



Regions 4Climate

Fostering smarter, faster and systemic adaptation in the Azores, the Basque Country, South Aquitaine and Tuscany

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This policy brief examines the regional governance and steering instruments of four European regions in the Regions4Climate Faster Adaptation Challenge Suite and provides recommendations for smarter, faster and more systemic adaptation.

We found that

- The Azores, the Basque Country, South Aquitaine and Tuscany have established or are establishing adaptation strategies and institutional capacity that can support scaling and acceleration of adaptation.
- Existing data and knowledge systems need to be better integrated into decision-making, monitoring, and innovation processes at the local and regional levels.
- Local, regional and national authorities should define clearer mandates related to adaptation, ensure policy alignment across governance levels, and mainstream adaptation into spatial and sectoral planning to translate plans into coherent action.
- Moving beyond project-based funding is critical to sustain adaptation across the full policy cycle.

Introduction

Climate change poses a growing threat to regions across Europe, with more frequent and severe weather events disrupting communities, economies, and ecosystems. Adaptation is essential to build resilience and protect vulnerable areas, but it requires adequate planning, coordination, and policies.

The European Commission's European Missions - Adaptation to Climate Change Implementation Plan outlines three objectives: smarter, faster and systemic adaptation. The plan presents these objectives as sequential and mutually reinforcing intervention steps that build on one another to achieve the Mission's overall goals. **Faster adaptation** involves mobilising partnerships and engagement, formulating vision and pathways, and orchestrating innovative solutions (See Fig. 1). Faster adaptation builds on smarter adaptation, but the partnerships and engagement can also serve to open new opportunities for stronger digital and knowledge services and a more comprehensive understanding of the regions' risks. Faster adaptation is also the foundation for systemic adaptation, helping to deliver cross-border value and impact at scale.

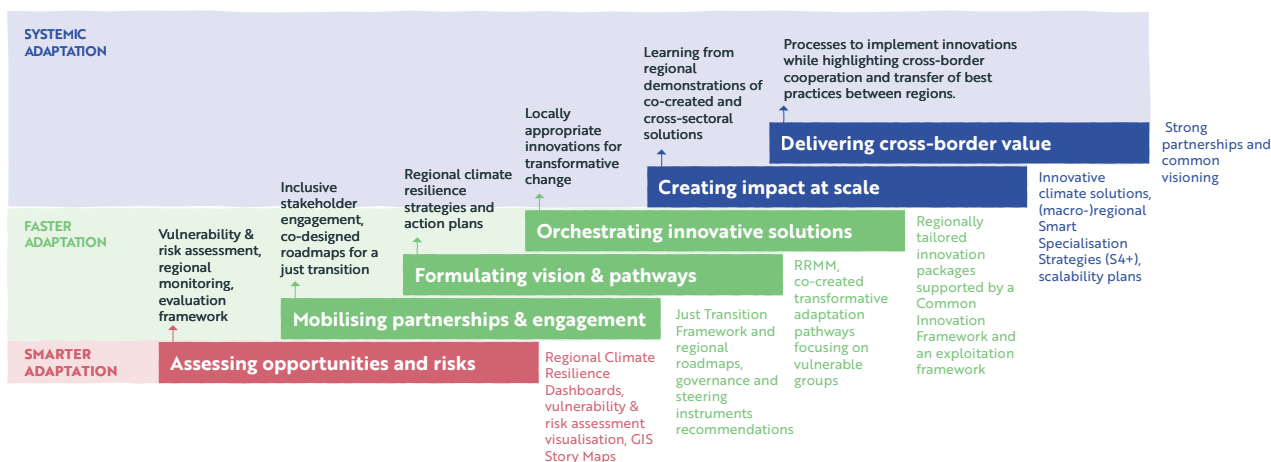


Figure 1 The implementation steps for achieving Adaptation Mission Objectives, which also align with the smarter, faster and systemic adaptation approaches. Adapted from the EU Mission on Adaptation to Climate Change – Implementation Plan. Smarter adaptation refers to step 1, Faster adaptation refers to steps 2-4, while Systemic adaptation refers to steps 5-6. Selected actions that regions are implementing in Regions4Climate are on the left of each step and selected research and innovation support examples provided by the project are on the right. These examples are not exhaustive.

This policy brief synthesises the Regions4Climate project’s governance and policy insights on transformative adaptation for **Challenge Suite 1: Faster Adaptation** in the Regions4Climate regions of: **the Azores, the Basque Country, South Aquitaine and Tuscany**.

In their Regions4Climate Innovation Packages, this group of regions is working to **accelerate their adaptation efforts** to reduce coastal risks (sea level rise, coastal erosion, storm surge and ocean warming) and protect and restore the integrity of coastal ecosystems. Although this Challenge Suite focuses their Innovation Package activities that support faster adaptation, the recommendations take a more comprehensive perspective based on insights related to smarter, faster and systemic adaptation.

Climate change adaptation is the process of adjusting to current or anticipated climate conditions and their impacts¹, enhancing adaptive capacity, strengthening resilience, and reducing vulnerability². **Governance** is considered the combination of formal and informal institutions, procedures and mechanisms that steer policy and decision-making³.

This policy brief draws on conclusions from the Regions4Climate Governance recommendations (D4.3)⁴ and draft Policy recommendations (D4.4)⁵, as well as the regions’ self-assessment results using the Regional Resilience Maturity Model (RRMM)⁶. Using the RRMM, the regions evaluate their adaptation readiness across multiple dimensions and indicators. For this policy brief, we draw on the results focused specifically on governance- and policy-related dimensions, namely Dimension 1: Regional Governance and Institutional

- 1 IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 p
- 2 Singh, C., Iyer, S., New, M.G., Few, R., Kuchimanchi, B., Segnon, A.C., Morchain, D., 2022. Interrogating ‘effectiveness’ in climate change adaptation: 11 guiding principles for adaptation research and practice. *Climate and Development* 14, 650–664. <https://doi.org/10.1080/17565529.2021.1964937>
- 3 Levi-Faur, D. 2012. *The Oxford Handbook of Governance*. Edited by D. Levi-Faur. Oxford: Oxford University Press. p. 8
- 4 Malmström, et al. 2024. Regions4Climate D4.3 Governance Recommendations.
- 5 Tuhkanen, et al. 2025. Regions4Climate D4.4 draft Policy and Steering Instrument Recommendations.
- 6 Manuelli, et al. 2023. Regions4Climate D4.1 Regional Resilience Maturity Model and Framework.

capacity, Dimension 2: Plans and policy instruments, and Dimension 6: Finance and resources. The overview of relative maturity patterns across regions helps contextualize the strengths and gaps identified in the governance mechanisms, and steering instrument analysis. This analysis assesses how regional governance strengths and gaps contribute to faster, smarter, and systemic adaptation. The brief aims to share integrated governance and policy recommendations for adaptation with local and regional authorities within the Challenge Suite 1, as well as with local and regional governments more broadly across the EU.

