According to the Physical Planning Act, spatial plans are hierarchically classified into state-level plans (Physical Planning Strategy of the Republic of Croatia, State Plan for Spatial Development, Spatial Plans of Areas with Special Features (national park, nature park), and the urban development plan of state significance), regional-level plans (county spatial plans, the Spatial Plan of the City of Zagreb and the urban development plan of county significance), and local level plans (spatial development plan of a city or municipality, the general urban plan and the urban development plan). The plans shall be mutually aligned and aligned with the higher-level plans, all the way up to the national plan. The existing but also former spatial plans are kept on file not only to be able to see how a certain area has developed through time, but also to be consulted during specific works. In the context of pluvial floods, they can indicate the initial natural and topographic conditions of drainage, the established solutions and the gradual development of the protection system.

Table 3.2-8: Croatia - Construction act & construction products act

Construction act & Construction products act
Country: Croatia
Period: 2013-2021
Related topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: Law on construction regulates the design, construction, use and maintenance of buildings and the implementation of administrative and other related procedures in order to ensure the protection and arrangement of space in accordance with the regulations governing spatial planning and to ensure the basic requirements for buildings and other conditions prescribed for buildings by this Law and regulations adopted on the basis of this Act and special regulations. Law on construction products regulates the systems of assessment and verification of the constancy of the properties of construction products, the actions carried out within the framework of the assessment and verification of the constancy of the properties of construction products by manufacturers of construction products and notified and approved bodies, documents for the evaluation and verification of the constancy of the properties of construction products, requirements for notified and approved bodies, application procedure, obligations of notified and approved bodies, obligations and requirements for the appointment of bodies for technical assessment, regulated by the implementation of Regulation (EU) no. 305/2011 of the European Parliament and of the Council of March 9, 2011, which prescribes the harmonized conditions for trade in construction products and repeals Council Directive 89/106/EEC, (hereinafter: Regulation (EU) No. 305/2011), working conditions and action of the body responsible for the implementation of Regulation (EU) no. 305/2011 and other issues important for placing on the market or making available on the market construction products.
Target group: - Stakeholders in construction and production of construction products
Detailed Information/Explanation: This Law regulates the design, construction, use and maintenance of buildings and the implementation of administrative and other related procedures to ensure the protection and arrangement of space in accordance with the regulations governing spatial planning and to ensure the basic requirements for buildings and other conditions prescribed for buildings by this Law and regulations adopted on the basis of this Act and special regulations.

3.3 Germany

The following tables were filled by Martin Oldenburg and Anna Mues.

Table 3.3-1: Germany - National water strategy

National water strategy
Country: Germany
Period: 2023 – 2050
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Bundling of water-related measures from all relevant sectors (agriculture and nature conservation, administration and transport, urban development and industry) - Even in 30 years and beyond, there will be always high-quality and affordable drinking water everywhere and. - Water bodies and our groundwater will be clean. - The near-natural water balance will be strengthened and restored. - Wastewater disposal will be organized according to the polluter-pays principle. - Water supply infrastructure and water use will be adapted to the consequences of the climate crisis.
Target group: - Authorities - Citizens
Detailed Information/Explanation: The water strategy is designed for the period up to 2050. To achieve its goals, it relies on a mix of funding, legal regulations, knowledge building and dialog. It describes how we can make our use of water sustainable in ten strategic areas. In addition, there is an action programme with around 80 concrete measures that will be implemented step by step. The challenges facing water management are diverse and complex. Accordingly, the approaches to solutions and options for action for the transformation to a future-proof water management are complex and interlinked. The strategic topics are deliberately set in such a way that they address challenges and solutions across sectors and fields of action. There are ten strategic themes of the national water strategy: 1. Protect, restore and permanently secure the near-natural water balance prevent water scarcity and conflicts of interest 2. Implement water-compatible and climate-adapted land use in rural and urban areas 3. Further develop sustainable water management - achieve and secure good status

4. Limiting risks from substance inputs
5. Further develop climate-adapted water infrastructures - protect against extreme events and guarantee supply
6. Linking water, energy and material cycles
7. Strengthen efficient administrations, improve data flows, optimize regulatory framework and secure financing
8. Protect marine areas (North Sea and Baltic Sea) more intensively against material from land
9. Raise awareness of water as a resource
10. Working together to protect global water resources sustainably

Table 3.3-2: Germany - Building Energy Act

Building Energy Act
Country: Germany
Date: 08/2020
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☒ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - The most economical possible use of energy in buildings including an increasing use of renewable energies to generate heating, cooling and electricity for building operation - Taking into account the principle of economic efficiency, the Act is intended to contribute to climate protection, the fossil resources and reduce dependence on energy imports, the Act is intended to help achieve the energy and climate policy goals of the German government and to further increase the share of renewable energy consumption for heating and cooling and to enable sustainable development of the energy supply. - Contains requirements for the energy quality of buildings, the preparation and use of energy certificates, and the use of renewable energies in buildings
Target group: - Authorities - Cities
Detailed Information/Explanation: The Building Energy Act is an Act on the saving of energy and the use of renewable energies for heating and cooling in buildings. This Act serves to implement Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings. This law shall apply to: 1. buildings, insofar as they are heated or cooled using energy in accordance with their intended purpose, and 2. their installations and equipment for heating, cooling, ventilation and lighting, as well as their hot water supply. The current European requirements for the energy performance of buildings were fully implemented with the Building Energy Act (GEG) 2020 and the regulation of the lowest energy building was integrated into the energy conservation law. The Building Energy Act (GEG) 2020 introduced a new equivalent procedure for demonstrating compliance with energy requirements in the construction of residential buildings (so-called model building procedure for residential buildings). The obligation to use renewable energies that exists for new construction can also be fulfilled by using electricity generated from renewable energies close to the building. The GEG also provides for flexibility options in meeting the energy standards for new buildings.

These options relate in particular to the possibility of taking into account electricity from renewable energy sources generated close to the building and gaseous biomass when calculating the energy balance.
The primary energy factors to be used in calculating the permissible annual primary energy demand are regulated directly in the GEG. This increases the transparency and comprehensibility of the primary energy factors for developers and owners. The GEG thus provides new impetus for the use of innovative approaches in energy-efficient construction.

The carbon dioxide emissions of a building resulting from its primary energy demand or primary energy consumption must be stated in energy certificates. Thus, an energy certificate contains additional information that considers the climate impact.

The GEG 2020 also standardizes a regulation restricting the installation of new oil-fired heating systems from 2026 onwards in accordance with the requirements set out in the key points of the Climate Protection Programme 2030. This regulation will apply equally to the installation of new boilers fired with solid fossil fuels (coal-fired heating systems) from 2026 onwards.

Table 3.3-3: Germany - Federal programme for the adaptation of urban areas to climate change

Federal programme for the adaptation of urban areas to climate change
Country: Germany
Date: 2020
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☒ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Preserve and develop green and open spaces (e.g. parks and gardens) in cities and towns - Contribute to climate protection and adaptation of urban spaces to climate change - Promotion of projects that promise a high technical quality and an above-average investment volume and a high innovation potential of measures - Projects that contribute to strengthening the vitality and functional diversity of urban green and open spaces.
Target group: - Cities - Communities - Municipal facilities
Detailed Information/Explanation: The federal programme for the “Adaptation of urban areas to climate change” is a funding programme of the Federal Ministry of Housing, Urban Development and Building (BMWSB) in cooperation with the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR). Record temperatures in Germany, show: Climate change is here, and we humans need to adapt. Parks and green spaces as well as more green-blue climate oases provide cooling in the cities. That's why the German Federal Ministry of Transport, Building and Urban Affairs is funding more green open spaces in urban areas with 176 million euros. The federal programme "Adaptation of Urban Spaces to Climate Change" funds investment projects in green and open space development with high effectiveness for climate protection (CO_2 reduction) and climate adaptation, with high professional quality, with above-average investment volume or with high innovation potential. Cities and municipalities were called upon to submit projects that benefit climate protection and the adaptation of urban spaces to climate change. Emphasis is placed on the development and preservation of publicly accessible green and open spaces such as parks and gardens, which can demonstrate a high potential for innovation. Funding is provided for measures to make public parks and green spaces climate resilient and to unseal and green urban areas. Nature-based solutions for greenhouse gas reduction and for temperature or water regulation as heat and flood prevention are among them.

The federal programme thus contributes to climate-friendly urban development through the targeted development and modernization of green-blue infrastructure.

Better climate adaptation can be achieved, for example, by linking existing green and open spaces and creating new green climate oases in residential neighbourhoods. More spacious green corridors with water and infiltration areas can be created in traffic areas, on city squares, on brownfield sites and in urban neighbourhoods. “Sponge city concepts” ensure better retention and storage of rainwater.

Parks, gardens and other green spaces are ideal measures against heat islands in the city, but they in particular suffer from the increasingly dry summers and at the same time cannot store enough moisture for hot spells. At the same time, the programme aims to create or further develop attractive local recreation areas for the population.

Table 3.3-4: Germany - Guideline for sustainable building

Guideline for sustainable building
Country: Germany
Date: 2020
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☒ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Tool to help planning and optimizing constructions - Make sustainable buildings applicable, measurable and comparable - The DGNB system translates the SDGs into building practice and closes the gap between the big, global goals and real implementation
Target group: - Businesses - Planning offices - residents
Detailed Information/Explanation: The certification system of the German Sustainable Building Council (DGNB) is a planning and optimization tool that helps all those involved in construction to implement holistic sustainability quality. Sustainable building thus becomes applicable, measurable and comparable. There are two options for building. You think about how you can implement the SDG subgoals yourself. Or you can benefit from the fact that numerous experts have already thought about the implementation of sustainability for buildings or neighbourhoods. These are certified by the DGNB and therefore you can be sure that all relevant SDGs are considered. There are many recommendations on how to proceed with a sustainability retrofit in your own home, neighbourhood, or development.

Table 3.3-5: Germany - Urban energy rehabilitation - climate protection and adaptation in the neighborhood

Urban energy rehabilitation - climate protection and climate adaptation in the neighbourhood
Country: Germany
Date: 2011
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☒ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Promote the neighbourhood as a level of action for urban energy renovation.
Target group: - Cities - Communities - Municipal facilities
Detailed Information/Explanation: The building stock in Germany comprises around 18 million residential and 1.7 million non-residential buildings (municipal, social and commercial). Public and private buildings in Germany account for 40 percent of total energy consumption for heating, hot water and lighting, and nearly 30 percent of total CO_2 emissions. This is where there is immense potential for energy savings. The problem is that 75 percent of all buildings were constructed before the first Heat Insulation Ordinance of 1978. In many cases, they have not yet been renovated and are therefore often in poor condition in terms of energy efficiency. One consequence is that ancillary housing costs, for example, are increasingly becoming a second rent. It is obvious that savings can and must be made here: through professional renovation and modern building technology, up to 80 percent of energy requirements can be saved in some cases. This potential must be tapped. In many cases, synergy effects can be exploited if not just one building but an entire neighbourhood is renovated and made climate friendly. For this reason, the neighbourhood is becoming increasingly important as a level of action for energy-efficient refurbishment. This is made possible by the Credit Institute for Reconstruction (KfW) programme "Energetic Urban Redevelopment". The aim of the funding programme is to initiate comprehensive measures in the neighbourhood that serve climate protection and climate adaptation. Among other things, this will create broader opportunities for the use of renewable energies in old inner-city neighbourhoods and involve additional investor groups in the refurbishment process. For 2020, programme funding of around EUR 70 million has been earmarked from the Energy and Climate Fund to promote energy-efficient urban redevelopment. Since the programme was launched at the end of 2011, KfW has already issued more than 970 commitments for promotional loans with a volume of more than EUR 690 million for the Neighbourhood Supply subprogramme (KfW 201/202) by the end of 2019. In the Concepts and Refurbishment Management subprogramme (KfW 432), over 1,620 individual measures with a volume of around EUR 87 million have been funded.

Table 3.3-6: Germany - Act on Access to Digital Spatial Data

Act on Access to Digital Spatial Data
Country: Germany
Date: 2009
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: This Act serves to establish a national infrastructure for spatial information. It creates the legal framework for 1. access to spatial data, spatial data services and metadata by agencies holding spatial data, as well as 2. the use of these data and services, in particular for activities which may have an impact on the environment
Target group: - agencies holding spatial data - Persons that provide spatial data
Detailed Information/Explanation: Spatial Data Access Act of 10 February 2009 (Federal Law Gazette [BGBl.] Part I p. 278), amended by Article 1 of the Act of 7 November 2012.This Act serves to transpose Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE Directive) (OJ L 108 of 25 April 2007, p 1) into German law. Resource: Act on Access to Digital Spatial Data (Spatial Data Access Act) (bmuv.de)

Table 3.3-7: Germany - Federal water act

Federal water act
Country: Germany
Date: 1996
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Regulation of water management of all water bodies, including wastewater and storm water discharge - Strom water management, prioritization of infiltration - Obligation of water and wastewater treatment - Maintain or restore good ecological and chemical quality of water bodies - Ensure an adequate supply of drinking and process water (quality and quantity)
Target group: - Authorities - Communities - Citizens
Detailed Information/Explanation: Regulatory law stipulates that water bodies in Germany are subject to state management. Citizens and authorities are obliged to use water responsibly. The most important federal law is the Federal Water Act (Wasserhaushaltsgesetz, WHG, in German), originally adopted in 1957. A substantially revised version entered into force in March 2010. This amendment completed the transposition of the EU Water Framework Directive (WFD) into German national law and allowed the German countries to adapt their respective water acts to the European provisions. The amendment created the legal basis for transboundary, sustainable water management. The goal is to achieve good status for all water bodies by 2027 at the latest, not just in terms of pollutant levels but also regarding the status of native aquatic animal and plant species. To this end, management plans must be drawn up. To coordinate this process, river basin communities have been established among the countries sharing joint responsibility for the catchment areas of large rivers. To learn more about the transposition of the WFD into German law. In addition, the Federal Water Act transposed the EU Floods Directive, the Marine Strategy Framework Directive and the provisions of the Industrial Emissions Directive that apply to water legislation in Germany. There are also several key ordinances regulating the implementation of the Federal Water Act. These include the Wastewater Ordinance (Abwasserverordnung, AbwV), the Surface Waters Ordinance (Oberflächengewässerverordnung, OGewV) and the Groundwater Ordinance (Grundwasserverordnung, GrwV). These ordinances also implement important EU provisions. For example, the Wastewater Ordinance transposes the European Urban Wastewater Directive and the EU's "best available technology" conclusions (BAT conclusions) for the wastewater sector. The Groundwater Ordinance implements the EU Groundwater Directive; the Surface Waters Ordinance implements the EU environmental quality standards for water bodies.

