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Commission for the Environment, Climate Change and Energy

ENVE

Implementing the European Green Deal:
Handbook for Local and Regional Governments

More information on the European Union and the Committee of the Regions is available online at http://www.europa.eu and http://www.cor.europa.eu respectively.

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Executive summary

The present Handbook is a component of the Committee of the Regions' 'Green Deal Going Local' initiative to support the implementation of the Green Deal at the local and regional levels. As part of this initiative, it has created a web portal that provides updated overviews of policy developments of particular relevance for local and regional authorities.

The European Green Deal (EGD) is an integral part of the European Commission's strategy to implement the United Nation's 2030 Agenda and the sustainable development goals, and the other priorities announced in President von der Leyen's political guidelines. It covers a broad range of field, e.g. climate neutrality, energy transition, transition to a circular economy, zero pollution strategy, farm to fork strategy, sustainable transport.

The EGD identifies two main sets of methods to generate transformational change. These can be considered as pillars of the EGD, and have major implications for its implementation at the local and regional levels:

(1) Profoundly **renewed modes of public action**. The EGD helps to overcome the challenges of environmental transition. It encourages public authorities to work across sectors, as part of partnerships involving public, private and 'third sector' organisations, with the active participation of the broadest possible range of stakeholders susceptible of contributing to the transition processes or affected by them.

(2) Fairness when it comes to **sharing the economic and social burden** of this transition process. This presupposes a strengthening of dialogues, cooperation and collaboration between e.g. actors at different institutional levels, regional and local authorities governing territories with higher or lower levels of resilience in the face of green transition, social groups, public and private actors.

Considering the wide range of issues addressed, the facilitation of local and regional transformation processes aligned on the EGD will require substantial resources. The EGD Investment Plan provides funding streams totalling 1 trillion euros, with a mixture of grants, loans and bank guarantees. However, local and regional authorities will only benefit from these possibilities insofar as they dispose of information on those that are relevant in their specific situation, and the capacity to take advantage of them.

EGD implementation is based on a Systems Innovation Approach

The implementation of the European Green Deal implies transformative action spearheaded by **local and regional authorities**. This implies that they think of themselves **as initiators and facilitators of systems innovation processes**. A systems innovation process is a set of coordinated interventions in economic, political and social systems. It targets an entire set of causal chains, groups and individual actors that would need to be mobilised to achieve changes of practices or outcomes.

All local and regional EGD implementations are expected to contribute to the adoption of **new 'deals'** between actors **on how the burden** of local and regional areas' transformation **should be shared**. This implies that processes should help to establish dialogue and trust, and agreements on priorities, intervention logics, targets (time-horizons) and divisions of roles and responsibilities. The collective elaboration of a **narrative of change** is a key component in efforts leading to such deals. Depending on the context it may be tacit or formalised. Possible sources of inspiration for narratives of change are listed in the box below.

Step-by-step guidance

EGD implementation is adapted to each local context. It occurs in thematic fields characterised by complexity, uncertainty about cause-effect relationships and future development. It is a creative and iterative process in which experimentation plays a central role. The handbook therefore presents the 'steps' described in the handbook are therefore generic moments in the collective process of EGD implementation. They are divided in four groups: preparation, elaboration and strategy renewal. Implementation is addressed separately under each thematic field.

- Preparation: the roles of local and regional authorities are **not necessarily limited by formal fields of competence**. They function as initiators and facilitators of systems innovation processes bringing together actors from different horizons (e.g. private companies, representatives of the civil society, non-governmental actors, public agencies, elected representatives).

    - The analytical phase explores institutional contexts for EGD implementation, and characteristics of the territory to be targeted. The active involvement of stakeholders in the analytical phase help combine different forms of knowledge.

    - The rapid evolution of National and European frameworks for action needs to be monitored. European platforms can provide useful assistance.
    - A provisional definition of objectives and intervention logics can provide a starting point for stakeholder dialogues.
    - It is in many cases useful to look beyond administrative borders, and to target functional areas of relevance for each thematic field through intermunicipal or interregional cooperation.
    - Stakeholder mapping exercises are structured attempts to identify actors that need to be involved in strategy elaboration and implementation processes.

- Elaboration:

    - Frameworks for the governance of EGD strategies balance the need be 'inclusive' of a broad range of stakeholders, while preserving their 'transformational capacity',
    - Processes for collaboration and consensus-building can mobilise a wide range of methods and tools. Each of them must be chosen with a clearly defined purpose. It is also important to ensure that participants have a realistic understanding of how results will be used.
    - Investment plans for EGD implementation can be designed with the help of European support platforms. This is particularly useful considering the broad range of funding possibilities, including EU instruments but also solutions such as crowdfunding, green bonds, environmental impact bonds and other financial instruments.
    - The communication strategy helps to contain fears and tensions linked to a local or regional green transformation process, in which habits and hierarchies are necessarily challenged.

- Strategy renewal helps to take into account changing framework conditions and to capitalise on learning that has occurred among involved institutions and stakeholders.

Implementing the different components of the EGD

The handbook provides proposals on the EGD may be implemented locally and regionally for a selection of policy areas:

- Building and renovation
- Sustainable mobility
- Zero pollution
- Biodiversity

- Sustainable consumption and production and circular economy
- Clean energy

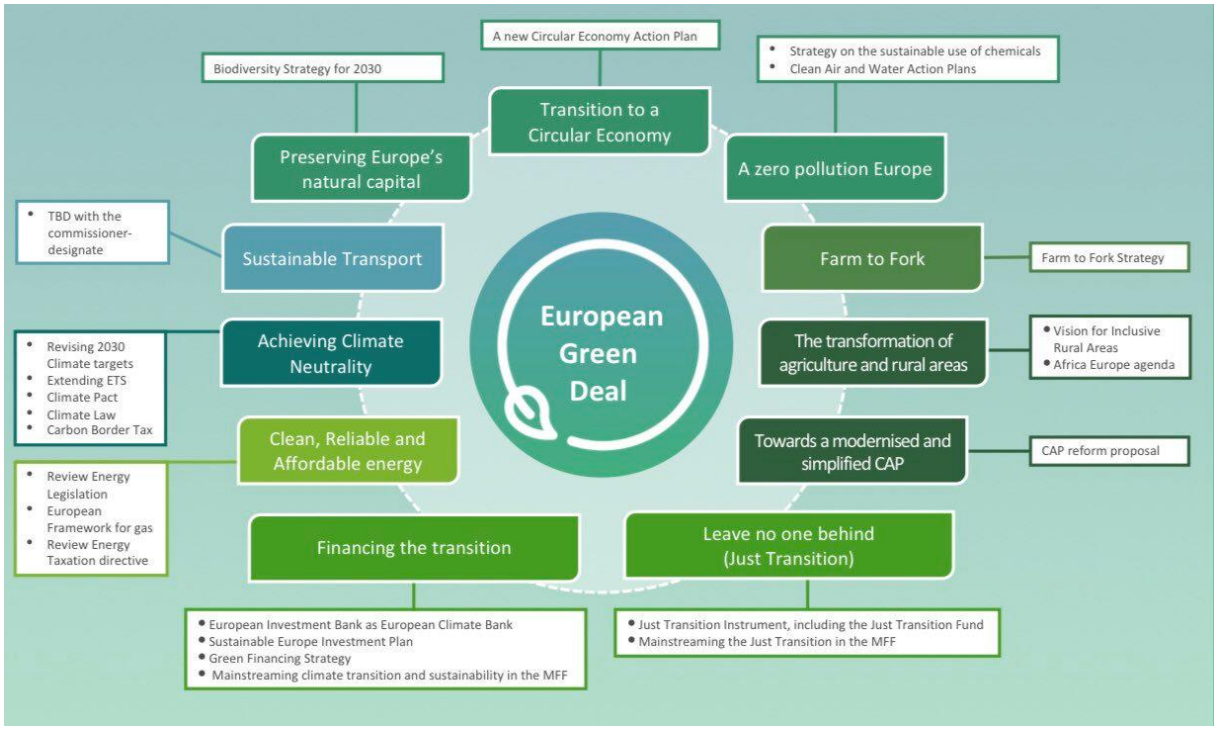
For each of these policy areas, specific challenges are highlighted and key European resources are listed, with links to relevant support platforms, handbooks and funding sources.

Introduction

The European Green Deal (EGD) is an integral part of the European Commission's strategy to implement the United Nation's 2030 Agenda and the sustainable development goals, and the other priorities announced in President von der Leyen's political guidelines.

As part of the Green Deal, the Commission will refocus the European Semester process of macroeconomic coordination to integrate the United Nations' sustainable development goals, to put sustainability and the well-being of citizens at the centre of economic policy, and to ensure that sustainable development goals (SDGs) are at the heart of the EU's policymaking and action. The different components of the EGD are synthesised in Figure 1 below.

Figure 1 The different components of the European Green Deal



The EGD therefore includes a combination of Strategies, Action Plans, Regulations and Directives. Many of them are still in the process of being negotiated by the European Commission, the European Council and the European Parliament. A key source of information on the current thematic focus of discussions is the yearly work programme of the European Commission. The 2022 Work Programme for example focuses on the regulatory framework for the certification of carbon removals, green bonds, the zero pollution action plan, renewable energies and sustainable agriculture. The Programmes of the Council Presidency trios are also important guiding documents. The programme of the French, Czech and Swedish Presidencies identifies some priorities in relation to the EGD, e.g. support to the development of low carbon and renewable energy,

transition towards sustainable agriculture and food systems and shift to develop sustainable, safe, smart and digital transport. The Committee of the Regions 'Green Deal Going Local' web portal provides updated overviews of policy developments of particular relevance for local and regional authorities.
The present handbook pursues four main objectives:

- Introduce general principles of local and regional implementation of the EGD (Chapter 1),
- Propose a step-by-step approach to the elaboration and implementation of the EGD in a locality or region (Chapter 2),
- Provide more detailed descriptions of how local and regional authorities (LRAs) may approach a selection of particularly relevant Green Deal strands of action (Chapter 3),
- Synthesise issues and challenges for cities and regions in implementing the EU Green Deal, as identified in the Committee of the Regions survey of 2022 (Chapter 4).

Each chapter is illustrated with numerous concrete examples and good practices. In this Handbook, you will find text boxes with recurring pictograms

Points of information

Examples of good practice

Aspects to be aware of

1 Green Deal: from EU framework to local implementation

The European Green Deal (EGD) is the strategy for the EU to become the first climate neutral continent by 2050 and to decouple economic growth from resource use. However, it is also more than that, as all available policy levers are mobilised to achieve EGD objectives. All EU regulations and directives, action plans and strategies, programmes and other funding mechanisms will be aligned on the principles and objectives of the EGD. EGD compliance is furthermore a guiding principle in all negotiations between the European Commission and Member States.

EGD principles may therefore be expected to infuse all levels of government in the years to come. The present handbook presents proposals on how local and regional authorities may align their organisation, governance approaches and objectives on these principles. When doing so, they are expected to build on existing strategies and actions plans. However critical assessments of existing practices may also be called for. Possibilities for improvements may be identified, e.g. on the basis of good practices observed in other localities and regions. The main objective is to ensure that environmental and climate change-related objectives and measures are fully integrated in all sectoral policies, rather than being circumscribed to dedicated branches of government.

As mentioned above, the EGD is an integral part of the European Commission's strategy to implement the sustainable development goals. Most LRAs have developed strategies and action plans for sustainable and resilient development over multiple decades. Local and regional climate plans emerged more recently, often incorporating energy provision and consumption measures. The adoption of the UN Sustainable Development Goals (SDGs) in 2015-2016 has inspired many localities and regions to develop SDG strategies (Committee of the Regions, 2019; European Commission Multi-Stakeholder Platform on the Implementation of the Sustainable Development Goals in the EU, 2018; OECD, 2020). The objective is to capitalise on lessons learnt and to accelerate transition processes.

1.1 What's new with the Green Deal?

Currently, 'green' measures tend to be circumscribed to specialised authorities and bodies, rather than being mainstreamed across sectors. This concerns both measures to preserve biodiversity and to mitigate climate change.

The EGD, and the numerous parallel initiatives associated to it, are designed to inspire and guide fundamental changes in the way the green and digital transition are understood and implemented. It seeks to empower actors at all levels and across all sectors to help preserve ecosystems, health, food and water security, and human safety and development. It states that **changes cannot be incremental, but need to be transformational**.

The EGD identifies two main sets of methods to generate transformational change. These can be considered as pillars of the EGD, and have major implications for its implementation at the local and regional levels:

(1) Profoundly **renewed modes of public action**. The EGD helps to overcome the challenges of environmental transition. It encourages public authorities to work across sectors, as part of partnerships involving public, private and 'third sector' organisations, with the active participation of the broadest possible range of stakeholders susceptible of contributing to the transition processes or affected by them.

(2) Fairness when it comes to **sharing the economic and social burden** of this transition process. This presupposes a strengthening of dialogues, cooperation and collaboration between e.g. actors at different institutional levels, regional and local authorities governing territories with higher or lower levels of resilience in the face of green transition, social groups, public and private actors.

The EGD is conceived as a growth strategy. In the specific context of post-COVID recovery and rapid increase of fossil fuel prices linked to the Russian invasion of Ukraine, a wide consensus has emerged on the fact that the transition to more environment and climate-friendly technologies, modes of production and consumption is the most resilient path to long-term prosperity and growth across Europe. The EGD therefore offers a stable European context for local and regional green and digital transition processes.

Governments of all levels play a key role in the implementation of the EGD, starting from the national level. The ways in which European funds, instruments

and objectives are implemented in each Member State are defined in e.g. partnership agreements, recovery plans, national energy and climate plans. However, more generally, the achievement of the European Green Deal objectives requires an extensive mobilisation of public authorities at all scale and the investment of public financial resources, and a major overhaul of national and regional governance frameworks and sectoral policies. According to the 2021 European Green Deal Barometer, one out of three interviewed sustainability experts consider the lack of commitment by EU Member States as the "biggest barrier to the implementation of the Green Deal" (Institute for European Environmental Policy and GlobeScan, 2021). The second most important barrier is "inadequate governance mechanisms" and the third one is "unequal progress among EU Member State". Part of the challenge for local and regional authorities is therefore to adapt to variable, evolving and in some cases inadequate national frameworks for the governance and implementation of the EGD.

1.2 Concrete implications for local and regional authorities

When seeking to implement the EGD, local and regional authorities are confronted to a range of bottlenecks. Some of these bottlenecks are external, e.g. possible issues regarding Member State commitment as addressed above in the Green Deal Barometer, limitations linked to regulations or legal frameworks, dynamics on global markets. Identifying such bottlenecks and raising awareness on their implication is a first step in view of the elaboration and adoption mitigating measures. As the EGD is conceived as a strategy which public authorities at all levels should contribute to fully, European authorities will be particularly attentive to help local and regional authorities overcome or mitigate identified external bottlenecks.

The European Union has already taken necessary steps to ensure sufficient access to capital. The EGD Investment Plan provides funding streams totalling 1 trillion euros. As part of this Plan, the Just Transition Mechanism will mobilise at least 100 million euros of investments in regions most impacted by the green and digital transition. The use of bank guarantees to leverage other public and private investments is a significant component of the EGD Investment Plan. This makes it easier for all actors to access the funds needed to make investments required by the green and digital transition. However, local and regional authorities will only benefit from these possibilities insofar as they dispose of information on those that are relevant in their specific situation, and the capacity to take advantage of them.

Some other bottlenecks to the implementation of the EGD can be internal to individual localities and regions. The EGD challenges localities and regions to critically assess the extent to which their own practices effectively contribute to reduce emissions of greenhouse gases and decouple growth from resource use. It also invites them to explore alternative methods and approaches that may be better suited to achieve these objectives in a cost-efficient, effective and socially fair way.

1.3 Local implementation as a systems innovation process

The implementation of the European Green Deal implies transformative action spearheaded by **local and regional authorities**. To this end, the European Commission, the European Innovation Council and SMEs Executive Agency (EISMEA) and the International Council for Local Environmental Initiatives (ICLEI) have produced a Local Green Deals Blueprint for Action in 2021. This Blueprint proposes a step-by-step approach in two stages: first to build momentum and second to scale up measures in view of integrating local green deals into the entire strategic and governance framework.

The full implementation of this approach presupposes that local and regional authorities think of themselves **as initiators and facilitators of systems innovation processes**. A systems innovation process is a set of coordinated interventions in economic, political and social systems. It targets an entire set of causal chains, groups and individual actors that would need to be mobilised to achieve changes of practices or outcomes.

Ensuring that necessary internal and external process facilitation resources are available

The local implementation of the European Green Deal presupposes that local and regional authorities can mobilise resources for the facilitation of systems innovation processes. It is therefore important to assess whether such resources are available internally, or whether support to process facilitation can be outsourced.

Processes at each level of governance also need to be coordinated with initiatives at higher and lower levels: many regions organise ambitious participative processes as part of the elaboration of their sustainable development strategies. Local authorities may consider how they link into such processes, while taking into the risk of "workshop fatigue" among stakeholders.

At the local level, it often makes sense to organise such processes at the intermunicipal level.

Systems innovation requires thinking out of the box. Concretely, this implies:

- **Action across traditional sectors,** with parallel and coordinated experiments in different fields. Existing relations between sectoral actors (e.g. interdependence, authority, trust) are starting points to be considered and, potentially need to be amended.
- Considering each **local or regional authority as a system**, embedded in wider national, European and global systems, and potentially encompassing narrower scale systems. All these systems have their own dynamics of change. A systems innovation process is therefore implemented in a context of uncertainty and needs to be continuously monitored and adjusted.
- Openness to **new working methods** within local and regional authorities, and a preparedness to inspire other actors to challenge their own traditional "ways of doing things" when this is needed. This raises questions regarding concrete incentives to change, and on how associated costs are distributed.

Systems innovation may be approached in different ways:

- As a '**closed'** process, seeking to achieve politically adopted objectives: Each local or regional authority identifies EGD-objectives to which it could contribute, given its formal competences, social and economic preconditions and territorial context. Concrete targets may be specified in relation to these objectives. One may then seek to identify bottlenecks that need to be overcome to this end. Addressing some of these bottlenecks is likely to require cross-sectoral, transformative action.
- As an '**open'** process, in which involved actors collectively identify objectives and amend them continuously in the course of the process. Local and regional authorities focus on inspiring and challenging actors to get involved in the local implementation of the EGD. They then collectively identify EGD-related scopes of action, objectives and targets. Local and regional authorities contribute to empower them to take corresponding actions. Systems innovation processes are a component of this empowerment.

'Open' processes are often presented as good practices, as involved actors tend to take better ownership of them. However, they require high levels of trust between actors and well-established habits of dialogue. It can be challenging to ensure the democratic legitimacy of objectives and targets identified in the framework of such processes. 'Closed' processes can function as steppingstones in view of establishing necessary preconditions for 'open' processes.

The European Institute of Innovation and Technology's resources on systems innovation processes

The European Institute of Innovation and Technology (EIT) offers extensive guidance on systems innovation processes, and specifically targets local and regional authorities. Their 2018 guidebook entitled Transformation, in Time is a good place to start.

The EIT has established Knowledge and Innovation Communities in different fields, including Climate. Communities are established and strengthened with support from programmes such as 'Deep demonstrations', 'Transformation Capital' in which local and regional authorities are actively involved.

More information can be found here.

Irrespective of the chosen approach to 'processes', their outcome is necessarily a step further in direction of **new 'deals'** between actors **on how the burden** of local and regional areas' transformation **should be shared**. This implies that processes should help to establish dialogue and trust, and agreements on priorities, intervention logics, targets (time-horizons) and divisions of roles and responsibilities. The collective elaboration of a **narrative of change** is a key component in efforts leading to such deals. Depending on the context it may be tacit or formalised. Possible sources of inspiration for narratives of change are listed in the box below.

Sources of inspiration and support for the elaboration of local and regional narratives of change

The European Green Deal carries a narrative for change, whose main components are climate neutrality, innovation and social justice. However, it can be challenging for LRAs to get an overview of this complex and multifaceted narrative and to translate it in their respective territorial context.

The European Environment Agency has launched a narrative for change series aligned on the EGD. Its objective is "*to bring new perspectives to the fore, enhance societal dialogue around alternatives to dominant paradigms, and enable agency and deliberation through debates and participation*". Currently available narratives are entitled Growth without economic growth, With people and for people: innovating for sustainability and COVID-19: lessons for sustainability. A narrative on Agriculture as care is upcoming.

These narratives can be useful sources of inspiration for local and regional narratives of change.

2 Step-by-step guidance

There is no 'one-size-fits all recipe' for a local and regional implementation of the European Green Deal. First, each local situation is unique. This has been acknowledged by the European Commission, which allocated Just Transition Fund to a subset of regions with fossil fuel production, fossil fuel-based energy generation and /or carbon intensive industries. However, more generally, **each region or locality has a unique combination of assets and challenges** when it comes to implementing the EGD.

Second, the **landscape is complex and uncertain**. There are seldom any certainties on the causal connections that will generate the desired change. 'Soft' factors that can be difficult to control such as trust and dialogue often play a critical role. Framework conditions evolve rapidly. These conditions are of different types:

- Geopolitical, e.g. recent events such as the COVID pandemic, the Russian invasion of Ukraine and successive migratory crises,
- Regulatory, legal and fiscal, as awareness of the urgency of the climate and biodiversity crises increases in policy making circles at all levels,
- Technological, as innovations help make green solutions less costly or generate new local and regional development options,
- Social and cultural, as practices, norms and values evolve,
- Climatic, e.g. in connection to global warming and the increasing frequency of extreme weather events,
- Financial, as new funding options are elaborated.

In this context, local and regional authorities strive to become more adaptive and resilient. They make different decisions regarding the efforts made to reduce exposure to uncertainties and risks. Their selection of measures that contribute to the achievement of EGD objectives will depend on local conditions and methods applied to assess cost-efficiency.

Third, EGD implementation is a **creative and iterative process**. Experimentation plays a central role. This presupposes openness to innovation and acceptance of failure. The role of local and regional authorities in consensus-driven bottom-up processes can be to facilitate and steer processes, provide robust monitoring and evaluation frameworks and preserve continuity and momentum.
The 'steps' described in this section are therefore generic moments in the collective process of EGD implementations, considered from the perspective of a local or regional authority. They can be visualised as elements of spiral, i.e. a self-

reinforcing process of green and digital transition. In other words, the steps will normally be repeated. They are divided in four groups: preparation, elaboration, implementation and strategy renewal.

2.1 Preparatory steps: EGD implementation as a process for systemic change

Systems thinking helps to build insights on how the environment and climate are negatively impacted by human activities. However, the benefits of such thinking are not necessarily straightforward to achieve. It may be especially complex at the level of local and regional authorities. Depending on the extent of their competences, local and regional 'systems' may be perceived as largely determined by external factors such as institutional setups, market dynamics and relations of power and hierarchy.

Preparing for the implementation of the EGD therefore first presupposes circumscribing fields of action and defining ambitions. Formal competences are a starting point in this process. Local authorities typically have formal competences in fields such as physical planning, housing, public transportation services, services of general interest (e.g. water supply, waste treatment). Regional authorities to an increasing extent have formal competences in fields such as strategic planning, economic development, transport and education. However, as initiators and facilitators of systems innovation processes (see section 1.3 above), the roles of local and regional authorities are **not necessarily limited by formal fields of competence**. They bring together actors from different horizons (e.g. private companies, representatives of the civil society, non-governmental actors, public agencies, elected representatives) and collectively explore how changes can be achieved at their geographic and institutional level.

Each process is therefore based on a **contract between its owner** (i.e. a local or regional authorities, or a grouping of such authorities) **and the participants**. Process participants undertake to remain committed to the process and to allocate necessary resources to provide inputs that are needed. In return, the process owner commits to make active use of process outputs. Clarity on how outputs will be used, and on the extent to which process owners may be expected to effectively respond to participant needs and ambitions, is essential. A relation of trust and long-term cooperation is established on this basis.

As stated above, local and regional EGD implementation is an iterative process. This implies that preparatory steps described in the present section may also be carried out in multiple rounds. An initial analysis (section 2.1.1 below) and the

ensuing definition of objectives and logics of intervention (section 2.1.3) may for example be nuanced and enriched as additional actors are integrated in the process and allowed to provide their insights.

2.1.1 Analytical phase

The first task is to compile the evidence needed to set up an EGD implementation framework. Different dimension may be considered:

- **Institutional context**: what are the formal competences of involved authorities? How is action between different institutional levels coordinated?
- **Governance practices and perspectives**: Is there an established habit of dialogue and cooperation between sectors, between public and private sectors, involving NGOs and representatives of the civil society?
- **Available resources**: What resources are currently available to organise an EGD implementation process? What external resources could be mobilised? This includes costs related to the process itself (facilitation, meetings, secretariat), but also experimentation and pilot projects, as well as incentives for actors to remain committed to the process over time.
- **Milestones, e.g. deadlines and time horizons** imposed by national authorities, elections, EU programming period.

The second step is to compile evidence on the territory to be targeted. An 'open' analysis, also considering patterns and trends in surrounding territories, may help to identify functional interdependencies, complementarities and potential synergies with neighbouring areas. In many cases, multiple overlapping functional areas may be identified, whether one considers economic development, social and cultural dimensions or ecological interdependencies. These observations support decision making with respect to the selection of a EGD implementation area. It may be a single municipality or region or multiple ones, with 'hard' and precisely defined border or 'soft' and fuzzy ones, open for future adjustments or fixed (see section 2.1.4 below). EGD-related fields of action are then aligned on the rationale for delineation.

Available evidence then makes it possible to synthesise assets and vulnerabilities which form a starting point for dialogues on EGD implementation (see Table 1 below). The objective is to identify possible starting points for action, which may be based on available policy levers and ease with which a different may be made

('low hanging fruits') and on a rationale for progressive strengthening of measures leading to the desired outcomes.

Table 1 Examples of assets and vulnerabilities per dimension

	Assets	Vulnerabilities
Economic	Trust between economic operators Well-functioning labour market Openness to innovation High levels of entrepreneurship	Tense relations and mistrust between economic operators High levels of unemployment, Low levels of participation in the labour market. Difficulties recruiting qualified staff
Social	Social cohesion Well-established forums for dialogue Strong cultural identity Well-established third sector, associations and NGOs	High level of social disparities Gender inequality Brain drain High levels of crime and violence
Environmental	Ecologically balanced and resilient habitats Production of extensive ecosystem services Well-established nature protection practice	Natural environments exposed to climate change, e.g. with increasing exposure to natural hazards. Environmental imbalances affecting human practices. Inadequate nature protection practices.
Institutional	Stable institutions, benefiting from high levels of trust Well-established practices of cooperation between institutions from different sectors	Instability of political leadership Sectoral "silos" within limited interaction

The analytical phase may require **setting up a dedicated organisation** (as illustrated by the WCYCLE Institute example below). Stakeholder participation processes help to base policies on local knowledge based on daily practices, as well as expert knowledge. Territorial Climate-Air-Energy Plans around Autun in France provide another example of how such knowledge acquisition can be organised.

Acquisition of strategic capacities through the creation of a local Circular Economy Institute in Maribor

The City of Maribor started elaborating its strategy for the transition to circular economy in 2017. From the start, it acknowledged that it did not have the capacity to elaborate and implement such a strategy. It therefore established the WCYCLE Institute (the Institute for Circular Economy) in April 2017. The Institute brings together the five local utility companies and was established as a platform for them to re-think their business models. It became a good platform to discuss and initiate new circular economy projects for different stakeholders in the city and the region, and made it possible to adopt the strategy in 2018.

Together, the five companies manage most local material streams. The WCYCLE institute has identified twenty projects to improve the circularity of these streams and the related business case. To foster collaboration between partner organisations, it was agreed that all initiated projects have participation from and should benefit at least two of the five utility companies.

The WCYCLE Institute is strategic in the field of integrated management. It promotes cross-sectoral cooperation in the processing and re-use of material, energy and wastewater management. It encourages companies and institutions in the city to share information and work together to achieve the highest possible re-use of resources. The Institutes' role includes the implementation of R&D activities, as well as the introduction of new waste recovery-related technologies and the use of integrated IT tools for information sharing. The Institute also monitors circular economy-related activities, and encourages cooperation between companies owned by the municipality each to achieve strategic objectives.

Source: based on Wcycle Institute Maribor (2018), Strategy for the transition to circular economy in the municipality of Maribor; see also circularcityfundingguide.eu, WCYCLE Institute: re-thinking the business model of Maribor

Active involvement of stakeholders in the territorial analysis

The elaboration of Territorial Climate-Air-Energy Plans is compulsory for all French intermunicipal cooperation bodies with more than 20,000 inhabitants. The objective is to enable local authorities to help meet national objectives with respect to Green House Gas emissions, energy consumption, renewable energy production and waste processing.

The Plans are elaborated in five steps: (1) setup of governance frameworks and process planning, (2) territorial diagnostic, (3) strategy elaboration, (4) adoption of an action plan and (5) establishing a monitoring and evaluation plan.

In the intermunicipal cooperation area around Autun, Grand Autunois Morvan, the diagnostic phase is organised as a participative process. Separate meetings are organised with elected representatives from the different municipalities, actors from the farming and forestry sectors, other economic actors, not-for-profit associations and the general public. These meetings make it possible to compile different perspectives on the territorial analysis, acknowledging the coexistence of expert knowledge and local knowledge based on daily practices. After these meetings, a 'Climate Club' is established, with participation of stakeholders that have volunteered. This Club plays a central role in the next phases of the participate process. A dedicated digital platform has been established to club members participate in debates.

The involvement of a wide range of stakeholders in the diagnostic phase helps to elaborate a local, shared perspective on climate change and possible measures to mitigate it. Ensuring that actors have a good understanding of issues helps prepare for an effective implementation of the plan

Source: Website of the Grand Autunois Morvan intermunicipal cooperation area.

2.1.2 Synthesis of national and European frameworks for action

The EGD functions as an umbrella for a wide range of directives, regulations, strategies and action plans:

- Directives set out a goal that all EU countries must achieve. However, it is up to the individual EU Member States to devise their own laws on how to reach these goals. In relation to the Green Deal, EU institutions are for example currently revising directives on Renewable Energy, Energy Taxation, Energy Efficiency, Energy Performance of Buildings and Gas.
- Regulations are binding legislative acts that must be applied in its entirety across the EU. In relation to the Green Deal, EU institutions have for example updated Waste Shipment regulations in 2021, and are in the process of elaborating a Regulation of Deforestation-free products.
- Strategies and Action Plans provide recommendations on how a specific issue or set of issues may be addressed, developed by the European Commission and guiding the elaboration of Directives, Regulations and Funding Instruments.

Directives, regulations, strategies and action plans linked to the European Green Deal will continue to be elaborated and adopted in the years to come. Implementation of directives by Member States take additional years. In parallel, many national authorities take measures on their initiative. National and European frameworks therefore evolve rapidly, and a monitoring by local and regional authorities and their representative organisations is required.

The success in the implementation of this complex framework also depends on the alignment of policies at different levels: to this purpose multi-level governance arrangements are crucial. These arrangements can take a wide range of forms. French local authorities have been invited to elaborated so-called “recovery and ecological transition contracts”, which are binding agreements with national authorities, public investment banks and other key actors. The citiES 2030 initiative in Spain is multi-actor cooperation space to prove how systemic innovation and open knowledge can lead the way to social, economic and environmental transformation. Both are described in further detail below.

Recovery and ecological transition contracts: an instrument for multi-level coordination in France

Recovery and ecological transition contracts are elaborated at the initiative of an intermunicipal cooperation entity, following nationally defined guidelines and based on an initial agreement on working methods and governance setups with key actors, including state representatives.