Climate adaptation governance can be understood through considering aspects such as structure or the effective coordination among local, regional, and national authorities, key actors driving decision-making and implementation, as well as mechanisms, such as the steering instruments. These include regulatory instruments, such as regulatory frameworks and policies; financial instruments, such as financial incentives and penalties, dedicated funding, etc., and informational instruments, such as collaborative platforms, networks, etc. Clarifying responsibilities, empowering key actors, and optimizing the tools used to achieve governance objectives enable policymakers to strengthen climate adaptation governance.



Map 1 The four regions of Challenge Suite 1.

Regional governance and steering instrument analysis

The Azores

- **Geography** – The Azores is an autonomous region of Portugal, consisting of nine volcanic islands in the mid-Atlantic (2,333 km², population around 246,000). Due to its geographical location and the increasing frequency of extreme weather events, the region experiences flooding, which contributes to severe coastal erosion, posing a risk to the population, property and economic activities linked to the sea and the coast.
- **Economy** – The economy has relied on agriculture, livestock raising, dairy farming and fisheries, with tourism growing rapidly in recent years. This expansion has increased pressure on natural resources and threatens the existing balance of farming, nature areas, water usage and other environmental concerns.
- **Governance** – The Azores has broad legislative autonomy within Portugal, including the competence to adopt binding climate change frameworks as well as legislative and management authority over the key affected sectors.
- **Regulatory instruments** – Portugal's Climate Law (2021) recognises autonomous regions as subjects of climate action. Other key policy frameworks include a national coastal management plan, a national plan for recovery and resilience, and the regional climate change programme, which is binding for all public entities. Inter-municipal and municipal spatial planning plans guide implementation locally.
- **Financial instruments** – Funding includes support for climate emergencies through insurance for the restoration of damaged property and support for public investments in resilience. The region benefits from the national environmental fund, EU funding through its regional program program, Açores 2030, and the NextGenerationEU initiative.
- **Informational instruments** – Knowledge related to adaptation is generated and shared through public information campaigns as part of European projects, public competitions for climate innovation, and the State of Spatial Planning reports. The Azores is a member of the Covenant of Mayors.

STRENGTHS

- **International collaboration for biodiversity:** The region actively collaborates with its Macaronesian partners on marine protected areas, sustainability and microplastics monitoring on beaches⁷. The region is committed to continuing and further developing this cooperation as part of its regional adaptation strategy⁸.
- **Technical-scientific cooperation:** A dedicated working group under the regional climate strategy⁸ supports coherence in climate adaptation policy implementation through a shared technical-scientific framework on adaptation.

⁷ Action Plan 2019-2030 Azores (2019)

⁸ Regional Strategy for Climate Change (ERAC) (2011)

- **Broad inclusion of actors in climate actions:** There is wide societal participation in climate policy making through formal recognition of the public, private and third sectors, and citizens as subjects of climate action under the Climate Law.
- **Risk-oriented strategies:** The regional program for climate change⁹ prioritises risk-based approaches, including relocating infrastructure from high-risk zones and imposing stricter land-use controls in such areas. Regional development is supported by data collection, e.g. using earth observation technologies to collect data and improve adaptation knowledge, especially for coastal risks^{7,10}.
- **Integration of nature-based solutions (NbS) in land-use planning:** The region's program for climate change⁹ promotes NbS through measures such as a ban on grazing on wasteland to foster passive restoration and promote of adaptive management of protected areas.

AREAS OF IMPROVEMENT

- **Multi-level and cross-sectoral coordination:** The Azores has a strong legal foundation for adaptation, supported by the region's autonomous status and a regional climate strategy. Although the RRMM highlights the region's support for municipalities in developing local adaptation plans, it suggests that vertical coordination across local, regional and national levels is insufficiently formalized which creates a lack of clarity around responsibilities at different levels. According to the RRMM, cross-sectoral coordination also remains limited and largely depends on central coordination within the regional government.
- **Continuous funding:** Although the region uses a variety of financial instruments for adaptation and resilience, financial planning for climate resilience is still evolving. While resources are allocated through regional programmes, a comprehensive strategic approach to financing climate resilience has not yet been established, and funding remains largely sporadic or project-based rather than dedicated and continuous funding across the full adaptation cycle.
- **Climate services:** The region has strong research-to-policy partnerships and adaptation policies that reflect risk-informed planning. However, the policies do not explicitly aim to advance the frontiers of knowledge around climate risk in the way that the regional development⁷ and S310 strategies do. Advancing climate risk knowledge could contribute to monitoring and evaluation systems for climate resilience policies, which according to the RRMM, are still developing.
- **Local knowledge integration and public awareness:** Despite the recognition of local actors in the Climate Law, regional policy frameworks do not yet explicitly address how local and traditional knowledge can support adaptation and resilience. This limits the extent to which planning reflects lived experience and local priorities, which are important to ensure a socially just transition. The RRMM analysis indicates that local knowledge is only partly integrated into existing policies. The gap is closely linked to broader challenges of low public awareness and limited participation, which further hinder opportunities for communities to contribute local knowledge, as well as the inclusive and effective implementation of climate adaptation measures.