3.4 Norway

The following tables were contributed by Harsha Ratnaweera and Agnieszka Cuprys.

Table 3.4-1: Norway - National strategy for social housing policy (2021 - 2024)

National strategy for social housing policies (2021-2024)
Country: Norway
Period: since 2022
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - comprise and target the efforts that central and local authorities carry out to help those that are disadvantaged in the housing market. - Following goals are set to improve efforts in the years ahead: - More people should be in a position to own their own home - Renting must be a safe alternative - Social sustainability in housing policies - Clearer roles, and necessary knowledge and competence
Target group: - Local authorities - Local communities - Vulnerable communities - Investors
Detailed information/explanation: The zero vision for homelessness needs the support of all those who have a role in preventing and combating homelessness. It is crucial to continue the established collaborative practices across different administrative levels and sectors, and to improve them. The Government wants to incentivize a wider range of housing options for the homeless. By offering loans and grants to local authorities, we will seek to encourage the trialing of new types of housing arrangements

Table 3.4-2: Norway - Norway's climate action plan for 2021 - 2030

Norway's Climate Action Plan for 2021–2030
Country: Norway
Period: since 2021
Related Topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Norway's climate policy is intended to give people freedom and opportunities. During the next ten years, Norway needs to go through a green transformation process that will affect every sector of society - By 2030, the aim is that - it will be easy for people in Norway to find emission-free ways of travelling. - it will be easy for businesses to transport goods in climate-friendly ways - for emissions from domestic shipping and fishing vessels to have been reduced by half compared with the 2005 level - people will continue to have opportunities to live in dynamic towns, cities and communities and find jobs in viable businesses in all parts of Norway - that Norway will be producing healthy, sustainable, climate-friendly food from the land and the oceans. - Norway will have a competitive manufacturing sector that produces low-emission goods and products - Norway will be a major producer of renewable energy, and the petroleum industry will be producing oil and gas efficiently, with low emissions, and will be playing a part in developing and deploying new technology.
Target group: - Central government, counties and municipalities, - the business sector, - research institutes, - voluntary organisations - individuals
Detailed information/explanation: Norway's climate policy is intended to give people freedom and opportunities. During the next ten years, Norway needs to go through a green transformation process that will affect every sector of society. The Government will pursue a climate policy that improves people's lives and gives room for growth in the business sector. The Government will provide a framework that encourages people to make climate-friendly choices and increases everyone's freedom of choice.

Table 3.4-3: Norway - Strategy for developing a green, circular economy

Strategy for developing a green, circular economy
Country: Norway
Period: since 2021
Related Topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - achieving environmental goals and UN's sustainable development goals, value creation and green competitiveness
Target group: - Local authorities - Local communities - Engineering professionals - Investors
Detailed information/explanation: The strategy underlines the promotion of a more circular economy through sustainable production and product design, through consumption, consumer rights, services and public procurements. It also contributes to enhancing the role of the recycling industry and non-toxic material cycles. It includes action for the sectors that have been identified as having the greatest potential for circularity and green competitiveness in Norway and prioritized value chains. The policy objective is to take a long-term perspective for sustainable management of our resources, and to limit the growth in waste generation in Norway, but increased resource efficiency and reduced emissions.

Table 3.4-4: Norway - Long-term low-emission strategy for 2050

Long-term low-emission strategy for 2050
Country: Norway
Period: since 2020
Related Topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Outlines strategic priorities for the pathway to a low-emission society - Polluter pay principle, - Policy instruments must be effective, - Support for technology development, - Global effects are of crucial importance, - A low-emission society, not a low-income society
Target group: - Central government, counties and municipalities, - the business sector, - research institutes, - voluntary organisations - individuals
Detailed information/explanation: Under the Paris Agreement to reduce emissions by.at least 50 per cent and up towards 55 per cent by 2030, compared to 1990-levels. The transition to a low-emission society has to take the current level of emissions as its point of departure. As in other OECD countries, the level of emissions is high in Norway today. In 2018, per capita emissions in Norway were about 10 tons $CO_{2\text{-eq}}$. By way of comparison, the average levels in 2017 were 11.9 and 8.8 tons $CO_{2\text{-eq}}$ respectively for the OECD countries and the EU, 11 while the world average was about 6.5 tons $CO_{2\text{-eq}}$.12 Emissions in different sectors are an important starting point for the path towards a low-emission society. The whole of society must be involved if we are to succeed in the low emission Transformation. Climate-smart cities and communities and a high quality of life is an overriding ambition. Targets enhancing the knowledge base for Norway's long-term climate policy

Table 3.4-5: Norway - Climate change act

Climate Change Act
Country: Norway
Period: since 2018, amended 2021
Related Topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Promote the implementation of Norway's climate targets as part of its process of transformation to a low-emission society by 2050. - Promote transparency and public debate on the status, direction and progress of this work. - The target is for greenhouse gas emissions to be reduced by at least 50-55 % by 2030 from the level in the reference year 1990. - Achieve reductions of greenhouse gas emissions of the order of 90-95 % by 2050 from the level in the reference year 1990.
Target group: - Authorities (all levels) - Planning professionals - Institutions of social services - Communities - Investors, developers
Detailed information/explanation: This framework law is intended to promote the implementation of Norway's climate targets as part of the transition to a low carbon society in Norway in 2050. The target is for Norway to become a low-emission society by 2050. A low-emission society means one where greenhouse gas emissions, on the basis of the best available scientific knowledge, global emission trends and national circumstances, have been reduced in order to avert adverse impacts of global warming

Table 3.4-6: Norway - Energy policy

Energy Policy
Country: Norway
Period: since 2017
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Strengthen the reliability of supply - Profitable renewable energy production - More efficient and environmentally friendly use of energy (includes buildings) - Business development and value added through efficient use of profitable renewable energy resources
Target group: - Local authorities - Energy producers - Engineering professionals - Investors
Detailed information/explanation: Ambition is to 10 TWh reduced energy consumption in existing buildings compared to the present level. It also points at the earlier agreement on new buildings from 2020 to be nearly-zero-energy-buildings. Use of oil for heating as base load in buildings will not be allowed after 2020, and the committee asks the government to evaluate if also the use of oil for peak load and use in district heating shall be included.

Table 3.4-7: Norway - Planning and building act

Planning and Building Act
Country: Norway
Period: since 2008
Related Topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Promote sustainable development in the best interests of individuals, society and future generations. - Shall facilitate the coordination of central government, regional and municipal functions and provide a basis for administrative decisions regarding the use and conservation of resources. - Ensure that building projects are carried out in compliance with statutes, regulations and planning decisions - Planning and administrative decisions shall ensure transparency, predictability and public participation for all affected interests and authorities. There shall be emphasis on long-term solutions, and environmental and social impacts shall be described. - The principle of design for universal accessibility shall be taken into account in planning and in requirements relating to individual building projects. The same applies to due regard for the environment in which children and youth grow up and the aesthetic design of project surroundings.
Target group: - Planning and building authorities - Planning professionals - Investors - Local communities and individuals
Detailed information/explanation: This is the main legal act regulating planning and construction in Norway. The Public Administration Act applies with the special provisions laid down in this Act. The Act prescribes procedures for the development, process of adoption and implementation of spatial plans. Defines the levels of plans as the way in which stakeholder participation in the decision-making process of a plan is ensured.

3.5 Serbia

The following tables were contributed by Ljiljana Jevremović and Milan Gocić.

Table 3.5-1: Serbia - Towards a national architectural strategy draft

Towards a national architectural strategy draft
Country: Serbia
Period: since 2023
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - to formulate public policy in architecture - to raise the level of building culture and awareness of the importance of quality - architecture and built environment - to address the problems of a) Neglected importance of architecture quality for the quality of life of citizens; b) Diminished socio-economic significance and position of architectural practice and profession; c) Neglected importance of the quality of the built environment and the position of architecture in the spatial development and preservation of cultural identity; d) Lack of awareness of the social significance of architecture and the built environment for quality of life - to develop new and improve existing lifting mechanisms for positioning architecture as a public interest. - to develop new and improve existing mechanisms for architectural practice and strengthen the position of the profession - to improve the quality of the built environment and strengthen the position of architecture in the spatial development and preservation of cultural identity - to raise awareness of the professional community, the public, decision-makers and public-policy makers on the importance of the quality of architecture and the built environment for the quality of life of citizens
Target group: - Authorities (all levels) - Community - Architectural professionals - Investors, developers
Detailed information/explanation: The National Architectural Strategy represents the basic document of architectural policy in the Republic of Serbia, defining the strategic direction of action of relevant actors to develop a culture of construction, improving architectural practice and profession, as well as raising awareness of the importance of quality architecture and built environment for the quality of life of citizens.

Cultural dimensions of architecture, as well as its other specific characteristics that indicate the role and significance of the development of the economy and society, are recognized in several international and national EU policies and documents as national priorities and fundamental elements of the culture, identity and life of its the profession of an architect is understood as a profession that affects the public interest, and that's why it's specially regulated.

Table 3.5-2: Serbia - Energy management system

Energy management system
Country: Serbia
Period: since 2022
Related Topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - creating conditions for efficient energy use and improvement of energy efficiency, which contributes to 1) energy savings; 2) energy supply security; 3) reduced environmental impact and climate change impact of the energy sector; 4) sustainable use of natural and other resources; 5) increased competitiveness of the economy; 6) improved conditions for economic development; 7) reduction of energy poverty.
Target group: - Local authorities - Local communities - Engineering professionals - Investors
Detailed information/explanation: This law establishes the terms and conditions of the efficient use of energy and energy resources; policy of efficient energy use; energy management system; energy efficiency policy measures: energy use in buildings, in energy activities and with final customers, for energy plants and energy services; energy labelling and requirements concerning eco-design; funding, incentives and other measures in this field.

Table 3.5-3: Serbia - Law on the use of renewable energy sources

Law on the use of renewable energy sources
Country: Serbia
Period: since 2021
Related Topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - aiming to achieve the public interest of the Republic of Serbia, the use of energy from renewable sources - to achieve long-term goals: - 1) decrease in the use of fossil fuels and increase in the use of renewable energy sources with the aim of environmental protection, - 2) long-term decrease in the dependence on fuel imports, - 3) creation of jobs and development of entrepreneurship in the field of renewable energy sources, - 4) incentives for research, innovation and competitiveness in the field of using renewable energy sources, - 5) digitalisation, simplicity, cost-effectiveness and efficiency of procedures in the field of renewable energy sources, - 6) Integration of electricity from renewable sources on the electrical energy market, including the exposure of electrical energy producers to changes in the market price of electrical energy to maximise their market revenues, - 7) Ensuring the stability of the electrical energy market while taking into consideration the costs of integrating renewable energy sources into the system and network stability, - 8) Regional development of the use of renewable energy sources, - 9) Stability of the system of incentives and use of operational state aid in the form of market premiums, except for small plants and demonstration projects, - 10) Awarding incentives through auctions in a public, transparent, competitive and cost-effective manner, without discrimination, ensuring a high degree of project implementation, except in the case of small plants and demonstration projects where incentives need not be awarded through auctions, - 11) Sustainable and independent development through maximised utilisation of national scientific-research, technological-developmental and human capacities in the process of planning the increase of the use of renewable energy sources.
Target group: - Local authorities - Local communities - Engineering professionals - Investors

Detailed information/explanation:

This act regulates the use of energy from renewable sources, the method for determining the share of renewable energy sources of the Republic of Serbia in the gross final energy consumption, the integration of energy from renewable sources to the market, the incentive system for producing electricity from renewable sources, guarantees of origin for electricity, the production of electricity from renewable sources for own consumption, the use of renewable energy sources in the field of thermal energy and in the field of transport, special procedures related to the construction and connection of energy facilities that use renewable energy sources, the bases of cooperation mechanisms with other states in the field of renewable energy sources, monitoring the implementation of this Law, and other matters of relevance for renewable energy sources.

Table 3.5-4: Serbia - Law on energy efficiency and rational use of energy

Law on energy efficiency and rational use of energy
Country: Serbia
Period: since 2021
Related Topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - creating conditions for efficient energy use and improvement of energy efficiency, which contributes to: 1) energy savings; 2) energy supply security; 3) reduced environmental impact and climate change impact of the energy sector; 4) sustainable use of natural and other resources; 5) increased competitiveness of the economy; 6) improved conditions for economic development; 7) reduction of energy poverty.
Target group: - Local authorities - Local communities - Engineering professionals - Investors
Detailed information/explanation: This law establishes the terms and conditions of the efficient use of energy and energy resources; policy of efficient energy use; energy management system; energy efficiency policy measures: energy use in buildings, in energy activities and with final customers, for energy plants and energy services; energy labelling and requirements concerning eco-design; funding, incentives and other measures in this field.