Compulsory key steps include an analysis of territorial assets and weaknesses, a participative elaboration of a shared and transversal territorial vision and the adoption of an action plan. A six-year contract between involved parties is signed on this basis. Involved parties typically include local and regional authorities, national sectoral authorities, public investment banks and, in some cases, private companies. The contract is a living document, which can be amended and enriched. Nationally defined indicators are used to assess each contract's contribution to the achievement of national sustainable development objectives.

Source: ANCT website

citiES 2030 initiative to support Spanish cities' systemic innovation processes for sustainable development

The citiES 2030 initiative in Spain is part of the Cities Mission launched by the European Commission in 2020, in the framework of the Horizon Europe programme. Participating cities sign a formal agreement to contribute to the European objective of making 100 cities climate-neutral before 2030. The agreement has been signed by Madrid, Barcelona, Sevilla, Valencia, Soria, Valladolid, Vitoria-Gasteiz and Zaragoza.

The initiative promotes systemic innovation by the means of interconnected projects, cooperation between academia, public administration, companies and civil society; an active citizen participation; promoting multilevel governance models and articulating a public-private funding.

citiES 2030 is implemented under the leadership of the El Día Después platform, which is a national incubator for

transformative partnerships. It helps actors in participating cities to get a better understanding of principles for a local and regional implementation of the EGD, and provides support for the concrete implementation of corresponding strategies.

Source: diadespues.org

2.1.3 Provisional definition of objectives and intervention logics

Information on institutional and governance-related preconditions for EGD implementation, territorial characteristics and frameworks for action inform decision making on EGD-related objectives to be pursued locally and regionally. A first provisional set of objectives function as inputs to dialogues with stakeholders. They may then be validated or amended as part of participative processes.

Intervention logics are descriptions of '**paths of transformation'** leading to desired objectives. They may also be elaborated as part of participative processes. Each 'path' will include intermediate steps, and clearly identified causal links between them. To make it possible to monitor progress, it should ideally be possible to measure or observe the achievement of intermediate steps. Scenarios on how the strategy may be adapted in case of changing framework conditions help to make the strategy more robust.

The EGD advocates systems innovation approaches, with connected innovative measures and experiments that focus on achieving transformational change (as opposed to incremental change). This presupposes precise descriptions of actors to be included in each portfolio of connected measures. Specific allocation of roles and responsibilities help to ensure that action proposals are result-oriented and realistic. Furthermore, needs for interdisciplinary crossovers need to be compared to current cooperation practices, levels of trust and openness to dialogue. When weaknesses are identified in any of these respects, concrete measures to address them or mitigate their effects are formulated.

However, levels of ambitions need to consistent with resources and capacities in each region or locality, and take into account their respective starting point. Establishing preconditions for systems innovation approaches, e.g. with enhanced trust between actors and by creative a sense of collective achievements, can be valid objective in a first phase.

2.1.4 Identifying appropriate scales and territories

Geographic limits to the action of local and regional authorities are circumscribed by administrative boundaries. **Functional areas crossing administrative boundaries** may provide a better geographic context for the elaboration and implementation of EGD-related processes. Functional areas can for example be urban or rural areas, river basins, coastal areas or mountain ranges. They can be delineated based on current interactions between actors or flows of persons and goods, or of ecological interdependencies. 'Functional integration' can also be a process objective, to be based on a shared territorial identity and an ambition of joint action (or 'community of intent'). Functional interaction can therefore be both a starting point for EGD implementation and a policy objective. The aim is to invent the functional areas that are best suited for a green and digital transition. When approaching issues from a systems innovation perspective, one often seeks to bring together social, economic and ecological dynamics that operate at different scales and in different functional areas. 'Fuzzy' or 'Soft' territorial cooperation areas can be established in such cases. Such areas have borders that vary depending on the issue addressed, and that may be open to evolutions over time. ESPON has elaborated a Handbook on how to develop strategic perspectives for such areas.

The European Union promotes Integrated Territorial Development Strategies as strategic frameworks for sustainable development at the sub-regional level. Local and regional actors are incentivised to adopt such strategies, as they open for Cohesion Policy funding with full thematic flexibility (see text box below).

Benefiting from EU support by implementing the EGD in an Integrated Territorial Development Strategy

Integrated territorial development implemented at the level of functional areas can benefit from European support. In the 2021-2027 programming period, Policy Objective 5 of Cohesion Policy specifically targets such initiatives. It makes it possible to benefit from full thematic flexibility under the European Regional Development Fund (ERDF). In other words, an EGD implementation process that is embedded in an integrated territorial development strategy can get financial support for a wide range of measures. However, this presupposes that national authorities and programme managing authorities have opted for support under Policy Objective 5 under the shared management of Cohesion Policy. Integrated Territorial Development

strategies have to be developed bottom-up, e.g. as part of a Community Led Local Development process.

Integrated territorial approaches to green and digital transitions within 'functional areas' are developed in interaction with initiatives targeting cross-border, transnational and global systems of interaction. The 'Luxembourg in Transition' process provides an example such multi-level reflections on sustainable development perspectives (see text box below).

Looking beyond borders for sustainable food provision: Example from Luxembourg

National authorities in Luxembourg have launched a wide consultation process called "Luxembourg in Transition – Spatial visions for the low-carbon and sustainable future of the Luxembourg functional region". One of the topics addressed was sustainable food provision. Luxembourg is characterised by low levels of self-sufficiency for a number of agricultural products. Sustainable provision of locally produced foodstuffs can therefore only be achieved in collaboration with neighbouring regions.

As first step, a succinct diagnosis of farming practices and of the agri-food sector around Luxembourg was produced, in cooperation with the ESPON programme. This first made it possible to identify two relevant functional scales:

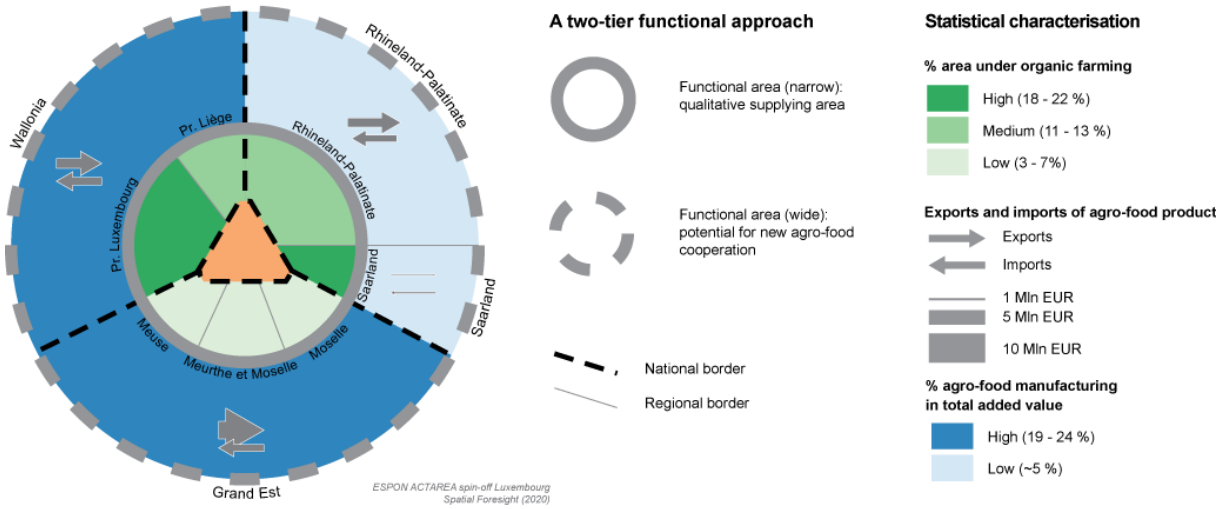
- Immediate surrounding areas for local food provision (i.e. Belgian provinces of Luxembourg and Liège, French départements of Meuse, Meurthe-et-Moselle and Moselle, closest parts of German Länder Saarland and Rhineland-Palatinate),
- Neighbouring regions as a whole in terms of involvement of the agri-food sector in such a strategy (i.e. Wallonia, Grand-Est, the entire Saarland and Rhineland-Palatinate).

Second, territorial units at each scale were characterised:

- Luxembourg borders two regions with particularly high proportions of ecological farming: Saarland and the Province of Luxembourg. On the other hand, these proportions are particularly low in neighbouring French Départements.
- the Grand Est region has the largest food processing industry, both in absolute and relative terms. The Grand Est and Wallonia host a number of major players in this sector, from a European and global perspective.

These findings were synthesised in a schematic map (see below). They show that Luxembourg can capitalise on different strengths in neighbouring territories and regions.

Figure 2 Analysis of food production around Luxembourg



In parallel, a broad alliance of actors in and around Luxembourg, including local and regional authorities, academia, civil society and natural parks have engaged in a collaboration process to structure cross-border networks of actors in the agricultural and food sectors, with focus on public and private organisations offering out-of-home catering services (e.g. hospitals, schools, cafeterias…). This innovative initiative was co-funded by the Greater Region INTERREG programme under the acronym AROMA. The project brings together a cross-border network of actors in the agricultural and food sectors and promoted the supply of local quality products and is in the process of establishing a food supply resource centre covering the entire cross-border region. These actions are based on evidence drawn from the project's quantitative and qualitative analyses of farming and food processing practices.

Source: ESPON ACTAREA

Multi-level strategic reflections may seek align local and regional strategies on patterns and trends in economic value chains. Value chains are made up of subsystems of inputs, transformation processes and outputs. They are often transnational or global. Local and regional authorities may seek to position themselves strategically within such value chains, or to promote more circular models of production. EU sectoral strategies such as the Farm to Fork strategy and the Sustainable Products Initiative promote changes in the functioning of value chains that can be capitalised upon locally and regionally.

Integrated territorial approaches to green and digital transitions within 'functional areas' are developed in interaction with initiatives targeting transnational and global systems of interaction. Value chains are an example of such systems of interactions between businesses. They are made up of subsystems of inputs, transformation processes and outputs. They are often transnational or global. Local and regional authorities may seek to position themselves strategically within such value chains, or to promote more circular models of production. EU sectoral strategies such as the Farm to Fork strategy and the Sustainable

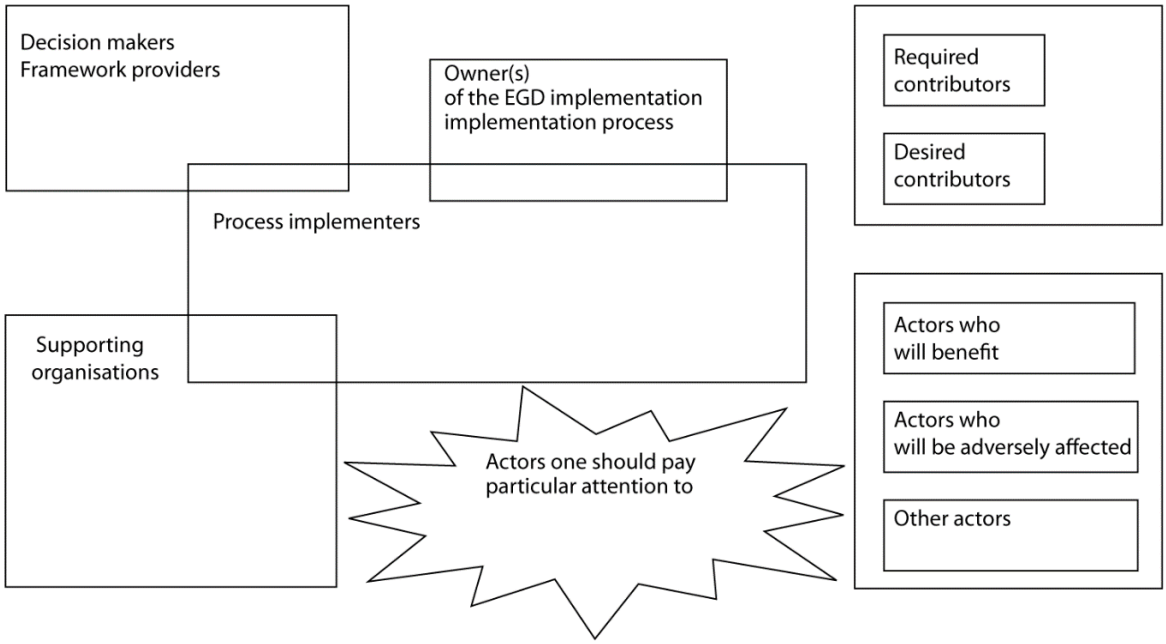
Products Initiative promote changes in the functioning of value chains that can be capitalised upon locally and regionally.

Similarly, innovation networks tend to operate across territories, connecting different research and development milieus and actors in need of new technical and organisational solutions. Local and regional implementation of the EGD presupposes an assessment of research, development and innovation needs, and the identification of external partnerships to be strengthened to satisfy these needs.

2.1.5 Stakeholder mapping

Stakeholder mapping consists in the identification and characterisation of actors whose involvement would be required or useful to the EGD implementation process. Figure 3 below provides a model and synthesis of how a stakeholder mapping exercise can be carried out. In the centre, owners and implementers of the process are identified, i.e. the concerned local or regional authority or group of authorities and the facilitators they have designated. Supporting organisations (bottom left) may for example provide evidence, help to mobilise stakeholders and to promote the process. Decision makers and framework providers (top left) include elected representatives and higher-level institutions. They provide strategic orientations to the process and may decide how outcomes should be implemented. These different categories overlap, as individuals and units may play different roles. The top right part of the model includes contributors to EGD implementation, e.g. organisations that provide funding or human resources. They are subdivided in required contributors, without which the EGD process cannot be implemented, and desired contributors. The bottom right part of the model is used to identify actors on which the process will have beneficial effects, adverse effects, or a neutral effect. Among the different actors, those one should pay specific attention to are highlighted (bottom of template). These will typically be decision makers and framework providers, required contributors and actors who may be adversely affected.

Figure 3 Stakeholder mapping template



Source: based on Susan Brockett and Erik Larsen

A stakeholder based on such a template offers a first overview. Actor mapping may be fine-tuned with a more detailed characterisation of each actor's motivation to get involved, potential contribution, influence and relations to other actors. The next step is then to elaborate a "process choreography", i.e. the sequence and modalities of involvement of different actor groups. The Rotterdam-The Hague region has for example chosen to start with groups of 'frontrunners' and the progressively widen stakeholder involvement (see below).

A cyclical approach to stakeholder mapping and involvement in the Rotterdam-The Hague region

The Roadmap to the New Economy for the region Rotterdam-The Hague in the Netherlands started in November 2015. The new economy is no longer vertically structured in pillars and sectors but horizontally structured and cross-sectoral around five intertwined transition pathways: Smart Digital Delta, Smart Energy Delta, Circular Economy, Entrepreneurial Region, and Next Society.

The governance structure reflects the principles of transition management, based on a synthesis of a top-down and bottom-up approach, with substantive input from local social and economic entrepreneurs, communities, cooperatives. The model is based on a strict involvement of different actors through the so-called "transition arena" as a participation model. A transition arena is

a way to map, select and involve stakeholders in a learning network of frontrunners, with a maximum of 15-20 participants. These frontrunners are carefully chosen because of their innovative ideas in a particular field. This means that a transition process is initiated with the support of a narrow, deeply committed group of 'frontrunners'. Frontrunners are selected in different categories of actors: business, government, knowledge organizations and NGOs should be adequately represented (multi-actor). The idea is to broaden this the support group in a stepwise manner, applying a cyclically renewed snowball method.

Within the roadmap process, this cyclical approach resulted in the identification of a core team (cockpit), a strategy group (transition arena) of 20 cross-sectoral innovative actors (frontrunners), 12 working groups covering different sector fields, and dozens of networks that got hooked on, In total, about 500 people were actively engaged.

Source: Rotmans (2017), Roadmap Next Economy for the Metropolitan Region Rotterdam-The Hague: an example of transition governance

2.2 Elaboration and implementation

The previous section described preparatory, more analytical phases of a local or regional EGD implementation process. This section focuses on the more operational aspects of (1) setting up frameworks for process governance and monitoring (2) organising consultations and participative processes (3) setting up investment plans and (4) communicating about green and digital transformation processes.

2.2.1 Setting up frameworks for governance and monitoring

Setting up governance frameworks for a process that ambitions to transform economic and social systems can require difficult balancing acts. On the one hand, including all major institutional actors may help to ensure that none of them feel excluded and perceive the EGD implementation process as a threat. On the other hand, these same institutions must be sufficiently challenged to embrace transformations that may be difficult to implement. Changes in hierarchies of power may be particularly sensitive. The objective is therefore to find the right balance between 'inclusiveness' and 'transformational capacity'.

'Empowerment' is a recurring buzzword in discourses on bottom-up processes of territorial transformation. The underlying rationale is that sustainability and resilience could be strengthened by enhancing the capacity of local and regional actors to elaborate and implement collective projects. As illustrated by the example of Extremadura below, empowerment may require a combination of participation, training and research.

The paradox of such empowerment approaches is that they first require proactive top-down strategies to generate new types of relations between actors, and changes in attitudes to collective, cooperative action. Second, they raise issues regarding the role of democratically elected institutions in the steering of development and transformation processes. Governance frameworks of EGD implementation process can help preserve the democratic legitimacy of changes that occur.

The good functioning of these governance frameworks presupposes that evidence about these changes is produced, compiled, analysed and shared. Monitoring mechanisms must be in place from the start to ensure that citizens, elected representatives, funding organisations and other actors can follow effects of the process. This implies that rules regarding indicators and reporting procedures are set, that responsibilities are assigned for the collection and processing of initiative

outputs and results and that resources are allocated for these tasks. The Bologna EcoBudget offers an example of how a monitoring approach can be structured and implemented (see below).

Structured approach to municipal monitoring of natural resources in Bologna

In 1996, the City of Bologna signed the Aalborg Charter and began a local Agenda 21 process. This led it to start using the 'EcoBudget' environmental management system in 2001. The EcoBudget was designed by the organisation "ICLEI – Local Governments for Sustainability" (ICLEI). It manages natural resources in the same way as a local authority would construct a financial budget. The EcoBudget provides a set of indicators together with short and long-term targets for planning, monitoring and reporting on the consumption of environmental resources within the area of the city. The main aim of the EcoBudget is to keep the use of environmental resources within set limits. The EcoBudget provides structured information on the state of the city territory and its natural resources: it is a tool for improving local governance in the field of the environment and provides administrators with practical decision support tools.

EcoBudget is a cyclical system consisting of 9 steps to be repeated every year. The system is organised in three phases (preparation, implementation, evaluation) which follow the routines of each management cycle. The whole process involves administrators, citizen representatives and technicians at different times; but it can contemplate the participation of the various stakeholders in the various phases according to a participatory process. the Environmental Balance is made up of two documents: the Estimated Environmental Balance and the Final Environmental Balance.

Source: based on Environmental Report of the Municipality of Bologna

2.2.2 Organising processes for collaboration and consensus-building

A number of formats and solutions may be envisaged to promote collaboration and consensus-building around the Green Deal implementation. The choice of method first depends on the objectives that are pursued:

- To gain better knowledge of citizens and actors, their concerns, perceptions and aspiration, one may envisage to organise:
    - Roundtable discussions: exchanges on a specific topic in small groups, where all participants are on equal terms,
    - Focus groups: exchanges in which a moderator steers exchanges, analyses opinions that are voiced and group dynamics,
    - Conferences and seminars, for example allowing actors to react to presentations made by experts and decision-makers.
- To consult a group of stakeholders on specific issues and challenges, or to obtain comments and suggestions in relation to a draft strategy, different workshop format can be envisaged:
    - World cafés, in which participants navigate between tables dealing with a specific issue in a predetermined sequence, so as to allow them to cooperate in a wide number of settings and to contribute to as many aspects as possible.
    - Design charrettes, which implies that actors work together in successive brainstorming sessions, while process owners (e.g. authorities, public agencies) in parallel design possible responses to suggested inputs. This fun and intensive approach is well-suited to a complex, cross-sectoral endeavour such as local or regional EGD implementation, but presupposes that actors can be convened over multiple days.
- To provide recommendations or support strategy elaboration and implementation:
    - Visioning exercises, with successive steps of unrestrained creativity and collective critical thinking, focus on group identity and ambitions and exposure to external inspiration and ideas.
    - Advisory groups with a representative group of stakeholders from the EGD implementation area, which provide reflections, comments and suggestions throughout the process.

- To extend areas of consensus and overcome conflict:
    - Collective elaboration of solutions in workshops, applying techniques to ensure a balanced expression of ideas and opinions, and a sense of shared ownership of outcomes,
    - Mediated consensus meetings, with the involvement of an external mediator to help overcome conflicts that may arise as part of the EGD implementation process.

Many more methods may be used. It is important to mobilise them with a clearly defined purpose and to ensure that participants have a realistic understanding of how results will be used. A process for collaboration and consensus-building includes a logical sequence of steps, leading to the outcome requested by the process owners. Professional process facilitation is needed for the implementation of the EGD in localities and regions.

Local and regional authorities may build on some European initiatives such as the European Climate Pact and the Just transition platform. It is also possible to develop partnerships with existing campaigns and networks such as the Count us in project.

The partnership setup in Extremadura to empower citizens to act

The Regional Government of Extremadura published "Extremadura 2030", the strategy for a green and circular economy titled at the end of 2017. The objective is to encourage the production of goods and services while reducing the consumption and waste of raw materials, water and energy sources, thus based on the principle of closing the lifecycle of production. This strategy calls for citizens, businesses, civil society, public administration and the scientific community to collaborate in realising the circular economy.

All actions of the strategy satisfy three criteria:

- participation ensures the social depth of the strategy and places the citizenry as the protagonist;

- training guarantees that citizen participation is deep and not mere mobilization, encouraging citizens to be an active agent in the green and circular economy;

- research, which informs training and participation and connects these transversal axes with economic activities, as it is the essential basis for turning them into innovation.

The strategy is then designed around 4 horizontal programmes across 7 thematic axes. Other than the green and bio-economy R&D support program and that for the identification and enhancement of the full potential of the green economy of the region, the strategy foresees two specific programmes to enhance citizens' participation and training.

The first massive citizen participation programme aims at enhancing the participation of all citizens and actors in the region to build the strategy in the medium and long term, the Action Plan and the projects to be carried out in the future.

The second Citizen training programme in green leadership is intended for employment and promotion and to accompany the transition of the entrepreneurial context towards a green and circular economy.

Several initiatives have already been established to implement the two programmes, such as the Extreme Green Leadership Laboratory, the School of Innovation and Talent, the Network of Green and Circular Educational Centres, the Municipal Network of Participation and Social Awareness, new green and circular economy courses at the School of Public Administration and in the regional agricultural training schools, social support networks and educational innovation, the Green Personal Planning Help Manual and the Help Manual for Green Entrepreneurship.

Source: based on Junta de Extremadura (2017), Extremadura 2030 - Estrategia de economía verde y circular - Plan de Acción de la Junta de Extremadura. See also Extremadura 2030 website.

Community-led Local Development as an instrument for Local implementation of the EGD

Community-led Local Development (CLLD) is a tool for involving citizens at local level in developing responses to the social, environmental and economic challenges we face today. CLLD is an approach that requires time and effort, but for relatively small financial investments, it can have a marked impact on people's lives and generate new ideas and the shared commitment for putting these into practice. It is directly inspired by the LEADER method, which has been applied in EU rural development for multiple decades. CLLDs can be developed in aby parts of Europe (rural or urban). Its use is encouraged by the European Commission to promote integrated territorial development, with cross-sectoral strategies mobilising multiple EU funds.

Principles and rules for Community-led Local Development in the 2021-2027 programming period are defined in article 31 and 32 of the Common Provisions Regulation. A CLLD focuses on a sub-regional areas and is led by "local action groups composed of representatives of public and private local socioeconomic interests, in which no single interest group controls the decision-making". CLLD strategies must set out community involvement processes, include a territorial analysis, define management, monitoring and evaluation arrangements and present a financial plan, including the planned allocation from each Fund. The legally constituted Local Action Group may then be a beneficiary and implement actions in accordance with the strategy.

2.2.3 Setting up the investment plan

Investments plans for the local and regional implementation of EGD can first benefit from a wide range of European funding opportunities. An overview of such opportunities is presented below. Second, alternative sources of funding such as crowdfunding, social impact bonds, environmental impact bonds, green bonds, social bonds and sustainability bonds may be envisaged.

Considering the wide range of EU funding programmes and initiatives, and their constant evolution, the overview presented overview is necessarily incomplete. However, multiple support platforms exist. One may for example EIB JASPERS, which advises regional and local authorities on their use of European Structural Investment Funds through project preparation, independent quality review and capacity building, free of charge to beneficiaries. Fi-compass is a platform for advisory services on financial instruments under the European Structural and Investment Funds. As part of its Rural Action Plan, the EU also foresees to set up a "one-stop shop for rural communities, rural project holders and local authorities".

The European Green Deal Investment Plan offers a wide range of financial support options, through grants, loans and bank guarantees. This section provides a few examples:

- As part of the EU Just Transition Mechanism, Territorial just transition plans have been elaborated (or are in the process of being elaborated) in all Member States. They are then validated by the European Commission. These plans identify territories and sectors that will be eligible for support. A wide range of measures can be funded under these plans, e.g. in the fields of economic diversification, renewable energy, green transport, urban heating, digital transition, circular economy and training. A first step can be to **check if your region or locality will be eligible**. This information can be found in national Territorial Just transition plans. The EU Just Transition Platform then provides guidance and assistance on how to make use of funding opportunities. It builds on the Initiative for coal regions in transition, which has provided similar support since 2019.

- The InvestEU Fund provides a budget guarantee of EUR 26.2 billion for investments in sustainable infrastructure, research, innovation, digitalisation, training education, training, social housing, schools, universities, hospitals, social innovation, healthcare, long-term care and accessibility, microfinance, social enterprise, integration of migrants, refugees and vulnerable people, and more. It also facilitates access to finance for Small and medium-sized companies. Concretely, public and

private promoters of a project can submit it on the InvestEU portal to reach an investor such as the European Investment Bank or other InvestEU implementing partners. A dedicated tracking methodology has been established to monitor the contribution of the investment to the achievement of EGD objectives. The EUInvest tool targets so-called 'bankable' projects, generating incomes to reimburse loans.

- Cohesion Policy[1] will provide substantial support to EGD implementation and the local and regional levels. Regulations for the 2021–2027 programming period for example specify that 30 % of European Regional Development Fund (ERDF) spending and 37 % of Cohesion Fund spending shall help to reach climate objectives. There are also quantitative targets on shares of spending dedicated to the preservation of biodiversity. These objectives will guide the selection of projects at the level of individual regional and national cohesion policy programmes. Cohesion Policy provides both grants and loans (by funding financial instruments). It also makes it possible to fund Integrated Territorial Investments (ITIs), which are further described in the text box below.

Integrated Territorial Investments as instruments for EGD implementation

An integrated territorial investment (ITIs) is a delivery arrangement for investments under more than one priority axes of one or more operational programmes. Funding from several priority axes and programmes can be bundled into an integrated investment strategy for a certain territory or functional area. It is therefore particularly well-suited for local and regional EGD implementation pursuing cross-sectoral objectives.
The adoption of an Integrated Strategy (see section 2.1.4) is a necessary prerequisite for setting up an ITI. Local authorities, regional development bodies or non-governmental organisations, may then carry out some or all of the management and implementation tasks, under the supervision of a Managing Authorities of involved programmes.

[1] 'Cohesion Policy' here refers to three main European Structural and Investment Funds: The European Regional Development Fund (ERDF), The European Social Fund Plus (ESF+) and the Cohesion Fund.

- The Recovery and Resilience Facility is a temporary recovery instrument following the COVID crisis, to be implemented until the end of 2026. It makes available EUR 723.8 billion (in current prices) in loans (EUR 385.8 billion) and grants EUR 338 billion) for that purpose. It is implemented in the framework of national recovery and resilience plans, which offer funding opportunities that can be relevant for local and regional EGD implementation.

- A wide range of EU funding programmes may provide support to local and regional EGD implementation:
    - The Connecting Europe Facility funds digital connectivity, decarbonisation of transport and transitions to clean and smart energy,
    - The Creative Europe Programme funds cultural projects in relation to the EGD,
    - Digital Europe addresses all aspects the deployment of digital technologies, in public and private sectors,
    - EEA and Norway grants support projects tackling common European challenges such as EGD implementation through regional cross-border and transnational cooperation across Europe,
    - The Erasmus+ programme contributes to EGD implementation by developing innovative learning methods in non-formal and formal education to teach about sustainability issues and climate change,
    - The ESPON 2030 programme funds so-called "targeted analyses" at the request of local, regional and national authorities. It puts a strong focus on green transition to climate-neutral economies while ensure just living conditions for all people,
    - The European Energy Efficiency Fund is an innovative public-private partnership dedicated to mitigating climate change, achieving economic sustainability of the Fund and attracting private, and public capital into climate financing.
    - The European Urban Initiative combines the Urban Innovative Actions and Urban Development Networks into a new initiative. It provides a platform to further develop sustainable urban development via cohesion policy and other EU programmes. In addition to innovative actions, it supports knowledge, policy development and communication.
    - The Horizon Europe funding programme for research and innovation target five 'missions', four of which are of direct relevance for local and regional EGD implementation: climate resilience, ocean and

waters restoration, climate neutral and smart cities and transition towards health. Local and regional authorities can be involved as contractors or by physically hosting projects on their territory. European Innovation Ecosystems under the Horizon Europe Programme have been set up to stimulate cooperation among national, regional and local innovation actors to help achieve collective ambitions towards challenges for the benefit of society, including the green, digital, and social transitions.

- The EU Justice, Rights and Values Fund can be mobilised to support citizen participation in EGD implementation processes.
- The LIFE+ programme is the EU's financial instrument supporting environmental, nature conservation and climate. Strategic Integrated Projects are of particular relevance to local and regional authorities. They support the full implementation of EU plans and strategies in different EGD-related fields.

The Covenant of Mayors' interactive funding guide for Sustainable Energy & Climate Action Plans

The Covenant of Mayors has set up an interactive funding guide for Sustainable Energy & Climate Action Plans which is of relevance for EGD implementation at the local and regional levels.

This interactive guide describes shared management EU funds, European Funding Programmes, technical assistance and advisory support and Financial institutions' Instruments.

This also provides information on alternative financing schemes such as citizen cooperatives, crowdfunding, energy performance contracts, green municipal bonds, on bill financing, revolving loan funds et soft loans guarantees.

European funding can be complemented by a wide range of alternative funding options:

- Numerous crowdfunding platforms focusing on EGD-related investments have emerged, e.g. in the field of Green energy. A European regulation applies a harmonised legal framework for crowdfunding service providers since November 2021. The Eurocrowd business network on transparency, regulation and governance in digital finance published a report on how crowdfunding can be used to provide match-funding to European Structural and Investment Funds in 2021.

- Social Impact Bonds (SIB) & Environmental Impact Bonds (EIB) are contracts between a public authority and a private body. The public authority pays for positive social or environmental outcomes in certain areas. Investors receive a return (in addition to the repayment of the original amount invested) insofar as the desired outcomes are achieved. This emerges as new collaborative instruments between public and private sector. In a 2016 report on Social Impact Bonds, the OECD concludes that such bonds should be considered as complementary and not core mechanisms for the achievement of desired changes.

- Green Bonds, Social bonds, Sustainability bonds and Climate Bonds enable capital-raising and investment for new and existing projects with EGD-related benefits. The International Capital Market Association has also published principles, guidelines and handbooks and set up a help desk for these different types of bonds. European Commission proposals for a European green bond standard are also currently under discussion.

Civic crowdfunding for local community projects in circular economy

Capannori, with its 47 000 inhabitants in the Province of Lucca in Tuscany, was a forerunner in the promotion of circular economy. In 2007, it was the first Municipality in Italy to join the "Zero Waste Strategy". This strategy was later applied in 260 municipalities from all over Italy, with a total population of more than four million inhabitants.