⁹ Regional Program for Climate Change (PRAC) (2019)

¹⁰ Research and Innovation Strategy for Smart Specialisation in the Autonomous Region of the Azores (2021)

The Basque Country

- **Geography** – The Basque Country, in northern Spain bordering France, is a mountainous region with a steep coastline (7,234 km² and population around 2.2 million) mostly concentrated along the coast. It spans the Atlantic and Mediterranean climatic zones and is a biodiversity hotspot with a variety of ecosystems. One-fifth of the territory is part of the Nature 2000 network. The region faces challenges related to fluvial flooding, sea level rise, and heat stress.
- **Economy** – The region is wealthy (with about 5.7% share of Spain's GDP), densely populated, and highly industrialised, with a strong manufacturing sector. The economy, with fisheries, livestock and agriculture, alongside tourism closely links to natural and cultural heritage, particularly along the coast and in major urban centres.
- **Governance** – Spain is a unitary decentralised state, where the division of powers across the country is asymmetrical (quasi- federation) with legislative powers at the sub-national level. As an autonomous community, the Basque Country holds extensive legislative and administrative competences over several relevant sectors (education, health, spatial planning amongst others). A distinctive feature of the Basque Country is the presence of a supramunicipal, subregional level of government at the provincial tier. Provincial councils (*Diputaciones*) hold significant administrative competences and play a key role in coordinating municipalities. Regarding climate change and the green transition, the region focuses on inter-institutional coordination among different Basque authorities and sectors, as well as cooperation between the private sector, research institutes, and local authorities. According to the RRMM, this coordination is formally anchored through the Basque Office for Energy Transition and Climate Change (*Oficina Vasca de Transición Energética y Cambio Climático*), a key governance body for climate policy, including climate adaptation. This Office was established under the Climate Change and Energy Transition Law (Law 1/2024), adopted in 2024 by the Basque Country.
- **Regulatory instruments** – The Law 1/2024 establishes a comprehensive and binding legal framework to achieve climate neutrality, territorial resilience, and a just transition by 2050, with an explicit commitment to make every effort to advance this objective to 2045. Unlike many climate laws that prioritise mitigation, this law gives adaptation and resilience a status equivalent to emissions reduction, explicitly recognising climate impacts as unavoidable and already affecting the territory. The law explicitly recognises that regions and local authorities are responsible for over 90% of climate adaptation measures, positioning regional governance as central to adaptation delivery. The law explicitly aims at mainstreaming climate adaptation into sectoral and territorial policies, including spatial planning, infrastructure, agriculture, water management and biodiversity protection.
- **Financial instruments** – Adaptation is supported through grants for multiple adaptation related themes, tax deductions for environmental investments, green public procurement and penalties for non-compliance with climate legislation (Law 1/2024). The Basque Country dedicates 1.9% of the total budget to climate change, with 1.7% to mitigation, and 0.2% to adaptation. The Basque Government has dedicated support programmes that fund R&D, innovation and demonstration projects focused on climate change adaptation (i.e. Klimatek). The region is also highly active in securing EU project funding and plans to allocate a dedicated regional budget for climate actions. In this context, the LIFE IP Urban Klima 2050 project is an accelerator to activate climate action in the Basque Country.
- **Information instruments** – Knowledge is generated through different tools such as, climate change scenarios, sea level rise scenarios, regional vulnerability assessments and climate change impact modelling, among others, that are shared through regional platforms (GeoEuskadi) and transborder networks. Public awareness is promoted through a network of environmental education centers (Ekoetxea) and initiatives like Basque Climate and Energy Week (AsteKlima).

STRENGTHS

- **Continuous knowledge generation and sharing:** The regional development and adaptation plans^{11,12} promote the generation and dissemination of knowledge and learning on topics such as climate mitigation, coastal adaptation and NBS. The Basque Science, Technology and Innovation Plan 2030 (PCTI Euskadi 2030) focuses on the triple technologicaldigital, energyclimate and socialhealth transition, leveraging public-private collaboration. Programmes such as Klimatek promote and fund demonstration projects and transfer advanced knowledge among municipalities, local stakeholders, universities and tech companies constituting a corner-stone of the R,D&I in the region¹¹. The lessons learnt with the Klimatek projects are intended to transfer to municipalities through a financial instrument named "orden de subvenciones".
- **Collaboration:** The region has multiple avenues for cooperation on sustainability transition topics, including cross-border cooperation (Transborder Scientific Interest Group "Littoral Basque" and The Pyrenees Working Community), municipal cooperation (UDALSAREA 2030 the Basque network of sustainable municipalities) and research cooperation (Basque Research & Technology Alliance). Also involvement of the private sector is steered by different initiatives under the RIS3 Basque Country's Circular Economy Strategy 2030¹³: the Basque Ecodesign Center, the Programme for Innovation in the Circular Economy and the Basque Ecodesign Hub. A new interdepartmental coordination body – the KAIA Board (Klima Aldaketaren Inpaktua) – has been created to foster collaborative climate adaptation governance and mobilize financing for demonstration projects.
- **Mainstreaming climate adaptation in spatial planning:** Adaptation is required by law to be integrated into spatial planning at the regional and urban levels. Climate risk reduction should be embedded across policy areas, including civil protection, territorial strategies, coastal management, waterway management, urban planning, health or land-use planning^{11,12}. The Coastal Sectoral Territorial Plan of the Basque Country (currently under adoption) is a leading example of the integration of climate change scenarios (e.g., sea level rise and temperature projections) across multiple time horizons into coastal zoning guidelines and adaptation criteria.
- **Climate-proofing infrastructures:** Adaptation is integrated into urban planning, with a focus on anticipating vulnerabilities and risks related to sensitive infrastructure, including water supply¹¹. A set of demonstrator projects has been defined which respond to the hotspots in the Basque Country suffering from the impacts of climate change.

AREAS OF IMPROVEMENT

- **Monitoring and Evaluation:** Despite substantial progress in data generation, spatial mapping, regionalised climate scenarios, and vulnerability and risk assessments at the municipal level, the establishment of a systematic framework for monitoring and evaluating adaptation impacts remains a key challenge.
- **Financial instruments:** While diverse resources exist for planning and implementation, funding for monitoring, evaluation, and re-planning phases is not secured. Strengthening adaptation-related financial and penalising instruments could improve compliance, while risk transfer mechanisms could help manage residual climate risks that are prohibitively costly or technically unfeasible to mitigate. In this context, the Social Fund introduced by the Basque Climate Change and Energy Transition Law (Law 1/2024) offers an opportunity to mobilise dedicated public resources to protect

¹¹ Urban Agenda for the Basque Country (Basque 2050) (2021)

¹² Climate Change Strategy of the Basque Country to 2050 (KLIMA 2050) (2015) under review.