Table 3.5-5: Serbia - National housing strategy 2020 - 2030 draft

National Housing Strategy 2020-2030 draft
Country: Serbia
Period: since 2020
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - That most of the population of the Republic of Serbia, with rational support, can afford decent housing in accordance with its rights and needs - Special attention is given to solving housing needs for the most socially vulnerable categories of the population, - To maintain and improve the quality and utilisation of housing stock, registration of property rights and other legal statuses in relation to housing - To establish the institutional and other capacities for further sustainable development of the housing sector.
Target group: - Local authorities - Local communities - Vulnerable communities - Investors
Detailed information/explanation: The National Housing Strategy establishes a framework for elaborating the implementation and monitoring of measures housing policies in the Republic of Serbia for a period of ten years from its adoption, which must improve the quality of life through improving the housing conditions of citizens and preserving and improving the value of housing stock while preserving the environment and rationally use of resources. The strategy defines the long-term vision, as well as objectives to increase the sustainability of housing in the Republic of Serbia. The specific objectives of the Strategy by 2030 are: - support to address the housing needs of citizens, - improvement of the existing housing stock through maintenance and renovation, - prevention of illegal construction and rehabilitation of informal settlements, - Capacity building for sustainable housing development.

Table 3.5-6: Serbia - Law on planning and construction

Law on planning and construction
Country: Serbia
Period: since 2020
Related Topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - creating conditions and manner of landscaping - arranging and using building land and building construction - supervision the implementation of the provisions of this Law and inspection supervision - other issues of importance for spatial planning, land management and building construction
Target group: - Authorities (all levels) - Planning professionals - Investors - Local communities
Detailed information/explanation: This is an umbrella legal act regulating planning and construction in Serbia. The law prescribes procedures for the development, process of adoption and implementation of spatial plans. Defines the levels of plans as the way in which stakeholder participation in the decision-making process of a plan is ensured.

Table 3.5-7: Serbia - Law on housing and maintenance of buildings

Law on housing and maintenance of buildings
Country: Serbia
Period: since 2020
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - to regulate sustainable housing development, building management, use and maintenance of the building, common and special parts of the building, - to prescribe eviction and relocation procedure, housing support, registers and records, - to supervise the implementation of the provisions of this Law and other issues of importance for housing policy.
Target group: - Local authorities - Local communities - Design and engineering professionals - Investors
Detailed information/explanation: This act aims to improve the housing conditions of citizens and preserve and improve the value of housing stock by improving energy efficiency, reducing negative impacts on the environment and rational use of resources. The goal is to harmonization of economic and social development and environmental protection during the development of the housing sector. Furthermore, the act aims to regulate maintenance and management in residential buildings, residential and commercial buildings, office buildings, public buildings or buildings declared as cultural property and buildings in protected cultural and historical units to prevent or eliminate the danger to life and health of people, the environment, economy or property of greater value, or to ensure the safety of the building and its environment.

Table 3.5-8: Serbia - Strategy for sustainable urban development of the republic of Serbia by 2030

Strategy for sustainable urban development of the republic of Serbia by 2030
Country: Serbia
Period: since 2019
Related Topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☒ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - fostering economically efficient, socially just and environmentally responsible urban development; - identifying and solving key urban development problems; - encouraging the effective use, management and promotion of urban capital; - establishing a framework for sustainable urban development by connecting the traditional system of spatial and urban planning, a new planning system of public policies, improving urban development financing and managing local public finances; - creating suitable general and spatial conditions for sustainable urban development in accordance with the UN New Urban Agenda, the EU Urban Agenda, the Leipzig Charter for Sustainable European Cities and other EU documents; - defining a strategic framework for local integrated urban development strategies, urban development projects and the use of funds from various sources of funding; - support to coordination and cooperation between the national, provincial and local levels of administration and different sectors of society in the implementation of the Strategy by applying various urban development management instruments; - improvement of institutional and personnel capacities and management mechanisms for implementing the Strategy.
Target group: - Authorities (all levels) - Planning professionals - Institutions of social services - Communities - Investors, developers
Detailed information/explanation: The Sustainable Urban Development Strategy is a coherent set of decisions arising from the process of coordination and cooperation of different actors to establish a strategic framework for directing productive, inclusive and resilient long-term urban development in the Republic of Serbia. The strategy is a means of managing urban development, which includes strategic strongholds (long-term) and a range of flexible elements of a stochastic nature in support of decision-makers on sustainable urban development.

In the development of the Strategy, a participatory and integral approach was applied with an overview of the spatial dimension of sustainable urban development and the organization of processes that ensure coordination and cooperation.

The strategy starts from the topics contained in the international charters of urban development adapted to the local context of urban development in the Republic of Serbia. This was achieved by applying a participatory approach through public dialogue and interdisciplinary cooperation of a wide range of actors from different sectors, professional fields and levels of administration. The purpose is to:
- identify key problems of urban development and improve the use of urban capital;
- defines a strategic framework (for the time horizon by 2030), which contains the required set of solid elements and a significant part of flexible (indicative) elements (as well as criteria for the selection of strategic urban development priorities of the Republic of Serbia), which is based on multidisciplinary planning instruments and oriented towards efficient and effective implementation;
- provide an open and flexible approach to urban development management topics in a local context bearing in mind the administrative, legal, and institutional framework, capacities, etc.
- enable interdisciplinary discussion on cross-cutting topics of urban development to overcome the limitations of the sectoral approach;
- ensure the participation of stakeholders in solving key problems and challenges, identifying areas of spatial.

Table 3.5-9: Serbia - National social housing strategy

National social housing strategy
Country: Serbia
Period: since 2012
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - To regulate the huge gap between the needs and opportunities of a large number of households in Serbia to independently solve their housing needs - To contribute to systemic measures of housing support
Target group: - Local authorities - Local communities - Vulnerable communities - Investors
Detailed information/explanation: The subject of the Strategy is to determine the conditions for the development of social housing in the Republic of Serbia and set goals that can be achieved in the next ten years to facilitate the resolution of housing issues of households that exercise the right under the Law on social housing and proposing ways to achieve these goals.

Table 3.5-10: Serbia - Regulation on energy efficiency of buildings

Regulation on energy efficiency of buildings
Country: Serbia
Period: since 2011
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - to define the energy properties of high-rise buildings - to prescribe the method of calculating heat properties of high-rise buildings - to define energy requirements for new and existing buildings
Target group: - Local authorities - Engineering professionals - Investors
Detailed information/explanation: This is a legal act regulating the needed energy performance of the buildings. The act prescribes the method of calculating the heat properties of buildings and properties of the thermal envelope of the buildings.

Table 3.5-11: Serbia - Water law

Water law
Country: Serbia
Period: since 2010
Related Topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: This Law provides for water regulation and rules to protect and control waters in the Republic of Serbia.
Target group: - Local authorities - Local communities - Engineering professionals - Investors
Detailed information/explanation: This Law hereby prescribes various provisions aimed to define the legal status of waters on the territory of the Republic of Serbia, defines the integrated water management approach, rules regarding the management of water facilities and water land, resources and financing of water activities, sustainable use of water resources, supervision, rules related to the surface water and groundwater including thermal and mineral waters, except groundwater from which useful mineral raw materials and geothermal energy is obtained. The Law has been implemented by the Regulation on the operational plan for flood control (2013), Regulation on water fees and charges for the year 2013, Regulation on the general plan for flood protection (2011).

3.6 Spain

The following tables were filled by Carmen de Pablos Heredero and Miguel Blanco.

Table 3.6-1: Spain - Sustainable mobility law 2023 (draft)

Sustainable Mobility Law (Draft) Approval Expected in 2023
Country: Spain
Date: 2023
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☒ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - The law is designed to implement a set of measures set out in the Strategy for Safe, Sustainable and Connected Mobility 2030. - To be a fundamental tool to achieve Sustainable Mobility. - Transforming mobility and decarbonising Spanish Transport System - Strengthen financing of the urban public transportation system and increase its reliability. - Improve collaboration between the various public authorities. - Make intramodality and interoperability a reality and improve infrastructure governance. - Contribute to achieving the reduction targets for greenhouse gases, and pollutant emissions in transport, in line with the international. Agreements assumed by Spain to achieve the Sustainable Development Goals set in the UN's Agenda 2030 and Paris COP21 targets and in line with European strategies such as the European Green Deal, The European Commission's Sustainable and Smart Mobility Strategy and the package of measures for green and efficient mobility.
Target group: - Citizens - Public Administrations - Transport Companies
Detailed information/explanation: The draft bill for the Sustainable Mobility Law includes a firm commitment to new technologies, from autonomous vehicles to on-demand transport and shared mobility. The new law also supports the Secure, Sustainable and Connected Mobility Strategy 2030, and the Recovery, Transformation and Resilience Plan (PRTR) in its goal of decarbonizing and digitizing mobility, as well as boosting the use of public transport to decrease the use of private vehicles. It does in this way aim to reduce dependence on fossil fuels and the resulting greenhouse gas emissions, thereby improving air quality. This aspect is particularly critical Spain since 27.5% of greenhouse gas emissions are generated by transport, a figure that is five points higher than the European average. Moreover, this sector his

sector accounts for 40% of final energy consumption, almost nine points above the continental average. As 70% of emissions are produced in cities, the new law will create a sustainable mobility contribution fund to regulate the Spanish State's contributions to financing the urban public transport system.

Table 3.6-2: Spain - Royal Decree 3/2023 establishing the technical-sanitary criteria for the quality of drinking water, its control and supply

Royal Decree 3/2023 establishing the technical-sanitary criteria for the quality of drinking water, its control and supply
Country: Spain
Date: 03/2023
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - This Royal Decree lays down the technical and sanitary criteria for the quality of drinking water, its control and supply establish a new, comprehensive and complex regulatory framework to protect human health from any pollution of drinking water.
Target group: - Citizens - Public Administrations
Detailed Information/Explanation: It establishes the technical and sanitary criteria for the quality of drinking water, its control and supply establish a new, comprehensive and complex regulatory framework to protect human health from any pollution of drinking water. The new legal text partially transposes Directive (EU) 2020/2184 on the quality of water intended for human consumption in Spain and repeals Royal Decree 140/2003 laying down the sanitary criteria for the quality of drinking water. The new Royal Decree establishes the technical-sanitary criteria and the control of the quality of the drinking water throughout the supply chain, from the collection bodies to the user's tap, with the aim of ensuring that the water is safe for consumption.

Table 3.6-3: Spain - Energy Efficient Act Royal Decree-Law 14/2022 on economic sustainability measures in the field of transport, in terms of scholarships and study aid, as well as measures for saving, energy efficiency and reducing the energy dependence of the Natural gas (Real Decreto Ley 14/2022: medidas de ahorro y eficiencia energética)

Energy Efficient Act Royal Decree-Law 14/2022 on economic sustainability measures in the field of transport, in terms of scholarships and study aid, as well as measures for saving, energy efficiency and reducing the energy dependence of the Natural gas (Real Decreto Ley 14/2022: medidas de ahorro y eficiencia energética)
Country: Spain
Period: 2022
Related topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: The decree was adopted following the energy and economic shocks brought by the COVID-19 crisis and the war in Ukraine. It takes a wide-ranging array of measures aiming at saving energy and reducing emissions. - Limitation of heating and cooling temperatures modified to 19 and 28 Celsius degrees respectively. In this sense, it is estimated that each degree in which the temperature setpoint is changed, which implies a lower need for heating or cooling, can lead to a saving of 7% in consumption. - Encourage the electrification of energy systems, allowing for an enhanced penetration of renewables, use of biogas and auto-consumption. - Increase inspections about the application of energy efficiency dispositions in buildings - A decrease in public transport fees - Law promoted by the state government and published in the BOE (BOE-A-2022-12925), has as main measure, limiting the temperature of air conditioning to 27 degrees during the summer, and heating to 19 degrees during the winter season, with the clear intention of substantially reducing the electricity bill for homes and shops, and achieving the objectives set by Brussels. These measures will have to be applied inside any type of commercial premises, offices, lobbies and similar spaces. It will also be mandatory for public administration, cultural spaces and public transport stations. On the contrary, it will not be obligatory to private spaces, schools, gyms, hairdressers, health centres, etc.
Target group: - Citizens - Business & Companies - Public and private spaces (Administrative Buildings, public Buildings and Shops)

Detailed information/explanation:

The draft bill for the Sustainable Mobility Law includes a firm commitment to new technologies, from autonomous vehicles to on-demand transport and shared mobility.
The new law also supports the Secure, Sustainable and Connected Mobility Strategy 2030, and the Recovery, Transformation and Resilience Plan (PRTR) in its goal of decarbonizing and digitizing mobility, as well as boosting the use of public transport to decrease the use of private vehicles. It does in this way aim to reduce dependence on fossil fuels and the resulting greenhouse gas emissions, thereby improving air quality.

This aspect is particularly critical Spain because 27.5% of greenhouse gas emissions are generated by transport, a figure that is five points higher than the European average. Moreover, this sector his sector accounts for 40% of final energy consumption, almost nine points above the continental average. As 70% of emissions are produced in cities, the new law will create a sustainable mobility contribution fund to regulate the Spanish State's contributions to financing the urban public transport system.