In spring 2017, Capannori launched the ‘Circularcity’ initiative with the participation of the Tuscany Region. The project was linked to the circular economy and gave concrete possibilities of action to citizens, institutions, schools, businesses and startups, to realize their ideas. Once selected, projects could receive 50 %

of financing from the crowdfunding platform Eppela, and once the target was achieved, the remaining 50 % was co-financed by the municipality.

The response of the territory was higher than expected, with 43 project ideas received through the call. 23 projects were considered admissible, and, in June, the first 13 ideas in the ranking participated in the Circularicity camp (C-camp). The C-camp was a two-day full immersion workshop, during which the groups of the various projects worked, supported by professional facilitators and experts in the field of circular economy, technological solutions and communication to finalize the proposals and prototype their own project / product. Then, in September, for 5 selected projects that completed the path it was possible to access the Eppela platform for civic and reward-based crowdfunding. Through the platform and crowdfunding campaigns, all 5 selected projects have reached the threshold of 50 % of the budget and therefore were all be co-financed by the municipality for the remaining amount (a total of EUR 20 thousand). The selected and financed projects have covered different sectors and activities, such as land re-use, 3D printing and plastics, food waste, exchange of unused

'Circularcity' was seen as a way to stimulate, accompany and strengthen innovative projects of civil society in terms of sustainability, recycling and creative reuse; encourage flexible forms of citizen participation in public spending through bottom-up financing tools that are able to animate the community around the project and integrate public resources; experiment new forms of collaboration between citizens, institutions and communities with more agile solutions than normal administrative action. By enhancing local community involvement and participation, Capannori has experimented an innovative and sustainable ways of collaboration between public bodies and citizens in the context of the circular economy.

Sources: based on Labsus website and Open Toscana.

2.2.4 Communication

A local or regional digital and green transformation process may generate fears and tensions, as hierarchies, relations between actors and 'ways of doing things' are challenged. A communication strategy is therefore essential to ensure that all stakeholders are on the same page and agree on how principles of fairness in the transition process shall be upheld. Communication tools can stimulate public discussions around social and environmental policies and trends, as exemplified by the South Denmark digital platform. They can also be combined awareness raising with practical guidance and support, as done by the Bacino Priula Council (Province of Treviso, Italy) for waste sorting. Both examples are further described below.

Using well-being indicators and metrics to enhance citizen awareness

The experience of Southern Denmark illustrates how regional metrics and indicators can help regions to improve the design and delivery of environmental public policy: i) providing a comprehensive picture of material and immaterial conditions of life on the ground; ii) raising social awareness; iii) highlighting possible areas for policy prioritisation; iv) helping to improve coherence across economic, social and environmental policies through more effective co-ordination and citizen engagement. The region created a website that offers an online database about a wide range of indicators, from emissions to energy consumption. The website features an interactive tool to visualise socio-economic data in maps or in graphs, and it offers a diverse set of downloadable publications on different subjects.

The website also hosts a platform for public consultations and debates about the implementation of green policies. This does not only help to raise public awareness, but also increases the accountability of public policy action and helps gather valuable information on the real needs and capacity of citizens. This experience confirms that citizens' feedbacks and awareness are crucial when it comes to ensuring that policies remain focused on achieving stated goals by monitoring progress towards them.

Source: OECD, 2014. Using well-being indicators for policy making: Region of Southern Denmark.

Communication campaigns for waste reduction

Contarina is an in-house company owned, directed and coordinated by the public Bacino Priula Council. The company deals with waste management in the 50 municipalities in the province of Treviso (Italy). Its objectives consist in increasing the percentage of separate waste collection and reducing the amount of waste produced. These are pursued through a strong commitment in raising citizens' awareness of environmental protection and sustainable development. The sustainability pf waste management is made possible through multiple activities. Today, the users can communicate directly with company staff by going to the “Eco Front Office” where they can ask for information, activate or close services, receive bags and containers.

In addition, the “Eco Calendar and Magazine” are sent to citizens, with indications for the separation and delivery of waste, and articles about separate waste collection, environment and eco-sustainability. Through the website, the free app and social channels, users can also communicate with the company in real time. With the aim of raising awareness of the different aspects of waste management, special initiatives are also organized such as the opening of the plants to the public and environmental education and training activities in schools. Today, the municipalities participating in the project recycle 88 % of waste.

Source: Fasan, M. & Bianchi, S., 2017. Contarina Spa: Il modello virtuoso di raccolta porta a porta a tariffa puntuale, Venezia: I libri di Ca’ Foscari.

2.3 Strategy renewal: updates and revisions

The governance and monitoring frameworks described above (see section 2.2.1) make it possible to continuously adjust the local or regional EGD implementation, taking into account lessons learnt, changing framework conditions and possible adjustments of policy objectives. Public consultations and participative processes can also help to identify necessary adaptations of the strategy, taking into account ways in which effects are perceived by stakeholders. External or internal evaluations procedures may also be called for.

Establishing procedures for strategy updates or revisions is particularly important in the context of local and regional EGD implementation. System transformations often entail high levels of uncertainty regarding effects of foreseen measures. In addition, framework conditions are evolving rapidly, e.g. with respect to EGD-related regulations, directives, strategies and action plans. A balance must therefore be found between providing a stable framework for transformation processes and implementing necessary adaptations. The communication strategy plays an essential role to explain these adaptations and convey the coherence of the EGD implementation strategy over time.

EGD implementation is also a learning process. Strategy adaptations may capitalise on learning that has occurred among involved institutions and stakeholders.

3 Implementing the different components of the EGD at the local and regional levels

The implementation of a the EGD at the local and regional levels concerns a wide-ranging number of sectors and issues, which are tightly interwoven. This section provides proposals on the EGD may be implemented locally and regionally for a selection of policy areas:

- Building and renovation
- Sustainable mobility
- Zero pollution
- Biodiversity
- Sustainable consumption and production and circular economy
- Clean energy

Each theme features a number of best practices illustrating how the essence and objectives of the European Green Deal can be incorporated and implemented by local policymakers. All in all, the implementation of the EGD is linked to the context and specificities of a territory. Looking through the lens of these local and regional characteristics is essential to identify the most relevant fields of action, for which externalities can be addressed.

3.1 Building and renovation

3.1.1 Introduction

Considering the climate crisis and increasing fossil fuel costs throughout Europe, renovation activities offer an efficient approach to reduce fossil fuel dependency, decrease emissions, and improve regional resilience. As buildings account for around 40 % of greenhouse gas emissions, renovation activities play an important role in achieving the climate neutrality targets as set out in the Green Deal. Reducing energy consumption in buildings has become an even more critical and urgent issue with the Russian invasion of Ukraine.

Renovation activities tend to be complex long-term investments, with correspondingly long-term impact potential on society. Accordingly, the involvement of wide sets of stakeholders is essential, including social actors, municipal utility and infrastructure providers, building owners and renters, and the construction sector.

Besides implementing renovation activities to fulfil overarching climate goals, these activities come with several incentives, such as reducing external fuel dependence, reduced energy expenditure and maintenance costs, as well as significant contributions to social cohesion via the mitigation of **energy poverty** Approximately 30 million Europeans, or 6.9 % of the population, were affected by energy poverty in 2019 (Chlechowitz, and Reuter 2021), particularly in Lithuania and Bulgaria (30.1 % and 26.7 % of households). Building renovation therefore helps strengthen the **social foundation of the Green Deal** in each locality and region.

EU Cohesion Policy Funds already have an established track record when it comes to supporting building renovations. In the 2014-2020 programming period, building renovations. In the 2014-2020 programming period, close to EUR 20 billionwere budgeted to improve the energy efficiency of buildings, including co-financing has , and the design of the performance framework made concrete recommendations regarding the planning and targeting of Investments, project selection procedures, and the design of the performance framework organisations such as the Visegrad Fund. Other organisations have supported analyses of how Cohesion Funds could more in which LRAs can capitalise on a range of effectively support building renovations[2]. This is therefore a field in which LRAs can capitalise on a range of good practices and comparative analyses.

[2]

In 2020, the European Commission launched the Renovation Wave initiative. Its objective is to at least double yearly energy-related renovation rates across the European Union by 2030. The initiative has three focus areas:

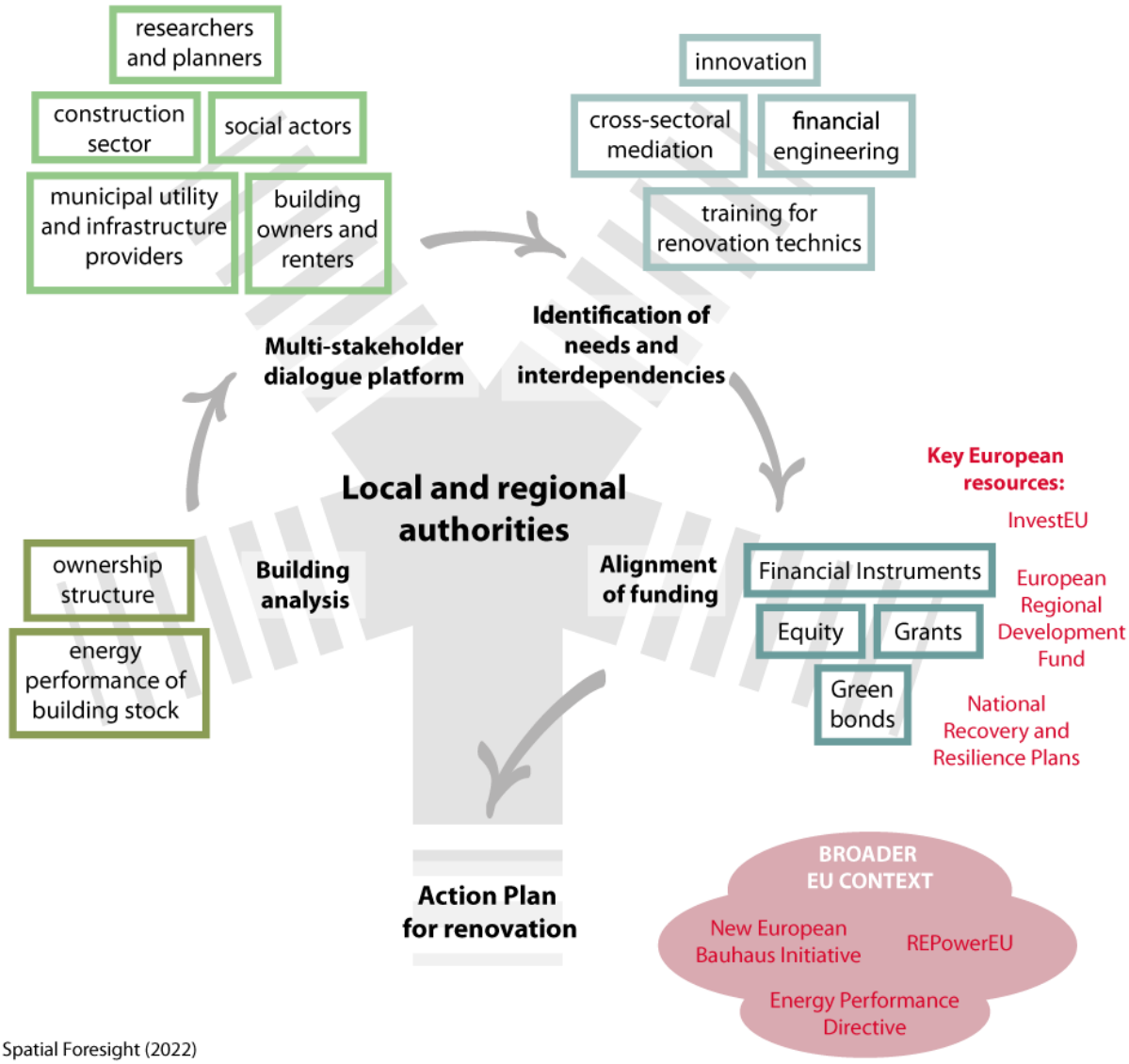
- Tackling energy poverty and worst-performing buildings;
- Renovating public buildings and social infrastructure;
- Decarbonising heating and cooling.

Renovation measures generate economic benefits for LRAs, as they can reduce their energy bills. Further, as the building sector will be included in emission trading via the overhaul to EU ETS, renovation activities can help limit future purchases of emission allowances.

A revision of the Energy Performance of Buildings Directive (EPBD) is ongoing. The last version of the EPBD was adopted in 2018 and transposed in national law in 2020. The European Commission adopted a proposal for a revised version in December 2021, as part of the 'Fit for 55' package. This proposal is currently being discussed in European Parliament and in the Council.

This thematic fiche introduces some steps that may help authorities to develop an "EGD approach" to renovation activities irrespective of local, regional and national specificities. This framework is anchored in the system-innovation approach to renovation, emphasising multi-stakeholder involvement to address social, environmental, and economic needs tied to the European building stock. The overall process first involves an analysis of the building stock, considering both energy performance and energy performances (see Figure 4 below). The range of potentially relevant stakeholders is broad, e.g. involving building sector actors to identify possible bottlenecks in the acceleration of energy renovation, and social actors to ensure that renovation works do not expect housing affordability. The analysis of needs and interdependencies involves distinct fields of expertise, e.g. construction regarding possible needs for technical innovative, financial engineering, cross-sectoral process facilitation to enhance mutual understanding and process coordination. A wide range of funding opportunities can be envisaged. These different steps leading to the adoption of a renovation plan are further detailed below.

Figure 4 Overview of process for the elaboration of an action plan for building and renovation



Spatial Foresight (2022)

3.1.2 Diagnosis

Renovation activities are organised differently in European regions and localities, depending on e.g., how competences for renovation and spatial planning are distributed, how ownership and management of public buildings and social housing are organised, and of the ways in which the latest version of the Energy Performance of Buildings Directive was implemented.

An assessment of building characteristics and renovation needs can be a beneficial first step in this process. Relevant technical aspects of the building stocks beneficial to analyse relate to its energy performance and the ownership structure. The latter is an important point, as it impacts which types of stakeholders may be involved in the project. It may also be beneficial to analyse at project implementation capacities, including organisational and institutional factors potentially impacting project implementation, as well as the capacity to obtain financing.

Besides the technical assessment of the building stock and its emissions, the systematic inclusion of relevant stakeholder groups can be beneficial for project implementation and ownership. It can also help target relevant needs, use state of the art renovation technologies and facilitate innovations when they are needed.

3.1.3 Planning and funding

3.1.3.1 Initial checklist

An initial checklist may help refine the overall process and steer the implementation of renovation projects within the region:

- What are the greatest renovation needs in the building stock?
- Who are the most relevant stakeholder groups affected by this project? Are they involved in the preparation process?
- How could dialogues with private actors and with representatives of the civil society help?
- What public investments would be needed to implement the project?

3.1.3.2 Assessing regulatory frameworks

Most local and regional authorities will have taken stock of applicable regulatory frameworks, such as details of the national transposition of the revised Energy Performance Directive. Some Member States and regions (e.g. France) have adopted more ambitious targets than the European ones. With the fast-evolving

nature of the challenges encountered in the climate crisis and increasing fossil fuel prices due to the Ukrainian-Russian war, one may expect frequent adjustments of renovation and emission targets at the level of Member State and regions.

The latest proposal for a revised Energy Performance of Buildings that was mentioned above introduces some major novelties:

- The notion of 'Zero-emission building', i.e. a building where the low amount of energy required is covered by renewables generated onsite, by an energy community, or via district heating and cooling. The European Commission would like this to be the standard for new buildings as of 2030. Transformations of existing building into 'Zero-emission building' are referred to as 'Deep renovations'.
- A focus on the least energy-efficient building: the European Commission would like all public and non-residential buildings to reach ‘Class F’ by 2027, and ‘Class E’ by 2030. At the same time, all residential buildings should meet class F by 2030 and class E by 2033. This implies renovating 15 % of the current building stock, i.e. some 40 million buildings.
- Calculating Life-cycle Global Warming Potential (GWP) for large new buildings from 2027, and for all new buildings from 2030. This calculation takes account of the whole life-cycle carbon emissions of the buildings, including manufacturing and construction, use, and end-of-life.

As part of the National Recovery and Resilience Plan, and in order to accelerate renovation works, some Member States have eased regulatory constraints. For example, in France, the government in October 2020 made it possible to let the same company design studies and the execution renovation works. As part of current efforts to reduce the EU’s dependence on imports of fossil fuel, the easing of regulatory constrains may be expected to accelerate. It may be purposeful for LRAs to assess how best to benefit from this less constraining regulation, while taking necessary measures to avoid possible pitfalls.

3.1.3.3 Financing renovation works

Financing building renovation remains a major challenge across Europe. European institutions provide a range of funding solutions to local and regional authorities, but also advise on available funding solutions. There are several direct and indirect funding initiatives at EU level, which can provide funding for the preparation and implementation of renovation projects, as well as to enhance capacities among LRAs. Alignment of funding schemes, such as the integration of various grants and financial instruments, can improve the financial viability of the renovation and building initiative.

This funding can encompass national or regional funds, funding from EU sources (such as via the ERDF or the NRRPs, see example below) for project implementation but may also include support to the preparation of project applications.

National Recovery and Resilience Plans: Enhanced involvement of LRAs in renovation funding activities

A major source of funding for Renovation Wave projects comes from the National Recovery and Resilience Plans (NRRPs) via the flagship area "Renovate". In total, the NRRPS provide approx. EUR 672.5 billion in loans and grants to the Member States. While participation of LRAs in the set-up of the NRRPs was relatively lower than in other funds under indirect management, they nonetheless play a role in their implementation.

The "Renovate" component of the of the Spanish NRRP foresees a strong involvement of local and regional actors. The NRRP allocated EUR 6.8 billion to the rehabilitation of homes and to urban regeneration. LRAs play an important role in the planning and in the implementation of the Spanish NRRP. As the NRRP is co-governed with the Autonomous Regions, a sectoral conference has been created to bring together LRAs and to establish mechanisms for cooperation and coordination. Civil society actors are also involved via e.g. dialogue tables and forums.

Source: Badouix, M; Münch, A; Schuh, B; Zillmer, S (2022, in-press). Renovation Wave: guidance for local and regional implementation

Renovation works are "bankable" insofar as they generate savings on energy bills for final beneficiaries and increase the market value of buildings. As such, financial instruments are a favourable alternative to traditional, non-repayable grants. The European Commission advocates the use of financial instruments when this is possible (see text box below). Financial instruments significantly increase the leverage effect of Cohesion Funds. The objective of financial

instruments is to provide loans for works which private banks would be reluctant to finance, i.e. to fill a market gap.

Using ERDF-funded financial instruments to improve energy performance of condominiums

The Regional Operational Programme for Western Netherlands has set up a financial instrument called the "Hague Sustainable Development Fund", which supports condominiums wishing to improve the energy performance of their buildings. Condominiums with less than 10 housing units can apply for a loan of a minimum of EUR 2,500 and a maximum of EUR 15,000. These loans can be used to finance, for example, insulation work, the installation of a heat pump, the replacement of a fossil fuel boiler, the installation of solar panels or the replacement of lighting in common areas with LEDs. The loans are repaid over a period of 10 to 15 years, partly with savings on energy bills. The fund targets small condominiums of up to nine flats. These make up 92 % of condominiums. They generally have low financing capacities. Large condominiums with 10 or more housing units can also apply for loans from a fund set up by the national Ministry of Economic Affairs and Climate.

Condominiums can apply for a loan at the "Condominium Office" of the municipality of The Hague. This office existed before the fund was established and was initially an information and advisory body. The fund allows them to provide an additional service to facilitate access to finance. The ex-ante evaluation estimated that 5 % of condominiums with less than 10 owner-occupiers wanted to invest in energy saving measures, but could not finance them.

The financial instrument is owned by the association "HEID", which was set up to ensure appropriate governance and to mobilise additional funding if necessary. It is managed by the Social Housing Fund Foundation (SVN), which assesses applications for funding and mediates between the ERDF programme managing authority and other involved authorities and bodies.

Source: Kleiwegt, E., Van Dijk, R. Van Elburg, J-C, Siepman, E. (2016) Ex-ante analyse VvE energiebesparingsfonds Den Haag. Rebel groep: Rotterdam

State aid rules is an important regulatory aspect which can impede the implementation of renovation projects, as the project may confer economic advantages to the beneficiaries. As shown below, this implies that legal experts need to be involved in the design and implementation of renovation projects.

Risks associated to State Aid rules in renovation projects

When planning renovation measures, it is important to ensure compliance with State Aid rules, for example in projects which may potentially lead to an economic benefit to the end-beneficiary. The revised Guidelines on State aid for climate, environmental protection and energy ('CEEAG') make it easier for LRAs to support renovation measures.

3.1.4 Implementation and engagement

The implementation of these generally complex and long-term renovation activities can benefit from multi-stakeholder involvement and mediation via dialogue platforms. This may include building owners, tenant groups, social partners, the building sector, technical experts, researchers, funding organisations as well as planners and other related stakeholders from the beginning of the process.

A system innovation approach to renovation activities is designed to overcome potentially conflicting needs and agendas. This approach emphasises systemic and broad stakeholder participation to promote innovative solutions to common challenges tied to renovation activities.

The systematic and coordinated implementation of district and community approaches in renovation activities, as well as in terms of heating and cooling systems, can be a cost-efficient avenue for LRA to improve energy efficiency in the building stock. The renovation of public buildings can generate spillovers, e.g. by enticing owners of private buildings in the vicinity to renovate. Owners of private buildings may also be associated to large-scale energy efficiency measures such as district heating and cooling systems. This can reduce costs for all involved parties.

The system innovation approach also helps to consider renovation activities is the broader contexts of built environments and social cohesion, which are important component of the Green Deal. The New European Bauhaus (see below) can offer insights into potential good practices and new approaches to renovation and urban planning. As illustrated in the text box below, a key aspect of the New Bauhaus initiatives is the strong focus on social inclusion and cohesion combined with environmental sustainability.

Local and Regional Authorities can get inspiration from European Bauhaus

The New European Bauhaus initiative creates a forum for the sharing of ideas on climate-friendly architecture. Within the framework of this initiative, sustainable, enriching, and inclusive projects are supported which should support Europe in its transition to a more sustainable and inclusive future. While the partnership is only open not-for-profit private organisations, local and regional authorities can draw inspiration from its projects seeking to combine building sustainability and aesthetics.

An example of the New European Bauhaus 2021 initiatives is the Tallinn Timber Tower Terminal, which presents a modular bus station built from timber in Tallinn, with a minimum carbon footprint. The building materials are locally sourced. Other examples include the Sergelhuset, S-Building project in Stockholm which sought to transform the pre-existing S-Building into a more sustainable and circular place (including urban greening and rainwater management systems).

The first steps of the project implementation process may require the set-up of tendering procedures for service providers. The use of life-cycle costing can be considered in the tendering procedure to comprehensively capture costs associated with the materials (including end-of-cycle costs, such as deconstruction and recycling), as this may highlight the economic advantages from using circular and sustainable construction materials. This practice is already in use for federal procurement procedures in Germany.

3.1.5 Monitoring and follow-up

The assessment of renovation project and monitoring of renovation activities may require a recourse to external technical experts. National resources such as land registries and observatories of building renovation may also be mobilised to monitor progress. Technical support may limit the exposure external risk factors which may delay implementation or affect final results.

Several megatrends are affecting renovation and construction activities in the EU. Besides climate change and an urgency to reduce emissions, strong fluctuations in energy prices provide overall incentives to shift away from conventional heating and cooling systems. Other aspects impact the implementation of renovation activities directly, in particular material and labour shortages and increasing construction costs. Compared to other sectors in the EU, the building sector is relatively less productive and is less digitalised(Lasarte et al 2021). Addressing these weaknesses in each locality and region can help increase the capacity to deal with current megatrends.

3.1.6 Sources and links

Funding sources:

- InvestEU provides guidance and funding to support renovation activities. The sub-programmes ('windows') Social Investment and Skills Window (EUR 2.8 billion EU guarantee) and the Sustainable Infrastructure Window (EUR 9.9 billion EU guarantee) will provide funding for renovation activities. The InvestEU advisory hub will provide technical advice and matchmaking between projects and potential investors.
- EIB JASPERS advises regional and local authorities on their use of European Structural Investment Funds through project preparation, independent quality review and capacity building, free of charge to beneficiaries
- EIB ELENA supports technical assistance in energy efficiency projects, in particular the drafting of technical studies, energy audits, business plans, financial advisory and legal advice, as well as the tendering procedure, project bundling and project management
- EU City Facility supports project applications in the ESIF by financing preparatory studies and analyses. This funding can help smaller LRAs access other funding, such as EIB ELENA.

- LIFE Clean Energy Transition supports coordination and assistance actions for policy development, stakeholder engagement, technology roll-out, and project development, in the framework of energy-efficiency, climate neutrality, and renewable energy.
- LIFE Climate Change Mitigation and Adaptation supports innovate actions to respond to challenges arising from climate change, in the fields of reduction of greenhouse gas emissions, increasing climate change resilience, and improving governance and information availability
- National Recovery and Resilience Plans, particularly under the flagship area Renovate, provide funding targeted at improving energy efficiency of public and private buildings in the MS (see Box 1: LRAs and ….)
- ERDF 2021-2027 supports investments into energy efficiency under Policy Objective 2 "a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe". The exact thematic focus of this funding is specified in the respective regional or national Operational Programme.

3.2 Sustainable mobility

3.2.1 Introduction

The transport sector emits around 25 % of all greenhouse gases in the EU-27. It is an economically important sector, employing around 10 million people throughout the EU and contributing to 5 % of overall GDP. However, these figures only reflect one component of the overall economic and social significance of transport activities. They are essential in maintaining supply chains affecting everything from day-to-day activities such as grocery shopping to high-tech manufacturing value chains.

Due to its heavy reliance on (largely imported) fossil fuels, the sector is highly vulnerable to market fluctuations. This dependency exposes transport activities to geopolitical risk, an illustrative case being the Russian war in Ukraine pushing up global oil and fuel prices and exposing regions in Europe to potential disruptions in oil supply.

In the framework of the European Green Deal, the EU foresees to implement several initiatives to improve the resilience and reducing the emissions of the transport sector. In terms of changes to the transport sector, the following elements are planned:

- Large-scale modernisation of crucial infrastructure (such as inland waterways, railway connections, and improved integration of transport modes via nine European transport corridors)
- In general, freight handling terminals should be improved in capacity and efficiency and cargo should be shifted to cleaner transport modes (train, waterway etc.)
- The introduction of the New Urban Mobility Framework which set guidance on how to reduce emissions and mobility challenges in cities. These goals will be implemented via Sustainable Urban Mobility Plans. In 2022 the European Commission will provide implementation guidance to the Member States.
- All 424 major cities along the TEN-T are required to develop Sustainable Mobility Plans with the overall goal to improve public transport and cycling and walking infrastructure.
- Improving the use of cross-border and long-distance rail traffic, by boosting multi-modal ticketing, better rail pricing options, and improving rail sector

competitiveness and introducing uniform regulation on timetabling and capacity management.

- Updates to the 2010 ITS Directive to stimulate the faster deployment of smart transport solutions and to make road, travel and traffic information widely available in digital formats.

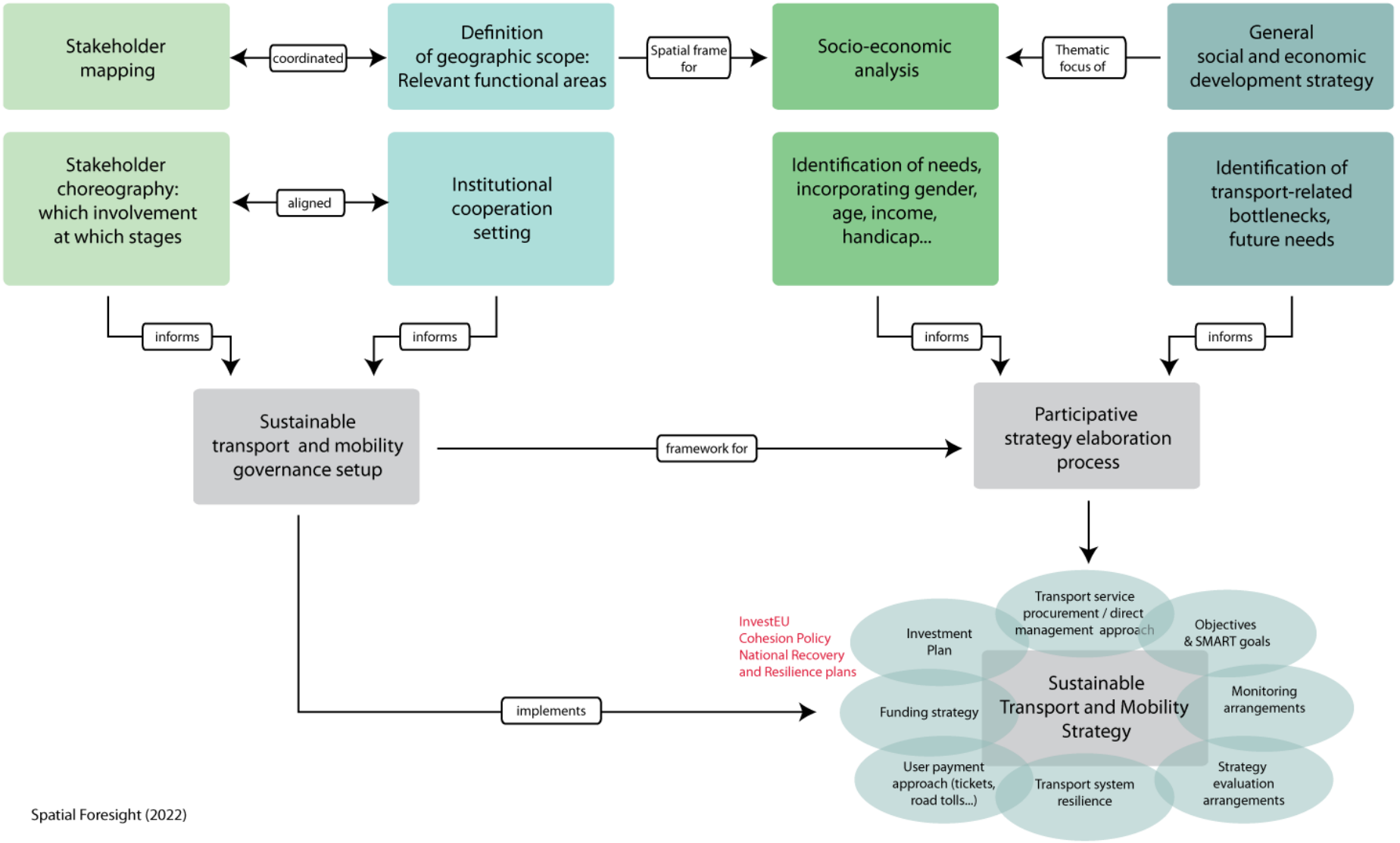
Many of the elements introduced in the framework of mobility initiatives are geared towards large-scale infrastructure projects, many of which may be implemented by national authorities or, depending on the Member State, large regions. However, LRAs play an essential role in this transition towards sustainable mobility practices, particularly in the fields of urban-rural transport interlinkages, public transport options, smart mobility, managing of commuting flows etc.

In terms of transport policies, one may consider that the Gren Deal has an "urban bias", e.g. with its emphasis on New Urban Mobility Frameworks. Rural areas have specific challenges, e.g. with a higher dependency on private transport modes. Rural and intermediate regions represent 55 % of the European population. Addressing their transport needs will be important to achieve EU climate targets.

The transition to renewable energy sources is only component of the development of sustainable mobility. A more efficient use of transport systems is also needed. This includes the improvement of multimodal transport options, allowing passengers to combine several transport modes to reach their destination. An overall goal of sustainable transport solutions is improving the accessibility of a region and quality of life of residents. Further, improvements to the whole transport system can be undertaken by smart mobility systems, to avoid long, not fully loaded journeys in cargo transport, which may be particularly relevant for less densely populated regions.