¹³ Circular Economy Strategy of the Basque Country 2030 (2019)

and adapt the territory and to support a just transition. It also helps to channel financing towards measures that reduce climate risk and address residual impacts, complementing regulatory and penalty-based approaches.

- **Private sector engagement:** Private sector involvement occurs mainly through public-private partnerships (PPPs) or voluntary initiatives as businesses are not legally required or strongly incentivized to participate in adaptation. Despite the already mentioned efforts (see PCTI 2030, RIS3 Strategy, Klimatek) the involvement of the private sector in adaptation actions remains a challenge, as stressed in the RRMM. Such involvement could be encouraged through regulatory and financial incentives to structurally embed collaboration, for example, through tax incentives for companies adopting climate resilience measures, or mandatory climate risk disclosures as part of corporate reporting.

South Aquitaine

- **Geography** – South Aquitaine is a coastal area along the southwest coast of France (7,645 km² and population around 679,300), with a coastline characterized by a mostly rocky environment, multiple bays with delimited sandy beaches, rocky cliffs, and a complex nearshore bathymetry with a mix of sand and rocks.
- **Economy** – The economy is strongly tied to the Atlantic Ocean, encompassing fishing, sailing, logistics, nautical sports, and a dominant tourism sector.
- **Governance** – France is a decentralized unitary state without legislative powers at sub-national level. South Aquitaine corresponds to eight coastal municipalities, which are part of the 158 municipalities of the Basque Country Urban Community (Communauté d'Agglomération Pays Basque or CAPB) administrative unit. The CAPB covers the western and southern parts of the larger administrative region of Nouvelle-Aquitaine. The CAPB has been managing local affairs in the region since 2017, it operates as an intermediate level of government. The Nouvelle-Aquitaine Region addresses climate change mitigation and adaptation through sector-specific regulatory measures and the allocation of financial resources, but the CAPB implements and operationalises at the local level. According to the RRMM, collaboration with national authorities is well defined within the French institutional system.
- **Regulatory instruments** – The French Climate Law (2021) guides adaptation and resilience measures and establishes a national strategy for integrated coastal management. According to the RRMM, climate resilience is supported by regional and local spatial planning instruments, notably strategies for coastal risk management and broader climate policies. At the regional level, climate change adaptation actions are included in the Anticipating Climate Change in Nouvelle-Aquitaine adaptation plan¹⁴. The main local strategy for South Aquitaine is the Local Coastal Risk Management Strategy (SLGRL)¹⁵, coordinated by the CAPB. Priorities and actions have been established locally, in consultation with coastal municipalities and involving regional and national representatives who participate in the steering committees. The Nouvelle-Aquitaine Region's climate change adaptation strategy directly informs and shapes that of the CAPB, which translates it into consistent local implementation.
- **Financial instruments** – Adaptation is supported by different instruments at the national level, including The Green Fund (Fonds Vert) or the Partnership Planning Projects (Projet Partenarial d'Aménagement¹⁶), as well as various types of EU funding.

¹⁴ Anticipating Climate Change in Nouvelle-Aquitaine (2020)

¹⁵ Local Coastal Risk Management Strategy (SLGRL) (2017)

¹⁶ [Partnership development project contracts and major urban planning operations](#)

- **Informational instruments** – Knowledge is mobilized through regional collaborative initiatives between research, stakeholders, and public authorities, such as GIS Littoral, Joint Research lab KOSTARISK, and Regional Coastal Observatory (OCNA). National bodies, such as the French agency for ecological transition (ADEME) and the High Council for Climate, provide expertise and evaluation support for the region, while NGOs support public outreach.

STRENGTHS

- **Anticipatory measures:** The regional development plan/S3 strategy¹⁷ (Nouvelle Aquitaine) includes measures to accelerate the rollout of land-use adaptation solutions. The region plans to limit land artificialization and anticipate environmental risks, such as coastal retreat and flooding. The Local Coastal Risk Management Strategy specifies all actions related to coastal protection, adaptation, and managed retreat to be implemented in the area¹⁵.
- **Climate services:** The regional development plan/S3 strategy¹⁷ (Nouvelle Aquitaine) promotes cross-sectoral and regional data pooling to monitor and steer environmental issues, thereby enabling faster adaptation. The regional adaptation plan¹⁷ (Nouvelle Aquitaine) refers to further risk assessments to build on the work done to map climate change impacts in the region (e.g. IMPACT2C project). The Local Coastal Risk Management Strategy includes monitoring of coastal erosion across the eight coastal municipalities¹⁵. The RRMM indicates that the existing monitoring systems are mainly tracking selected indicators, rather than providing a comprehensive evaluation.
- **Stakeholder participation:** The Nouvelle-Aquitaine adaptation plan¹⁴ aims to broaden stakeholder participation to include economic actors and participants beyond mobilized citizens, thereby improving knowledge sharing and promoting wider public involvement in climate action.
- **Innovation:** Nouvelle Aquitaine's regional development plan/S3 strategy encourages the establishment of regional innovation testing and demonstration centers to promote and develop innovations aligned with the ambitions of the regional ecological and climate roadmap (Néo Terra).
- **International cooperation:** The region collaborates with the Spanish Basque Country, particularly on coastal protection and is involved in a proposed transregional agreement among France, Spain, and Andorra for ecosystem protection in the Pyrenees¹⁴. The Basque Country adaptation plan¹⁸ also refers to the cooperation with the Spanish Basque Country on shared issues and involvement in European initiatives.

AREAS OF IMPROVEMENT

- **Horizontal coherence:** While adaptation is mainstreamed into some sectors and local adaptation plans exist, the integration across sectoral policies remains partial. For example, regional and local plans for tourism, a key sector, and transport do not consider adaptation or climate resilience.
- **Continuous funding:** While the region employs a variety of financial instruments, financial programming in the (French) Basque Country Climate Plan is mostly provisional and project-based and there is no coherent strategy for securing funding for the entire adaptation cycle. The RRMM also emphasizes the lack of a coordinated regional financing strategy. Limited use of incentivizing or penalizing

¹⁷ Regional scheme for economic development, innovation and internationalisation 2022-2028 SRDEII (2022)

¹⁸ Basque Country Climate Plan -territorial climate-air-energy plan (2021)

instruments for adaptation can limit adaptation by private individuals and private sector actors and may limit the climate-proofing of sectors such as agriculture and tourism.