Table 3.6-4: Spain - Law 9/2022: Law on quality in architecture (Ley de Calidad de la Arquitectura)

Law 9/2022: Law on Quality in Architecture (Ley de Calidad de la Arquitectura)
Country: Spain
Period: since 09/2022
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☒ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - A state law that aims to protect, promote and disseminate the quality of architecture as an asset of general interest and aims to promote the protection of architectural heritage, encourage conservation, promote research, innovation, digitization, industrialization and creativity and promote the application of the principle of quality in the field of public procurement. - Promote links that enable the approximation of architecture to society and as an instrument to consolidate a new model of economic, energy and ecological transition that promotes greater inclusion and social cohesion
Target group: - Academic (Universities and Schools) and social sector - Territorial Administrations - Professionals (i.e. Architects) - Territorial Administrations - Ministry of Transport, Mobility and Urban Agenda
Detailed information/explanation: The law is aligned with several recently promoted European and International initiatives such as the New European Bauhaus, the Urban Agendas, the Davos Declaration and the Renovation Wave. The law is a legislative instrument that reinforces the exemplary role of the public administration, boosting the planning of the refurbishment of the public building stock. Along the same lines, the draft bill includes a series of amendments to Law 9/2017, of the 8th of November, on Public Sector Contracts, aimed at improving the quality of the architecture promoted by the Administration, in particular a: a) Expedite the processing of certain supplementary contracts, such as minor contracts for construction management. B) Facilitate joint contracting of project drafting and construction management as a measure to ensure coordination and continuity between the drafting and implementation phases. C) Specify certain conditions whose existence the Contracting Authority may take into consideration for the purpose of estimating the complexity of architectural, engineering and urban planning projects. The Act is included as reform 4 of component 2 of the Recovery, Transformation and Resilience Plan (PRTR), approved by the Spanish Government to tackle the crisis caused by COVID-19, which focuses on promoting actions to rehabilitate and improve the building stock, both in urban and rural areas funded on EU Next Generation Funds.

It is also part of the European legislative initiatives to promote energy efficiency, renewable energies and the fight against energy poverty and it will promote the application of the "energy efficiency first" principle, in accordance with Commission Recommendation (EU) 2021/1749 of the 28th of September 2021.

Regarding the development of the law was based on a public participation process. In its drafting, this future law has been the subject of extensive public participation, since, in addition to the prior public consultation that took place in July 2020, a multidisciplinary participatory process structured in six tables was held, which could be followed telemetrically and openly, having a great reach on networks, including at an international level. Roundtable discussions were also held with the main sectors affected, the academic and social sector, territorial administrations, professionals and schools

One of the most important points in the law is the creation of two key bodies to guide action and enhance the public role of public authorities: House of Architecture and The Council for Architectural Quality. The House of Architecture is conceived as a state-owned and managed museum, whose vocation is to become a national and international benchmark for the dissemination of architecture. This body will perform both the functions of a museum adapted to the present day and those more typical of a platform for exchange between institutions and associations linked to the dissemination of architecture. These include the dissemination of the Spanish architectural legacy and its contemporary representations and the positioning of the excellence of Spanish architecture on the national and international scene.

The Council for Architectural Quality is a platform for the exchange of knowledge and participation, as well as for consultation and advice on matters related to the contents of the Law. The functions of the Council for Architectural Quality are grouped into two large blocks. The first of these contains the functions aimed at protecting, promoting and disseminating the quality of architecture and improving governance. The second focuses on matters of public procurement, such as promoting the adoption of standards or measures of a general nature to improve the quality of architecture, or the modification of existing ones.

Table 3.6-5: Spain - Royal Legislative Decree 7/2015: Law on land and urban rehabilitation

Royal Legislative Decree 7/2015: Law on Land and Urban Rehabilitation
Country: Spain
Period: since 07/2015
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☒ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - 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.
Target group: - Citizens - Public and Private initiatives for urban transformation and building activities
Detailed information/explanation: The Land Act (Ley del Suelo) was the first comprehensive city planning system in 1956, it was subsequently amended in 1975, 1990, 1998 and 2007. As explained below, the current act exists as succinct principles, and the actual implementation of land policies and city plans are left to local bodies and autonomous regions. RDL 7/2015 aims to ensure a balance of new construction with rehabilitation and regeneration, boosting energy efficiency in the built environment and making the system more flexible. The law encourages investment in housing rehabilitation. It is important to mention that the EU has substantial influence on regional development policies and Spain has received a significant aid from EU's Structural Fund from 1995 to 2010. Spain had the highest growth of developed land between 2000 and 2012 of all 28 analyzed OECD countries. Developed land grew on average by 1.6% annually, which implies a total increase of approximately 22% over the entire period. As Spain experienced significant population growth over the same time, the per capita area of developed land grew by only 0.4% annually. While this is still high compared to the OECD average, it is more closely in line with several other OECD countries. Compared to many other OECD countries, Spain is unusual as it experienced strong growth of developed land in the core parts of its metropolitan areas – to a degree that the growth in developed land was stronger than population growth. The increase in developed land was accompanied by a decrease in land covered with forests (which declined by a total of 1.930 km²) and a somewhat smaller decrease in agricultural lands.

Spain is defined by the OECD as a quasi-federal state with 4 levels of government: the national government, 17 autonomous communities, 50 provinces and 8 119 municipalities. The division of powers regarding land-use policy is specified in the constitution and in other national legislation. The constitution assigns responsibility for spatial planning to the autonomous communities, but the national government prepares framework legislation that guides regional laws. Furthermore, the national government has important powers in policy fields related to spatial planning. It can impose environmental legislation and related legislation that affects the possibilities to develop land. It also prepares a sectoral plan for national infrastructure, for example related to transport and energy. However, according to a decision of the constitutional court, it has no authority to prepare a general national spatial plan.

Autonomous communities develop and complement the basic national framework legislation concerning land use by establishing their own legislative framework on land-use planning. Within the limits set by the national framework, this allows them to establish their own comprehensive planning systems. This includes, for example, the definition of the requirements of municipal master plans to delineate land as “suitable for urban development”, as “not suitable” or as “protected according to its environmental, natural cultural, etc. value”: and the definition and the content of the different planning instruments. Most regions have adopted a hierarchical system in which the regional government is responsible for preparing a regional.

Table 3.6-6: Spain - Law 22/2011: Land pollution act

Law 22/2011: Land Pollution Act
Country: Spain
Date: 2011
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - The prevention and reduction of waste generation and the adverse impacts of its generation and management, the reduction of the overall impact of resource use and the improvement of the efficiency of such use. The aim is to prevent and reduce the impact of certain plastic products on human health and the environment, with special attention to the aquatic environment.
Target group: - Public Administration - Landowners
Detailed information/explanation: The holders of the potentially polluting activities (APC) of the soil must deliver a preliminary status report (IPS) to the competent waste management within less than 2 years for each of the soils in which it carries out its activity to report on the state of that soil. This report can be drawn up based on information generated in compliance with existing legislation on waste and hazardous substances and does not imply the obligation not to carry out any kind of specific test or analysis The main objective of the report is to collect the relevant information that allows to assess the possibility of significant contamination of the soil where is placed.

Table 3.6-7: Spain - Royal Decree 1391/2007, which regulates the Spanish Committee of geodesy and geophysics

Royal Decree 1391/2007, which regulates The Spanish Committee of Geodesy and Geophysics
Country: Spain
Date: 2007
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Regulate the Spanish Geodesy and Geophysical Commission
Target group: - Citizens - Public Administrations
Detailed information/explanation: The Royal Decree establishes that the purposes of the Spanish Geodesy and Geophysical Commission are a) Promote, support and promote the work, research and physical, chemical and mathematical studies of the Earth and its environment, and define the lines priority of public action in the fields of Geodesy and Geophysics. b) To advise the Inter-Ministerial Commission of Science and Technology on projects related to Geodesy or Geophysics. (c) To advise the Public Administrations on natural hazards associated with geophysical phenomena. d) Represent Spain to the International Union of Geodesy and Geophysics and other similar organizations.

Table 3.6-8: Spain - Law 34/2007 on air quality and protection of the atmosphere

Law 34/2007 on air quality and protection of the atmosphere
Country: Spain
Date: 2007
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - The purpose of this Act is to lay the foundations for the prevention, monitoring and reduction of air pollution to prevent and, where this is not possible, to reduce the damage that may result to persons; the environment and other goods of any kind.
Target group: - Citizens - Companies - Public Administrations
Detailed information/explanation: The law regulates the level of a pollutant to be achieved, as far as possible, at a given time to prevent, prevent or reduce harmful effects on human health, the environment as a whole and other goods of any kind. After this law of the year 2007, many other legal texts have been developed in Spain in development of air protection, but in any case, they pursue the same objective and come to extend the requirements of this law 34/2007, air quality and protection of the atmosphere. It applies to all installations which may cause the air pollutants listed in Annex I thereof and which correspond to the potentially polluting activities of the atmosphere listed in Annex IV to Law 34/2007. Spain has adopted the air quality standards of the European Union, set out in: Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe and Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic hydrocarbons in ambient air (4th daughter Directive). These directives were incorporated into Spanish legal framework through the Royal Decree 102/2011, of 28 January on the improvement of air quality. In addition, Law 34/2007 on air quality and protection of the atmosphere is legally binding from 15th November 2007.

Table 3.6-9: Spain - Spanish building act 38/1999: Law on building regulations (ley de ordenación de la edificación)

Spanish Building Act 38/1999 Law on Building Regulations (Ley de Ordenación de la Edificación)
Country: Spain
Period: since 1999
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: - To set out the basics for the provision of construction services, and by the Spanish Building Act 38/1999 of 5 November 1999 (Ley de Ordenación de la Edificación) that governs the construction process, laying down the obligations and responsibilities of the various parties involved in the process.
Target group: - Building agents participating in any construction project - Public Administration & authorities, companies, landowners
Detailed information/explanation: Construction contracts in Spain are mainly governed by the Spanish Civil Code (chiefly in articles 1588 to 1600), which sets out the basics for the provision of construction services, and by the Spanish Building Act 38/1999 of 5 November 1999 (Ley de Ordenación de la Edificación) that governs the construction process, laying down the obligations and responsibilities of the various parties involved in the process. The Spanish Technical Construction Code (Código Técnico de la Edificación) is a "Code of Practice" and since 2007 provides for technical standards for buildings and endeavor to control the quality of building elements such as: structural safety; safety in case of fire; security within the buildings; hygiene, health, and environmental protection; Energy saving and thermal insulation and Protection against noise. Also, to be considered are the Urban Planning Law of the region where the real estate is located and the relevant town council's building ordinances. In Spain, the execution of any construction project (i.e., dwelling, large facility, other buildings) is governed by the legal provisions of the Law 38/1995 on Building Regulations (Ley de Ordenación de la Edificación, LOE). The LOE establishes a unified legal framework of the main functions, duties and liabilities of the building agents participating in any construction project. The main criteria used by Spanish lawmakers to determine the role of each participant in the building process in general, the professional qualifications and licenses required to perform the relevant activities in connection with the execution of the works. Regardless of any agreement between the parties, the LOE establishes the legal requirements to be appointed and, therefore, to be able to

act as a designer, head of management works or head of works, head of execution of works) among others.

To act as a designer in a construction project in Spain, the LOE requires that the person must hold either a graduate degree in architecture or civil engineering (depending on the nature of the building, whether housing or other purposes such as factory, harbor, etc.), as well as being registered in the relevant Official College of Architects or Engineers (e.g., *Colegio Oficial de Arquitectos de Madrid*). The same applies for being appointed as the Head of Execution of Works, which includes funcons such as quantity surveying and supervising the quality of works. To be eligible to act as the Head of Execution of Works, the person must hold either a higher or technical degree in architecture or a degree in civil or building engineering and be a member of their respective Official Colege.

The LOE also establishes a common set of rules protecting owners and prospective buyers in connection with material damage caused to buildings, even if there is no contract signed with the designer, or head of execution of works. For this purpose, the LOE provides various warranty periods in favor of owners and purchasers running from the date of the certificate of acceptance to enable the owner or purchasers to act against agents for repair or compensation for material damage – depending on the building element affected, it may cover between one and ten years.

The framework under the LOE is independent from the contractual obligations and liabilities of each agent in their agreement with the employer or owner. Under Spanish law, a claim can be filed seeking repair or damages for specific defects and flaws based on the rights and warranties under the LOE (legal liability) as well as the contractual framework agreed between the parties (contractual liability). This is set out in current Spanish case law (judgment of the Civil Chamber of the Spanish Supreme Court 529/2020 dated 15 October 2020).

Regarding final work certificates and the signatories, As is common in most countries, construction works end when a building has been properly built and complies with all the conditions, standards and features required in the licensed project prepared by the designer, the building licences and permits, and any other instructions from the public authorities.

In Spain, the completion of any building works is usually formalised by a 'certificate of acceptance' that the owner and/or employer signs with the general contractor. Through this certificate, the general contractor delivers the works, and the owner accepts their receipt, either because of the building having been totally and properly finalised, or because only minor defects or flaws remain. That certificate of acceptance may also be signed by the head of works or the head of execution of works. The head of works or the head of execution of work's participation and, therefore their signatures (although common in practice), are not mandatory under article 6.2 LOE.

The reason is that both the head of works and head of execution of works must, pursuant to articles 12.3(e) and 13.2(e) LOE, issue a specific legal document called a 'final work certificate' (*certificado final de obra*) (CFO).

According to the Spanish Technical Code for Building Construction, the CFO may only be issued if: the head of works considers that the building has been carried out under their supervision in accordance with the licensed project and the rest of technical requirements and, thus, is ready for proper use; and the head of execution of works understands that they have supervised the material execution of the works and have, among others, controlled the quality of what has been built in

accordance with the technical documentation and the applicable rules for ensuring proper construction.

This CFO will be attached to the certificate of acceptance under article 6.4 LOE.

Lastly, pursuant to article 17.7 LOE, the head of works and the head of execution of works are responsible for the veracity and accuracy of any CFO they sign. Their liability cannot be limited or excluded even if the works were initially managed, supervised and controlled by other architects and engineers. To the extent that both have signed and certified the works pursuant to article 17.7, they will be responsible in relation to the owners and/or employers for any defects resulting from a lack of veracity or accuracy.