The different main components of a sustainable transport and mobility strategy are closely interlinked, as illustrated by the top row in Figure 5 below. This may require a stepwise approach, allowing for a progressive convergence between stakeholder involvement, geographic scope for strategy design and implementation and socio-economic perspectives. An alignment between these different perspectives makes it possible to envisage a sustainable transport and mobility governance setup, and to organise a participative strategy elaboration process. These are prerequisite for the elaboration, adoption and implementation of a transformative sustainable transport and mobility strategy.

Figure 5 Stepwise approach to the adoption of a transformative sustainable transport and mobility strategy



Spatial Foresight (2022)

3.2.2 Diagnosis

LRAs may face specific challenges related to transport needs in the context of the Green Deal. For example, Transport needs may vary depending on the demographic and territorial characteristics of the region. The gender dimension also needs to be taken into account, as women are more likely to be affected by transport poverty than men[3]. For this region, car-reliant infrastructure and low multimodal accessibility within a region may further exacerbate gender gaps and reduce overall accessibility, as well as quality of life.

Rural regions face different mobility needs than well-connected intermediate regions. In predominantly rural regions, a comprehensive coverage of public transport options is more costly to implement than in regions with higher population density. As such, shared mobility and flexible transport solutions may be more relevant in these areas.

The first steps to setting up a EGD approach to sustainable mobility may include the following steps:

- Identification of available human, institutional, and financial resources available for the development of sustainable mobility initiatives within the LRA.
- Early and active consultation of relevant stakeholder groups to increase public ownership of the regional initiative. This, in turn, may improve implementation by reducing the risk of delays and stakeholder conflicts. Furthermore, including cross-regional or cross-border stakeholders may be very relevant for regions with strong commuting flows.
- Identification of main challenges and opportunity tied to sustainable mobility in the region. Analysing the current mobility situation from the perspective of all transport modes (and, ideally, from the perspectives of the transport users and their specific needs, such as women, children, the elderly) using current and relevant data provides a solid basis for action.
- Identification of vulnerability and resilience factors (e.g. fossil fuel intensive transport modes) which impact transport and mobility patterns in the region in the case of external developments, including their impact

[3] Sansonetti, S and Davern, E (2021). Women and Transport. Research for European Parliament's Committee on Women's Rights and Gender Equality (FEMM).

mechanism (who is affected by the development and how are they affected?).

As illustrated by Figure 5 above, a comprehensive and thorough planning process is needed to align the mobility strategy with social and economic needs. The case of rural mobility solutions implemented in Zachodniopomorskie (Poland) provides a concrete example of the benefits of an extensive planning process (see below).

Extensive preparation process to optimise chances of success for sustainable rural transport solutions

In Zachodniopomorskie (Western Pomerania, Poland), the total length of regional bus services decreased by 40 % between 2014 and 2017. This means that rural communities experienced a major decline in their access to public transportation. Regional authorities implemented a pro-active strategy to counter this trend. This strategy had three main components:

1. Better evidence. Production of usable data for transport planning in the form of an eModule that brings together information on licenses, timetables, public transport infrastructure, public transport services, key demand drivers of trip origins / destinations, demographic data, and administrative data
2. Collection of good practices and lessons learnt from other regions. This was done as part of the 3rd edition of the Catching-Up Regions programme by the European Commission and the World Bank in cooperation with the Ministry of Investment and Development.
3. On Demand Responsive Transport as a commercially viable option. Preliminary analyses suggested that the economic viability of traditional all-day and all-year fixed route bus services in rural areas would be difficult to achieve. On Demand Responsive Transport (DRT) were identified as a possible alternative. This implies that smaller buses and vans operate flexible service routes over a large area. Routes are elaborated by an algorithm on the basis of bookings collected by voice or using an application, with a minimum of human resources

mobilised for coordination. This makes it possible to use the rolling stock in an efficient way.

Contracting and financial compensation models based on competitive tendering were elaborated.

Source: European Commission, Polish Ministry of Investment and Economic Development, World Bank Group (2019)

3.2.3 Planning and funding

3.2.3.1 Initial checklist

When setting up a framework for sustainable transport solutions, an initial checklist may help LRAs identify relevant transport needs in the context of the green transition in sustainable mobility.

- What is the status of roads and transport infrastructure (roads, parking, bike lanes, sidewalks, public transport, car sharing points etc., already available)?
- What are the local transport resources and their state (such as communal fleets)?
- What are the most used roads and transport modes? Are there seasonal variations in transport needs?
- Which population sub-groups can be identified with respect to the specificity of their transport needs? E.g. seniors, schoolchildren.
- Is it possible to circumscribe main areas of daily mobility (e.g. based on commuting patterns, access to education, common goods and services, leisure activities)?
- Are there any regional transport specificities (e.g. cross-border commuting patterns)?
- Are there already transport hubs established in the region?
- Who are the local stakeholders involved in questions of (public) transport?
- What likely trends may impact mobility choices and patterns in the future?
- What transport infrastructure is needed to achieve the locality or region’s economic development

3.2.3.2 Planning and funding sustainable mobility

A solid evidence basis on transport and mobility patterns and behaviours of the local population is beneficial in the development of an EGD-inspired approach to sustainable mobility. In the planning stage, the following steps can be taken to cement the local and regional transition:

- Defining the territorial scope of the initiative,
- Maintaining coherence with other planning processes (within the region and outside),
- Development of a timeline and financing concept,
- Assessment whether (external) financial or technical support is needed in the transition.

The territorial scope plays an important role in the design of sustainable transport and mobility solutions. Commuting flows and the presence of large transport axes can impact local and regional mobility patterns and traffic incidence, beyond the presence of administrative boundaries. As such, taking stock of these factors, involving relevant actors from bordering regions (for example in the case of cross-regional commuting patterns) and defining the geographical scope of the initiative are important factors when designing sustainable transport and mobility measures.

Higher level processes at EU and national level may impact the planning process. Conversely, mobility strategies in neighbouring regions have a potential in influencing regional mobility patterns. Other sectoral strategies (e.g., land-use strategies) may also be consulted to ensure coherence. Taking stock of these processes, their planned measures and objectives can help reduce duplication and improve overall coherence. Alignment of the transport goals with socio-economic targets and plans can further improve overall policy coherence. This may require identifying what the region wants to achieve with the transport and mobility strategy in the socio-economic context, such as the development of transport and logistics hubs, tourism infrastructure, etc.

A comprehensive funding plan may include funding from regional and national sources and programmes as well as from dedicated EU support schemes. There are several funds available to support the transition to sustainable mobility and transport systems. These are detailed in section 3.2.6 and include funding for technical support and in the form of investment support.

Multiple handbooks have been produced to help LRAs design sustainable mobility initiatives (please see section 3.2.6):

- The Sustainable Urban Mobility Plan handbook describes four phases and 32 activities to implement during an urban mobility process. It is addressed to both planners and policy-makers. The issues of governance and needs for national and regional support are tackled.
- The Smart Villages and Rural Mobility paper by the ENRD contains best practice examples of sustainable mobility solutions implemented in rural areas and presents some key steps that could inspire local authorities and help design and implement an effective 'smart' strategy for sustainable rural mobility. Best practice examples and different approaches are suggested on the questions of involvement, needs assessment, need prioritisation, adaptability.
- The SMARTA projects support LRAs in understanding the market and policy context of rural mobility for each EU Member State; identify good rural mobility practices; provide guidance in piloting, monitoring and evaluating digital solutions and shared mobility services.

3.2.4 Implementation and engagement

A stakeholder outreach and activation strategy can help ensure active participation og stakeholders in sustainable mobility initiative and mitigate the risk of conflicts. The outreach strategy can include the following elements:

- An overview of all relevant stakeholder groups and how they are affected by this initiative;
- A concept on how to reach out to local interest groups and, particularly, vulnerable groups (such as ethnic minorities) and how to include stakeholders in the process;
- How regular monitoring of these groups will be undertaken, as changes in stakeholder constellation may occur;
- Developing a public relations strategy can have a positive impact on the public perception of the initiative.

Comprehensively involving diverse stakeholder groups in the initiative may reduce conflicts and promote innovate approaches to complex needs. An example of a multi-stakeholder approach to addressing complex traffic management needs is provided below in the case of Antwerp (Belgium).

Platform for partnership in Antwerp, partnering with private mobility service providers for mobility solutions

Antwerp is the second largest Belgian city and hosts Europe's second largest port. Road congestion is a major issue. To promote sustainable mobility, the city launched the Antwerp Marketplace for mobility in September 2016. This platform for partnerships between the municipality and private mobility service providers aims to reconcile freight/logistic transport with passenger flows (commuters, visitors and other daily mobility). An analysis identified bottlenecks and issues. Marketplace partners and projects are then invited to present solutions to overcome these challenges. The Marketplace involves both passenger transport providers and logistic companies. Transport service providers can participate in the Marketplace for Mobility in three ways: partnerships with promotional support, partnerships with financial support through a project call, and long-term partnerships through a call for tender.

In order to be accepted in the Marketplace for mobility, services, products and projects have to contribute to keeping the Antwerp region accessible and liveable. Four possible types of mobility solutions may be pursued: a shift from car to more sustainable means of transport; time shift, meaning movements are done before or after rush hour, or are avoided if possible; location shift, meaning the location is altered so that congested areas are avoided; technology shift, meaning the implementation of new technology to optimise workflows and make certain behaviour possible. The cooperation model of the Marketplace for mobility has a positive, entrepreneurial atmosphere in which private and public partners co-create socially relevant solutions. The project call offers companies the opportunity to roll out projects with the support of the city. It acts as a laboratory for mobility solutions.

Source: Kishchenko K, De Roeck M., Salens M., and Van Maroey C. (2019), The Antwerp Marketplace for Mobility: partnering with private mobility service providers as a strategy to keep the region accessible, Transportation Research Procedia 39 (2019) 191–200.

3.2.5 Monitoring and follow-up

Overall and regular monitoring are important aspects to ensure efficient and adaptive implementation, particularly in light of rapidly changing technological and regulatory frameworks in the field of mobility. Along with the goals of the planned measures, the definition of robust indicators and appropriate targets is an important aspect in ensuring a transparent monitoring process.

Proactive involvement of stakeholder groups in the monitoring process may increase local ownership and awareness of the planned mobility transition. While the shift to more sustainable modes of mobility and transport requires the infrastructure investments (e.g. in charging stations, multi-modal mobility points and cycling and walking friendly infrastructure), it also required sufficient awareness among stakeholder groups to avoid low usage levels.

3.2.6 Sources and links

Funding sources:

- The Horizon Programme supports interventions in the area of clean, safe and accessible transport and mobility and smart mobility, through its cluster number 5: Climate, Energy and Mobility.
- Cohesion Policy: ERDF 2021-2027 supports sustainable urban mobility. Several Interreg programmes provide funding for local mobility issues in their priorities. The Cohesion Fund provides funding for TEN-T networks.
- CLLD/LEADER supports local, bottom-up approaches covering the local needs. LRAs might present their mobility project during one of the calls for project. The Local Action Group and its support team can help the LRA to build their application.
- National Recovery and Resilience Plans may provide funding targeted at investments in smart and sustainable mobility, such as the promotion of smart, safe and clean collective transport.
- EIB JASPERS advises regional and local authorities on their use of European Structural Investment Funds through project preparation, independent quality review and capacity building, free of charge to beneficiaries
- The Just Transition Fund may support investments in smart and sustainable local mobility, including decarbonisation of the local transport sector and its infrastructure

Handbooks and tools:

- Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, published by the European Platform on Sustainable Urban Mobility Plan in 2019
- The projects SMARTA and SMARTA 2 provide guidance for rural mobility solutions
- Smart Villages and Rural Mobility, published by the European Network for Rural Development (ENRD) in 2019

3.3 Zero Pollution

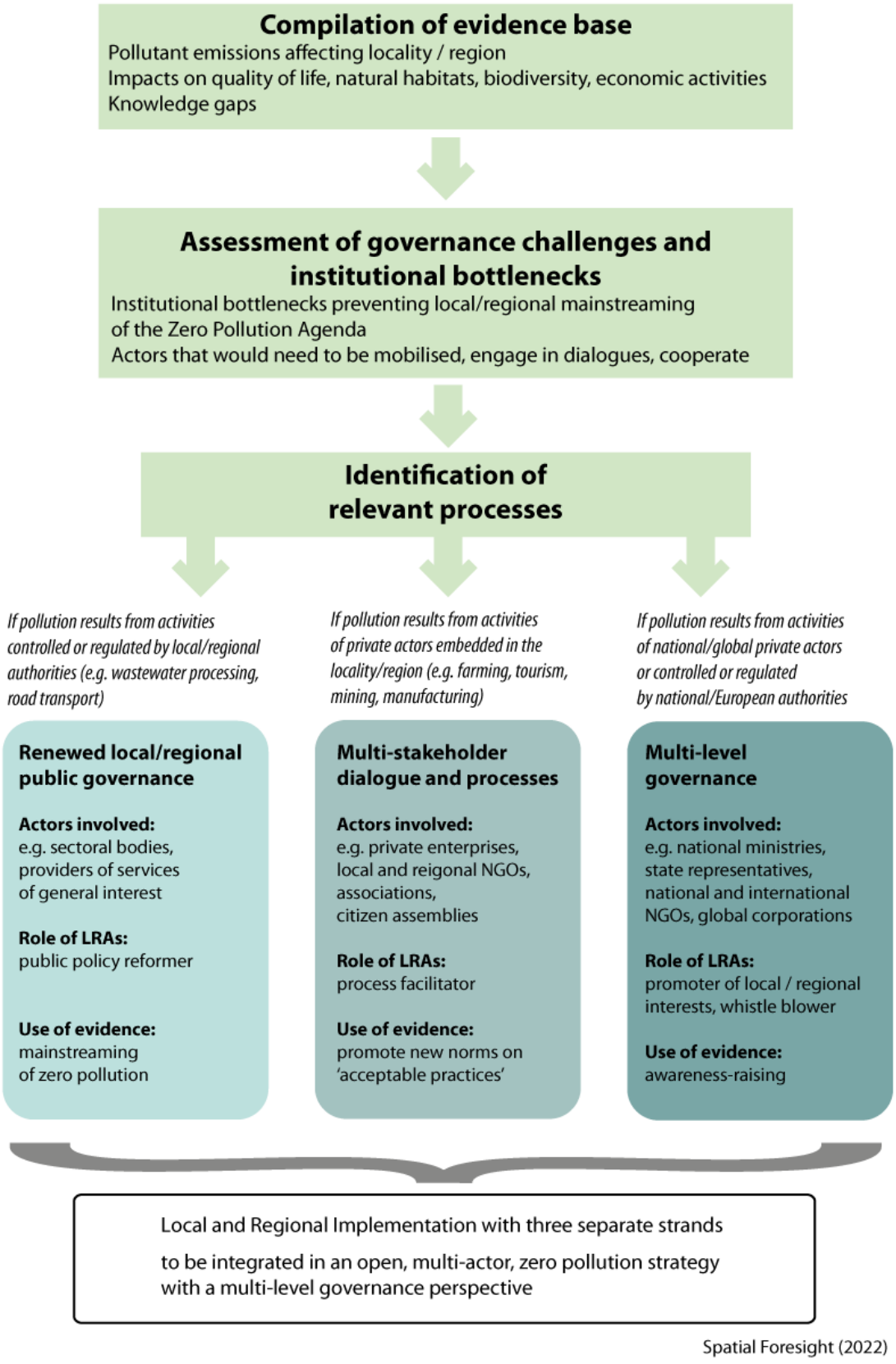
3.3.1 Introduction

One of the EGD's main pillars is the Zero pollution action plan: "Towards a Zero Pollution for Air, Water and Soil". The objectives of this zero-pollution vision by 2050 are "for air, water and soil pollution to be reduced to levels no longer considered harmful to health and natural ecosystems, that respect the boundaries with which our planet can cope, thereby creating a toxic-free environment". Such a vision requires cross-sectoral actions and systemic changes. Multi-level governance arrangements must be set up to address forms of pollution and their consequences at global, EU, national, regional and local levels. The Zero pollution action plan covers a large array of policy areas, e.g. air, chemicals, circular economy, industrial emissions, marine and coastal environment, nature and biodiversity, noise, plastics, soil and land, water.

To mainstream the zero-pollution agenda, the European Commission and the European Committee of the Regions launched the Zero Pollution Stakeholder Platform. Its aim is to bring together stakeholders and experts of different policy areas, such as health, agriculture, research and innovation, transport, digitalisation and the environment in order to foster collaboration, exchanges of solutions and maximise synergies. Pollution does not stop at borders; it affects the health and well-being of local populations and joint efforts are needed to reduce it to levels that are not harmful to human health and natural ecosystems. For this purpose, several networks and initiatives such as the European Green Leaf and the Cities Mission also further rally and encourage localities and cities in their endeavours against pollution and towards a more sustainable future.

LRAs are in many respects at the frontline of the implementation of pollution-relevant laws, policies and programmes. Reducing pollution requires clean choices for regional and urban mobility and energy, investments in buildings and infrastructure, as well as overall spatial planning. Impacts on pollution on e.g. public health, drinking and bathing water quality, soil contamination generate issues which LRAs have a responsibility to address. As such, cities, rural municipalities and regions have a key role to play in translating the zero-pollution vision into actions on the ground.

Figure 6 Three strands in local and regional Zero Pollution strategies



Spatial Foresight (2022)

Pollution may result from a wide range of possibly intertwined sources that are more or less embedded in the local or regional contexts and regulated by various actors at different governance levels. This diversity of situations may be addressed by distinguishing between three strands in local and regional Zero Pollution strategies (see Figure 6 above). The first strand relates to pollution directly connected to activated controlled or regulated by the local authority, e.g. wastewater processing or road transport. The second strand includes to pollution generated by actors embedded in the locality or regions, e.g. farming, tourism, mining or manufacturing. The third strand covers pollution resulting from actions of national or global private actors or controlled or regulated by national and European authorities. In this case, local and regional authorities may promote their interests at higher level and when, needed, act as whistle blowers.

The common goal is to address pollution at the source. This can be easier to achieve in the case of point source pollution, coming from a single place such as a smokestack, a discharge pipe or a drainage ditch. Pollution can also be diffuse, i.e. caused by multiple activities with no common point of discharge. LRAs dispose of a wide range of potential measures to address such pollution. They can for example persuade more households to separate waste, expand district heating, lower speed limits, introduce congestion charging and low emissions transport zones, ban pesticides from public areas and set up strategies for the rehabilitation of brownfield areas.

The following sections provide LRAs with different avenues for reflection and suggestions regarding action to address pollution sources.

3.3.2 Diagnosis

Integrating soil and water management is often an institutional challenge which may substantially differ depending on the country/region. No single institution or set of institutions may address all challenges, as the pursuit of ‘Zero pollution’ encompasses a range of different processes (as illustrated in the introductory figure). This section accordingly provides a set of key questions and steps to establish a baseline and gather information which may help to develop a shared understanding of the problem at hand and identify the most purposeful policy measures.

- Which information, data is available to assess whether the EU/national air/soil/water quality standards are met?

- Have areas of contaminated land and/or water bodies been properly identified? By whom?
- What is the territorial scope of the pollution?
- Are there health-related concerns which may be linked to pollution? (e.g. asthma, cancer, cardiovascular diseases, impacts on reproductive system etc.)
- Is there a consensus with regards to the origins and causes of the identified pollution?
- What are the direct and indirect consequences of the pollution on the economy, society and environment?
- Who are the most impacted stakeholders? Which ones are responsible and/or should be sensitised?
- Which actions addressing the issues fall within the competency of the regional and/or local authority? Which relevant actors/authorities should be approached (e.g. at national or European level)?

All in all, pollution sources are often hidden and diffuse, and their consequences sometimes only visible on the long run. This challenges the role of LRAs which must remain alert about any reported signs (e.g. widespread heath issues among the local population, biodiversity loss… etc.). Carrying out a risk assessment is therefore essential, as illustrated by the City of Bydgoszcz (Poland) which tested specific contaminants in order to assess health risks for the inhabitants.

Assessing the risks to human health for evidence-based decision making

The City of Bydgoszcz investigated the environmental risks associated with the contamination brought on by the Zachem former chemical factory as well as its impact on inhabited areas with the aim of assessing the risk to human health and the drafting of guidelines for future monitoring operations.

A sampling plan was developed in compliance with national regulations, taking into account cartographic data and the findings of previous investigations. The residential area (31.1 ha) was divided into 20 sampling sections taking into account the location of groundwater pollution clouds and a topographic

relief. The location of 9 bore-holes were determined with the coordinates representing the central points of the selected plots.

All pilot activities were carried out with the involvement of the most important local stakeholders: RDOŚ Regional Directorate of Environmental Protection, WIOŚ Regional Inspectorate for Environmental Protection, SANEPID District Sanitary and Epidemiological Station, MWIK Municipal Waterworks, AGH University and the local inhabitants.

Source: Interreg Europe, GreenerSites

3.3.3 Planning and funding

Pollution, in particular air pollution, is not bound to any administrative limits and requires the mobilisation and collaboration of a different actors within and between different levels of governance, and in different sectors. As such, interventions or mitigation measures must be aligned with existing plans and programmes.

For example, joining forces with other LRAs can effectively help to address cross-border air pollution issues. Projects gathering various regional and local authorities in different countries (e.g. AIR-TRITIA) can support the capacity of LRAs, providing them with unified spatial information database as well as new tools for air pollution management and forecasting. Intermunicipal and interregional cooperation around Lake Vänern (Sweden) (see below) illustrates how pollution in water bodies can be addressed by mobilising a large array of stakeholders.

The multi-level governance arrangements to address pollution of water bodies: example of the European Union's largest lake, Lake Vänern (Sweden)

Sweden is subdivided in five Water Districts (managed by a regional representative of the Government), each of which is subdivided in a number of 'Water Councils'. A 'Water Council' is basically a local association that has been formally integrated in the national environmental monitoring system. The different

Water Councils around Lake Vänern are all members of Vänern Water Management Association

All organisations that have an impact on the lake become members. Cost reduction is a main incentive to become member. Membership makes it less expensive to comply with environmental impact monitoring rules. For example, the association funds reference measuring stations, to which measurements located in the immediate vicinity of the potential polluting activity may be compared.

The Vänern Water Management Association currently has 38 members, including:

- 13 riparian municipalities;
- Both riparian regions (Västra Götaland and Värmland);
- Entreprises with emissions into the lake;
- Swedish Armed forces (as an air force base is located next to Lake Vänern);
- Swedish Maritime Administration (for water transport);
- Lake harbours;
- Lake fishermen organisation;
- Vattenfall, as regulator of the water levels in Lake Vänern.

In addition, there are 38 supporting organisations, including interest organisations. Members pay a limited yearly membership fee (EUR 50) and additional "measuring fees" (monitoring impacts of emissions into water bodies) that are proportional to their size. This makes it possible for members to comply with monitoring rules at much lower cost, compared to carrying out measures individually. This is the main incentive for joining the association.

Vänern Water Management Association also elaborates a multiannual Lake Water Management Plan. The plan is currently being revised. Currently addressed issues include tracking of toxic and environmentally damaging substances such as traces of drugs, e.g. hormones (oestrogen), and Per- and

polyfluoroalkyl substances (PFASs), and in particular perfluorooctanesulfonic acid (PFOS), a global pollutant, which was the key ingredient in Scotchgard, a fabric protector made by 3M, and related stain repellents.

The association therefore allows for multistakeholder dialogues. The dialogue with municipal planning agencies is described as "well-functioning". Some of the issues addressed are the importance of avoiding constructions of buildings and infrastructure in the immediate vicinity of the lake, and risks associated with flooding of known polluted land areas, which may significantly affect the quality of lake waters.

Many tributary rivers feed into Lake Vänern. These are managed by separate water management associations, in dialogue with Lake Vänern Water Management Association. Issues such as over-fertilisation from agriculture area addressed around some of these rivers.

Source: ESPON LAKES

LRAs across Europe have developed action plans or strategies to address different types of pollution. Air Quality Plans (AQP) for example make it possible for cities to adopt actions to improve air quality in cooperation with other authorities and sectoral actors. Measures and instruments which local administrations can consider include:

- traffic related measures- e.g. with Low Emission Zones;
- residential heating plants - punctual controls, local regulation;
- protection of sensitive population groups - e.g. reduce exposure to traffic emissions for schools and hospitals;
- land use and urban planning - e.g. reduce traffic proximity exposure for new buildings with local urban planning instruments; increasing green areas.

Using EU financial instruments to support roadmap towards zero carbon emission

The CAP Troisième Révolution Industrielle (CAP TRI) is financial instrument supported by the 2014-2020 European Regional Development Fund (ERDF) Operational Programme developed in the region of Nord-Pas de Calais in France (now a part of Hauts-de-France region). It was developed in 2014 to help the region become the first carbon-neutral region in France by 2050.

The region had traditionally been heavily industrial, with a focus on coal mines and the steel sector. It also had the highest percentage of 'brownfield' sites in the country. In addition, the region was one of the highest consumers of energy in the country. As a result, greenhouse gas emissions per inhabitants were 30 % higher than the national average. In addition, in 2008, the share of renewable energy for the region was around four times lower than the national average. To mitigate these challenges, in 2013, the managing authority and the regional Chamber of Commerce and Industry (CCI) jointly published a road map for the regeneration of the area known as the 'Troisième Révolution Industrielle' (TRI). It targets 'zero carbon emission' by 2050, by which time energy needs in the region would be totally reliant on renewable energy sources.

Within the TRI, CAP TRI is the first public-private financial instrument combining resources from European Structural and Investment Funds (ESIF), with European Investment Bank (EIB) funding guaranteed by the European Fund for Strategic Investments (EFSI), and private investors. With initial investment funding of EUR 37.5 million, as well as EUR 2.5 million for technical support in the form of grants, the financial instrument aimed to stimulate investments in projects of EUR 100 million to aiming to support the TRI road map and invest in projects with high socio-economic and environmental returns. CAP TRI's overall objective was to provide equity and quasi-equity, primarily for small and medium-sized enterprises, but also for mid-caps and special purpose vehicles to support their transition towards zero carbon emission.

Source: fi-compass (2016), CAP Troisième Révolution Industrielle Nord-Pas de Calais, France

3.3.4 Implementation and Engagement

This section focuses on policies managed and implemented by LRAs, in collaboration with key stakeholders, to address various types of pollution. The examples provided relate to the different strands of action presented in the introduction.

Local policies have for example been elaborated to address excessive pesticide use. These practices are known to have had negative impacts on water quality and on aquatic ecosystems, ultimately leading to reduced aquatic and terrestrial biodiversity. Conflicts have also emerged as urban sprawl and the development of secondary housing have brought populations closer to agricultural production areas. Debates have for example emerged on the minimum distance between dwellings and areas treated with pesticides. Building on EU and national plans to promote alternatives to pesticides, some local authorities have sought to be exemplary by banning the use of pesticides in public areas. Others, such as the Municipality of Aarhus (Denmark) are going even further, rallying farmers on a voluntary basis to shift towards more environmentally-friendly farming practices.

Approach to ground water protection in Aarhus, Denmark

Ground water protection in the Municipality of Aarhus is based on a combination of information, voluntary agreements and mandatory restrictions.

In the Municipality of Aarhus, ground water protection zones cover 12 100 hectares. This represents about 25 % of the municipal area. The designated area is based on hydrogeological and chemical mapping. The focus on ground water resource is particularly important as resources are being overexploited and pesticide pollution has been detected in 1/3 of the municipality's wells.

In the Municipality of Aarhus, there has been no use of pesticides on public owned land in drinking water areas since the late 1990s. Moreover, since then, water companies have been carrying out several protection schemes aimed at farmers and owners of private gardens.

The water companies have offered fully compensated voluntary agreements to farmers to stop using pesticides. Since year 2000,

approximately 100 farmers have agreed to non-pesticide farming covering around 1400 hectares. In 2013, The council has decided to use regulatory instruments to accelerate and further extent the pesticide ban. In 2016, the council prohibited the use of pesticides in specific ground water protection zones. Farmers are fully compensated by the water companies.

Source: Pesticides free towns

Such initiatives raise the need to consult, dialogue and raise awareness of key stakeholders (e.g. farmers) as well as providing incentives to ensure the adoption and acceptance of any strategy or public interventions.

A range of institutional actors within each locality or region can play a driving role in such processes. LRAs may, as a first step, focus on identifying organisations that are in the best position to bring actors together and encourage new practices. This can for example be associations, chambers of industry and agriculture, centres for the promotion of socially and environmentally responsible innovation. A central objective is to progressively establish business models aligned on the 'Zero Pollution' agenda as the new local or regional norm.

In urban areas, environmental management of unused or underused industrial sites (brownfields) is also key to addressing pollution issues. Brownfield remediation is essential for sustainable land management, as illustrated by the Simmering Gasworks rehabilitation described in the text bo below. Local and regional authorities play a major role in these policies, which require coordinated actions of multiple actors. Brownfield remediation is implemented more effectively and rapidly when new uses of industrial sites have been clearly identified.

Brownfield remediation project in Vienna, Austria

The Simmering Gasworks is the largest municipal gasworks facility in Austria and one of the first historically contaminated sites (both by organic and inorganic substances) to be listed in the national remediation programme in 1990. Emissions to soil and groundwater were further amplified by damage caused during the Second World War, when the gasworks site was the target of several air raids. After extensive investigations of the gasworks site's groundwater and soil, a contaminated site remediation project was launched in 2008 to permanently prevent any further infiltration of contaminants into the ground, to protect groundwater from effusion of contaminated soil areas by means of a pump and treatment system and to recover brownfield areas for reuse. At the same time, several projects focusing on the reuse of the gasworks site facilities were launched, the most prominent of which is the revitalisation of the gasometer (Gasometer City): a flagship example of industrial heritage use, since gasometers are adapted as residential and service buildings.

Source: *Interreg Europe, GreenerSites*

3.3.5 Monitoring and follow-up

A long-term approach is essential to follow the evolution and concentration of pollution issues. LRAs may contribute to the monitoring of pollution issues relevant to their territories via:

- Establishing a surveillance committee for the evaluation and control of a monitoring system with the task of producing annual report.
- Building air quality monitoring networks in order to communicate air pollution data to the public, so that they can be aware of the issues that impact them
- Promoting citizen science initiatives to gather data and possibly report pollution issues

3.3.6 Sources and links

Legal Frameworks and policy developments:

- Sustainable and smart mobility strategy and action plan
- The Renovation wave to improve energy efficiency while driving the clean energy transition
- Europe's Beating Cancer Plan
- EU Soil Strategy for 2030

Platforms and initiatives:

- Zero Pollution going local
- The Zero Pollution Stakeholder Platform helps to deliver on the flagship initiatives and actions set out in the Zero Pollution Action Plan
- The New European Bauhaus initiative showcases how building projects can contribute to zero pollution objectives by applying principles based on 'beautiful, sustainable, together'
- EU Mission "A soil Deal for Europe"

Main sources of funding:

- Zero Pollution Stakeholder Platform - Funding opportunities
- Cohesion Policy funds investments in water services
- Life Programme funding opportunities

Guidance:

- Lessons learnt and good practices applicable to brownfield remediation interventions
- (Upcoming) Zero Pollution Stakeholder Platform - Knowledge hub

3.4 Biodiversity

Biodiversity is one of the cross-cutting focus areas of the Green Deal given its contribution to, inter alia, climate neutrality. The importance of biodiversity is underlined by the ambition for all EU policies to contribute to the preservation and restoration of Europe's natural capital. The EU biodiversity strategy for 2030 argues that the balanced ecosystems will enhance resilience to current and future threats such as climate change impacts, forest fires, food insecurity, disease outbreaks, including wildlife protection. The strategy also supports a green recovery following the Covid-19 pandemic, as part of the Recovery Plan's general principle of 'building back better'. At EU level, several laws are protecting nature and biodiversity, those are notably: the Birds Directive, the Habitats Directive, the Zoos Directive, the Wildlife Trade Legislation and the Invasive Alien Species Regulation. The EU has also built Natura 2000, which is the largest coordinated network of protected areas in the world.