- **Local engagement:** While the Basque Country adaptation plan¹⁸ recognises the value of diverse knowledge, it could more explicitly outline ways to engage local communities. Operationalising inclusion to understand their perspectives, including their experience of how they are affected by climate change in policies embeds engagement into practice.
- **Multi-level coordination:** Coordination exists in practice, but the region has no legal framework for ensuring coherence of climate resilience goals across national, regional, and local levels. Improving coherence between local, regional and national policies on climate resilience depends on better coordination of existing frameworks, strengthened multi-level governance and a shared long-term vision that fully integrates climate change adaptation.

Tuscany

- **Geography** – Tuscany is a central Italian region along the Ligurian and Tyrrhenian Seas (22,985 km²; population ~3.7 million). It is characterised by a predominantly hilly and mountainous landscape, a western coastline, and the Arno River valley, where its major cities, including the capital Florence, are located.
- **Economy** – The region is a major tourist destination, particularly in summer, with a strong focus on coastal tourism alongside broader regional economic activities.
- **Governance** – Italy is a regionalized unitary state with legislative powers at the sub-national level. Tuscany has ordinary legislative and administrative competences, reflecting principles of local autonomy and decentralisation.
- **Regulatory instruments** – Adaptation is steered through a national adaptation strategy (2015) which provides guidelines and a more recent climate adaptation action plan (2023) that guides regional institutions. Tuscany has adopted several laws and planning instruments related to adaptation topics, as well as public-private agreements for sustainable practices. Climate resilience is addressed through several regional strategies and sectoral plans, including those related to energy, forestry, water management and land-use planning¹⁹.
- **Financial instruments** – Financial resources for climate resilience are distributed across sectoral programmes and initiatives, often through national and European funding schemes, e.g. ERDF, Horizon and Interreg, for funding adaptation. Key funding sources for adaptation include the National Recovery and Resilience Plan, which covers the green transition. The region also benefits from the European initiative RepowerEU, which provides financial incentives for the energy transition, which is perceived as supporting climate resilience, as well as ERDF, Horizon and Interreg, for funding adaptation.
- **Informational instruments** – Adaptation-related knowledge is generated and shared through EU-funded projects and regional initiatives, including voluntary river management contracts and model forest networks. Tuscany hosts the Mediterranean Model Forest Network secretariat and is developing monitoring systems and open data platforms to support knowledge sharing and stakeholder engagement.

¹⁹ Intelligent Specialisation strategy of Toscana 2021-2027 (preliminary version) (2022)

STRENGTHS

- **Coastal risks assessment and management:** Both the S3¹⁹ and the Regional Development Programme²⁰ of Tuscany support climate adaptation through their aims to protect and monitor the shoreline and the beach at the regional level. Both policies mention the use of technologies for hydro-geologic and hydraulic risk studies, monitoring, and forecasting. This data informs adaptation planning in the region, for instance, to improve the climate resilience of port infrastructure to coastal risk²⁰.
- **Multi-level coordination:** Adaptation is currently steered by non-binding national adaptation policies (strategy and plan). According to the RRMM, governance arrangements for climate resilience are supported by regional institutions and multiple sectoral plans addressing environmental and climate-related issues. Coordination between regional and local authorities exists and the region supports municipal adaptation initiatives and emergency response mechanisms. In addition, in Tuscany, the national and local levels collaborate around the National Heatwave Health Effects Warning system. This cross-level collaboration aims to empower local communities through local adaptation strategies and active civil society involvement in planning and monitoring. This also connects climate change adaptation with disaster risk reduction. Tuscany has also been one of the coordinating regions in the Italian Board for Coastal Erosion, leading to the publication of the National Guidelines for Coastal Protection from Erosion and Climate Change Effects (2018).
- **Climate services:** The national adaptation plan²¹ sets up a new National Observatory for Adaptation to Climate Change to mainstream adaptation into planning at all levels and establish criteria for evaluating adaptation actions. According to the RRMM, monitoring activities are conducted by several regional institutions, while data management and accessibility remain fragmented.
- **Private financing:** In Regions4Climate, the region plans to create a consortium of private stakeholders to consolidate private funding for NbS coastal projects and establish a private-public partnership (PPP) model, which can be replicated in other regions²².

AREAS OF IMPROVEMENT

- **Multi-level and horizontal coordination:** Adaptation goals are integrated into various sectoral plans, but there is currently no regional adaptation law or mandatory framework assigning responsibilities at the regional and municipal levels or clarifying objectives and actions. The regional adaptation plan, which is being developed, will formalize coordination. According to the RRMM, the integration between regulatory instruments and planning frameworks and collaboration across sectors and administrative levels remains uneven.
- **Financial instruments:** Funding for adaptation is project-based and not continuous; financial instruments are limited and not fully focused on adaptation. The limited strategic approach to financing climate resilience is recognised by the RRMM. Some financial instruments, such as RepowerEU, are based on European mechanisms that are managed at the national level and difficult for regions to access. Additionally, the region lacks insurance-related mechanisms to manage residual climate risks that are prohibitively costly or technically unfeasible to mitigate.
- **Pilots and learning:** Although the region participates in collaborative projects and pilot initiatives, its policy documents^{19,20,21} do not explicitly institutionalise piloting as a structured governance

²⁰ Tuscany Region: Regional Development Programme 2021-2025

²¹ National Plan for Climate Change Adaptation (PNACC) (2023)

²² Thompson et al. 2026 (Regional Innovation Roadmaps (D6.2))

instrument for adaptation. Embedding experimentation and learning mechanisms within formal strategies could strengthen long-term innovation and scaling up of solutions.

- **Low awareness:** The lack of awareness among stakeholders and the public about climate change adaptation is identified as a major barrier to rapid implementation.

Synthesis

The governance and policy analysis for the Faster Adaptation Challenge Suite^{4,5,6} shows that the Azores, the Basque Country, South Aquitaine and Tuscany have established important foundations for **faster adaptation** (see Fig.1). Across the regions, coordination mechanisms, collaborative platforms, planning instruments, and stakeholder networks are helping to translate adaptation strategies into action. These include examples of multi-level cooperation, coastal risk management strategies, and the integration of adaptation into spatial and sectoral planning. These efforts are supported by strengths in **smarter adaptation**, particularly climate-risk knowledge, technical-scientific capacity, monitoring systems, and evidence-based tools. These knowledge systems provide an important basis for informed decision-making and help regions identify, prioritise, and implement adaptation measures.