4 Best practices from programme countries

To this assignment, only one example per EU Member States and third countries associated to the Programme country will be considered. The examples are to be understood as selected cases only. For a deeper and more detailed overview, please refer to the report of WP 4, Task 4.1. There, an overview of programs and technical solutions in CSUD in EU Member States and third countries associated to the Programme is presented.

4.1 Austria

Table 4.1-1: Best practice 1 Austria

Smart Climate City Strategy Vienna
Location: Vienna, Austria
Year of implementation: 2022
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: The Smart Climate City Strategy Vienna is the umbrella strategy for sustainable urban development focusing on climate change adaptation and climate change mitigation. Additionally, the so called "Vienna Climate Guide" specifies and operationalises the overarching objectives with concrete measures to achieve them. The overall objective of the Smart Climate City Strategy Vienna is: "High quality of life for everyone in Vienna through social and technical innovation in all areas, while maximising conservation of resources." (City of Vienna 2022). Target Groups: - Departments and offices of the Vienna City Magistrate - Interest groups - General public
Detailed information/explanation: The 2022 newly adopted "Smart Climate City Strategy Vienna" is based on the global, European, and Austrian climate strategies and goals. The strategy is also based on the Sustainable Development Goals (SDGs) of the UN Agenda 2030. It breaks down the overarching goals to the level of the state/municipality and operationalises them in accordance with the tiered structure of the Austrian legal system. Based on headline goals - Quality of life, resource conservation and innovation – goals and measures for 11 thematic fields are formulated. These are: 1. Energy supply 2. Mobility and transport 3. Buildings

4. Economy & employment
5. Zero waste & circular economy
6. Adapting to climate change
7. Urban ecology, environment & water
8. Health & social inclusion
9. Education, science & research
10. Digitalisation
11. Participation, engagement & culture

For each of these thematic fields the actual situation and challenges are stated, the corresponding goals anchored, and measures proposed. The last part of the strategy is focused on implementation. Tools for implementation, necessary alliances and partnerships as well as Specifications for monitoring and evaluation are presented.

References:
City of Vienna (2022): Smart Climate City Strategy Vienna. Available online: https://smartcity.wien.gv.at/wp-content/uploads/sites/3/2022/05/scwr_klima_2022_web-EN.pdf, last accessed 31-03-2023

4.2 Croatia

Table 4.2-1: Best practice 1 Croatia

Multi-annual programme of cadastral surveys of construction areas for the period 2021-2030
Location: Croatia
Year of implementation: 2021-2030
Related topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☒ Geodesy and analysis ☐ Planning and participation procedures ☒ Governance and planning policies
Objectives: The main goal of the Programme is the establishment of a cadastral operation of the real estate cadastre and renewal, i.e. the establishment of land registers based on cadastral surveys for real estate in construction areas in the Republic of Croatia.
Detailed information/explanation: The program is implemented through annual programs related to real estate cadaster affairs, which are adopted by the Government of the Republic of Croatia on the proposal of the State Geodetic Administration, with the prior approval of the ministry responsible for judicial affairs. By implementing activities from the Program, a whole series of positive effects can be expected: - strengthening the competitiveness of the economy, - improvement of the business environment, - efficient functioning of the real estate market, - investment growth and implementation of capital, development and infrastructure projects, - improving the management and disposal of state assets, - improvement of public administration, - improving the efficiency of the justice system.

Table 4.2-2: Best practice 2 Croatia

Information system of spatial planning
Location: Croatia
Year of implementation: 2021
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: Spatial Planning Information System (ISPU) is a system of the Ministry of Spatial Planning, Construction and State Property, which provides citizens with easy access to information about the use of space through a geoportal. The goal of establishing ISPU is to make the spatial planning system transparent and relevant data available to everyone, and to enable simple insight into all the processes that take place in the space.
Detailed information/explanation: Geoportal is the central place for accessing certain so-called ISPU modules, i.e., computer solutions such as ePermit, eKatalog, eNekretnine, etc., which are used for entering and uploading data and are available to authorized users from public authorities responsible for conducting procedures in the field of spatial planning, construction, real estate assessment, building inspection etc. Data sets uploaded through the modules are available for viewing by citizens on the geoportal in laws and by-laws to a certain extent.

Table 4.2-3: Best practice 3 Croatia

Zagreb spatial data infrastucture
Location: Zagreb, Croatia
Year of implementation: 2013
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☒ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: Based on Law on NSDI City of Zagreb defined Zagreb spatial data infrastructure and established Zagreb SDI geoportal through which numerous spatial data sets are made available together with applications developed for usage of those data.
Detailed information/explanation: This Geoportal is a type of Internet portal that provides access to spatial information and various related services (searching, browsing, downloading, transformation, discovery of services). Geoportals are an integral part of spatial data infrastructures at the European, national and local level. ZG Geoportal is the access point of the Zagreb spatial data infrastructure and contains spatial data of the city's administrative bodies, companies and institutions. This geoportal offers: a directory of cadastral, thematic and urban plans of the city of Zagreb, shows the spatial plan of the city of Zagreb, GUP Zagreb and Sesveta, as well as detailed spatial plans. It also contains a digital orthophoto map for the Zagreb area, with a higher resolution than the one on the SGA GeoPortal. See https://geoportal.zagreb.hr/

4.3 Germany

Table 4.3-1: Best practice 1 Germany

Connected Urban Twins (CUT)
Location: Hamburg, Leipzig and Munich, Germany
Year of implementation: 2021
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Municipal innovation field - Joint further development of urban digital twins and urban data platforms in the three partner cities - Leading other cities by example - Further development of digital twins for cities and municipalities - Based on the Urban Digital Twin Model, enable a better understanding of complex urban development relationships and make more informed decisions
Detailed information/explanation: Hamburg's, Leipzig's, and Munich's smart city strategy targets the municipal innovation field. Whether creating housing or taking action to address climate change, Urban Digital Twins combine innovative models and data to create a realistic representation of the city and to enable what-if scenarios for livable and sustainable cities. The Connected Urban Twins (CUT) project focuses on the joint further development of urban digital twins and urban data platforms in the three partner cities of Hamburg, Leipzig, and Munich. With their experiences from the cross-city knowledge transfer, the three CUT cities also show other cities and municipalities new ways in digital urban development. Whether creating housing and traffic routes or measures to cope with climate change - Urban Digital Twins bundle new, innovative models and extensive data to create a realistic image of the city. They enable what-if scenarios for livable and sustainable cities. This creates a sound basis for faster and rethought decisions in integrated urban development. Complex urban contexts become comprehensible with Urban Digital Twins even for non-experts, offering new opportunities for citizen participation. Urban Digital Twins are to be used for a more sustainable, resource-saving and efficient urban development. This should also enable transparent participation of the urban society. In addition to the active transfer of knowledge on Urban Digital Twins within the project, replication beyond its borders to other cities and municipalities is a key project goal.

CUT project results are available, for example, as standardized technical building blocks or innovative use cases for urban development or citizen participation. The project thus forms a foundation for the use and self-development of Urban Digital Twins in other cities and municipalities.
To achieve these goals, five technical focal points were conceived as subprojects:

- Urban Data Platforms and Urban Digital Twins
  Further development and operational deployment of replicable urban data platforms and urban digital twins.
- Innovative use cases of urban development
  Testing the Urban Data Platforms and Urban Digital Twins in current urban development use cases.
- Participation of urban society
  Co-creative development and use of innovative digital participation formats, tools and processes
- Transformative experimental urban research
  Linking Technology Research with Social Science Research on Urban Digital Twins.
- Replication and knowledge transfer
  Project internal knowledge management, supra-regional knowledge transfer and exemplary replication of project results

The CUT partner cities have already gained extensive experience with their own digitization and smart city strategies. The cross-city partnership that the three cities are entering into with the CUT project is unique in Germany. The intensive cross-city knowledge transfer offers a great opportunity that characterizes the model character of CUT: In the CUT project, solutions are created that leave the urban perspective and thus also show other cities and municipalities in Germany new ways.

*Table 4.3-**Error! Use the Home tab to apply Überschrift 2;Header 2 to the text that you want to appear here.**: Best practice 2 Germany*

Jenfelder Au, Hamburg

Location: Hamburg, Germany

Year of implementation: 2011 - 2024

Related topics:

☒ Spatial and urban planning
☒ Architecture and building design
☐ Material science
☒ Energy efficiency
☐ Road design and mobility
☒ Urban water management
☐ Geodesy and analysis
☐ Planning and participation procedures
☐ Governance and planning policies

Objectives:

- Carbon neutral housing area
- Resource orientated sanitation system
- Water and energy savings
- Nexus of water and energy
- Reuse of water and nutrients

Detailed information/explanation:

On a former barracks area 835 housing units for approx. 2.000 inhabitants were installed. Houses are designed with a high energy consumption standard. The area is equipped with an own water management system. Stormwater is discharged in a new created pond system. Wastewater from the toilets (blackwater) is collected by vacuum toilets with a much lower water consumption and discharged by a vacuum sewer system. The blackwater treatment in a biogas plant produces bio-gas, which is used for electricity and heat production. Electricity is supporting the local grid and heat is , which supports the local district heating system.

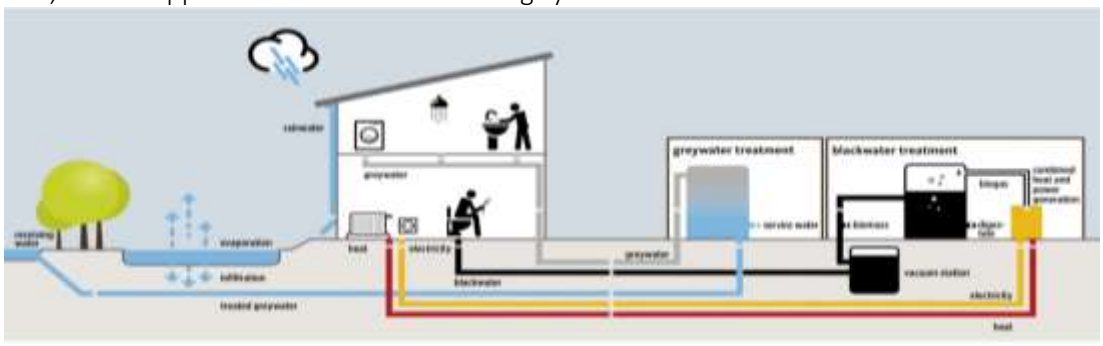

Figure 4: scheme of Hamburg Water Cycle (www.hamburgwager.cycle.de)

Greywater is treated locally and will be used for cooling and cleaning purposes in an industrial com-pany. All systems are operated by the utility HAMBURGWASSER.
Due to the separation of the wastewater and the appropriate treatment less energy compared to conventional wastewater treatment. Furthermore, the reuse of water and energy can be achieved by the system. This project serves as a pilot for other projects in a larger scale in the Netherlands. Belgium and Sweden.

www. Hamburgwatercycle.de

Table 4.3-2: Best practice 3 Germany

Hamburg as an example of sustainable urban development
Location: Hamburg, Germany
Year of implementation: 2009
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☐ Governance and planning policies
Objectives: - Achieve a near-natural water cycle even in the city, thereby preventing unforeseen flooding due to sealing and protecting water bodies from excessive hydraulic stress - Combining the sustainable further development of the city with water management adapted to climate change - Forming an interface between urban water management including heavy rainfall prevention (by using multifunctional spaces) and urban and landscape planning, traffic planning and water-course planning - Preparation of infiltration, decoupling and evaporation potential maps as well as the hazard analyses for exceptional heavy rainfall events as a basis for a risk assessment of channel-induced flooding
Detailed information/explanation: Increasing land sealing and the consequences of climate change pose new challenges for water management in Hamburg. The Hamburg Authority for the Environment, Climate, Energy and Agriculture (BUKEA) and HAMBURG WASSER are working together in Rain InfraStructure Adaption (RISA) to implement concepts and solutions for the sustainable management of rainwater. The options for action created in the project and the model for sustainable and water-sensitive urban development must now be implemented. With the RISA Structure Plan Stormwater 2030, the joint project launched in 2009 was successfully completed in 2015. The implementation of the RISA goals and action priorities as part of a water-sensitive urban development is only possible through the participation of different stakeholders from water management, urban development, landscape planning, traffic planning and water planning. HAMBURG WASSER and BUKEA are working to involve these and other stakeholders beyond water management. These work together in a modern network that pools resources across institutions and develops unconventional approaches to new challenges in stormwater management. The changing boundary conditions of the growing city and the consequences of climate change require the implementation of new ideas and concepts for dealing with stormwater in Hamburg. The future challenges to water management are being met here with an integrated and interdisciplinary approach.

The city's infrastructure, which has grown over decades, must be adapted to meet the requirements of climate change, urban densification and the EU Water Framework Directive (WFD) in a sustainable manner. Meeting this challenge is a joint task and requires interaction between the various players from Hamburg's administration and business community. The RISA network is a working forum that emerged from the RISA project, in which the ideas and concepts were developed, and in which today the extensive and demanding tasks are being worked on together.

The ideas and concepts refer to the following main fields of action:

- Urban water management
  The focus here is on analyses of hazards due to heavy rainfall, flood proofs as well as potential analyses for decentralized rainwater management.
- Urban and landscape planning
  The priority here is to develop ways of integrating water management more closely into planning processes and to find options for establishing water management measures in urban land use planning procedures.
- Traffic planning
  In this work area, possibilities are sought to use traffic routes for drainage.
- Watercourse planning
  The focus here is on implementing suitable measures that contribute to improving water quality and aiming for natural water balances.