Problems linked to biodiversity loss have a wide range of consequences including direct impacts on the quality of life of citizens. LRAs are well-positioned to play a key role in biodiversity conservation through established local and regional planning systems and the wide range of services they provide.

At the local and regional levels, a range of policies for the preservation and enhancement of biodiversity have been elaborated in both urban and rural areas. In urbanised areas, the focus is on developing green infrastructure, limiting sprawl and optimising planning to preserve habitats. Local and regional authorities in many rural areas have sought to preserve permanent pastures and meadows, adapt agricultural practices, protect and restore wetlands, peatlands and coastal ecosystems, sustainably manage marine areas, forests, grasslands and agricultural soils. In all areas, the challenge is to mainstream biodiversity concerns across in all policies, e.g. tourism development, food production, transport, waste management.

The concept of nature-based solutions (NBS) provides a framework for these efforts. These are solutions that are "inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes,

through locally adapted, resource-efficient and systemic interventions"[4]. The objective is to organise a transformation of economic and social systems by enabling actors to take account of ecosystemic opportunities and constraints.

The 'solutions'-oriented approach to these transformations help to focus on benefits. Some benefits are immediate and easily observable, e.g. when it comes to improved living environments, better health, access to clean air and water, reduced exposure to pests and an increase in the amount of natural resources available for use. Other benefits can be more long-term and intangible, e.g. enhanced genetic variability and resilience. Therefore, justifying the efforts needed for a system-wide reorganisation across technological, economic, and social factors requires political and societal awareness as well as leadership.

LRAs can be key enablers in this process. Regional partnerships can play an important role in knowledge sharing. Local authorities can capitalise on close links to citizens to highlight concrete positive effects of enhanced biodiversity, including effects that may be difficult to measure in terms of 'market value'. Urban green areas play an important role in the education for sustainable development. They help demonstrating that biodiversity-friendly practices can be less costly and contribute to social integration. Local authorities are also at the frontline when it comes to meeting the target of 'Zero Net Land Take, which is an important component of biodiversity strategies.

All in all, LRAs can contribute to biodiversity protection and management using a number of planning, financial and regulatory instruments[5], such as:

- Local biodiversity strategies and action plans
- Local government plans including plans for land-use, housing development, environmental management, infrastructure and economic development
- Zoning and land-use by-laws
- Public consultation

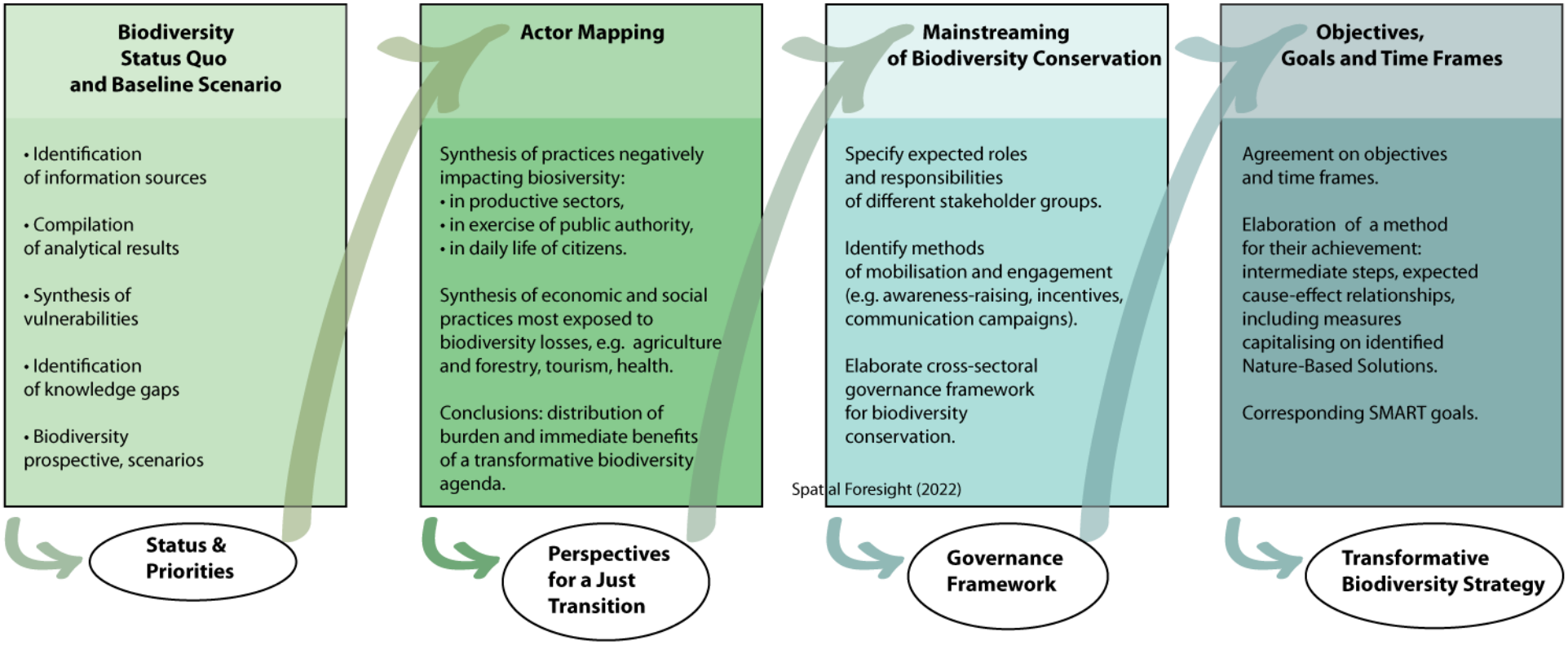
[4] Faivre et al. (2017) Nature-Based Solutions in the EU: Innovating with nature to address social, economic and environmental challenges

[5] IUCN (2010) Local action for biodiversity guidebook: biodiversity management for local governments, retrieved from IUCN website.

- Financial incentive measures including tax incentives, property tax rebates, grants
- Non-financial incentive measures including recognition and local award schemes, training and technical support
- Market-based incentives such as procurement policies, biodiversity offsets and sustainable ecotourism
- Disincentive measures to discourage activities that are harmful to biodiversity such as imposing fines and penalties
- Environmental levies to raise revenue for biodiversity conservation initiatives and land purchase
- Acquisition of conservation worthy land
- Establishment of protected natural spaces
- Conservation covenants or legally binding voluntary agreements that limit types of uses or prevent development on a private property to protect its biodiversity

Figure 7 below illustrates key elements to be taken into consideration for the mainstreaming of biodiversity for LRAs' decision-making. It emphasizes the importance of disposing of a robust evidence base, including good overview of practices and actors with a negative impact on biodiversity, or inversely particularly exposed to effects of biodiversity losses. This is the basis for strategic reflections on how biodiversity preservation can be mainstreamed across all sectors, leading to the setup of a dedicated governance framework. The governance framework in turn makes the elaboration and implementation of a transformative biodiversity preservation strategy possible.

Figure 7 The importance of a robust evidence base and of actor mapping for the importance of a local or regional biodiversity strategy



Key European resources

European Environment Agency
LIFE, Horizon Europe

EU Biodiversity strategy for 2030
ICLEI Europe publications and tools

EU Knowledge Centre for Biodiversity
Funding from Cohesion Policy, InvestEU

Spatial Foresight (2022)

3.4.1 Diagnosis

Biodiversity protection as well as the shift towards a nature-based economy entail a large array of possible actions. This section provides a set of key questions to establish a baseline and gather key information which may help identify the most pressing fields of action. At this stage, identifying and partnering with local and regional nature protection organisation(s) may also be helpful to better understand the status of biodiversity in a given territory.

- Are there biodiversity hotspots in the territory? (e.g. presence of endangered or rare faunal or floral species)

- Is the state of biodiversity (e.g. number of species, vulnerable ecosystems… etc.) being monitored and assessed? Do these efforts cover all types of areas, e.g. protected areas, agricultural areas, forests, public spaces, rivers and water bodies?

- Are monitoring results effectively incorporated in policies? Which mechanisms are foreseen for this purpose?

- Are private and public actors whose activities have an impact on biodiversity made accountable? Have collaborative structures been established to engage them in a solution-oriented transformation process?

- What further data collection or research is needed? What are the gaps and uncertainties?

It is essential to dispose of evidence on the biophysical state of local and regional ecosystems, and on the services the generate in terms of social and economic benefits. The following aspects may be considered:

    - the status of ecosystems, with regular updates on possible evolutions,

    - the value ecosystem services, and the possibility of accounting for economic impacts of observed or potential future biodiversity losses,

    - Risks or vulnerabilities, e.g. in relation to climate change, emissions of pollutants, invasive species, overexploited resources, spatial organisation of settlements, economic activities and infrastructure,

- the proper identification of private and public organisations whose activities have an impact on biodiversity, including illicit activities (e.g. in the processing of waste and emissions),

- science-policy assessments, review frameworks, capacity to trace local and regional impacts of human activities on biodiversity and procedures to support corresponding policy developments and monitoring of policy effects.

This baseline assessment shall lead to the identification of focus area(s) and related policy sectors requiring interventions. It may also help reveal needs for cooperation beyond regional and local borders. This for example concerns river basin management and ecological corridors.

3.4.2 Planning and funding

A systems innovation approach to biodiversity preservation can be elaborated on the basis of the Nature Based Solutions approach. It may require a profound rethinking of ways in which local and regional policies are designed and implemented. It is best done within existing planning frameworks. It is not about creating parallel processes, but rather about mainstreaming biodiversity preservation across all local and regional activities. The following presents a series of preparatory steps for this purpose.

3.4.2.1 Initial Checklist

- Which implementation instruments are needed to support implementation and enforcement: rules, funding, labelling, voluntary schemes, payments for ecosystem services or others?

- Which stakeholders may be negatively affected by biodiversity preservation measures? Are compensatory measures needed?

- Which ones may experience positive effects?

- What are the potential synergies, risks and trade-offs?

- Which groups of stakeholders should in priority be targeted by awareness raising and/or capacity building measures?

- What indicators and metrics should be used to monitor and evaluate implementation?

- Which funding source(s) may be mobilised?

3.4.2.2 Biodiversity financing

Cohesion Funds provide a major part of EU contribution to financing biodiversity supporting measures as part of a sustainable regional development approach which intends to mitigate and reduce biodiversity loss. European Territorial Cooperation programmes are for instance very active in this field, fostering joint actions and pilots at local level to address cross-border issues, knowledge gaps as regards biodiversity and ecosystem services, building capacity, raising public awareness on biodiversity... Section 3.4.5 provides links to the main Cohesion Fund funding and financing opportunities.

Traditional public funding may be complemented by innovative financing methods. Three main approaches may be highlighted:

- Payments for ecosystem services (PES), as illustrated by the Rusenski Lom Nature Park below,

- When ecosystem preservation also generates carbon sequestration, carbon credits may also be a possible source of financing. This is for example the case in for the MoorFutures project in Mecklenburg-Vorpommern subsequently presented.

- Green bonds may be used to collect risk capital from investors that have adopted environmental, social, and governance (ESG) policies.

Tourism investment and Payments for Environmental Services

Rusenski Lom Nature Park ecosystem, in Bulgaria, provides several benefits in the area, which annual value was estimated to exceed EUR 2 million. Within this context, Payments for Environmental Services (PES) were introduced in Rusenski Lom in 2009 as a win-win solution to businesses and nature. The instrument contributes to generating income from tourism users of the park, which are invested entirely in enhancing the values of the area. The PES-generated tools include promotion materials, add-up price of 1 % to 5 % over standard price to tourist services, and donations to the funds for nature conservation.

The measures to be implemented, through the funds, include development and maintenance of low-impact biodiversity trails, restoration and management of the habitats and protection of key animal species and local cultural values. In this way, the landscape features and the biodiversity of the area are protected, also ensuring the livelihood of local tourism businesses, who supply their products in tourism places, as well as local people employed to provide different services to tourists. Monitoring is carried out by a Steering Committee which is composed by the directorate the park, the regional government, 2 representatives the business and NGO sector, and one representative of local governments. The SC is responsible for the control and monitoring of implementation of the scheme with view to achieving its objectives and to the decision-making process to efficient absorption of the funds.

Sources: FAO, 2013. Case studies on Remuneration of Positive Externalities (RPE)/Payments for Environmental Services (PES), Rome: s.n.
Ilieva, L., Bojovic, D. & Giupponi, C., 2014. Payments for ecosystem services: Existing practices in the Balkan region, Venice: Euro-Mediterranean Centre for Climate Change (CMCC).

Carbon credits, think local! MoorFutures in Mecklenburg Western Pomerania

MoorFutures is a regional standard delivering carbon credits developed by the Ministry of Agriculture of the German federal state of Mecklenburg Western Pomerania and Greifswald University in 2010. It is the first carbon credits scheme issued for peatland rewetting in the world. The overall aim of MoorFutures is to incentivize emission avoidance projects through the rewetting of peatlands across the federal state.

MoorFutures has been developed for the voluntary carbon market. Anyone can use them to improve their own carbon footprint. Voluntary carbon markets allow carbon emitters to offset their unavoidable emissions by purchasing carbon credits emitted by projects targeted at removing or reducing GHG from the atmosphere. As a customer of MoorFutures, companies can pay to keep carbon dioxide from the atmosphere and, with this money, peatland rewetting programmes can take place. This particular carbon credit is currently being sold on the voluntary carbon market, for anyone who wants to offset their carbon footprint. They are aimed in particular at companies, organizations and private individuals who would like to voluntarily offset at least part of their unavoidable greenhouse gas emissions. For companies, MoorFutures are particularly suitable for achieving strategic company goals with regard to Corporate Social Responsibility (CSR) and thus for enhancing the company's image. The standard is based on the criteria of the VCS and the Kyoto Protocol, but avoids high administrative costs by keeping validation and certification in its own hands.

MoorFutures operates on the local level in order to 1) facilitate proximity between buyers, sellers, project developers and coordinating bodies; 2) exploit regional expertise with respect to quality control; and 3) facilitate regional identification, specialisation and diversification. Since 2010, MoorFutures has been further developed to quantify and integrate additional ecosystem services (including biodiversity) into its carbon credits.

Source: Joosten H., Brust K., Couwenberg J., Gerner A., Holsten B., Permien T., Schäfer A., and Tanneberger F. (2015), MoorFutures - Integration of additional ecosystem services (including biodiversity) into carbon credits – standard, methodology and transferability to other regions, BfN-Skripten 407

3.4.3 Implementation and engagement

For biodiversity preservation and restoration, a first key objective is to engage stakeholders whose activities have a significant impact on ecosystems. In some cases, not-for-profit associations can be established to help these stakeholders comply with regulatory monitoring and reporting obligations in a cost-efficient way. Economies of scales in such monitoring and reporting activities help individual companies and administrations cut costs. Once a group of relevant stakeholders is established, a dialogue can be engaged on possible Nature Based Solutions can be engaged.

Second, actively used and appreciated natural environments are more likely to be preserved on the medium to long term. Measures to promote leisure and tourism activities that are adapted to the vulnerabilities of each area may therefore be promoted, insofar as they constitute a group of 'users' that will defend the continued preservation of ecosystem qualities. Similarly, citizen assemblies and neighbourhood councils can be mobilised on biodiversity issues. As illustrated by the example of the Luxembourgish 'Nature Park Our' below, multi-stakeholder partnerships help to ensure that nature preservation measures are accepted.

Multi-stakeholder partnership to ensure the acceptance and viability of nature preservation

The Luxembourgish 'Nature Park Our' is located in the Ardennes, in the border triangle of Belgium, Germany and Luxembourg. It covers an area of 420 km² and 8 municipalities have joined forces with the aim of balancing nature conservation and the economic development of the region. Within the 'Nature Park Our', Natura 2000 zones are covering 167 km² and are run with the help of 6 management plans containing information about habitats, endangered faunal and floral species and possible threats.

Every management plan is divided into three main different zones: the alluvial zones, the open landscape and the forests. For each zone, several long-term objectives and operational measures have been foreseen. In this complex set-up, good governance is a key to achieving the ambitious goals of the nature park. The park Steering Committee is expected to ensure the acceptance of the measures to be implemented and the smooth collaboration and participation of a heterogeneous group

of local stakeholders. Moreover, the committee needs to work hand-in-hand with other Luxembourgish Steering Committees, the national Ministries involved and cover the Park's cross-border aspects.

Source: Interreg Europe, 2021

Mobilising the widest range of stakeholders is essential, including those who may have a negative impact on biodiversity and may have the greatest potential to foster biodiversity. For example, in cooperation with national/regional rural networks, workshops and information material could be provided to the farming community on, e.g. the importance of preserving landscape features such as walls, hedges, banks, watercourses and trees, the various types of farmland birds, but also on retaining various domesticated forms of life found on farms (plant varieties, breeds of animals. etc). Similarly, informative signs can be placed in key, biodiverse areas sensitising pedestrians, hikers and/or drivers to the existence of rare species and on the importance of not disturbing certain habitats.

All in all, increasing awareness of the role of biodiversity through education and knowledge sharing are indirect but essential enabling conditions for better integration of biodiversity-enhancing solutions in various economic sectors and for more effective use of the available funding for biodiversity.

3.4.4 Monitoring and follow-up

Monitoring of activities with impacts on natural environments (e.g. emissions of pollutants) is generally regulated by national and European legislation. Extensive data are also produced on the evolution of natural and semi-natural environments. It may be purposeful to critically assess the extent to which procedures are in place to process this information and to derive policy implications from them at the levels of individual localities and regions.

The use and analysis of indicators can provide evidence or hints as for the effects of actions addressing the conservation of habitats and species. Evaluation based on suitable indicators is critical as it provides information on how decisions affect ecosystems and their services. Indicators may capture changes in aspects of biodiversity such as the population size of important species or the area of land managed for wildlife. Indicators specific to the urban context can measure points such as the number of native species or the percentage of natural/semi-natural areas.

Indicator-based context evaluation and monitoring projects

The municipal council of Vitoria-Gasteiz (Spain) established a Green Urban Infrastructure Strategy in 2012 to provide a wide range of ecosystem services. The policy is intertwined with the city's biodiversity protection strategy as well as its goal to battle and adapt to climate change. The intention is to set up an interconnected network of green spaces and elements in which each space or element acquires its own functionality as an ecosystem within the whole. Expertise within the municipal staff and from the Centre for Environmental Studies was mobilised to elaborate the strategy.

The analysis of 50 indicators, together with spatial modelling techniques, provided a valuable reflection on the current and future situation (e.g. on biodiversity in the city, ecological and hydrological processes, mobility and services) along the strategy’s objectives. Indicator values were generated for three scenarios: the current status, 2020, and 2050. These indicators helped identify sustainability issues that required the adoption of measures in the city.

The city of Vitoria-Gasteiz has not yet developed direct indicators to measure the results of the city’s green urban

infrastructure strategy. This is mostly because the benefits of the strategy are often difficult to measure and mostly relate to long-term objectives. However, some monitoring projects are under development. Examples of monitoring projects under development include: the creation of a monitoring programme on urban common birds, water-consumption monitoring in green areas, an assessment of urban trees acting as CO2 sinks, cost-benefit studies on greening actions, the creation of an exotic invasive species inventory, and an evaluation of the carbon footprints of green areas. It is expected that the development of these indicators will help promote supportive adaptive management.

Sources: European Environment Agency, 2018. Implementation of the Vitoria-Gasteiz Green Urban Infrastructure Strategy, Copenhagen: s.n.
Environmental Studies Centre, 2014. The Urban Green Infrastructure of Vitoria-Gasteiz, s.l.: Vitoria-Gasteiz City Council.

Citizens may also be actively involved in the monitoring of biodiversity. Experience shows that volunteer citizen scientist can compile reliable data if proper training is provided, and if challenges and possible biases are identified. Assessments on the interests and motivations of the public to take part in monitoring activities help to ensure continuity in citizen scientist engagement.

3.4.5 Sources and links

Legal Frameworks and policy developments:

EU pollinators initiative: revision to enable tools and measures to address the main factors behind the decline of insect pollinators

Industrial pollution – European Pollutant Release and Transfer Register

Platforms and initiatives:

The EU Urban Greening Platform is a capacity development tool for LRAs.

The Green City Accord is a movement of European mayors committed to making cities cleaner and healthier (open to any cities of 20,000 inhabitants and above).

CitiesWithNature and RegionsWithNature are platforms to engage and commit LRAs (also beyond the EU) to showcase their efforts and recognise the value of nature in cities and regions.

The Knowledge Centre for Biodiversity enhances the knowledge base, facilitates its sharing and fosters cross-sectorial policy dialogue for EU policy making in biodiversity and related fields.

Main sources of funding:

The Life programme's Nature and Biodiversity sub-programme funds nature conservation projects

Grant Scheme for Biodiversity in the Outermost Regions and the Overseas Countries and Territories (LIFE-2021-BEST)

Rural development funding and financing: the European Agricultural Fund for Rural Development (EAFRD)

The European Maritime, Fisheries and Aquaculture Fund (EMFAF) facilitates the protection of marine biodiversity and ecosystems

The European Territorial Cooperation (Interreg) Programmes contribute to a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe

The EIB's Sustainable Ocean Programme aims at tackling ocean pollution and protect marine ecosystems

Guidance:

Policy brief on the development of green infrastructure in EU regions

Policy brief for LRAs on EU initiatives to improve the management of biodiversity restoration and protection, ecosystem services and natural areas

Investing in Nature: Financing conservation and nature-based solutions: a practical guide for Europe

3.5 Sustainable consumption and production and circular economy

3.5.1 Introduction

The EU transition towards a circular economy is one of cornerstone elements of Europe's agenda for sustainable growth, namely the European Green Deal. While the European Green Deal's focus areas do not explicitly address sustainable production, consumption and the establishment of a circular economy, these issues are transversally integrated across several actions (e.g. agriculture, climate and industry). A circular economy is defined as "a model of production and consumption, which involves sharing, leasing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended."[6]. By fostering such transitions, the EU intends to reduce the pressure on natural resources and create sustainable jobs. Likewise, the establishment of a circular economy is considered to be a critical point to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss.

To foster this more sustainable model, the EU has introduced a large array of policies and initiatives aiming improving the overall environmental performance of products throughout their life cycle, stimulate demand for better products and production technologies, and help consumers make informed choices. Local and regional authorities play an essential role, identifying how these EU strategies can be implemented in each territory. Given the cross-sectoral nature of the legislative as well as non-legislative initiatives required to promote sustainable production, consumption as well as the establishment of a circular economies, LRAs are considered as enablers for enhancing the engagement of stakeholders and setting up flagship projects.

In line with the European Green Deal, the European Commission adopted a new Circular Economy Action Plan in March 2020. This action plan is a sustainable product policy legislative initiative to make products fit for a climate-neutral, resource-efficient and circular economy. It also introduces a series of actions addressing how products are designed, how circular economy processes can be promoted, sustainable consumptions encouraged, waste prevented and resources preserved. Seven areas essential to achieving a circular economy are highlighted: plastics; textiles; e-waste; food, water and nutrients; packaging; batteries and vehicles; buildings and construction. While the powers and competences of LRAs

[6] European Parliament (2022) Circular economy: definition, importance and benefit, retrieved from website.

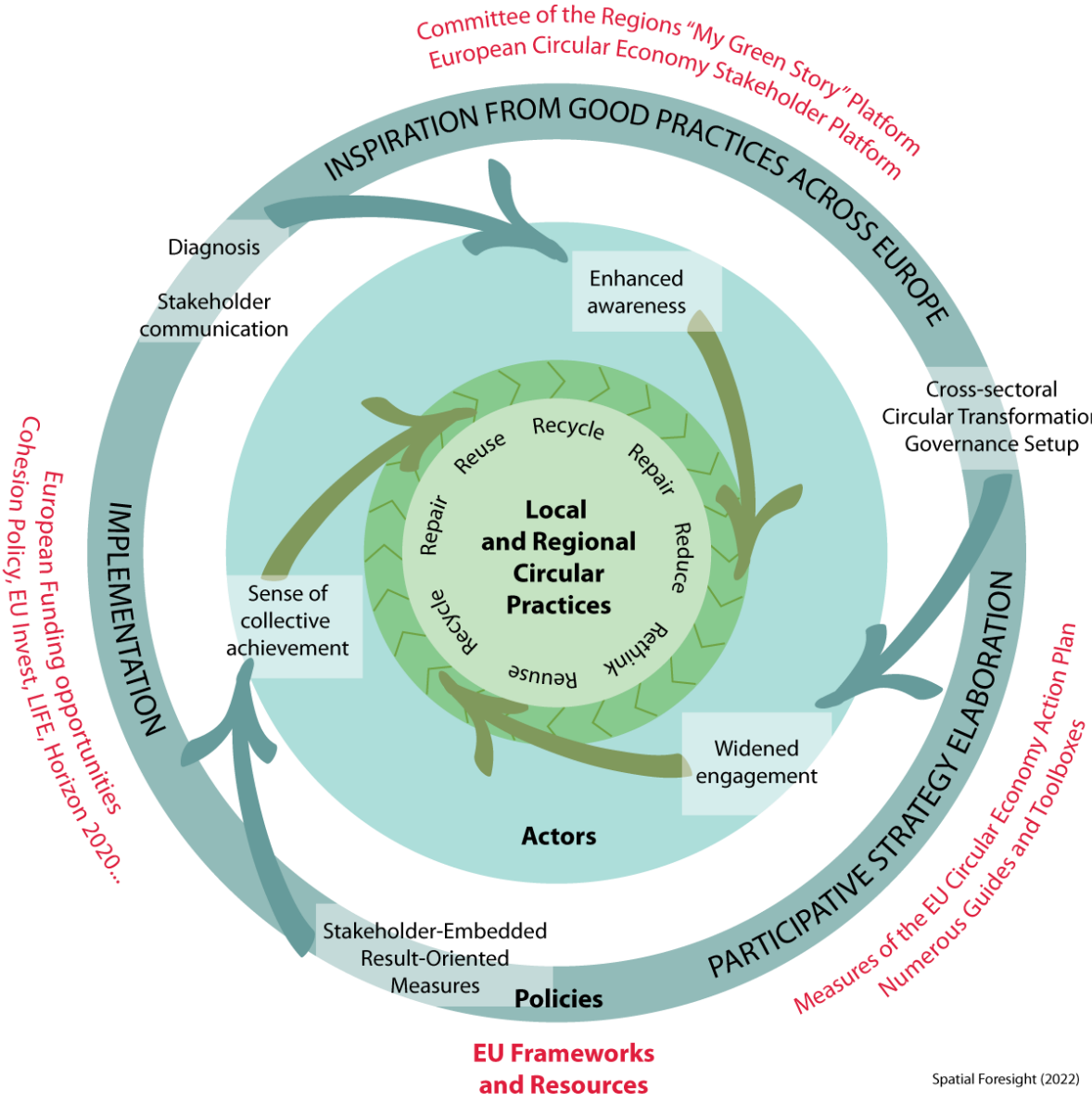
vary across EU Member States, LRAs can take action in several of these key policy areas.

LRAs may promote sustainable production, consumption and a circular economy in different ways. For example, LRAs can raise awareness and empower local populations, provide advisory support to targeted stakeholders, foster the exchange of knowledge between practitioners, provide direct financial support, implement fiscal measures, practice green public procurement to direct public purchases towards more environmentally-friendly products and services, encouraging waste reduction and recycling (e.g. domestic waste as well as in the construction sector), urban planning (e.g. to improve mobility), encourage networking and the creation of clusters, and of course, set up roadmaps, actions plans anchoring the LRA's visions and commitments.

This section provides further details and illustrations on the role(s) of LRAs in promoting sustainable production, consumption and a circular economy. To enable and/or accelerate the circular economy as well as sustainable consumption and production, there are no pre-defined recipes. However, several steps, actions, cross-cutting themes (not necessarily to be regarded in a sequence) can be considered to establish the right preconditions for a transition towards sustainable consumption and a more circular economy.

Figure 8 below presents an overview of these key steps and actions. Diagnosis and stakeholder communication (top left corner part of the figure) can be a natural starting point. These efforts target current circular economy and responsible consumption practices in each region or locality. Reflections leading to a more systematic approach, making it possible to establish a cross-sectoral circular transformation governance setup, can be enriched by capitalising on good practices from across Europe, e.g. those compiled by the Committee of the Regions "My Green Story" Platform and from the European Circular Economy Stakeholder Platform. The Governance Framework in turn makes it possible initiative the participative elaboration of an integrated strategy for the promotion of circular economy and responsible consumption. The objective is adopt a stakeholder-embedded strategy with result-oriented measures making the achievement of objectives within agreed deadlines possible. Extensive European resources can be mobilised for the implementation of such a strategy. This is a learning process, which needs to monitored. Monitoring outputs and lessons learnt inform new rounds of diagnosis and stakeholder mobilisation.

Figure 8 Circular economy strategy development as an iterative process



3.5.2 Diagnosis

A primary analysis of the resources and capabilities can reveal possible hindering as well as enabling factors unique to the territory. Such analysis can be articulated around the following indicative set of questions:

- Which amount of waste is produced in the territory and what type of waste is collected?
- How is the waste (organic, domestic and industrial) management handled?
- Is waste being segregated and recycled? Are there waste prevention initiatives in place?
- What issues is terms of waste management and pollution can you identify?
- What are the territories' resources, the main goods produced and imported?

Such an assessment can provide LRAs with an overview of the feasibility of implementing circular initiatives in specific focus areas or sectors. The role of LRAs in setting up such baseline assessment is pivotal as it allows for the identification of issues, sectoral synergies and opportunities for fostering sustainable production, consumption and a circular economy, in particular areas in which LRAs could pave the way forward.

This baseline assessment can help identify appropriate geographic scales and territorial units for the promotion of responsible consumption and circular economy. This may imply targeting value chains that extend far beyond individual localities and regions, as exemplified by the example of Luxembourg below.

The OECD's 3Ps approach to circular economy in Umeå, Sweden

The 3Ps (people, policies and places) framework that was developed by the OECD provides a conceptual framework for developing circular economy strategies in cities and regions. The approach aims at identify 'people' at the centre of the new local business and governance models within a circular economy. People should include the business (determining the shift towards new business models), knowledge institutions (contributing to boosting innovation and research), not-for-

profit organisations (at the core of bottom-up initiatives in a wide range of sectors) and citizens (who make constant consumption choices and can influence production). Identifying policies means to select those sectors holding potential for the circular economy. Finally, identifying places means to looking at the "functions" beyond the administrative boundaries of cities. Cities and regions are not isolated ecosystems but spaces for inflows and outflows of materials, resources and products, in connection with surrounding areas and beyond. Therefore, linkages across urban and rural areas (e.g. related to agriculture and forestry) are key to promote local production and recycling of organic residuals to be used in proximity of where they are produced and avoid negative externalities due to transport.

Such an approach was implemented by the city of Umeå in its circular economy strategic plan for 2016-2028. In its diagnosis phase, the Strategic Plan was informed by a circular economy survey carried out in the Västerbotten County in 2015 and a feasibility study on the circular economy, carried out in 2016. The Survey on the circular economy was shared across 15 municipalities, as well as advisors, business developers and CEOs of 23 companies. It aimed at checking respondents' interest to increase their knowledge on the circular economy and to be involved in pilot projects on circular economy. On the basis of these results, the Business Department of the Umeå Municipality committed a feasibility study on the circular economy in 2016. This investigated the possible content and sources of finance for a pilot project to be carried out in Umeå. One of the main results of the study was the commitment to build knowledge, capacities and new business models related to the circular economy in the upcoming years.