At the same time, the analysis highlights that the extent to which these mechanisms are formalised and operationalised varies across the Challenge Suite. In some regions, clearer roles and responsibilities, stronger vertical and horizontal coordination, more systematic integration of adaptation into sectoral policies, and more continuous financing would help improve the speed and coherence of implementation. These same conditions also support progress towards **systemic adaptation**, by helping adaptation move beyond individual projects towards larger-scale impact and stronger cross-border value. Strengthening governance, knowledge and financing conditions can therefore help the regions move from promising strategies and good practices towards more sustained, coordinated and scalable action.

Governance and steering instrument recommendations

This section presents an **integrated set of recommendations** based on two sets of regional analyses: one focused on governance^{4,5} and one focused on policy and steering instruments². The recommendations below reflect elements relevant to local and regional governments in each of the regions but are not necessarily shared by all of the regions. More details related to a broader set of recommendations for each region can be found in the specific deliverables. In connection with the recommendations, we also present connected good practices from across Europe identified in the Regions4Climate Good Practice Leaflet.

Improve knowledge sharing and monitoring systems

- Consider expanding climate services, broaden climate risks assessment, and strengthen monitoring disaster losses for improved adaptation decision-making.
- Strengthen regional monitoring, evaluation, and data governance systems, including centralized or pooled access to climate information, to improve planning coherence and support policy adjustment.

- Leverage transboundary collaboration and stakeholder networks to address knowledge gaps and build cross-sectoral knowledge bases across the region.

Good practice for centralised climate data governance: Castilla y León. Since 2015, the region has operated a GIS-based geoportal providing georeferenced, real-time risk information on wildfires, floods, and other hazards to authorities and the public. The platform integrates open data from weather stations and wildfire reports, supporting coordinated disaster response and continuous updates to cartographic and risk data.

Mainstream climate adaptation into sectoral policies

- Explore potential synergies between local and regional climate adaptation and resilience, S3 strategies and regional development strategies.
- Institutionalise integration of adaptation and resilience-focused piloting into relevant sectoral strategies to foster learning and innovation around adaptation and cross-sectoral benefits, scale up adaptation actions for broader impact, and accelerate adaptation.
- Strengthen cross-sector collaboration and partnerships to scale up adaptation actions, including nature-based solutions, across sectors and ecosystems.
- Address remaining gaps in key sectors where adaptation is not yet fully integrated.

Good practice for cross-sector collaboration in climate adaptation: Nordic Archipelago. The Nordic Archipelago Inspirational Forum brings together decision-makers, stakeholders, and communities across borders to develop shared strategies on sustainable transport and renewable energy systems. This cross-sectoral network has grown into an independent entity, demonstrating how structured stakeholder engagement can generate lasting inter-regional collaboration beyond the lifespan of individual projects.

Align climate adaptation policies and governance across governance levels

- Clarify roles, mandates, and accountability mechanisms across governance levels, including monitoring responsibilities. Consider promoting regulatory frameworks that formalise alignment and clarify responsibilities.
- In cases where legally binding regional level steering instruments are not possible, explore the possibilities of adopting an informal regional adaptation framework to clarify and align regional goals across sectors and synergise local adaptation efforts.

Good practice addressing multi-level governance challenge: The Basque Country. The region launched Udalsarea 2030 in 2002, a cooperation network to promote sustainability across Basque municipalities through shared governance and technical support. It strengthens coordination between local and regional authorities and improves support for local sustainability policies.

Leverage participatory processes to make regional and local strategies more inclusive and just

- Integrate local and traditional knowledge to improve the evidence base for climate adaptation planning and decision-making.
- Strengthen the engagement with local communities and civil society to raise awareness of climate change, to better understand local priorities, provide ideas for local level solutions, and to ensure that adaptation strategies reflect diverse needs, priorities, and experiences.

Good practice for co-production of knowledge: South-Aquitaine. For over 15 years, the region has brought together academia, technology centres, and public authorities through two complementary initiatives (KOSTARISK and GIS Littoral Basque) to translate coastal research into practical tools and services. This long-term science-society collaboration has demonstrated that sustained institutional commitment and open stakeholder dialogue are key to producing actionable knowledge on climate and coastal risks.

Diversify, expand, and integrate financial instruments for climate resilience

- Develop comprehensive regional financing strategies for adaptation, beyond project-based funding. Consider new financial instruments like green and climate bonds, equity financing, public-private partnerships, as well as risk transfer and risk-sharing mechanisms, such as insurance and catastrophe funds to address residual climate risks.
- Introduce adaptation-specific financial incentives and secure resources for all stages of the policy cycle, including monitoring, evaluation, and revising.
- Mobilize private sector investment in climate resilience through financial incentives and partnerships.
- Improve accessibility of national and EU funding at regional and local levels, including administrative capacity support.



**Regions
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Regions 4Climate

Fostering smarter, faster and systemic adaptation in Burgas, Køge Bay, Pärnumaa and Uusimaa

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This policy brief examines the regional governance and steering instruments of four European regions in the Regions4Climate Smarter Adaptation Challenge Suite and provides recommendations for smarter, faster and more systemic adaptation.

We found that

- Burgas, Køge Bay, Pärnumaa and Uusimaa regions are investing in climate-risk assessments, modelling, digital tools, climate services and knowledge platforms that improve understanding of risks, vulnerabilities and adaptation needs.
- Existing data and risk knowledge need to be more systematically integrated into local and regional planning, as well as municipal investment processes.
- Local, regional and national authorities should define clearer mandates related to adaptation, ensure policy alignment across governance levels, and improve cross-sectoral coordination to reduce fragmentation and support local implementation.
- Local and regional authorities need to mainstream adaptation across sectoral policies, planning frameworks, financing mechanisms and innovation capacities to move beyond isolated projects and enable long-term resilience.

Introduction

Climate change poses a growing threat to regions across Europe, with more frequent and severe weather events disrupting communities, economies, and ecosystems. Adaptation is essential to build resilience and protect vulnerable areas, but it requires adequate planning, coordination, and policies.