To realize water-sensitive urban and landscape planning, early involvement of water management in urban development and its planning processes is urgently needed. This will improve the quality of life for Hamburg's residents and reduce risks and damage from flooding. If green spaces and park areas are in such a way that they can be used to retain and evaporate rainwater, they contribute directly to heavy rainfall prevention and support a natural water balance. Intensive coordination among various stakeholders is required to plan and implement these multifunctional spaces. The legal framework also varies from case to case. The goal is to place water management concerns in planning processes, such as urban land use planning, at an early stage and thereby find increasingly more synergies with the needs of settlement development.

The following main topics and concrete approaches to solutions are currently being worked on:
RISA as a building block of an urban development model:
- Living with water as an urban and landscape planning model.
- Green and open spaces for temporary shared use (multifunctional uses)
- Resilience of the settlement structure to droughts and heavy rains for climate impact adaptation
Involvement of practitioners in the "management of stormwater":
- Increasing the transparency of water management responsibilities
- Integration of water management concerns into the urban land use planning process
- Implementation of water management regulations in urban land use plans
- Analysis and further development of superordinate planning instruments (landscape planning, land use plan, impact compensation regulation, guiding principles of urban development)

Further development of the "future handling of stormwater":
- permanent monitoring of the actual state
- Adaptation of laws, ordinances, technical instructions
Design and implementation of a "water plan" on the spatial level of the FHH
- Further design of the water management plan on the spatial level of the development plan

Table 4.3-3: Best practice 4 Germany

Kronsberg Model - Ecological Building for the Future
Location: Kronsberg, Germany
Construction time: 1998 - 2000
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - land-saving construction, environmentally friendly traffic, quality open space design
Detailed information/explanation: The Kronsberg, located in the southeast of the city of Hannover, is the largest contiguous area for building development in the state capital of Lower Saxony. A wide variety of urban planning concepts have been developed for it since the 1960s. But it was not until EXPO 2000 that the city succeeded in implementing the plans. The Kronsberg development is itself an exhibit of the world exhibition due to its exemplary, future-oriented design representing the theme of the man-nature-technology world view. The Kronsberg district was built according to the latest knowledge about ecological building and living in the sense of Agenda 21. Ecological objectives had a prominent place in the planning and realization. Thus, the urban planning concepts for land-saving construction, environmentally friendly traffic, quality open spaces and the adjacency of living and working were consistently implemented. By 2006, more than 3,300 apartments had been completed. In the future, a total of 6,000 apartments for 15,000 residents are to be built. Three daycare centers, an elementary school, an integrated comprehensive school, a district center, a church center and a health and supply center with high ecological standards have started operation. In addition, large commercial areas are being developed in the after-use of the World's Fair site. About 3,000 jobs adjacent to the new residential area have already been created. The new district stretches from north to south along the new light rail line on the western slope of the Kronsberg hill, thus linking the old district of Bemerode with the World's Fair site. A kilometer-long double-row avenue of trees demarcates the residential area from the eastern landscape area. The area covers approx. 60 hectares gross building area A holistic approach is used to ecologically optimize building at Kronsberg across the board. The components are: - Energy concept, - Water concept, - Soil management.

- Energy concept: low-energy house standard, two combined heat and power plants, passive houses;
- Water concept: rainwater is discharged in a delayed manner;
- Soil management: excavation used for hills in landscaped area and noise barriers.
- Notable as solar architecture is the "Solar City" in the south-eastern part of the district (developers: GBH, Philipp Holzmann; 106 apartments), where large solar collectors are placed on the roofs facing Expo.

Different ecological approaches were taken depending on the project sponsor, but overall they were held together by a stormwater approach. Rainwater is collected along the streets in a trough /rigole system, retained decentral and discharged with a time delay. Partly in wide "mountain streams", the rainwater ripples down the wide median strip of the uphill cross streets. Rainwater collection basins (no infiltration) are built in the courtyards for temporary storage and evaporation. Rainwater streams as a design element in the main experience spaces of the "cross streets"; rainwater collection basins also design focal point in some courtyards.

"The central theme of rainwater management was the one that Atelier Dreiseitl ... most intensively. On the northern and southern downhill street avenues, green spaces stand out, between about 13 and 30 meters wide. Their main purpose is to absorb the surface water from the avenues, the overflow from the adjacent apartment blocks, and the throttled runoff from the streets parallel to the slope. In addition, however, these areas will serve as public parks where residents and visitors will experience water as directly as possible...".

Efforts are made to maintain the natural water balance. This can also be kept very close to the natural water balance through planting and the swale and trench systems. In this way, a near-natural rainwater system can be realized. In addition, the water is used as a design element and thus made visible for the residents. The apartments are flexible usable, small and large apartments were mixed as well as apartments suitable for families. Overall, apartments were created for new lifestyles, and these thus prevent social segregation.

The traffic planning shows itself by environmentally compatible and short ways. The stops of the light rail system were arranged in such a way that there is a stop every 600 meters. In addition, the main traffic is diverted past the urban area. Thus, the city is characterized as bicycle-friendly and there are many traffic-calmed zones.

Through the realization of the planning, the CO_2 emissions could be reduced by 60 %, in addition, the energy consumption can be significantly minimized through the construction of passive houses. The construction of wind turbines reduces this by a further 20 %.

Figure 5: Kronsberg 1998 and 2007

Figure 6: Planning sketch buildings and infiltration swale -rigole system

Other best practices in Germany are for example:

- Productive urban quartier in Winnenden, Stuttgart
- Urban planning in the Yorkkaserne in Münster, including a sustainable drainage concept
- WagnisART cooperative housing project in Munich with social uses and space for new forms of living
- strategy “Gemeinsam Digital: Berlin” (digital together)

4.4 Norway

Table 4.4-1: Best practice 1 Norway

How Europe's rainiest city is turning stormwater into a resource
Country: Norway
Year of implementation: 2018
Related Topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - The city of Bergen aims to be Norway's greenest city and a pioneering city with regards to environment, sustainable development, and climate adaptation. Specific targets include becoming fossil free by 2030 and a 1.5-degree city by 2050, having zero-emission construction sites by 2025 and increasing climate adaptation especially through blue-green infrastr. - Bergen aims to be Norway's greenest city and a pioneering city with regards to environment, sustainable development, and climate adaptation. Specific targets include becoming fossil free by 2030 and a 1.5-degree city by 2050, having zero-emission construction sites by 2025and increasing climate adaptation especially through blue-green infrastructure
Detailed information/explanation: **Adapting to climate change**: In the quest to adapt to climate change, Bergen has for many years had an interdisciplinary and interdepartmental approach to stormwater management. As a leader in this area in Norway, Bergen developed a Municipal Stormwater Management plan that: - prioritises stormwater management; - ensures that stormwater management is integrated in all land use planning and urban development; - ensures that blue-green infrastructure for stormwater management is a mandatory first choice **Mitigation actions**: Actions around mitigation will reduce greenhouse gas emissions and contribute towards Bergen becoming a 1.5-degree city by 2050, meeting the goals of the Paris Agreement - The utility strategy for Bergen Water specifies the use an energy management system, with a circular economy approach which also reduces non-revenue water and emissions - Energy-use reduction and cost savings are driving utility's mitigation actions. The utility can produce 60% of its energy through a combination of the utility's biogas production from wastewater sludge and water turbines connected to the water intake from high in the mountains to the drinking water treatment plants. - Energy consumption in operations has been reduced by 15% between 2018 and 2020, and further reduction is expected in the coming years. Another feature providing great energy savings is trenchless (no-dig) infrastructure management. - For many years, Bergen has been now using a high percentage of trenchless solutions for renewal of pipe infrastructure. In 2020, around 80% of wastewater pipes were renewed with this method. Trenchless technologies not only save large amounts of energy in the construction phase, but also time and are less of a nuisance for citizens.

Table 4.4-2: Best practice 2 Norway

Energy Labelling of Housing and Buildings, in Norwegian
Country: Norway
Year of implementation: 2010
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Energy certificates are mandatory for all housing and non-residential buildings sold or rented, and for new constructions. - To stimulate and energy efficient operations and management of buildings and facilities, - To implement measures for energy efficiency.
Target group: - Local authorities - Local communities - Design and engineering professionals - Investors
Detailed information/explanation: Mandatory minimum technical requirements for new buildings and large rehabilitations. Also, minimum requirements to energy performance of main components (windows, walls, etc.) are defined. - For buildings above 500 m²: Minimum 60 % of energy from other sources than direct electricity or fossil fuels - Below 500 m²: Minimum 40 % - Fossil fuels is not allowed to cover base load - U-values The energy label is composed of an energy grade/character and heating character/grade. The energy label gives the market an assessment of the building or housing's energy standard.

4.5 Serbia

Table 4.5-1: Best practice 1 Serbia

Affirmation of the concept of Sustainable Urban Mobility
Country: Serbia
Period: 2022
Related Topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☒ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Better quality of life - Improving the image and attractiveness of the city - Access and access to European funds. - Solving acute traffic problems - Reducing air pollution and reducing noise - The health of the citizens
Detailed information/explanation: Urban mobility involves a balanced relationship between different forms of movement and the basis for sustainable modes of transport in cities. A sustainable urban mobility plan is a strategic plan designed to meet the need to move the population and economy in cities and surroundings to improve the quality of life. Relies on existing planning practice with respect to principles of integrality, participation and evaluation. The Sustainable Urban Mobility Plan (SUMP) is an innovative way of planning urban mobility. A transport and urban system that satisfies, primarily, people's needs. SUMP involves comprehensiveness, citizen involvement and monitoring and evaluating how to meet the existing and future mobility needs of city dwellers to improve the quality of life in and around cities. From a social point of view, transport is sustainable when it is accessible, when there is an opportunity for alternatives to the transport system, when there is a better connection of public transport and when there is an infrastructure for active modes of transport. In contrast to the traditional approach of urban and traffic planning, SUMP rests on a holistic approach. Special emphasis is put on the involvement and participation of citizens and other entities through harmonizing decisions in different sectors: transport, spatial and urban planning, economic development, social activities, health, safety, energy, environmental protection, etc. Joint decision-making should include participants on all vertical and horizontal levels of decision-making.

Table 4.5-2: Best practice 2 Serbia

Clean Energy and Energy Efficiency for citizens in Serbia
Country: Serbia
Period: 2022
Related Topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - to increase the availability and accessibility of more efficient energy for households, - to increase the possibility of establishing sustainable heating and installing roof solar photovoltaic panels in households in Serbia. - to create a sustainable model of a solution that would enable the use of clean energy in households – represents essential steps towards improving air quality, reducing energy poverty and supporting Serbia in its drive to reduce carbon dioxide emissions.
Detailed information/explanation: This project includes both financial and technical assistance to foster the development of green and inclusive infrastructure as well as the execution of infrastructure works at the local level, including compliance with the relevant chapters of the Sustainable Urban Development Strategy (SUDS). The objectives of the project are achieved through two components: 1) Financing investments through granting grants to households to achieve energy efficiency, establishing sustainable heating and installing roof solar photovoltaic panels. 2) Technical Assistance and Support includes support to the public and other stakeholders, as well as raising public awareness to support the development of a scalable financing mechanism and remove market barriers. The project covers the whole of Serbia. Municipalities and households are selected based on the criteria adopted.

Table 4.5-3: Best practice 3 Serbia

Energy Management System
Country: Serbia
Period: 2022
Related Topics: ☐ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - The annual energy savings target for the current calendar year shall be the savings at each location of 1% of the primary energy consumed at that location in the previous calendar year per unit of product or equivalent product.
Detailed information/explanation: Obliged to the Energy Management System are: units of local self-government and city municipalities with more than 20,000 inhabitants and state administration bodies, other bodies and organizations of the Republic of Serbia, including social services organizations; companies and public companies whose main activity is in the production sector if they have an annual primary energy consumption of more than 25 GWh (90 TJ or 2150 toe) at least one location; companies and public companies whose main activity is in the trade and services sector are System Payers if they have an annual primary energy consumption of more than 7 GWh (25.2 TJ or 602 toes) at least one location; Other beneficiaries of public funds if they use at least one publicly owned building whose total net area exceeds 5000 m^2.

Table 4.5-4: Best practice 4 Serbia

The National Urban Forum
Country: Serbia
Period: 2022
Related Topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - to provide a polygon for discussion among different stakeholders on urban development - to provide a synergistic effect of key topics and activities that considers urban development policy
Detailed information/explanation: The National Urban Forum of the Republic of Serbia was held on 11 and 12 April 2022 in Belgrade at the Palace of Serbia, organized by the Ministry of Construction, Transport and Infrastructure, the Standing Conference of Towns and Municipalities, the Office of the UN Resident Coordination in Serbia and the United Nations Settlements Programme – UN Habitat. The holding of national urban forums is envisaged by the Sustainable Urban Development Strategy of the Republic of Serbia until 2030 and confirmed by the Action Plan for the implementation of the Sustainable Urban Development Strategy of the Republic of Serbia in 2021 and 2022. The forum is designed to look at key topics and activities in the field of urban development, as well as other policies within the scope of the ministry that have a synergistic effect with urban development policy: National Housing Strategy, Long-term strategy to encourage investment in the renovation of the national building stock (energy efficiency) and National architectural strategy. Between the introductory and closing part of the forum, seven sessions were held, as follows: - plenary session on the revision of the Urban Development Strategy of the Republic of Serbia - special session on young people in urban development - special session on gender aspects of urban development - special session on urban development in the Balkans - a parallel session on the green agenda in urban development - parallel session on housing policy - parallel session on the quality of the built environment

Table 4.5-5: Best practice 5 Serbia

Action plan for the implementation of the sustainable urban development strategy of the republic of Serbia until 2030 for the period from 2021 to 2022
Country: Serbia
Period: since 2021
Related Topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☐ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - to provide effective implementation of Strategy for Sustainable Urban Development of the Republic of Serbia by 2030 - to define responsible institutions for the activities and their partners in the implementation process
Detailed information/explanation: Action Plan contains: - Measures for achieving Urban development goals of the Strategy, grouped into 20 packages of measures, elaborated by the activities in the Action Plan, considering that no package of measures would be without activities - The initial values of three indicators of effect for the overall objective and 40 outcome indicators for specific objectives referred to in section "7.6 Performance indicators for monitoring the achievement of the strategy" are presented in the Action Plan for a total of 31 indicators. - To display the target values, it is necessary to make projections based on trends in the value of indicators that will be monitored until the first urban development report is made. - Measures of the Strategy and urban development indicators refer to urban settlements in the Republic of Serbia. (The criteria for urban settlements in the census include urban settlements with more than 2,000 inhabitants unless they are spas or municipal centres.) - In accordance with Article 24 of the Law on the Planning System of the Republic of Serbia, strategic measures can be: regulatory (R), incentive (I), informative-educational (IE), institutional-management-organizational (IMO) and goods, services and public investments (GS-PI).