Sources: OECD (2020), The Circular Economy in Umeå, Sweden and OECD (2020), The 3Ps framework: People, polices and places in The Circular Economy in Cities and Regions : Synthesis Report

3.5.3 Planning and funding

Based on the fragilities, assets and opportunities identified, several actions may be undertaken by LRAs to either prepare for, kick-start or scale up circular economy initiatives and/or sustainable production and consumption actions. This sections accordingly presents pivotal starting points which may help LRAs in setting up and/or fostering a vision and approach for a circular economy, and sustainable production and consumption.

3.5.3.1 Initial checklist

The following questions may help narrow down the scope and possible range of actions LRAs can undertake:

- To which extent and how can local and/or regional authorities address these issues identified in the diagnosis phase?
- Are there specific fields of actions which can be prioritised?
- What is the potential for circular economy activities (e.g. use more recycled or sustainably-sourced material, generate less waste, lower energy consumption in production processes), and in which sector(s)? In the light of the territory's strengths, how can LRAs address the challenges and needs initially identified applying circular economy principles?
- Are there any existing initiatives based on circular economy principles in these fields of action?
- Which funding and financing opportunities may be available to support and foster circular economy in the targeted fields? (Further information on possible sources of funding is provided in section xx)
- Which key actors can be mobilised? Locally as well as beyond the territory
- What are the existing formal and informal interactions, cooperation frameworks between local actors/regional actors?

3.5.3.2 Steering mechanisms

Engaging in such endeavour requires resources, in particular for the coordination and collaboration of a large array of stakeholders (public actors themselves as well as private actors and the civil society). LRAs may act as key steering actors for this purpose. The nomination of a main coordinator, within the public administration, can help to ensure the smooth and continuous design, implementation and monitoring of the LRA's initiatives for a circular economy and sustainable production and consumption. This person may notably act as a main contact point for interested stakeholders, ensure the interdepartmental coordination with the different departments of a public administration, lead the drafting of a circular economy strategy or action plan, and integrate circular economy principles in the functioning of the administration itself (e.g. circular economy budgeting approaches[7]).

3.5.3.3 Awareness raising and communication

Circular economy and the idea of producing and consuming in a more sustainable way are not new concepts. However, due to their wide-encompassing nature, clarifying what this means to various sectors is essential. Sharing the benefits of a circular economy more widely shared among different sectors, including tailored information to help people understand the concept and its potential applications is necessary. Likewise, disseminating examples of circular economy projects can further illustrate what has been successfully implemented elsewhere in related fields. Looking further for best practices may help, and so does learning from examples and projects that did not work so well. At this stage, the role of LRAs is to widely share information (e.g. information material in schools, in public buildings, public websites or via newsletter) on what a circular economy as well as sustainable production and consumption are, from a conceptual and practical standpoint. Awareness raising on the potential and concrete application of circular economy and is key to refine the considered priority focus areas based on the needs, strengths and opportunities of a territory identified in the diagnosis phase.

[7] Circular economy budgeting, similarly than for gender budgeting, is a strategy to initiate and foster circular economy by focusing on public resources are collected and spent.

3.5.4 Implementation and Engagement

3.5.4.1 Stakeholders' mobilisation

In parallel with the identification of priority focus areas or fields of actions (based on the diagnosis undertaken), engaging with and consulting stakeholders across supply chains and sectors allows for the creation of an ecosystem conducive to circular economy. Stakeholder engagement is a cross-cutting aspect and should be a constant variable rather than a one-time event.

Identifying local champions, i.e. ambassadors to promote circular economy as well as allies within the public and private sectors (enterprises as well as business intermediaries) can help capitalise on existing structures and mechanisms. Along those lines, Table 2 below provides an indicative list of stakeholders which LRAs can mobilise.

The mobilisation of stakeholders needs to be aligned with a targeted communication on benefits of circular economy so as to include a wide array of actors. Anchoring the regional/local vision for a circular economy in an action plan or strategy may reinforce the understanding and commitment of stakeholders and attract interest from other parties.

The approach to reach out and mobilise stakeholders may take different forms. For instance, a platform of networking and animation between actors to share information and maintain a dynamic dialogue can be established.

Table 2 Indicative list of relevant stakeholders

Stakeholders	**Role in supporting LRAs for the transition towards a circular economy/sustainable production & consumption patterns**
Local ambassadors	Support LRAs in provide concrete examples
Other public sectors partners	Improve the legal framework, especially if the LRA does not have the power/competency or resources to act in a certain field. Improve inter-departmental communication (e.g. environment and economic administrations)
Sectoral representatives	Support the LRAs in implementing any strategies and action plans
Entrepreneurs	May have the flexibility to take up the LRA's approach and come up with sustainable business models
Business support structures	Contribute to further disseminate information on the LRAs' approach, on possible funding opportunities and provide relevant training

Research and academia	Provide a technical and research-based support to LRAs, e.g. SWOT of the territory, feasibility studies...etc.
Investors	Private financing institutions as well as other information funding platforms may help complement the financial support provided by LRAs
NGOs /civil and environmental organisations	Contribute to further disseminate information on the LRAs' approach and on possible funding opportunities

The mobilisation of stakeholders needs to be aligned with a targeted communication on benefits of circular economy so as to include a wide array of actors. Anchoring the regional/local vision for a circular economy in an action plan or strategy may reinforce the understanding and commitment of stakeholders and attract interest from other parties.

LRAs may reach out and mobilise stakeholders in different ways. For instance, a platform of networking and animation between actors to share information and maintain a dynamic dialogue can be established.

LRAs can play a major role in mainstreaming circular practices among public and private actors, as illustrated by the Circular Flanders approach described below.

A systematic approach to circular economy in Flanders

The Government of Flanders has set the circular economy as one of the seven transition priorities and appointed the OVAM (the Public Waste Agency of Flanders) as the initiator of this process; within this context, Circular Flanders was launched in 2017 to ensure Flanders transition to the circular economy by 2050. Specifically, it is a partnership involving government, local authorities, companies, civil society and researchers. The Circular Flanders partnership acts as a hub for development of the circular economy in the Flemish region. The Belgian region of Flanders is a pioneer in management of resources for better recycling and reuse. Today, about 70 % of Flemish waste is collected for reuse, recycling or composting, and a further 27 % is sent to energy-producing incinerators. Flanders has one of the world's leading recycling companies and supports a range of initiatives to look at closing material loops and promoting the circular economy.

Circular Flanders works in three areas: circular purchasing, the circular city and circular business. In each area, Circular Flanders has six activities: networking; knowledge sharing (including policy-relevant research on the circular economy and materials management); stimulation and acceleration of circular economy innovation and entrepreneurship; a laboratory function to support new ideas; provision of policy guidance and support and coordination between public authorities; and anchoring, or working to ensure circular economy principles and good practices become embedded and are scaled-up. In practice, this means a number of concrete initiatives: providing a circular economy helpdesk for public authorities and companies; providing grants to circular economy projects carried out by government, business and civil society (so far, 135 projects have been co-financed with a budget of EUR 11 million); circular economy workshops for citizens and circular economy boot camps for young people; and the organisation of green deals, or voluntary partnerships that bring together large numbers of participants.

Over two years, more than 150 organisations committed themselves to jointly purchase according to circular models. Circular procurement is an extension of sustainable procurement. It seeks to actively contribute to closed energy and material loops throughout supply chains, whilst minimising, and in the best case avoiding, negative environmental impacts and waste creation across the whole life-cycle. Circular procurement responds to the changing functional needs of users within an organisation. It stimulates maximum cooperation and co-creation with all those involved who are able to help close the loop. Through the Green Deal Circular Procurement (GDCA), more than 150 organizations committed themselves to jointly apply or facilitate this method of purchasing. About four times a year Circular Flanders brings the purchasers and facilitators together to learn from Flemish and foreign cases and to work together on concrete issues. At the same time, they also test tools and measure projects' outputs.

Sources: based on Circular Flanders retrospective report and Case Study Report on Circular Economy Flanders for the European Commission, DG RTD

3.5.4.2 Public procurement and market development

LRAs can initiate and scale up circular economy initiatives through public procurement. LRAs as well as public sector organisations providing goods and services can develop new and innovative circular economy business models and approaches to support the sustainable production and consumption of goods. The example of the Danish public procurement body SKI below illustrates some advantages of coordinated approaches to LRA public procurement.

Multilevel coordination as a lever of public procurement greening: example of furniture purchases

Danish authorities have a long tradition of pooling public purchases of all public authorities, dating back to the 1800s. In 1994, the State and Association of Municipalities set up an integrated public procurement body for national and municipal authorities. It is called SKI and has the status of limited company. 3 % of total public procurement in Denmark (EUR 49 billion) is carried out within the framework of agreements set up by SKI. By pooling their purchasing power under such "SKI agreements", public sector customers avoid investing resources in the long and often complicated process of designing and implementing a tender. This proved an effective approach also when it comes to greening public procurement.

A concrete example is the SKI procurement agreement for the purchase of furniture, which was concluded in January 2021. The furniture agreement has a separate "Environmental Furniture" range, which consists exclusively of eco-labelled products. A group of professionals, including furniture buyers and an ergonomic consultant, have evaluated the quality of a selection of the furniture when awarding the contract. In addition to the environmental range available under the agreement, it is also possible to buy second-hand furniture.
The furniture contract has made it possible to obtain a five-year guarantee on all new furniture, the possibility of buying furniture maintenance allowing it to last longer, to buy spare pieces such as loose tabletops and access to advice on sustainable disposal of furniture if needed. This is an illustration of how multilevel coordination can be a lever of public procurement greening.

Source: SKI website

3.5.5 Monitoring and follow up

Measuring the performance of a territory in the shift towards a circular economy provides an opportunity for LRAs to self-assess their achievements and to adapt their development trajectory towards circularity accordingly.

The monitoring and evaluation (M&E) of roadmaps, action plans or strategy requires an analysis of the progresses made towards the implementation of the LRA's visions and approaches. The M&E plan is to be set up in the design phase of the document. LRAs can enshrine their commitments by including indicators to monitor their efforts and initiatives (e.g. share of public contracts dedicated to circular solutions). Moreover, LRAs can play a key role collecting the data necessary to conduct the M&E. The following steps outline the development and execution of a monitoring and evaluation framework:

1- Designing the monitoring and evaluation system

2- Monitoring the execution of the projects

3- Evaluation

3.5.6 Sources and links

Definition of circular economy

- European Parliament (2021) Circular economy: definition, importance and benefits
- European Commission: what does a circular economy mean?

Legal Frameworks and policy developments:

- The European Circular Economy Stakeholder Platform for stakeholders to exchange information
- New Circular Economy action plan
- Sustainable consumption of goods – promoting repair and reuse
- Consumer policy – strengthening the role of consumers in the green transition
- National circular economy strategies

Main sources of funding

- Financing the circular economy
- European circular economy fund
- Horizon Europe
- Life programme
- Cohesion funds

Guidance:

- Public procurement for a circular economy
- The circular economy and the Covid-19 recovery

Projects/research:

- ESPON CIRCTER project
- The Local and Regional Dimension in the New Circular Economy Action Plan

3.6 Clean Energy

3.6.1 Introduction

A shift to cleaner energy generation, consumption, and transmission via the use of renewable sources and smart grids can improve regional resilience by decoupling economic and social activities from imported fossil fuels. Furthermore, reducing greenhouse gas emissions is an essential step in achieving EU climate targets. A core element of this transition is a shift to more sustainable energy consumption practices. This entails the modernisation of infrastructure and products to increase energy efficiency, but also changes in behaviour and processes to reduce their energy intensity.

The Clean Energy Transition is a core element of the European Green Deal. Across the regions of the EU-27, approximately 75 % of greenhouse gas emissions are generated from energy production and use. The Green Deal focusses on ensuring energy security and affordability, the development of an integrated and modernised energy market, and improving energy efficiency (such as in the building stock, see section 3.1) and developing renewable energy capacities. These activities support the overall transition to a greener economy and improve energy autonomy. The following is a list of on-going initiatives in the context of clean energy:

- The National Energy and Climate Plans outline how the Member States intend to achieve their clean energy transition targets over the 2021-2030 period. The plans outline specific actions and regulatory changes which may affect regional energy production systems.
- The Long-term Renovation Strategies outline the Member State goals in transforming and decarbonising their building stock by 2050 (see renovation factsheet and the Renovation Wave).
- The EU Energy Systems Integration Strategy seeks to modernise the EU's energy system by improving integration between users and producers.
- The EU Hydrogen Strategy provides a framework for the generation of renewable hydrogen within the EU energy systems. Due to the high storage capacities of hydrogen, the Hydrogen Strategy is interlinked with the Energy Systems Integration Strategy.
- The EU Offshore Renewable Energy Strategy addresses issues such as access to sea-space, industrial and employment dimensions, cooperation, and technology transfer within the context to boost the deployment of offshore renewables.
- the EU Methane Strategy outlines steps to reduce the emission of methane, a powerful greenhouse gas, via improved measurement and reporting

standards, as well as leak detection and bans on methane venting and flaring.
- The revisions of the Trans-European Networks for Energy defines nine energy corridors (electricity, gas, and oil infrastructure) and three thematic areas for action (smart grids, electricity highways, and cross-border carbon dioxide networks)

Local and regional authorities can pursue different energy-related objectives as part of their implementation the EGD. These include, e.g.:

- Generating municipal income, e.g., through taxes on renewable energy installation such as wind turbines,
- Generating new employment opportunities, in services like installation, operation, and maintenance of renewable capacities, as well as project management, but also in other parts of the value chain (e.g. research and development, construction of equipment)
- Reduce dependence on imported fossil energy and local emissions of greenhouse gases,
- Reaching energy self-sufficiency, which can be particularly relevant in island territories that are not connected to electricity distribution grids,
- Strengthening energy security, i.e. stability of energy supply and of energy costs,
- Improving added value of local production, e.g. by producing biogas from manure, or by combining photovoltaic panels and agricultural production
- Processing waste, i.e. conversion of non-recyclable waste materials into usable heat, electricity, or fuel through a variety of processes
- Addressing energy poverty, e.g. by supporting the establishment of renewable energy communities.

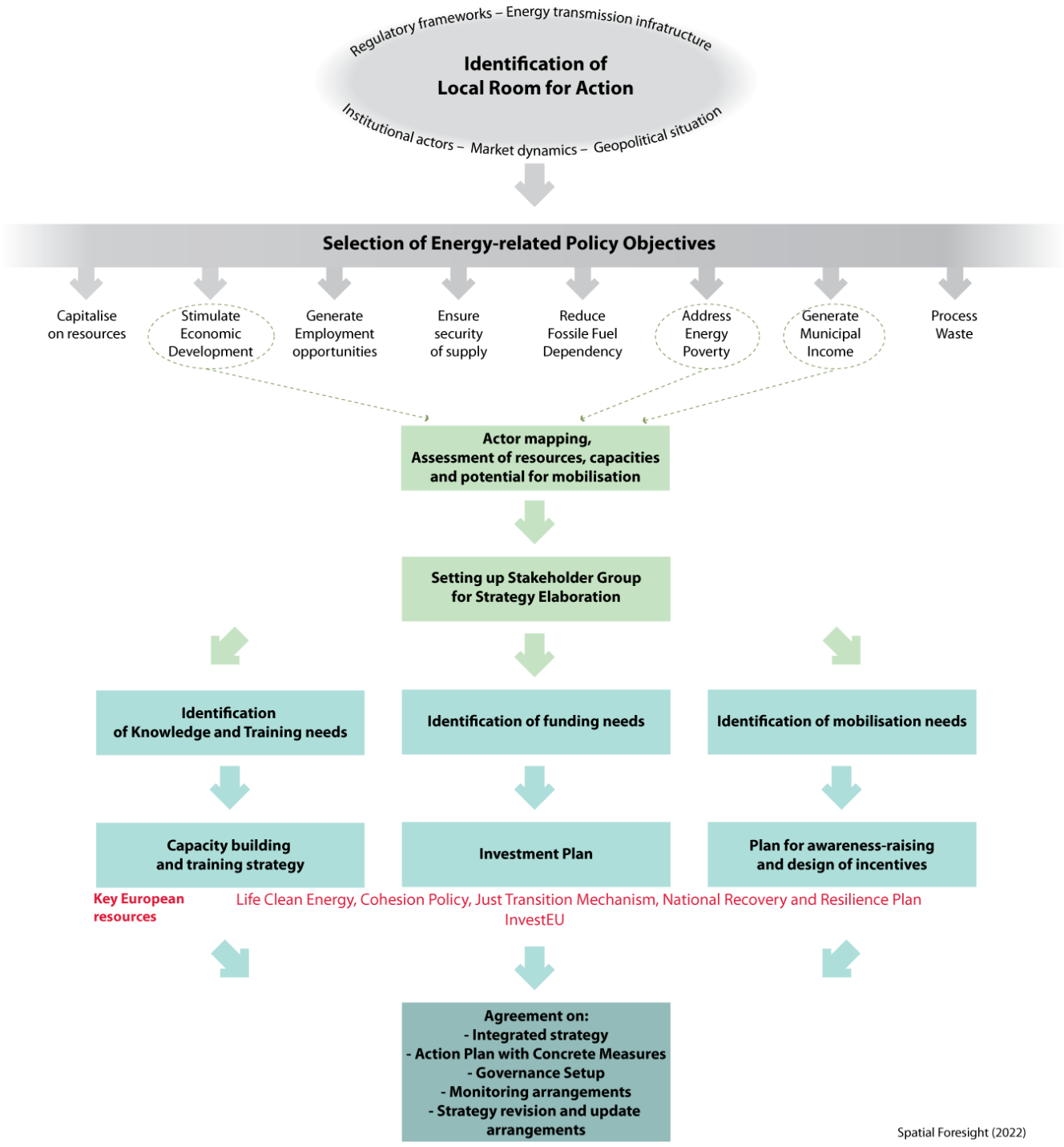
When pursuing such objectives, local and regional authorities operate within the frameworks of European and national regulations, the territorial organisation of electricity markets and capacities of energy-related infrastructure. Local and regional actions are constrained in some respects. Strategic reflections may therefore first focus on carefully identifying local and regional added value in broader energy transition processes. These reflections may incorporate recent developments in the fields of decentralised ownership, generation, storage and distribution of energy.

This thematic fiche introduced some steps that may help authorities to develop an "EGD approach" to clean energy transition activities irrespective of local,

regional and national specificities. This framework is anchored in the system-innovation approach to renovation, emphasising multi-stakeholder involvement to address social, environmental, and economic needs tied to the European energy sector.

An essential first step in the implementation process is the identification of the local room for action, which inter alia depends on regulatory frameworks, existing energy transmission infrastructure, policies of institutional actors such as infrastructure owners and energy producers, market dynamics and the geopolitical situation (as exemplified by the Russian invasion of Ukraine) (see Figure 9 below). Second, the range of possible energy-related policy objectives at the local scale is particularly broad. Strategy elaboration and implementation options will depend on the selection of objectives. This for example determines the actor mapping processes that will be useful, and the composition of the stakeholder group to be mobilised for the strategy elaboration process. In all cases, it will be relevant to consider relevant training and capacity building needs, and to identify which groups of actors should be mobilised for a successful strategy implementation. This in turn may require the design of corresponding incentives. Finally, the investment plan plays a central role. Numerous European funding instruments may be used.

Figure 9 Multiple possible objectives for local and regional energy transition strategies



3.6.2 Diagnosis

Investments into energy generation, storage, transmission, and use systems can be significant in terms of financial, human, technical, and administrative efforts needed to successfully implement these projects. These investments may have a long time horizon, taking significant time to plan and implement, and to recoup initial costs. In this context, local and regional authorities may be affected by specific aspects:

- Due to complexities tied to the modernisation of energy systems, LRAs may be constrained in terms of capacities to set up and implement energy transition plans.
- Holistic energy planning can be an important aspect when delivering the regional energy transition. Successful transitioning to clean energy use and production requires sectoral integration comprehensively covering up and downstream sectors (energy producers, building stock, land-use, waste management, transport etc).
- Policy consistency with other energy and climate transition frameworks (such as renovation or sustainable mobility plans) is necessary to avoid duplication and inefficiencies in the transition.
- Due to the long-term nature of the clean energy transition, a strong and lasting political commitment of the transition plans and the subsequent implementation by public authorities is important. Robust governance systems, strategy embedding, sufficient competences and resources of relevant bodies are important elements in ensuring a successful transition.

As such, an important first step may be to identify the local room of action. This can be done by taking stock of energy production and transmission infrastructure within the region, as well as of energy use systems (such as in the building stock or in terms of energy systems of economic sectors). This step may be used to identify system modernisation needs and select overarching energy-related priorities.

Due to the complexity of these projects, it can be beneficial to take stock of the capabilities of involved stakeholders in terms of project implementation to identify institutional and organisational limitations and potential conflicts. The inclusion of diverse stakeholder groups (particularly also the end-users of the energy systems) into the planning of energy system investments can improve the systems' resilience and improve *ownership* of the project among affected groups.

3.6.3 Planning and funding

3.6.3.1 Initial checklist

An overall checklist may help steer the implementation process of clean energy systems:

- What is the current energy consumption mix in the region or area? What are potential renewable sources of energy which the region can capitalise on (such as biomass from waste, district heating solutions from waste heat, potential wind, water, and solar energy sources)?
- What are the characteristics of the region's electricity transmission network? What can be done to accommodate increasing shares of renewable energy (e.g. to avoid grid congestion and to accommodate fluctuations in electricity generation, and improve storage capacities)?
- In what ways is energy consumed in the region or area? What can be done to increase energy use efficiency (e.g. in the building stock, in companies, in transport etc.)?
- What other strategies and plans (such as renovation plans) offer relevant support? What can be done to embed this energy transition strategy into the wider framework?
- What are the land-use and zoning implications of increasing renewable energy production and consumption?
- Who are the most relevant actors? Are they involved in the planning process? Do they have sufficient capacities to support the clean energy transition?

3.6.3.2 Planning and funding clean energy projects

The first step may be to set up a stakeholder group for strategy elaboration, involving key stakeholder representatives. Throughout the process, this *inter alia* makes it possible to identify needs for knowledge and training, funding and awareness-raising.

Most local and regional authorities will likely already have taken stock of relevant regulatory frameworks at national and EU level, as outlined in the introduction of this fiche. The proposed strategies and regulatory packages of the clean energy transition are highly interlinked and may impact many other (national and European) policies outside of the direct production and consumption of energy (such as renovation policies). As such, it can be beneficial to embed clean energy transition efforts into other strategies to avoid duplication and provide a holistic multi-stakeholder approach to clean energy.

The introduction of decentralised approaches can be beneficial to foster improved energy sustainability at relatively low degree of technical complexity and economic cost. This may include implementing projects to promote self-sufficiency in private households and small enterprises (e.g. photovoltaic installations, heat pumps, small wind turbines, etc). District heating and cooling solutions can be relatively sustainable approaches to recycle excess heat or waste and can be a feasible solution in more populated areas. Reducing energy consumption by improving the efficiency of the building stock or capital goods in enterprises can be another low-barrier manner in improving the sustainability of the region.

Financing energy transition projects remains a major action field across regions in the EU. Energy projects tend to be technically complex and expensive, increasing uptake barriers. European Union institutions provide a range of direct and indirect funding solutions to LRAs. An overview of potential funding sources is provided in section 3.6.6.

When setting up financing for clean energy projects, an essential element to consider is the aspect of state aid. The supported project may confer an unfair economic advantage to one beneficiary over another or distort competition. An example on how this was addressed in the case of a renewable energy project is presented below.

Funding arrangements for small-scale renewable energy production that are compliant with state aid rules

The Wielkopolska Regional Operational Programme supports the establishment of "framework projects" to enable the installation of renewable energy production units in private homes.

The region sets up "framework projects" financed by regional ERDF programmes. Each "framework project" finances the investments of between one and three "local units", each of which consists of between 300 and 500 renewable energy production installations in private homes. These local units are set up by a local authority by identifying households interested in replacing equipment in their homes that uses non-renewable energy sources (e.g. boilers, water heaters) with equipment that uses a renewable source (e.g. solar energy).

The installations financed are owned by the local authorities, who are the final beneficiaries of the operation. Each installation provides energy to the household in which it is located. To comply with state aid rules, communities do not sell the surplus production, but give it to local energy distribution networks free of charge. The investments also contribute to

reduce the energy bills of households where energy production units are installed.

Sixteen "framework projects" have been programmed. They benefit from a total ERDF support of more than EUR 21 million. The "framework projects" have promoted the use of renewable energy sources in private homes in an efficient way and with limited administrative management costs. The demand for this type of support exceeds the budget available under the ERDF regional programme.

Source: Regional Operational Programme for Wielkopolskie Voivodeship

3.6.4 Implementation and engagement

After scoping the applicable regulatory framework and assessing potential funding sources, a beneficial step cementing project implementation is the comprehensive involvement of stakeholder groups in a participatory process. Involvement of "on-the-ground" stakeholders (such as residence or environmental groups) in the beginning of the process may increase acceptance of the overall project and reduce the possibilities for stakeholder conflict at later stages in project implementation. This may be undertaken in the context of a systems-innovation approach (see, e.g., systems innovation in the context of renovation activities in section 3.1.4) to minimise conflicts and promote project innovation by stakeholder mediation.

Cross-regional and multi-level cooperation can also be beneficial, especially for more complex energy transition needs (such as improved storage infrastructure). Cooperation, such as in terms of financial "pooling" between municipalities is an avenue to access larger funding programmes and financing schemes. When pooling, multiple municipalities apply for funding together, enabling them to access larger financial pools than they would otherwise be eligible for.

Multi-level cooperation can be particularly effective for smaller municipalities with constrained capacities, as the example of Tilos (Greece) illustrates below.

Decentralised electricity system in remote islands, the case of Tilos

The Greek island of Tilos belongs to the electric system of Kos-Kalymnos that is powered with fuels from a thermal station located in Kos. The unstable connection, with frequent blackouts that caused damage to the island's infrastructure and the tourism industry, led to the TILOS Project in the period 2015-2019. The

idea, which involves a wind turbine, a photovoltaic park, battery storage, and smart meters, is a multi-governance project coordinated by Greek universities, the local municipality (project design and manager), the national distribution authority (support process), NGOs and other supporting partners (network and knowledge dissemination). The 80 % of the project was funded by the EU, under the Horizon 2020 programme.

Today, the microgrid of Tilos is one of the most advanced islands microgrids in Europe with smart aspects and many novel technologies and components. The system now produces about three- quarters of the island's energy in summer and a surplus in the winter months. All these novel elements, following the TILOS project demonstration stage, are gradually evolving in order to support the operation of a mature energy ecosystem, fostering in the course of time the addition of new agents and actors such as the envisaged pool of prosumers, towards the full-scale decarbonisation of the island of Tilos.

Source: European Environment Agency, 2018. Implementation of the Vitoria-Gasteiz Green Urban Infrastructure Strategy, Copenhagen: s.n

3.6.5 Monitoring and follow-up

Obtaining stakeholder agreement on all aspects of the strategy may improve its long-term functioning and success. Functioning multi-level governance arrangements can be an important element in ensuring a successful clean energy transition in the region. Due to the rapidly evolving nature of clean energy (e.g. regulatory changes at national and EU level, technological and technical advancements, changes to the geopolitical context regarding energy supplies etc.) robust vertical and horizontal communication and coordination channels can improve the overall resilience and relevance of the strategy.

It can be beneficial to implement a monitoring strategy at the beginning of the clean transition process. This may improve the overall quality of the strategy implementation and provide stakeholders with relevant information to adapt the strategy, if necessary. It may also be beneficial to include or inform the consulted stakeholders of the status of strategy implementation, as to further improve ownership among those groups.

Monitoring the technical implementation of the clean energy transitioning may also require significant commitment in terms of the LRA's personnel and resources over extended periods of time. Due to the specialised knowledge required in these projects (particularly in terms of technical knowledge on the

infrastructure) it can be beneficial to proactively plan for these sorts of projects and dedicate and/or employ experts within the administration to monitor implementation.

3.6.6 Sources and links

Further reading:

- The Energy Cities handbook "How cities can back renewable energy communities: guidelines for local and regional policy makers"
- Dobravec, V., Matak, N., Sakulin, C., & Krajačić, G. (2021). Multilevel governance energy planning and policy: a view on local energy initiatives. Energy, Sustainability and Society, 11(1), 1-17.
- The European Commission Clean Energy Transition Agenda for islands

Funding sources:
A comprehensive overview is provided on this page. More specifically, funding sources include:

- The National Recovery and Resilience Plans (as implemented by the Member States) particularly under the pillars green transition and digital transformation.
- Cohesion Policy 2021-2027 and in particular the ERDF 2021-2027
- Connecting Europe Facility with funding for energy, transport and digital investments.
- InvestEU provides guidance and funding to energy projects. It structures other financial instruments available to finance projects within one framework. This includes, among others:
    - EIB funding and advisory.
    - The EIB also provides support via the European Fund for Strategic Investments in the areas of the areas of energy efficiency, renewable energy, power grids and interconnectors.
- The Just Transition Mechanism including the Just Transition Fund (as implemented by the Member States), a dedicated InvestEU scheme, and a loan facility from the EIB. This funding aims to support the re-skilling of workers in carbon-intensive sectors, support the transition to cleaner energy sources, and promote economic diversification.
- LIFE Clean Energy Transition supports coordination and assistance actions for policy development, stakeholder engagement, technology roll-out, and

project development, in the framework of energy-efficiency, climate neutrality, and renewable energy.

- LIFE Climate Change Mitigation and Adaptation supports innovate actions to respond to challenges arising from climate change, in the fields of reduction of greenhouse gas emissions, increasing climate change resilience, and improving governance and information availability
- In some Member States the Modernisation Fund provides funding for energy investments in the 2021-2030 period.

4 Closing the Green Deal Gap from Brussels to territories

4.1.1 Objectives of the survey

The Committee of the Regions has organised a survey to get an overview of LRA experiences when it comes to implementing Green Deal-related policies. To objective was to get insights into what LRAs view as priorities, the main challenges there are confronted to and current and foreseen EGD implementation practices.

The survey was launched in March 2022. The 51 responses analysed in this chapter were extracted on 15th May. The survey will be open at least until the end of 2022. The final closure date has still not been set.

4.1.2 Characterisation of respondents

Over one third (35 %) or respondents are elected politicians, and somewhat under one third (29 %) are civil servants (see Figure 10). 6 % are academics, and 10 % present themselves as "citizens". Close to 20 % are other stakeholders such as business owners, entrepreneurs or representatives of an association.

One out of four respondents is a Committee of the Regions members, and an additional 10 % are politicians that are not members.

Half of respondents represent or belong to a city or town, and over one third (35%) represent or belong to a region.