The European Commission's European Missions - Adaptation to Climate Change Implementation Plan outlines three objectives: smarter, faster and systemic adaptation. The plan presents these objectives as sequential and mutually reinforcing intervention steps that build on one another to achieve the Mission's overall goals. **Smarter adaptation** involves assessing opportunities and risks and creating a solid evidence base for decision making (See Fig. 1). Smarter adaptation is the foundation for faster and more systemic adaptation, which is helping to accelerate adaptation action and deliver cross-border value and impact at scale.

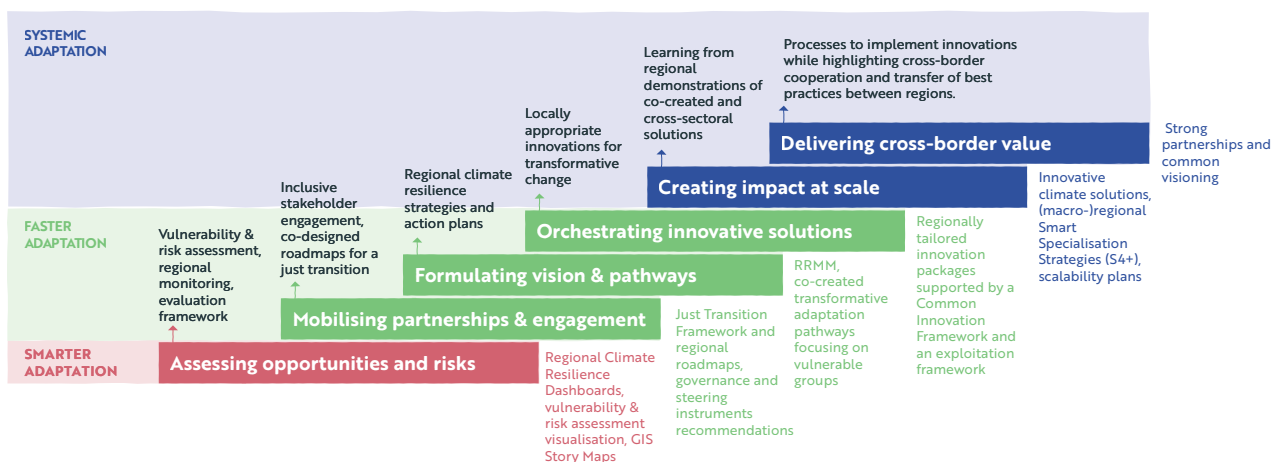


Figure 1 The implementation steps for achieving Adaptation Mission Objectives, which also align with the smarter, faster and systemic adaptation approaches. Adapted from the EU Mission on Adaptation to Climate Change – Implementation Plan. Smarter adaptation refers to step 1, Faster adaptation refers to steps 2-4, while Systemic adaptation refers to steps 5-6. Selected actions that regions are implementing in Regions4Climate are on the left of each step and selected research and innovation support examples provided by the project are on the right. These examples are not exhaustive.

This policy brief synthesises the Regions4Climate project’s governance and policy insights related to transformative adaptation for **Challenge Suite 2: Smarter Adaptation** in the Regions4Climate regions of **Burgas, Køge Bay, Pärnumaa and Uusimaa**. In their Regions4Climate Innovation Packages, this group of regions is working to **improve the evidence base for their adaptation work** through digital twins, modelling, as well as improving the understanding of vulnerability to climate impacts. Although this Challenge Suite focuses on their Innovation Package activities that support smarter adaptation, the recommendations take a more comprehensive perspective based on insights related to smarter, faster and systemic adaptation.

Climate change adaptation is the process of adjusting to current or anticipated climate conditions and their impacts¹, enhancing adaptive capacity, strengthening resilience, and reducing vulnerability². **Governance** is considered the combination of formal and informal institutions, procedures and mechanisms that steer policy and decision-making³.

This policy brief draws on conclusions from the Regions4Climate Governance recommendations (D4.3)⁴, draft Policy recommendations (D4.4)⁵, as well as the regions’ self-assessment results using the Regional Resilience Maturity Model (RRMM)⁶. The RRMM evaluates adaptation readiness across multiple dimensions and indicators. For this policy brief, we draw on the results focused specifically on governance- and policy-related dimensions, namely Dimension 1: Regional Governance and Institutional capacity, Dimension 2: Plans and policy instruments, and Dimension 6: Finance and resources. The overview of relative maturity patterns across regions helps contextualize the strengths and gaps identified in the governance and steering instrument

- 1 IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 p
- 2 Singh, C., Iyer, S., New, M.G., Few, R., Kuchimanchi, B., Segnon, A.C., Morchain, D., 2022. Interrogating ‘effectiveness’ in climate change adaptation: 11 guiding principles for adaptation research and practice. *Climate and Development* 14, 650–664. <https://doi.org/10.1080/17565529.2021.1964937>
- 3 Levi-Faur, D. 2012. *The Oxford Handbook of Governance*. Edited by D. Levi-Faur. Oxford: Oxford University Press. p. 8
- 4 Malmström, et al. 2024. Regions4Climate D4.3 Governance Recommendations.
- 5 Tuhkanen, et al. 2025. Regions4Climate D4.4 draft Policy and Steering Instrument Recommendations.
- 6 Manuelli, et al. 2023. Regions4Climate D4.1 Regional Resilience Maturity Model and Framework.

analysis. This analysis assesses how regional governance strengths and gaps contribute to faster, smarter, and systemic adaptation. The brief aims to share integrated governance and policy recommendations for adaptation with local and regional authorities within the Challenge Suite 2, as well as with local and regional governments across the EU more broadly.

Climate adaptation governance can be understood by considering aspects such as the structure, effective coordination among local, regional, and national authorities, key actors driving decision-making and implementation, and mechanisms, such as steering instruments. These include regulatory instruments, such as regulatory frameworks and policies; financial instruments, such as financial incentives and penalties, dedicated funding, etc., and informational instruments, such as collaborative platforms, networks, etc... Clarifying responsibilities, empowering key actors, and optimizing the tools used to achieve governance objectives enable policymakers to strengthen climate adaptation governance.