Table 4.5-6: Best practice 6 Serbia

ENERGY PASSPORT - a certificate of the energy performance of buildings
Country: Serbia
Period: since 2009
Related Topics: ☐ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☐ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☐ Planning and participation procedures ☐ Governance and planning policies
Objectives: - to provide all users with information about the energy characteristics of the building - to enable to consider the necessary future investments in the reconstruction of buildings
Detailed information/explanation: This document contains the calculated consumption values of energy within a specific category of buildings, energy class and recommendations for improving the energy performance of the building. The passport also contains information about: - thermo-technical systems used in the building, - properties of the thermal envelope of the building, - energy needs of the building and - heat losses.

4.6 Spain

Table 4.6-1: Best practice 1 Spain

Alcobendas - Digital Innovation Hub for the smart city
Country: Alcobendas, Spain
Year of implementation: 2020
Related topics: ☒ Spatial and urban planning ☒ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☒ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - To strengthen Alcobendas' business fabric, to increase population and economic activity boost, to improve life quality, to fight against climate change the city of Alcobendas promoting Sustainable mobility in Northern Madrid.
Detailed information/explanation: Alcobendas is a city located in northern Madrid (pop. 117,000). Thanks to a great public transport system, the city is less than 15 minutes away from Madrid's financial district, downtown, Barajas International Airport and IFEMA convention centre. The city hosts in April 2023 the headquarters of 554 multinational corporations, being the Third Spanish city by turnover, just behind Madrid and Barcelona. Alcobendas was selected as part of the European's Commission Intelligent Cities Challenge in 2020 and launched a Digital Innovation Hub – Intelligent Urban Lab – and since 2022 is part of the European Digital Innovation Hubs. This project has developed some digital services based on digital innovation solutions to improve the quality of life for citizens, to tackle mobility issues promoting sustainable mobility, and with the main purpose through testing and experimentation to be smarter in terms of improve environmental cleaner services generating digital innovation solutions to challenges in today's smart cities. In this link some of the initiatives are explained: Resource: https://intelligent-urban-lab.org/en/home/

Table 4.6-2: Best practice 2 Spain

Smart Tourist Destination Programme
Country: Spain
Year of implementation: 2019
Related topics: ☒ Spatial and urban planning ☐ Architecture and building design ☐ Material science ☒ Energy efficiency ☒ Road design and mobility ☐ Urban water management ☐ Geodesy and analysis ☒ Planning and participation procedures ☒ Governance and planning policies
Objectives: - Provide a tool to prioritize the actions to be undertaken at the destination on the path to becoming a Smart Tourist Destination. - Increase competitiveness, thanks to a better use of existing tourism resources, and the identification and creation of new ones. - Improvement in the efficiency of production and marketing processes - A boost to sustainable development. - Improvement in quality of stay for visitors, as well as in quality of life for residents. - Provide the guidelines to make the tourism strategy the basis for the economic revitalization of the area, guaranteeing long term positive impact.
Detailed information/explanation: The Smart Tourist Destination Programme is promoted by the Spanish Secretary of State for Tourism (SETUR) and managed by the State Society for the Management of Innovation and Tourism Technologies (SEGITTUR). The programme is devoted to help make tourist destinations more competitive and improve the quality of life of their residents by focusing on five key areas of action: governance, innovation, technology, sustainability, and accessibility. Smart Tourist Destinations is defined as an innovative tourist destination based on a state-of-the-art technological infrastructure, thus guaranteeing the sustainable development, being accessible to anyone, enabling visitors to integrate and interact with their surroundings, raising the quality of their experience at the destination, and improving quality of life among residents. The Smart Tourist Destination methodology is structured around the pillars supporting the Smart Tourist Destination Programme: governance, innovation, technology, sustainability, and accessibility. Its effective implementation relies on the close coordination of all the areas and all the public and private agents that directly or indirectly make tourist activity possible within the territory. The aim is to build a common working framework to identify needs and priority actions before initiating the process of becoming a recognized Smart Tourist Destination. The path to becoming a Smart Tourist Destination is divided into two cycles and five phases. Recognized Smart Tourist Destinations must regularly renew their commitment to prove continuous improvement. Cycle1: Diagnosis and Planning

The methodological process starts upon receiving a diagnosis request from the destination, which undertakes to implement the Smart Tourist Destination action plan and formalize its membership in the Smart Tourist Destinations Network (Phase 1).
Upon acceptance of the application, the Diagnostic Phase (Phase 2) begins, the outcome of which sets the baseline or starting point for the entire conversion process to Smart Tourist Destination recognition. A total of 97 requirements and 261 indicators – distributed across the five pillars – are then used to assess the degree of maturity of the destination in relation to the methodology and a list of recommendations is generated in order to draw up an action plan.
Phase 3 – Strategy and Planning defines the process for implementing the actions envisioned in the Smart Tourist Destination action plan, from prioritization and scheduling through to identification of those responsible, including investment needs, if any.
Upon completion of these phases, the destination can be recognized as a Smart Destination by achieving a degree of compliance equal to or higher than 80% of the requirements. If it falls short of this percentage, it will qualify as an Affiliate Smart Tourist Destination. In both cases, it moves on to cycle 2 – Implementation and Monitoring

Cycle 2: Implementation and Monitoring
During this cycle, the action plan is implemented, and the accreditation undergoes regular monitoring and renewal. Associated Smart Tourist Destinations move to Phase 4 and proceed to implement the proposed actions. They must renew their accreditation every two years by showing the progress they have made. Once the Action Plan has been put in place and the necessary degree of compliance has been achieved, they will earn Smart Tourist Destination accreditation, thus moving on to Phase 5 – Renewal.

All destinations recognized as Smart Tourist Destinations enter the Renewal phase, whether they come directly from Phase 3 (Cycle 1) or from Phase 4. There they remain within a continuous monitoring process to certify that they continue to meet the standards set by the Smart Tourist Destination methodology, thus guaranteeing the objectives pursued by the programme of ensuring a new tourism governance structure driven by knowledge and the use of technology and innovation. The renewal process takes place every two years to validate compliance with all Smart Tourist Destination requirements and indicators.

The Smart Tourist Destinations Network is a tool for coordination and cooperation and an instrument to bring together and represent all tourism destinations that want to be recognized as Smart Tourist Destinations, as well as other essential agents, both public and private; in short, all those whose knowledge and field of work can contribute and add value to the development of Smart Tourist Destinations. In March 2023, the Smart Tourist Destination Network had 635 members. Thanks to this programme, Spain is now cementing its status as a leader in the implementation of a methodology for the transformation of destinations towards a new tourism management model rooted in governance, sustainability, accessibility, innovation, and technology.

5 Networks and cooperation

In this chapter, examples of networks and cooperations in the EU Member States and third countries associated to the Programme countries are presented.

Examples for network and cooperation could be:

- ✓ Smart Cities Marketplace
  - speeding up the green transition of cities in Europe by improving citizens' quality of life;
  - complements current EU efforts with a complete catalogue of offers (e.g. calls for free technical assistance, 1-to-1-consultancy services for city-led consortia close to the financing stage, financing masterclasses and a fine-tuned matchmaking for the financing of urban projects and intensified partnerships with other EU initiatives);
  - bringing together cities, industry, SMEs, investors, banks, research, and other climate-neutral and Smart City actors.
  Creating smart cities together | Smart Cities Marketplace (europa.eu)

- ✓ Global covenant of Mayors for Climate and Energy
  - connect local governments that have voluntarily committed to meeting and exceeding EU climate and energy targets;
  - engage and support cities and towns to commit to reaching the EU climate mitigation and adaptation targets;
  - increase support for local activities and provide a platform for greater engagement and networking by cities.
  Home - Global Covenant of Mayors

- ✓ BUILD UP
  - environment for building professionals, local authorities and building occupants;
  - promotes the exchange of best practices
  Homepage | BUILD UP (europa.eu)

- ✓ EIT Urban Mobility
  - working to encourage positive changes in the way people move around cities to make them more liveable
  Home - EIT Urban mobility

- ✓ European Covenant of Companies for Climate and Energy
  - encourage and support companies to step up their contribution to a clean energy transition and related climate objectives as set out in the European Green Deal;
  - decarbonise the business sector.
  Covenant of Mayors - Europe | Covenant of Mayors - Europe (europa.eu)

- ✓ European Energy Research Alliance (EERA) Joint Programme Smart Cities
  - develop new scientific methods, concepts and tools designed to support European cities in their transformation into smart cities; key focus on large-scale integration of renewable energies.
  EERA - European Energy Research Alliance (eera-set.eu)

- ✓ European Energy Efficiency Platform (E^3P)
  - serves as the Commission online platform in the Energy Efficiency Directive, Article 25;
  - facilitates the practical implementation of the Energy Efficiency Directive at national, regional and local levels, with data collection and analysis;
  - supports the exchange of experiences on practices, benchmarking, network activities, and innovative practices.
  E3P | European Energy Efficiency Platform (europa.eu)

- ✓ European Innovation Partnership on Smart Cities and Communities – EIP-SCC
  - driving the development and deployment of smart city technologies;
  - brings together public and private actors to develop and implement strategic implementation plans, concrete actions and projects.
  European Innovation Partnership on Smart Cities and Communities | E3P (europa.eu)

- ✓ mySMARTLife
  - Urban growth and emissions play a role in many European metropolises. Therefore, it is important to face and counteract these and other challenges. Smart solutions are becoming increasingly important in this context.
  - The question of how to shape the transformation processes associated with these requirements is the focus of an EU project "mySMARTLife" developed jointly by Hamburg, the Finnish capital Helsinki and the French city of Nantes, which has now been awarded a contract by the European Commission.
  - In the five-year EU project, the three partner cities are working together with the following five cities Varna (Bulgaria), Bydgoszcz (Poland), Rijeka (Croatia) and Palencia (Spain).
  - Based on concrete measures and projects, new ways and strategies are shown how the cities can face the current challenges and actively involve citizens in decision-making processes.
  https://www.mysmartlife.eu/mysmartlife/

- ✓ Danube Region strategy
  - Strategy for closer cooperation among the countries along the Danube, focusing on infrastructure, environmental protection, prosperity and good governance.
  EUSDR (danube-region.eu)

- ✓ #connectedinEurope
  - European networking opportunities in the area of Smart Cities as well as existing European opportunities within the framework of Digital Europe.
  - participation of Europe communities (6 tandem-peer-learning-partnerships)
  #CONNECTED IN EUROPE | Smart Cities Marketplace (europa.eu)

- ✓ D-A-CH Cooperation Smart Cities
  - A Memorandum of Understanding (MoU) between Germany, Switzerland and Austria for the joint promotion of research, technological development and innovation (RTI) in the field of smart cities provides a formal basis for transnational cooperation
  D-A-CH Co-operation on Smart Cities (bmk.gv.at)

- ✓ Smart cities member states initiative
  - support European cities in moving forward by creating a roadmap with real impact
  - support the development of integrative methods and tools for the large Smart Cities demonstration projects (21 countries participating)
  The Smart Cities Member States Initiative - Smartcities

Examples for a national network could be:

- ✓ Smart City Dialogue (Germany)
  - wants to contribute to shaping smart cities in a dialogue between politics, administration, business, science and civil society.
  Europa - Smart City Dialog (smart-city-dialog.de)

- ✓ Model projects Smart City (MPSC) (Germany)
  - On the basis of the Smart City Charter of the National Dialogue Platform Smart Cities.
  - The model projects are intended to show how the qualities of the European city can be translated in the age of digitisation.
  - Promote smart city strategies and their implementation.
  - Use the opportunities provided by digitalisation and link them to the requirements of integrated urban development and the model of the sustainable European city.
  - Follow the normative guidelines defined under the Smart City Charter of the National Dialogue Platform Smart Cities, which focuses on people and the common good.
  - The projects can be used as diverse learning examples whose findings and results are transferred to all municipalities as part of a comprehensive knowledge transfer.
  - Want to help shape Smart Cities together in a dialogue between politics, administration, business, science and civil society.

6 Conclusion

Due to the incentive and support of EU, many ideas and regulations are already being implemented. As can be seen from the national policies as well as the best practices, the program countries are on the track in the different areas of urban development, but nevertheless big challenges must be fulfilled in future.