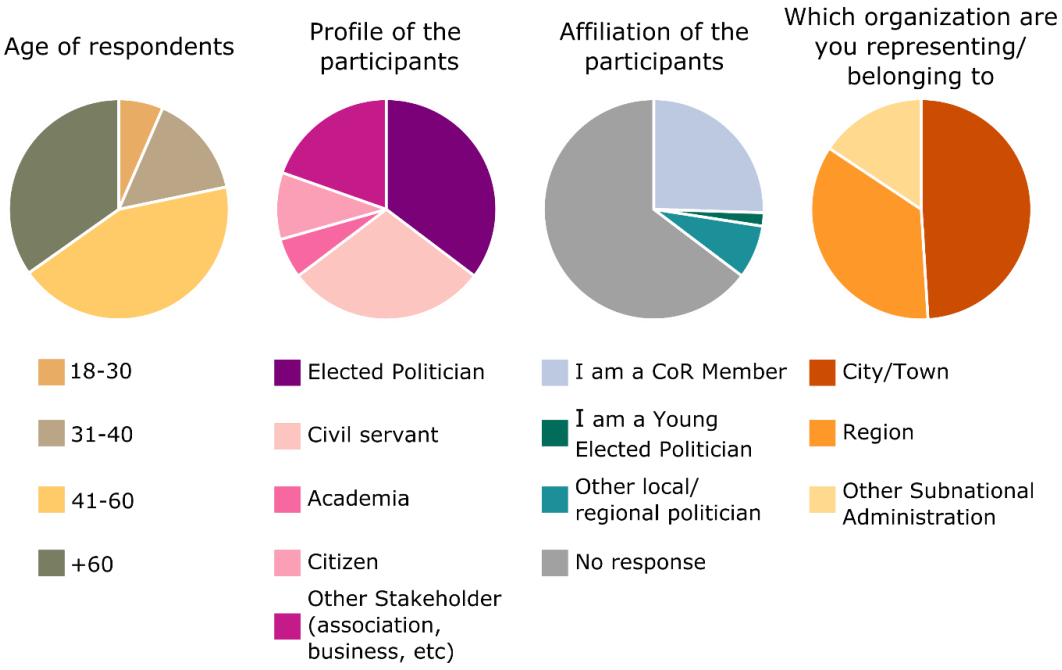
Compared to the EU27 average age profile, the age group 18 to 30 is underrepresented (6.5 % against an expected value of 18 %) and the age group 41 to 60 years old is overrepresented (43 % of respondents against an expected value of 34 %) compared to the weight of these age groups in the EU27 population. Answers are not geographically balanced (see Table 3). There are no responses from eight Member States, including France. Germany and Poland are also strongly under-represented. Spain and Finland are the most over-represented Member States.

Table 3 Over and under-representation of Member States in responses received

Member State	Share of EU27 population (2021)	Share of respondents	Over or under-representation
Belgium	2,6%	4,0%	1,4%
Bulgaria	1,5%	No response	No response
Czechia	2,4%	No response	No response
Denmark	1,3%	2,0%	0,7%
Germany	18,6%	2,0%	-16,6%
Estonia	0,3%	2,0%	1,7%
Ireland	1,1%	No response	No response
Greece	2,4%	6,0%	3,6%
Spain	10,6%	18,0%	7,4%
France	15,1%	No response	No response
Croatia	0,9%	4,0%	3,1%
Italy	13,2%	14,0%	0,8%
Cyprus	0,2%	2,0%	1,8%
Latvia	0,4%	4,0%	3,6%
Lithuania	0,6%	4,0%	3,4%
Luxembourg	0,1%	No response	No response
Hungary	2,2%	No response	No response
Malta	0,1%	No response	No response
Netherlands	3,9%	6,0%	2,1%
Austria	2,0%	4,0%	2,0%
Poland	8,5%	2,0%	-6,5%
Portugal	2,3%	6,0%	3,7%
Romania	4,3%	8,0%	3,7%
Slovenia	0,5%	2,0%	1,5%
Slovakia	1,2%	No response	No response
Finland	1,2%	8,0%	6,8%
Sweden	2,3%	2,0%	-0,3%

Source for population data: Eurostat

Figure 10 Profiles of respondents

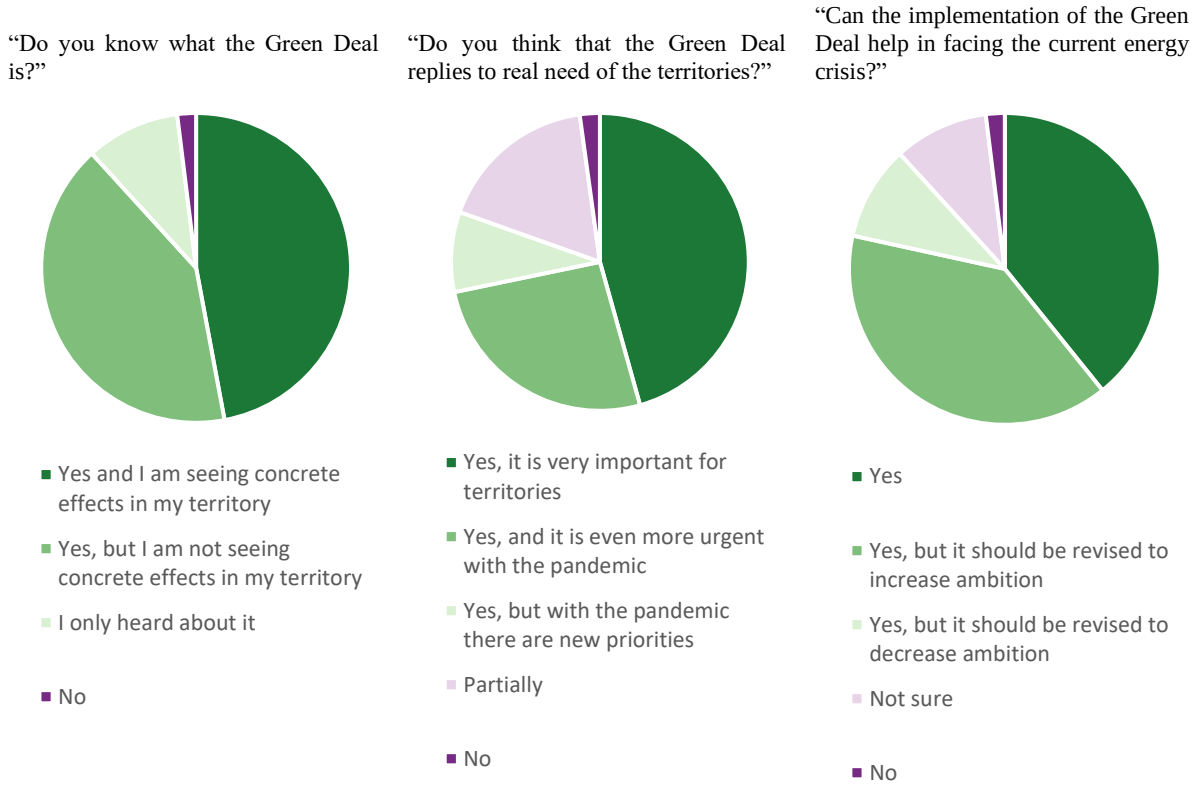


4.1.3 Knowledge about the Green Deal

Approximatively 90 % of respondents know what the Green Deal is, while 9 % have only heard about it. Only one respondent does not know about it. Out of those who know what the Green Deal is, 2 % of respondents do not consider that it replies to the real needs of the territories, 17 % consider that it replies only partially and 9 % consider that it lost priority to other issues related to the pandemic. However, 72 % believe that it is very important or even more urgent after the pandemic.

About 88 % of respondents believe the Green Deal implementation can help face the current energy crisis as it is currently implemented or with revisions. Some respondents consider that framework conditions have changed with the war in Ukraine. The EGD must be adapted to this new context, e.g. by accelerating the shift to electricity from renewable sources as an alternative to gas. Other Respondents also insist on the need to accelerate the pace of transition processes, and to make the EGD more ambitions (for example stating that it is currently "not 1.5 degree compliant". A few respondents consider that EGD implementation is some regions is superficial ("a façade", "only on paper"), suggesting that more should be done to ensure that measures with a real impact are implemented. Respondents from Greece insist on the need to take better account of the social and economic impacts of the EGD. One respondent considers that the EGD puts insufficient pressure on industries to change their practices, and focuses too much on changes affecting the daily lives of EU inhabitants.

Figure 11 Knowledge about the Green deal



4.1.4 Perceived impacts of the energy crisis and mitigation measures

Energy poverty, industrial production, and the primary sector are fields considered most hit by the energy crisis. Respondents indicate that households have difficulties to make ends meet due to the high cost of energy. Insufficient provision of public transportation services and inadequate social protection policies accentuate this problem. Increased energy costs for companies threatens their viability.

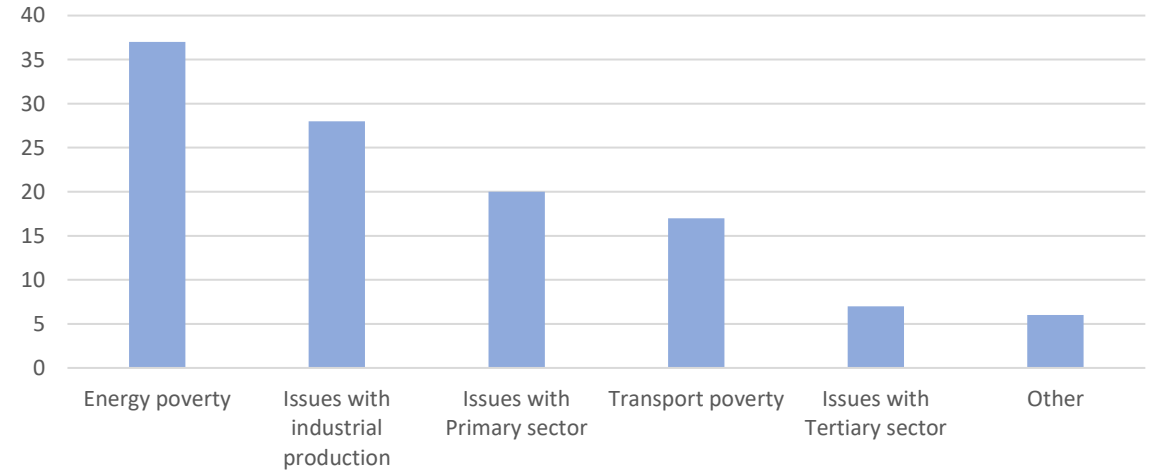
To mitigate the impacts of the crisis, a large share of respondents indicate that measures are taken in their territory to support specific sectors, actions in the field of energy transition and renewables and/or social measures. However, multiple respondents indicate that these measures are funded by national authorities, and not by regional or local ones. Some point out that fossil fuels continue to be subsidised and that efforts to support renewables are limited. Others consider that support measures are insufficient considering the large increase of energy costs. It is also mentioned that too much focus is on short term compensatory measures (i.e. subsidies), and that measures to promote behavioural changes are neglected.

To mitigate the impacts of the energy crisis, close to half of respondents believe a revision in EU taxation policy, of sectoral legislation and/or of EU cohesion

policy would be needed. One respondent notes that the priority is to strengthen support and guidance to enable local authorities to make better use of existing policies. Others point out that there is still too much red tape. One respondent insists in the need for improved multi-level governance, with adaptations of legislations at national level and capacity building efforts to enable local authorities to design and implement cross-sectoral portfolios of measures.

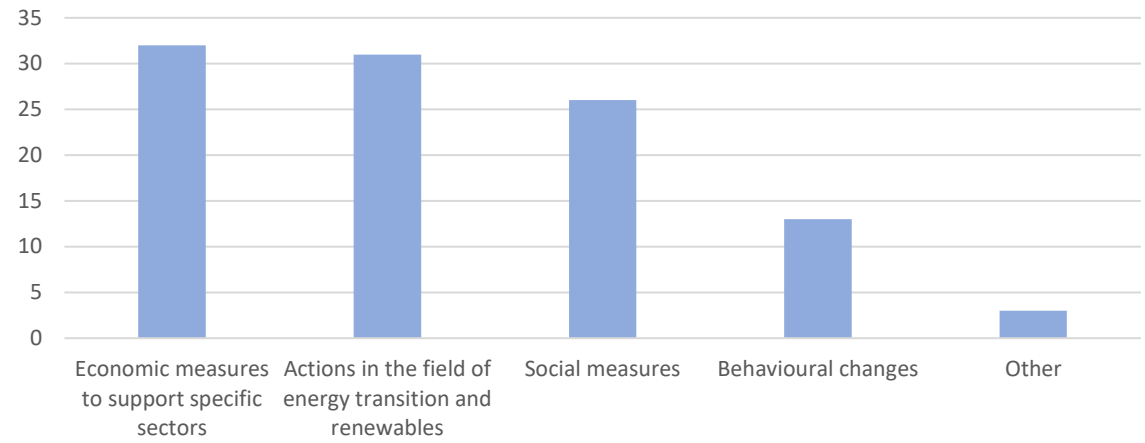
The most important actions to tackle the high energy prices and ensure energy supply in the short term would be to speed up renewables, accelerate energy efficiency in buildings and industry. Other relevant actions would be to support gas imports from non-Russian suppliers and to maximise the generation of energy from low-emission sources.

Figure 12 Impact of the Energy crisis and mitigation measures



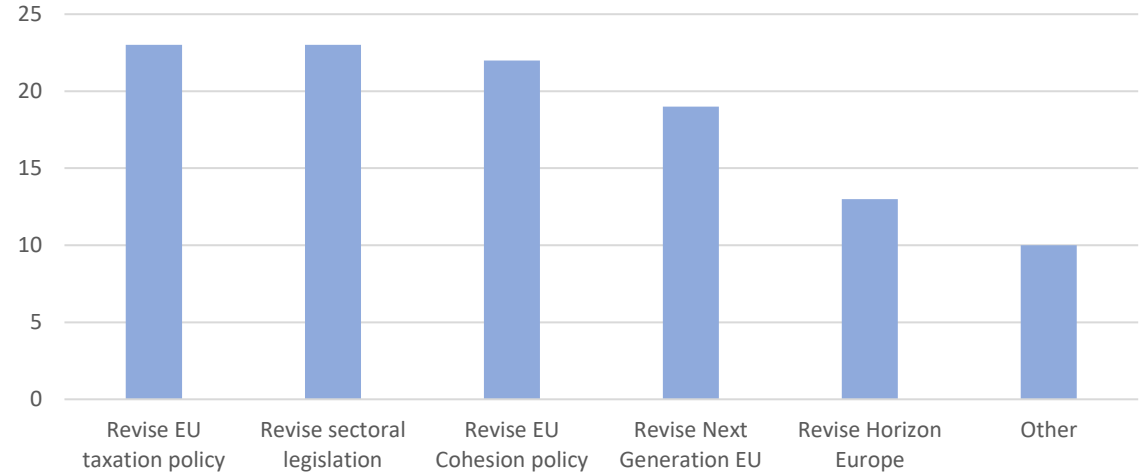
Answers to the question "In which fields is the energy crisis hitting you and your territory the most?", multiple options possible.

Figure 13 Measures taken to mitigate the impact of the energy crisis



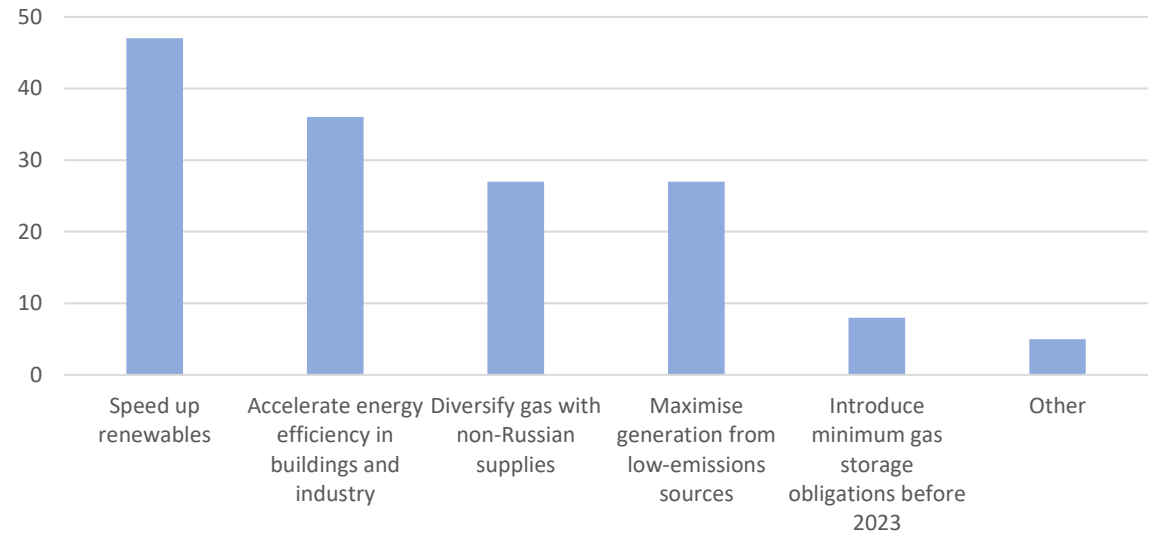
Answers to the question "Which actions is your territory taking to mitigate the impacts of the energy crisis?", multiple options possible.

Figure 14 Measures needed to mitigate energy crisis impacts



Answers to the question "What support would your territory need from the EU to mitigate the impacts of energy crisis?", multiple options possible.

Figure 15 Most important actions to tackle high energy prices and ensure energy supply in the short term



Answers to the question "What actions do you think are important to tackle high energy prices and ensure energy supply in the short term?", multiple options possible.

4.1.5 Extents to which the Green Deal is a local or regional priority in different fields

Respondents were asked to assess the extent to which 13 different policy areas of the Green Deal are a prioritised in their territories. Overall, significant proportions of respondents indicated that major European Green Deal policy fields were not a top priority (i.e. not "very important") (see

Table 4 and Figure 17 below). This may be because some policy fields targeted by the EGD are less relevant for some territories (e.g. sustainable agriculture for urban localities).

Energy efficiency and renewable energy production stand out as the fields thought to be "very important" by 57 % of respondents. An additional 24 % of respondents consider these policy fields to be important.

Table 4 Synthesis of responses on the extents to which the Green Deal is a local or regional priority in different fields

	Irrelevant	Low priority	Normal priority	Important	Very important
Energy efficiency		4 %	16 %	24 %	57 %
Renewable energy production		4 %	16 %	24 %	57 %
Emission reduction		2 %	16 %	35 %	47 %
Circular economy	2 %	2 %	22 %	31 %	43 %
Biodiversity protection and nature restoration		14 %	20 %	24 %	43 %
Sustainable buildings	2 %	6 %	25 %	25 %	41 %
Pollution reduction		6 %	29 %	24 %	41 %
Adaptation to climate change		12 %	18 %	31 %	39 %
Sustainable agriculture	4 %	2 %	25 %	29 %	39 %
Sustainable food production and consumption	4 %		27 %	29 %	39 %
Sustainable mobility	2 %	16 %	16 %	29 %	37 %
Fight against energy poverty and just transition		12 %	22 %	29 %	37 %
Climate justice	10 %	12 %	35 %	24 %	20 %

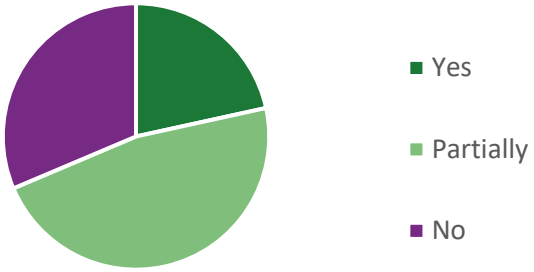
Answers to the question: "Rate how much each policy area of the Green Deal is a top priority for your territory"

Emission reduction is regarded as a "very important" priority in the territory by 47 % of respondents, and an additional 35 % consider it to be regarded as "important". The fact that this is not believed to be a top priority in all territories, suggests that the emphasis put on the reduction of greenhouse gas emissions at the EU level may not yet have translated into sufficiently ambitious policies at local and regional levels.

More than 25 % of respondents perceive "climate justice", "pollution reduction", "sustainable buildings" and "sustainable agriculture" as "normal priorities" in their territories, i.e. not receiving particularly high attention. climate justice stands out as the policy field which the highest rate respondents think is considered "irrelevant" in their territory. 16 % of respondents think "sustainable mobility" is a low priority in their territory, and 14 % think "biodiversity protection and nature restoration" is a low priority.

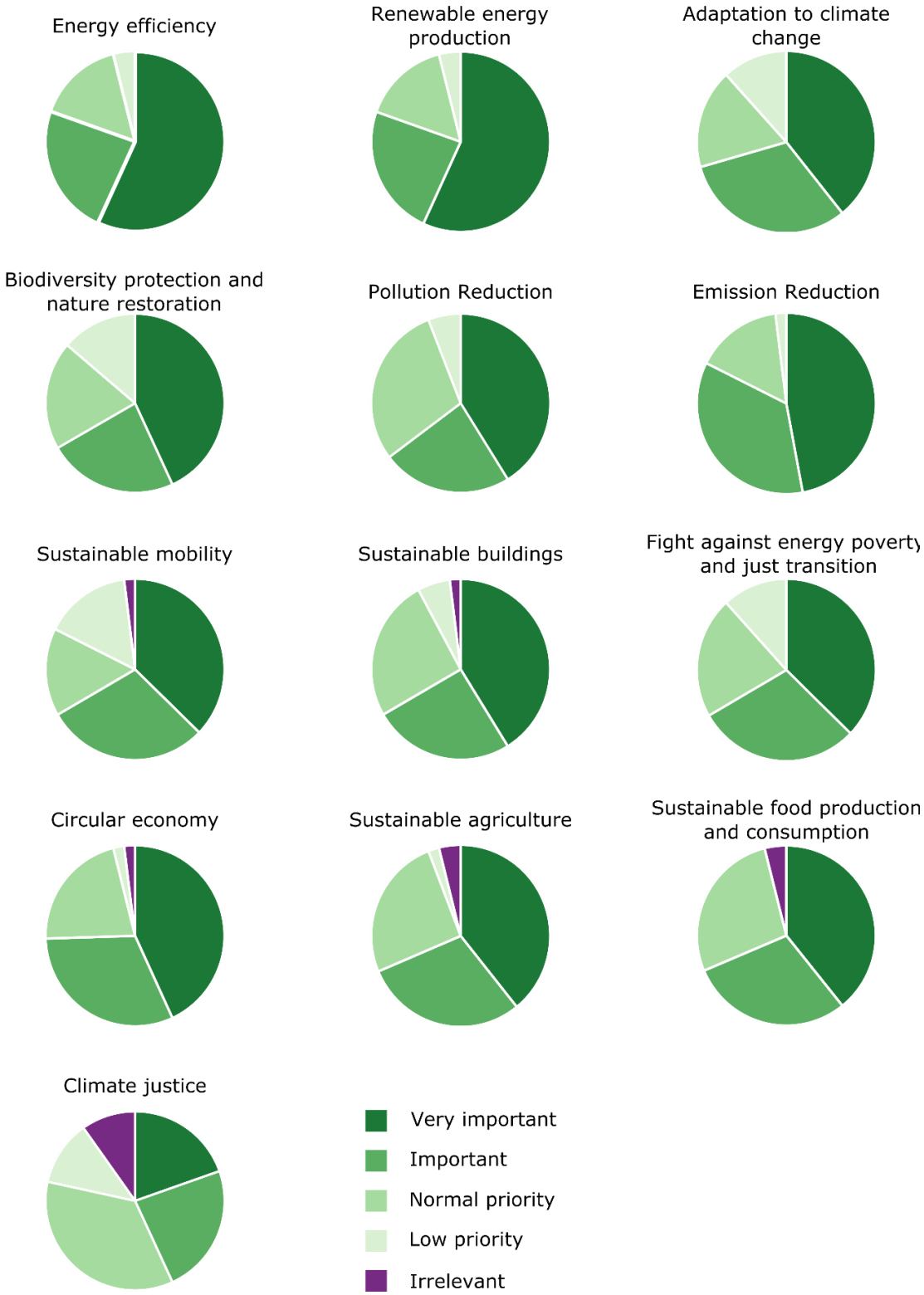
More than two-thirds of respondents believe the level of priority of different EGD policy area has changed, at least partially, with the COVID-19 pandemic (see Figure 16).

Figure 16 Extent to which the COVID-19 pandemic has affected the extent to which policy area of the Green Deal is a top priority in regions and localities



Answers to the question: "Has this changed with the COVID-19 pandemic?"

Figure 17 Extents to which the Green Deal is a local or regional priority in different fields



Answers to the question: "Rate how much each policy area of the Green Deal is a top priority for your territory"

4.1.6 State of implementation of the Green Deal in different fields

The survey participants were asked to give their views on the state of implementation of 13 policy areas. Overall, energy efficiency is the only policy field more than half of respondents consider is currently being implemented (see Table 5 and Figure 17 below). More than 40% of respondents consider that policies for renewable energy production, sustainable buildings and pollution reduction are currently being implemented. Only a few respondents consider that any of the policies are impossible to implement. A possible exception is climate justice policies, which 12 % of respondents considered impossible to implement.

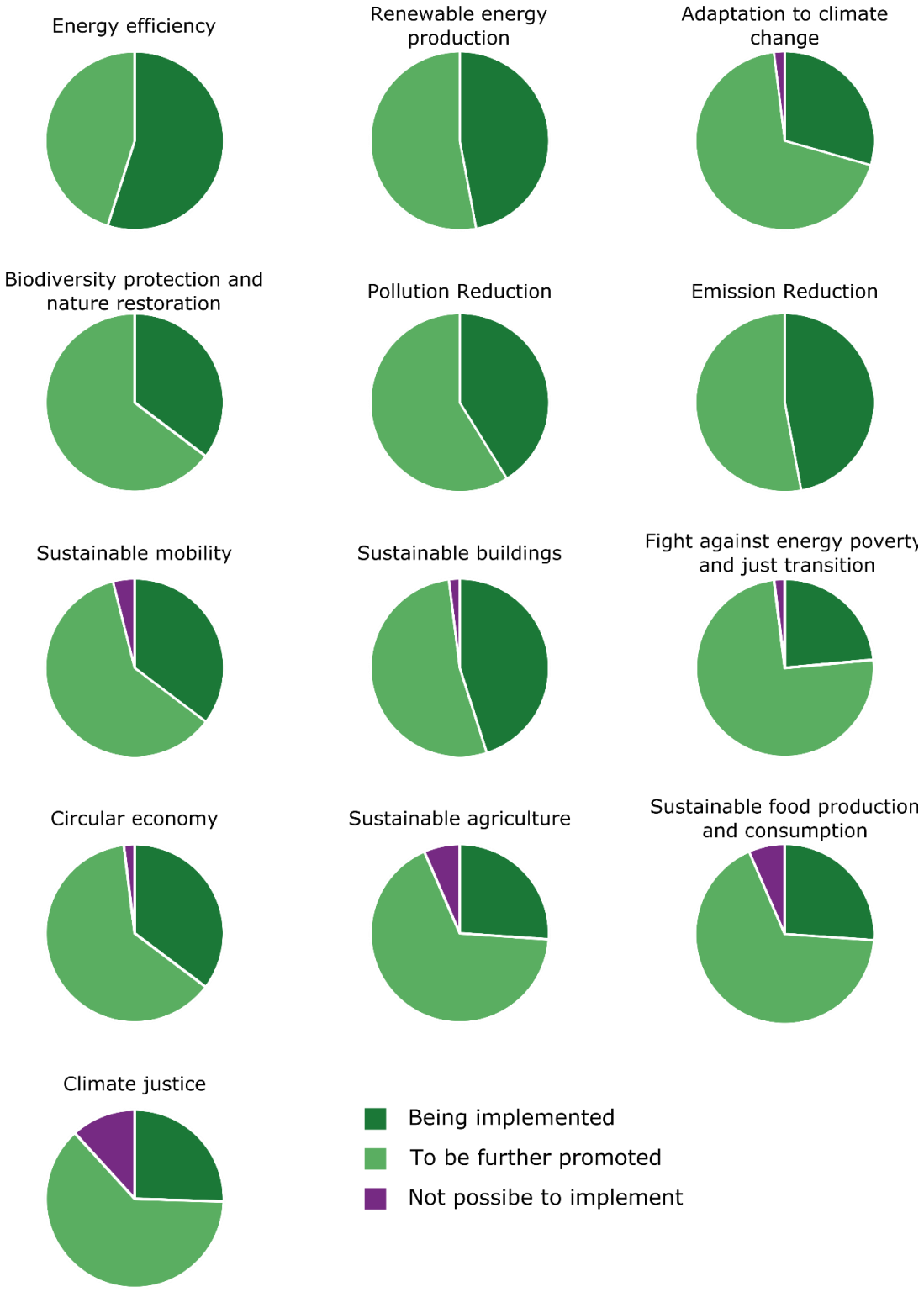
Less than 30% of respondents consider that policies for the fight against energy poverty, climate justice, sustainable food production and consumption, sustainable agriculture and adaptation are currently being implemented.

Table 5 Synthesis of responses on the state of implementation of European Green Deal policy fields

	Being implemented	To be further promoted	Not possible to implement
Energy efficiency	55 %	45 %	
Renewable energy production	47 %	53 %	
Emission reduction	47 %	53 %	
Sustainable buildings	45 %	53 %	2 %
Pollution reduction	41 %	59 %	
Biodiversity protection and nature restoration	35 %	65 %	
Circular economy	35 %	63 %	2 %
Sustainable mobility	35 %	61 %	4 %
Adaptation	29 %	69 %	2 %
Sustainable agriculture	25 %	69 %	6 %
Sustainable food production and consumption	25 %	69 %	6 %
Climate justice	25 %	63 %	12 %
Fight against energy poverty and just transition	24 %	75 %	2 %

Answers to the question: Please give us your views on the state of implementation of the different Green Deal policies

Figure 18 Views on the state of implementation of Green Deal policies in different fields

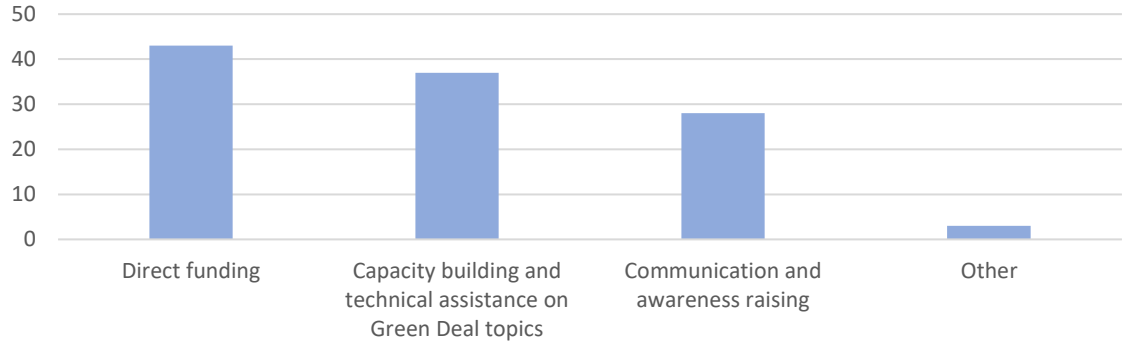


Answers to the question: "Please give us your views on the state of implementation of the different Green Deal policies"

4.1.7 Support needed for the implementation of the European Green Deal

Most respondents believe that direct funding, capacity building and technical assistance on Green Deal topics are the types of support their territories would need. Some of the EU initiatives considered to better support their territories on implementing the Green Deal are the EU Mission on Adaption to Climate Change, the EU Mission on Climate-Neutral and Smart Cities and the Climate Pact. Other initiatives were the Urban Agenda, the EU Covenant of Mayors, the Energy Poverty Advisory Hub, and the Green City Accord.

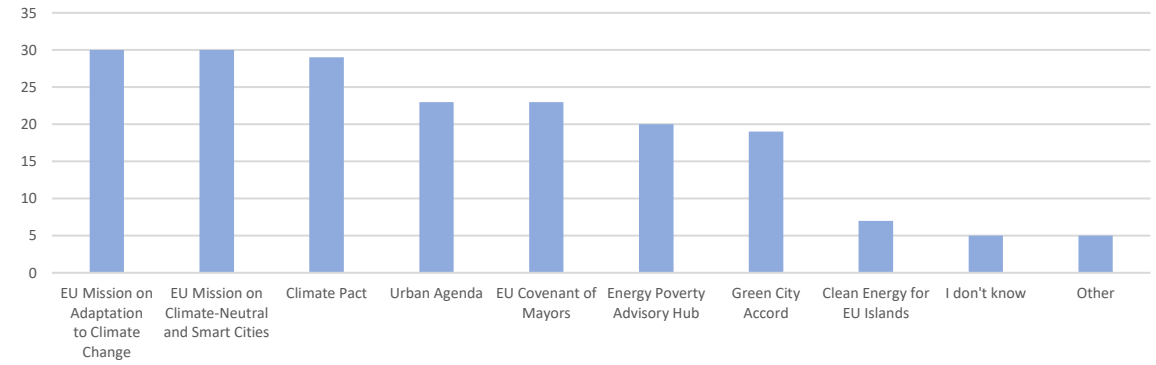
Figure 19 Support needed by local and regional authorities to implement the European Green Deal



Answers to the question "What kind of support does your territory need in order to further promote these policies", multiple options possible.

The EU initiatives that the largest shares of respondents believe could best support Green Deal implementation in their territory are the EU Mission on Adaption to Climate Change, the EU Mission on Climate-Neutral and Smart Cities and the Climate Pact. The Urban Agenda and the EU Covenant of Mayors are mentioned by almost half of respondents, while the Energy Poverty Advisory Hub and the Green City Accord are mentioned by just under 40% of respondents. The Clean Energy for Islands initiative, of relevance only for island territories, is mentioned by 10% of respondents.

Figure 20 EU instruments best suited to support European Green Deal implementation



Answers to the question "Which EU initiatives can better support your territory in implementing the Green Deal?", multiple options possible

4.1.8 Citizen views on European Green Deal policies

Respondents were asked how citizens of their territories consider European Green Deal policies. Most policies are considered to be welcomed by citizen, but without generating any active engagement (see Table 6 and Figure 21). In most cases, over 10% of respondents that consider that citizens perceive the policy as controversial with possible negative impacts. Few respondents consider that specific policy fields are not welcome. Energy efficiency policies are considered to be welcomed with active engagement by 53% of respondents. This is the highest rate observed for any policy. It is followed by renewable energy production, circular economy and sustainable buildings.

Policies the highest shares of respondents think are welcomed by citizens, with or without active engagement, are circular economy (96%), sustainable buildings (94%), energy efficiency (90%) and fight against energy poverty and just transition (90%). Strikingly, climate justice is the policy the highest share of respondents think is welcomed by citizens without active engagement. Over one third of respondents consider this policy field to be a "normal priority" only (see section 4.1.5).

In most cases, over 10% of respondents that consider that citizens perceive each policy is "controversial with possible negative impacts". The issue the highest share of respondents believe are controversial among citizens is "adaptation", followed by "sustainable agriculture" and "climate justice".

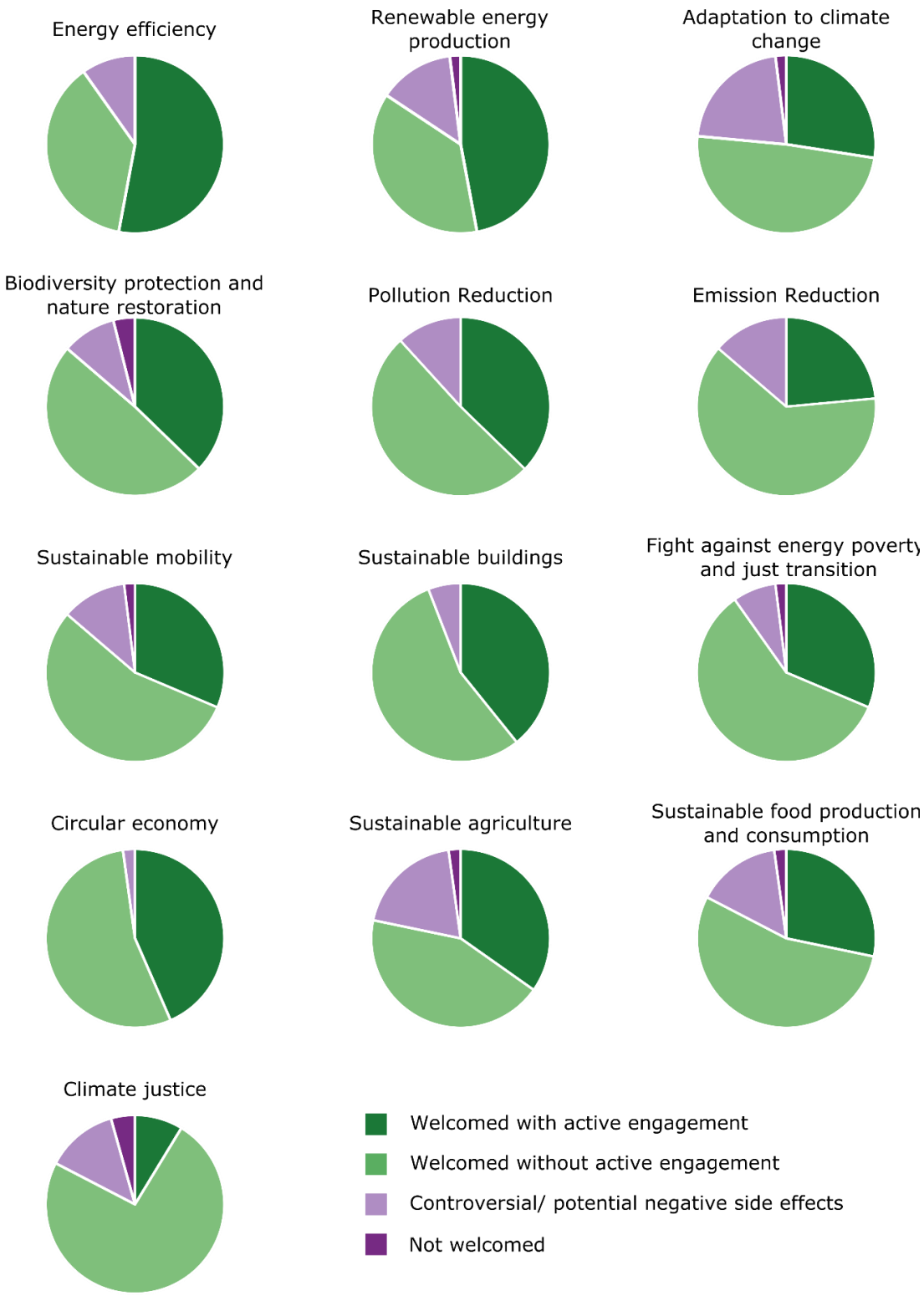
Few respondents consider that specific policy fields are not welcome by citizens.

Table 6 Synthesis of responses on Citizen views on European Green Deal policies

	Welcomed with active engagement	Welcomed without active engagement	Controversial/ potential negative side effects	Not welcomed
Energy efficiency	53 %	37 %	10 %	
Renewable energy production	47 %	37 %	14 %	2 %
Circular economy	41 %	55 %	4 %	
Sustainable buildings	39 %	55 %	6 %	
Biodiversity protection and nature restoration	37 %	49 %	10 %	4 %
Pollution reduction	37 %	51 %	12 %	
Sustainable agriculture	35 %	45 %	18 %	2 %
Sustainable mobility	31 %	55 %	12 %	2 %
Fight against energy poverty and just transition	31 %	59 %	8 %	2 %
Adaptation	27 %	49 %	22 %	2 %
Sustainable food production and consumption	27 %	57 %	14 %	2 %
Emission reduction	24 %	63 %	14 %	
Climate justice	8 %	73 %	16 %	4 %

Answers to the question"*Please give us your views on how the different GD policies are considered by citizens in your territory".*

Figure 21 Perceived Citizen views on European Green Deal policies

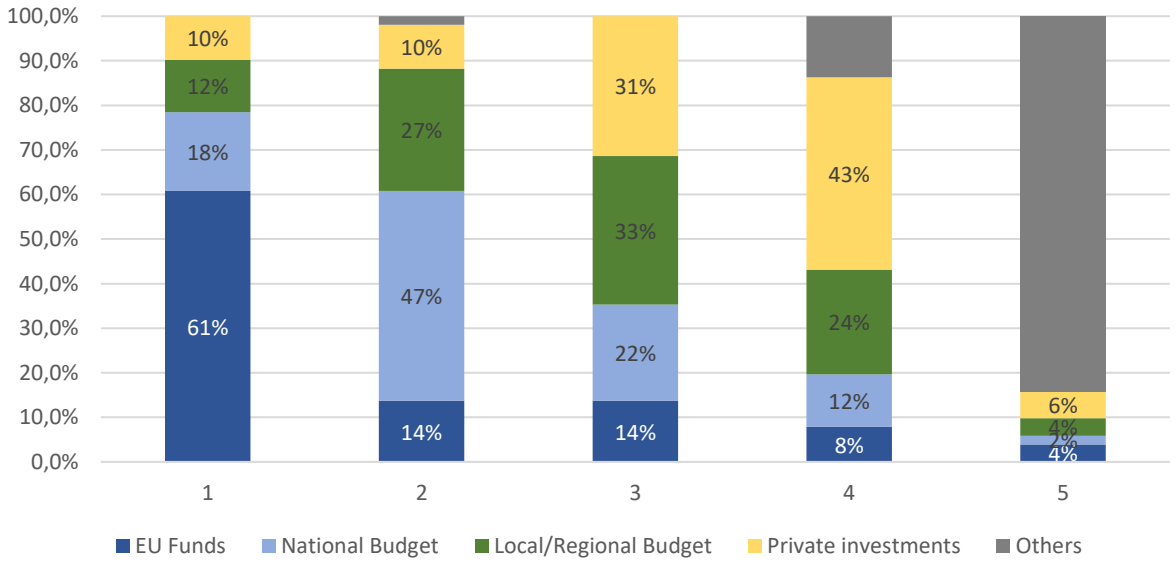


Answers to the question "Please give us your views on how the different GD policies are considered by citizens in your territory".

4.1.9 Most used Sources of financing for European Green Deal Projects

The survey participants ranked the sources of financing they believed were the most used for EGD projects in their territories from 1 ("most used") to 5 ("least used"). Four categories of funding were considered: EU Funds, national budgets, regional and local funding and private funding, in addition to "other". Overall, one may note that different perspectives on EGD project funding prevail among the respondents, as all four categories of funding have been selected by a significant number of respondents in each of the ranking levels. The only exception is the category 'others'. This indicates that the four categories include all sources of funding considered relevant by 84% of respondents. It could be purposeful to further explore the sources of funding the remaining 16 % of respondents were referring to as second or fourth most important source of funding.

Figure 22 Sources of funding most used for European Green Deal projects



Answers to the question "Rank from 1 to 5 the sources of financing for GD projects in your territory. (up = the most used; down = the less used)".

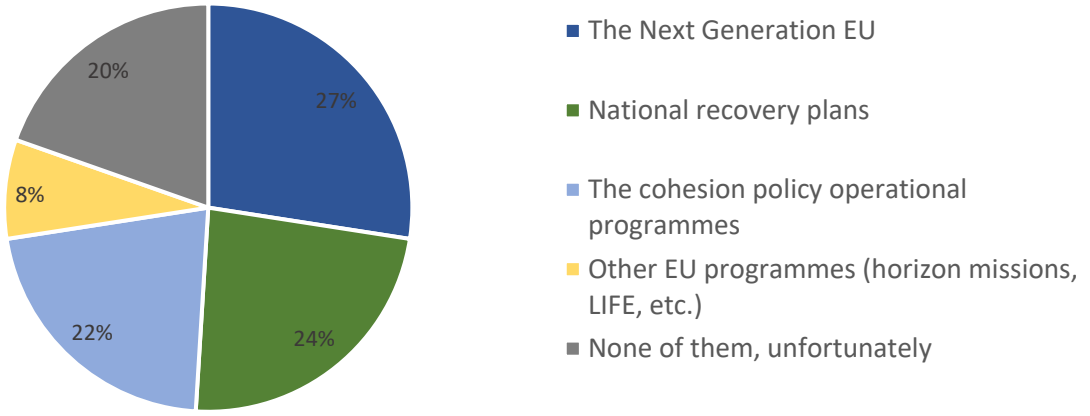
61 % of respondents indicated that EU funds were most used, 47 % that national funds were second most used and 33% of respondents that regional and local funds were third most used. Almost the same number (31 %) indicate that private funds are third most used. However, 43 % consider that it is fourth most used.

It is notable that 39 % of respondents consider regional and local as the first or second most important source of funding, and 24 % as the fourth important one.

This broad range of responses reflect the diversity of regional and local situations with respect to EGD project funding.

Respondents were also asked to indicate whether any projects with funding from key EU programmes or instruments were implemented in their territory. Surprisingly, only one option could be chosen. One could expect many territories to have EGD projects funded by multiple programmes and instruments. Equivalent shares of respondents indicate that their territory has EGD projects funded by Next Generation EU, national recovery plans and Cohesion Policy operational programmes. 8% identify EGD projects funded by "other European programmes" such as Horizon and LIFE, and 20% consider that no projects funded by any of the programmes or instruments are funded. This may reflect a partial knowledge of EGD-relevant projects funded by these programmes and instruments, considering the broad range and extensive territorial coverage.

Figure 23 Implementation of European Green Deal projects funded by key European programmes or instruments

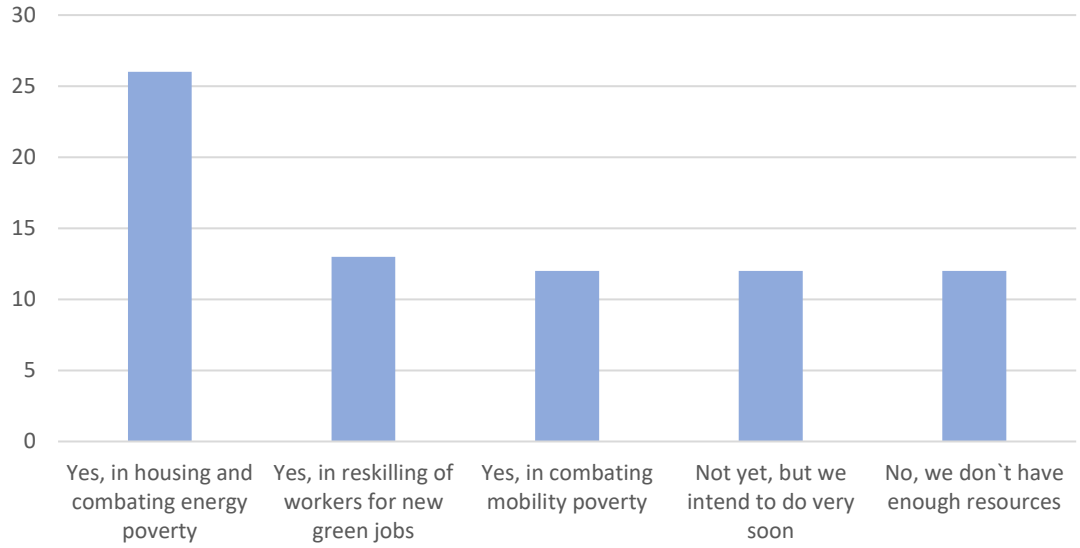


Answers to the question "Does your territory have any Green Deal projects which are expected to be financed by [any of the following EU programmes or instruments]?". Only one option possible.

4.1.10 Investments of European Green Deal Relevance in Respondent Territories

When asked whether their territory invests in projects to promote a just green transition, more than half of respondents report that their territories are investing in just green transition projects such as housing and combating energy poverty. Other projects are about reskilling the workers for new green jobs and combating mobility poverty. Over 10 % of respondents indicate that their territories are not investing in any of these projects but intend to do so in the future. Another 10 % consider that their territory does not enough have enough resources to invest in projects that promote a just green transition.

Figure 24 Local and regional investments in projects to promote a just green transition



Answers to the question "Does your territory invest in projects to promote a just green transition?". Multiple options possible.

4.1.11 Plans of European Green Deal Relevance in Respondent Territories

Respondents were asked whether their territories already have plans for climate, energy, and environment issues. Regarding operational plans, close to half respondents indicate that there is an operation plan for renewable energy production (see Table 7 and Figure 25 below). An additional 22% indicate that their territory is working on such a plan. Around 40 % consider that there are operational plans energy efficiency, and 31% consider that their territory is working on such plan.

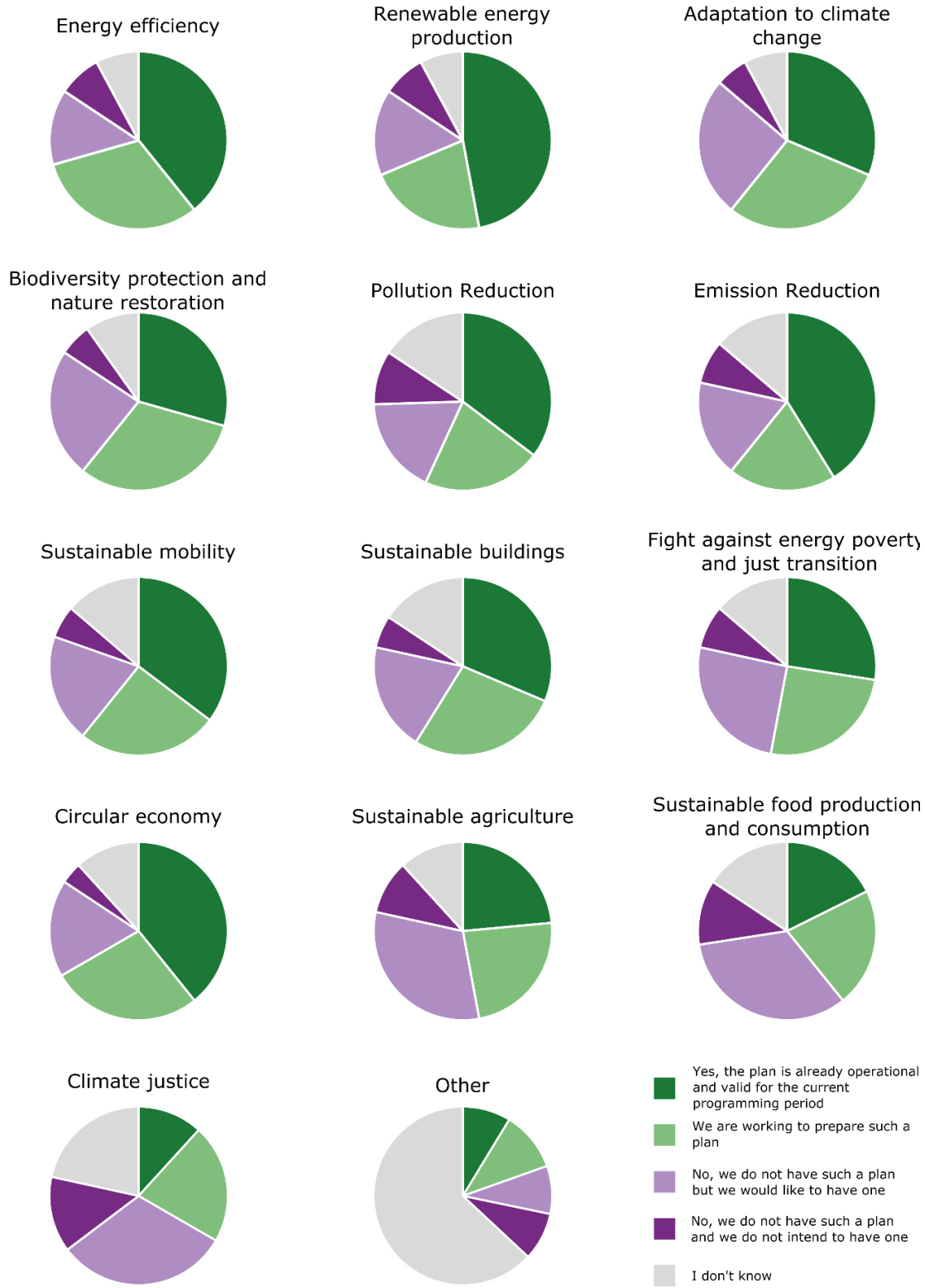
Therefore, about 70 % of respondents indicate that their territory either already has an operational and valid plan on renewable energy production and renewable energy, or are working to prepare one. The corresponding rate is around 60 % for

Table 7 Synthesis of responses on plans of European Green Deal relevance in respondent territories

	Yes, the plan is already operational and valid for the current programming period	We are working to prepare such plan	No, we do not have such a plan and but we would like to have it	No, we do not have such a plan and we do not intend to have it	I don't know
Renewable energy production	47%	22%	16%	8%	8%
Emission reduction	41%	20%	18%	8%	14%
Energy efficiency	39%	31%	14%	8%	8%
Circular economy	39%	27%	18%	4%	12%
Pollution reduction	35%	22%	18%	10%	16%
Sustainable mobility	35%	25%	20%	6%	14%
Adaptation	31%	29%	25%	6%	8%
Sustainable buildings	31%	27%	20%	6%	16%
Biodiversity protection and nature restoration	29%	31%	24%	6%	10%
Fight against energy poverty and just transition	27%	25%	25%	8%	14%
Sustainable agriculture	24%	24%	31%	10%	12%
Sustainable food production and consumption	18%	22%	33%	12%	16%
Climate justice	12%	22%	31%	14%	22%
Other	8%	10%	8%	8%	67%

Answers to the question "Does your territory have a climate/energy/environment plan for the following policies?".

Figure 25 Extent to which respondent territories have climate/energy/environment plans for different policies



Answers to the question "Does your territory have a climate/energy/environment plan for the following policies?". Multiple options possible.

sustainable mobility, biodiversity protection and nature restoration, adaptation, emission reduction, sustainable buildings and pollution reduction. it is below 40 % for climate justice, sustainable food production and consumption and sustainable agriculture.

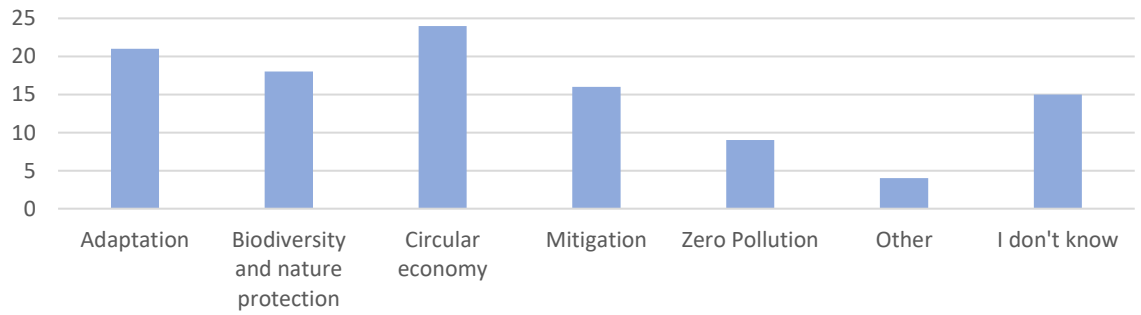
Climate Justice, sustainable food production and consumption, sustainable agriculture, fight against energy poverty are the fields in which the lowest proportions of respondents indicate that there is an operational plan. In all these fields, less than 25% of respondents indicate that their territory is working on a plan.

Sustainable food production and consumption, sustainable agriculture and climate justice are the fields in which the highest proportions of respondents indicate that their territory does not have a plan but would like to work on one. However, these same three fields, are also the only ones, alongside with pollution reduction, for which over 10% of respondents indicate that their territory has no plan and does not intend to have one.

4.1.12 Concrete targets for the implementation of the European Green Deal in respondent territories

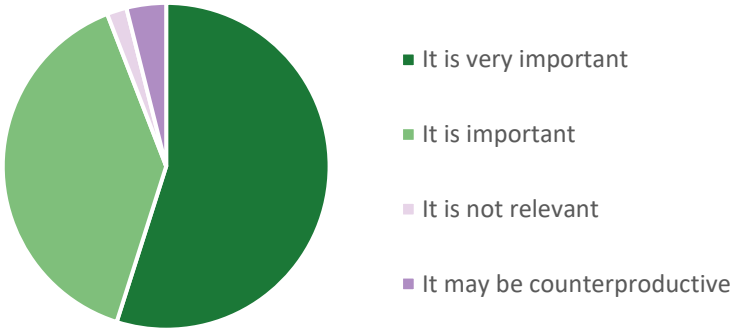
Respondents were asked to identify concrete targets for the implementation of the European Green Deal their territory. Close to half of respondents identify circular economy-related targets, followed by climate change adaptation targets, biodiversity and nature protection targets and climate change mitigation targets (see Figure 26). Less than 10 respondents mention zero pollution targets. The vast majority of respondents consider that a formal recognition of local and regional commitments at the global level is important or very important (see Figure 27)

Figure 26 Concrete targets for European Green Deal implementation in respondent territories



Answers to the question " Does your territory have concrete targets for implementing the Green Deal?". Multiple options possible.

Figure 27 Relevance of formal recognition of local and regional commitments at the global level



Answers to the question " Do you consider it relevant that these local/regional commitments are formally recognizer at global level, notably in UNFCCC COP and UN CBD COP?"

4.1.13 Missing elements and hurdles in the implementation of the European Green Deal in respondent territories

Respondents were asked to identify missing elements in the European Green Deal framework. They mainly consider that frameworks for engagement are missing, viz. engagement of local and regional governments (67 % of respondents), of citizens (57 % of respondents) and of youth (41 % of respondents). Some respondents characterise the European Green Deal as "top-down".

41 % of respondents also consider that the economic dimension is insufficiently covered. 24 % would like social protection to be better addressed. Some respondents consider that poorest and most vulnerable regions must be supported more to cover the cost of the Green and Digital Transition.

When asked to identify the main hurdles in the implementation of the European Green Deal, 69% point to the lack of financial resources, and 61 % to difficulties in triggering behavioural change. Difficulties in shouldering the economic transition is mentioned by 51 % of respondents, and the lack of skills and knowledge by 47 %. However, only 22 % of respondents consider that technological barriers are a main hurdle.

Some respondents also point out that more training and education is needed in the field of green transition. Others consider that there is too much red tape, and that coordination between policies at different levels is insufficient.

4.1.14 Proposals to make the European Green Deal a success in respondent territories

When asked to make proposals on how the European Green Deal could become a success in respondent territories, respondent inputs include the following elements:

- More education and training

- Better measures to promote behavioural change.

- More financial resources, also mobilising green investors. This latter option presupposes that projects generate sufficient financial returns.

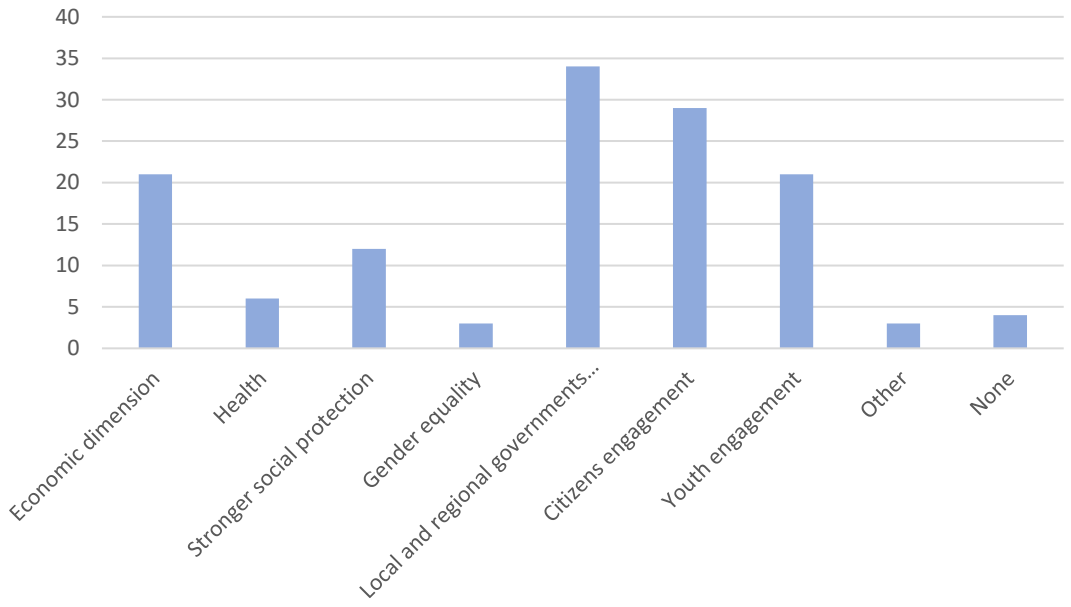
- More focus on “micro-interventions spread throughout the territory, within the reach of citizens (home energy renovation, renewable energy on a family/company scale, proximity agriculture, safeguarding the territory against hydro-geological risk) instead of large infrastructures that are harmful to the environment, very costly and managed by a few institutional players or private power groups far removed from the local community.”

- More dissemination of lessons learnt and good practices

- Frameworks enabling private actors to do their part

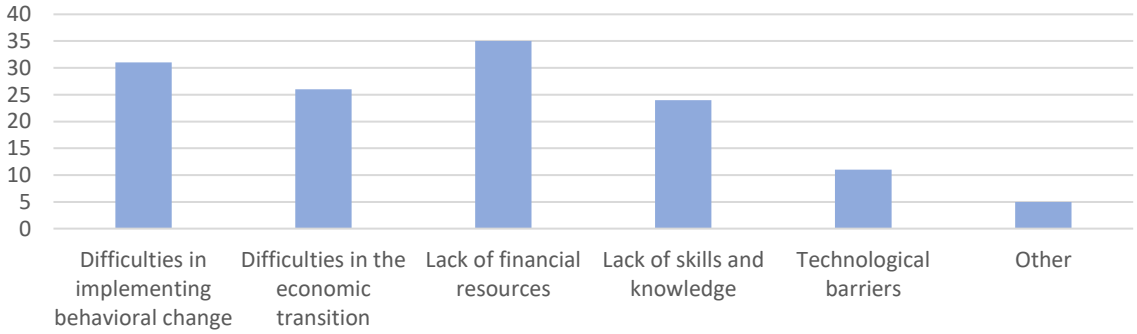
- Concrete infrastructure investments, e.g. in train infrastructure and in connection to hydrogen production and storage.

Figure 28 Elements considered missing in the European Green Deal Framework



Answers to the question "Which elements do you see missing in the Green Deal framework?" Multiple options possible

Figure 29 Main hurdles in implementing the Green Deal



Answers to the question "Which is the main hurdle you see in implementing the Green Deal?" Multiple options possible.

4.1.15 Examples of regional and local good practices

Respondents mention the following examples of good practices:

- The Circular Economy Law of Andalusia in Spain which aims to create an appropriate regulatory framework to promote the rational use of resources, extend the useful life of products and minimise waste generation. The law is expected to be adopted in 2022.

- Rakvere, first Estonian city to join the European Commission's Covenant of Mayors initiative in 2008, will have reduced CO2 emissions in its regions by almost 70 percent by 2022 and has reduced its dependence on imported energy.

- Eastern Wielkopolska (Poland) regional authorities have facilitated a bottom-up fair transformation process, with the active involvement of NGOs. The appointment of a process coordinator who focuses only on this task, made it possible to organise a successful participative process. What is important in the whole process is that all stakeholders (NGOs, employee representatives, including trade unions, business communities and local government officials) feel listened to. Work carried out by the local government is complemented by grassroot activities.

- Maribor (Slovenia) uses a central energy management system to collect, document and analyse energy data. As a result, energy use in primary schools and kindergartens has decreased significantly over the last ten years, thanks to targeted investments and awareness raising measures.

- In the Netherlands, Groene Cirkels ('Green Circles') organise triple helix collaborations to make the agricultural sector more future proof, involving stakeholders from the region.

When asked about worst practices, respondents mention a wide range of limitations to European Green Deal implementation:

- Insufficient efforts to communicate implications of the European Green Deal to businesses and inhabitants,

- The construction of the Lyon-Torino railway,

- Regional regulations limiting the construction of windmills,

- Limited control of industrial pollution,

- Insufficient public transportation options outside of urban centres,

- European Green Deal being perceived as a strategy of western European Member States to make profits at the expense of eastern European Member States.

- Focus on the construction of new buildings, rather than on renovations of old one.

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