To finally classify and evaluate the laws, policies and initiatives introduced by the European Union, it must be considered that only a part of the many current policies and initiatives of the EU could be presented and of course many more would have to be added to get a complete overview. Since the selection made, however, it becomes clear that many projects and policies have to do with the topic of climate smart urban development, as an example energy efficiency, urban mobility, and urban water management because of the framework of the European Green Deal can be mentioned. Especially in the last 5 - 10 years all policies have to do with energy efficiency (as you can see in Table 4.6-1 and Table 4.6-2).

These can be used as reference projects and inspire other countries and cities to become more sustainable and to think smart early on especially in urban development.

Since the adoption of the European Green Deal in 2019, this has been the overall focus of activities in the EU. Numerous initiatives and projects have been launched to achieve the goal of climate neutrality by 2030. The Green Deal is a very comprehensive and large program. It has many different goals; all working together to promote and achieve climate neutrality.

One of the main objectives of the European Union is to achieve territorial cohesion, i.e., to ensure equal development opportunity in all its sub-regions. The achievement of this objective may be compromised by the adaptation to climate change because the need for adaptation needs differs greatly in the various sub-areas, as a result, and consequently exacerbate existing inequalities.

Although the challenges are very big, the Green Deal offers many opportunities and possibilities to drive change in the European Union.

Overall, it can be said that the EU has very large and far-reaching goals. These are supported by various policies, laws, and initiatives. However, the EU's grand ambitions are so far-reaching that it is difficult to keep track and find a clear direction. With the large number of policies and laws, it is easy to lose sight of the big picture.

In addition to the EU's goals and aspirations, it is important to monitor how member states adopt and implement these policies and laws. Based on national policies and the best practices, however, it can be said that all EU Member States and third countries associated to the Programme countries are already implementing and pursuing the EU's ideas and goals well.

It also becomes clear that an exchange should and already does take place on a local, regional, and also intra-European level. In this way, countries can learn from each other's experiences and developments and skip long testing and development phases.

In addition, international cooperation on research projects such as the Danube Region Strategy (Chapter 5) or the D-A-CH cooperation is also useful to combine different approaches and thought processes and to achieve the goal of climate neutrality and sustainability as quickly as possible.

Regarding updating the curricula in the Western Balkan countries in the field of smart urban development, it can be noted that the EU has already been taking steps and measures towards climate neutrality, sustainability, and digitalization for several years. Based on the national policies and best practices, the countries are also implementing these European initiatives in wide areas.

In the curricula, one can therefore look to the experiences and projects of the EU Member States and third countries associated to the Programme countries for inspiration and motivation in the various related topics.

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7 Appendix

Table 4.6-1: Evaluation of EU initiatives and policies

Policies	Year	1) Spatial and urban planning	2) Architecture and building design	3) Material science	4) Energy efficiency	5) Road design and mobility	6) Urban water management	7) Geodesy and analysis	8) Planning and participation procedures	9) Governance and planning policies
Proposal for a revised Urban Wastewater Treatment Directive	2023	☐	☐	☐	☒	☐	☒	☐	☒	☒
EU Mission - 100 climate-neutral and smart cities by 2030	2022	☒	☐	☐	☒	☐	☐	☐	☒	☐
REPowerEU Plan	2022	☐	☐	☐	☒	☐	☐	☐	☐	☐
Cohesion Plan	2021	☒	☐	☐	☒	☐	☐	☐	☐	☒
Hydrogen Strategy	2020	☐	☐	☐	☒	☐	☐	☐	☐	☐
Urban Greening Platform	2020	☒	☐	☐	☒	☐	☒	☐	☒	☐
European Climate Pact	2020	☒	☒	☐	☒	☒	☒	☐	☒	☒
European Climate Law	2020	☒	☐	☐	☒	☐	☒	☐	☒	☒
A European Green Deal	2019	☐	☐	☒	☒	☒	☒	☐	☒	☒
New Urban Agenda	2016	☒	☐	☐	☒	☐	☐	☐	☒	☒
Circular economy action Plan (CEAP)	2015	☐	☐	☐	☒	☐	☐	☐	☐	☒
The Paris Agreement	2015	☒	☒	☐	☒	☐	☒	☐	☒	☒
Urban Innovative Actions (UIA)	2014	☐	☐	☐	☐	☐	☐	☐	☒	☒
Urban Mobility Package	2013	☐	☐	☐	☒	☒	☐	☐	☐	☐
EU Adaptation Strategy	2013	☒	☒	☐	☒	☐	☐	☐	☒	☒
2020 Climate and Energy Package	2009	☐	☐	☐	☒	☐	☐	☐	☐	☒
Directive 2007/2/EC: Infrastructure for Spatial Information in the European Community (INSPIRE)	2007	☐	☐	☐	☒	☐	☐	☒	☐	☒
Water Framework Directive	2003	☐	☐	☐	☐	☐	☒	☐	☐	☒
URBACT	2002	☒	☐	☐	☐	☐	☐	☐	☒	☐
European Climate Change Programme (ECCP)	2000	☒	☒	☐	☒	☐	☒	☐	☒	☒

Table 4.6-2: Evaluation of national policies

Country	Policies	Year	1) Spatial and urban planning	2) Architecture and building design	3) Material science	4) Energy efficiency	5) Road design and mobility	6) Urban water management	7) Geodesy and analysis	8) Planning and participation procedures	9) Governance and planning policies
Austria	Austrian Strategy for Adaptation to Climate Change	2017	☒	☒	☐	☒	☒	☒	☐	☐	☒
	General Wastewater Emission Ordinance	1996	☐	☐	☐	☐	☐	☒	☐	☐	☐
	Water Rights Act	1959	☐	☐	☐	☐	☐	☒	☐	☐	☐
Croatia	Recovery and resilience plan for Croatia	2021	☐	☐	☐	☐	☐	☐	☐	☐	☒
	Water Act	2019	☐	☐	☐	☐	☐	☒	☐	☐	☐
	Law on state survey and Real-estate cadaster + Law on performing geodetic activities	2018	☐	☐	☐	☐	☐	☐	☒	☐	☐
	Law on national spatial data infrastructure (NSDI)	2018	☒	☒	☐	☐	☒	☒	☒	☐	☒
	Strategy of spatial development of Republic of Croatia	2017	☒	☐	☐	☐	☐	☐	☐	☐	☒
	Law on energy efficiency	2014	☐	☐	☐	☒	☐	☐	☐	☐	☐
	Law on spatial planning	2013	☒	☐	☐	☐	☐	☐	☐	☒	☒
	Construction act & Construction products act	2013	☐	☒	☐	☐	☐	☐	☐	☐	☐
Germany	National Water Strategy	2023	☐	☐	☐	☐	☐	☒	☐	☐	☐
	Building Energy Act	2020	☒	☒	☒	☒	☐	☐	☐	☐	☐
	Federal programme for the adaptation of urban areas to climate change	2020	☒	☒	☒	☒	☐	☒	☐	☒	☒
	Guideline for sustainable building	2020	☒	☒	☒	☒	☐	☐	☐	☐	☐
	Urban energy rehabilitation - climate protection and climate adaptation in the neighborhood	2011	☒	☒	☒	☒	☐	☒	☐	☒	☒
	Act on Access to Digital Spatial Data	2009	☐	☐	☐	☐	☐	☐	☒	☐	☒
	Federal Water Act	1996	☐	☐	☐	☐	☐	☒	☐	☐	☐
Norway	National strategy for social housing policies	2022	☐	☒	☐	☐	☐	☐	☐	☒	☒
	Norway's Climate Action Plan	2021	☒	☒	☐	☐	☐	☒	☐	☒	☒
	Strategy for developing a green, circular economy	2021	☐	☐	☐	☒	☐	☐	☐	☒	☒

Country	Policies	Year	1) Spatial and urban planning	2) Architecture and building design	3) Material science	4) Energy efficiency	5) Road design and mobility	6) Urban water management	7) Geodesy and analysis	8) Planning and participation procedures	9) Governance and planning policies
Norway	Long-term low-emission strategy	2020	☒	☒	☐	☒	☐	☐	☐	☒	☒
	Climate Change Act	2018	☒	☒	☐	☒	☐	☐	☐	☒	☒
	Energy Policy	2017	☐	☒	☐	☒	☐	☐	☐	☐	☒
	Planning and Building Act	2008	☒	☐	☐	☐	☐	☐	☐	☒	☒
Serbia	Towards a national architectural strategy draft	2023	☐	☒	☐	☐	☐	☐	☐	☒	☒
	Energy management system	2022	☐	☐	☐	☒	☐	☐	☐	☐	☒
	Law on the use of renewable energy sources	2021	☐	☐	☐	☒	☐	☐	☐	☐	☒
	Law on energy efficiency and rational use of energy	2021	☐	☐	☐	☒	☐	☐	☐	☐	☒
	National Housing Strategy 2020-2030 draft	2020	☐	☒	☐	☐	☐	☐	☐	☒	☒
	Law on planning and construction	2020	☒	☐	☐	☐	☐	☐	☐	☒	☒
	Law on housing and maintenance of buildings	2020	☐	☒	☐	☒	☐	☐	☒	☒	☒
	Strategy for sustainable urban development of the republic of Serbia by 2030	2019	☒	☒	☐	☐	☒	☒	☒	☒	☒
	National social housing strategy	2012	☐	☒	☐	☐	☐	☐	☐	☒	☒
	Regulation on energy efficiency of buildings	2011	☐	☒	☐	☒	☐	☐	☐	☒	☒
	Water law	2010	☐	☐	☐	☐	☐	☒	☐	☐	☐
Spain	Sustainable Mobility Law (Draft) Approval Expected in 2023	2023	☐	☐	☐	☐	☒	☐	☐	☒	☒
	Royal Decree 3/2023 establishing the technical-sanitary criteria for the quality of drinking water, its control and supply	2023	☐	☐	☐	☐	☐	☒	☐	☐	☒
	Energy Efficient Act Royal Decree-Law 14/2022 on economic sustainability measures in the field of transport, in terms of scholarships and study aid, as well as measures for saving, energy efficiency and reducing the energy dependence of the Natural gas	2022	☐	☒	☐	☒	☒	☐	☐	☐	☒

Country	Policies	Year	1) Spatial and urban planning	2) Architecture and building design	3) Material science	4) Energy efficiency	5) Road design and mobility	6) Urban water management	7) Geodesy and analysis	8) Planning and participation procedures	9) Governance and planning policies
Spain	Law 9/2022: Law on Quality in Architecture (Ley de Calidad de la Arquitectura)	2022	☒	☒	☒	☒	☐	☐	☒	☒	☐
	Royal Legislative Decree 7/2015: Law on Land and Urban Rehabilitation	2015	☒	☒	☐	☐	☐	☒	☒	☐	☒
	Law 22/2011: Land Pollution Act	2011	☒	☐	☐	☐	☐	☐	☐	☐	☒
	Royal Decree 1391/2007, which regulates The Spanish Committee of Geodesy and Geophysics	2007	☐	☐	☐	☐	☐	☐	☒	☒	☒
	Law 34/2007 on air quality and protection of the atmosphere	2007	☒	☐	☐	☒	☐	☐	☐	☒	☒
	Spanish Building Act 38/1999 Law on Building Regulations (Ley de Ordenación de la Edificación)	1999	☒	☒	☐	☐	☐	☐	☐	☐	☒

Table 4.6-3: Evaluation of best practices

Country	Policies	Year	1) Spatial and urban planning	2) Architecture and building design	3) Material science	4) Energy efficiency	5) Road design and mobility	6) Urban water management	7) Geodesy and analysis	8) Planning and participation procedures	9) Governance and planning policies
Austria	Smart Climate City Strategy Vienna	2022	☒	☒	☐	☒	☒	☒	☐	☒	☒
Croatia	Multi-annual programme of cadastral surveys of construction areas for the period 2021-2030	2021	☐	☐	☐	☐	☐	☐	☒	☐	☒
	Information system of spatial planning	2021	☒	☐	☐	☐	☐	☐	☐	☒	☒
	Zagreb spatial data infrastructure	2013	☒	☐	☐	☐	☒	☒	☒	☒	☒
Germany	Connected Urban Twins (CUT)	2021	☒	☒	☐	☒	☐	☒	☐	☒	☐
	Jenfelder Au, Hamburg	2011	☒	☒	☐	☒	☐	☒	☐	☐	☐
	Hamburg as an example of sustainable urban develoment	2009	☒	☒	☐	☒	☐	☒	☐	☒	☐
	Kronsberg Model – Ecological Building for the future	1998	☒	☒	☐	☒	☒	☒	☐	☒	☒
Norway	How Europe's rainiest city is turning stormwater into a resource	2018	☒	☒	☐	☐	☐	☒	☐	☒	☒
	Energy Labelling of housing and building in Norwegian	2010	☐	☒	☐	☒	☐	☐	☐	☒	☒
Serbia	Affirmation of the concept of Sustainable Urban Mobility	2022	☒	☐	☐	☐	☒	☐	☐	☒	☒
	Clean Energy and Energy Efficiency for citizens in Serbia	2022	☒	☐	☐	☒	☐	☐	☐	☒	☒
	Energy Management System	2022	☐	☐	☐	☒	☐	☐	☐	☒	☒
	The National Urban Forum	2022	☒	☒	☐	☒	☐	☐	☐	☒	☒
	Action plan for the implementation of the sustainable urban development strategy of the republic of Serbia until 2030 for the period from 2021 to 2022	2021	☒	☐	☐	☐	☐	☐	☐	☒	☒
	ENERGY PASSPORT - a certificate of the energy performance of buildings	2009	☐	☒	☐	☒	☐	☐	☐	☐	☐
Spain	Alcobendas - Digital Innovation Hub for the smart city	2020	☒	☒	☒	☒	☒	☒	☐	☒	☒
	Smart Tourist Destination Programme	2019	☒	☐	☐	☒	☒	☐	☐	☒	☒