Map 1 The four regions of Challenge Suite 2

Regional governance and steering instrument policy analysis

Burgas

- **Geography** – Burgas region is represented by Burgas Municipality, which is located in southeast Bulgaria along the Black Sea coast (559, 15 km²; population around 195,900). The region is characterised by a mix of coastal zones, wetlands, lakes, agricultural land, and urban areas, making it both ecologically rich and highly exposed to coastal and flood-related risks. The largest city, Burgas is situated between the sea and surrounding lakes and wetlands. Its urban core is dense with limited green space.
- **Economy** – Burgas Municipality is a key industrial hub with important transport infrastructure, including a large port, airport, and rail and road networks. Major sectors include chemicals, shipbuilding, fishing, tourism, transport and logistics services.
- **Governance** – Bulgaria is a unitary state with no legislative powers at the sub-national level, but with recognised local self-government. It has three levels of governance: central government, districts/provinces, and municipalities. Burgas region includes 13 municipalities, including Burgas Municipality. Bulgarian municipalities have administrative competencies and some financial autonomy. Adaptation is strategically framed at the national level but is primarily driven and implemented at the municipal level, with limited coordination at the regional/district level.
- **Regulatory instruments** – Bulgaria adopted a National Climate Change and Adaptation Strategy and Action Plan (2019) that provided a baseline assessment and sectors' prioritization. At the sub-national level, a key adaptation policy is the Flood Risk Management Plan (2022–2027) for the Black Sea Basin. Climate resilience is also integrated into several strategic planning instruments, including the Sustainable Energy and Climate Strategy and Action Plan 2021–2030, the Integrated Development Plan of Burgas Municipality, the Long-Term Energy Efficiency Program of Burgas Municipality 2021–2030, and the Sustainable Urban Mobility Plan of Burgas Municipality 2023–2031. These frameworks define goals, measures and indicators while integrating climate mitigation and adaptation priorities across sectors.
- **Financial instruments** – Funding is largely project-based, relying on EU programmes (e.g. LIFE, Horizon, Operational Programmes) and the National Recovery and Resilience Plan, a large part of which is financed by the EU. Additional instruments include national funding for risk mitigation, local funding from the municipal budget and municipal start-up support programmes.
- **Informational instruments** – Knowledge is generated and shared regionally through tools such as the public platform Smart Burgas and the Integrated Water Management System of Burgas Municipality. The Local Climate Resilience Unit also mobilises knowledge in Burgas, which has a dedicated digital platform for public consultations on local climate adaptation and mitigation topics, projects and policies. Burgas Municipality also builds knowledge through participation in international networks. The Regional Council for Development supports monitoring and coordination; however, according to the RRMM analysis, monitoring and evaluation systems remain relatively limited.

STRENGTHS

- **Strong information systems:** Local climate-related information is generated to support decision-making at the local level. The municipal development plan includes measures to upgrade Burgas city's resilience to climate change by improving the integrated flood risk management information system and developing an integrated urban adaptation model to identify areas vulnerable to natural hazards and heat island effects. The plan also assesses water scarcity and drought risk⁷. The adaptation plan further supports local decision-making by creating a climate and meteorological database and installing sensors to upgrade the water management information system⁸.
- **Synergies between adaptation and preparedness to foster local resilience:** The municipality fosters risk preparedness by establishing early warning systems for vulnerable groups and implementing the "Municipal Disaster Risk Reduction Programme 2025-2030", focusing on coastal sections at risk and flood risk prevention and management measures⁷. Additionally, Burgas municipality will also develop guidance on societal "behaviour and action in case of disasters, accidents and catastrophes"⁷.
- **Scale-up of NbS across sectors:** The Burgas municipality aims to create an NbS catalogue for risk mitigation, the development of green space and the connectivity of the green infrastructure elements and green corridors⁷. Considering connectivity is key to scaling up NbS. The adaptation plan also includes afforestation in urban areas such as spaces between residential buildings and along main thoroughfares to mitigate heat islands and utilise green infrastructure to reduce particulate pollution⁸.
- **Participatory instruments:** The Municipality has developed the programme "My City, My Neighbourhood, My Street", which enables Burgas residents living in condominium buildings to improve the spaces in front of their homes. Through a competitive process, citizens can implement landscaping and urban improvement projects and receive public funding, which is supplemented by co-funding from property owners.
- **Broad stakeholder involvement:** Adaptation efforts engage public, private, and third-sector actors alongside citizens, ensuring that all key societal groups are represented in the political and decision-making processes.

AREAS OF IMPROVEMENT

- **Financial instruments:** According to the RRMM analysis, financial resources for climate resilience are integrated into municipal planning frameworks and action plans. However, these resources are limited, largely project-based, and funded by national or EU programmes rather than supported by a dedicated or continuous budget at the regional or local level. Further, while the private sector is engaged in adaptation, its participation is limited; it is voluntary, with no regulatory or financial requirements.
- **Incoherence between plans:** Stakeholders perceive the General Spatial Plan for Burgas Municipality (2021–2023) as limiting local climate resilience and conflicting with the municipal development plan because the spatial plan does not sufficiently account for the local regulatory framework or the need to develop blue-green infrastructure.
- **Insufficient vertical and horizontal governance:** Adaptation responsibilities are unclear between local and national governance levels. Interaction between national and local levels is characterised by a top-down strategic framework and decentralised municipal implementation. While compliance is coordinated, there is a lack of clarity around aligning responsibilities, integrating data and monitoring systems, and

⁷ Integrated development plan for Burgas Municipality 2021-2027 (2021)

⁸ Sustainable Energy and Climate Strategy and Action Plan 2021-2030 (2022)

ensuring consistent implementation across governance levels. Also, without district-level coordination or collaboration in adaptation, regional resilience is fragmented. Governance structures for regional–local collaboration exist in Burgas, but the RRMM analysis notes that cross-sectoral coordination within the municipal administration remains limited, as climate-related responsibilities are distributed across several directorates and often require coordination with national authorities and research institutions.

Køge Bay⁹

- **Geography** – The Køge Bay project area or “region” covers suburban communities stretching 20 km south of Copenhagen along the shallow Køge Bay, part of the Øresund maritime strait. The area has a population of 900.000 and covers 550 km². The area includes suburban settlements, infrastructure corridors, and coastal zones exposed to storm surges, heavy rainfall, river flooding, and rising groundwater.
- **Economy** – The Køge Bay project area is part of the Greater Copenhagen economy, characterised by knowledge-based industries, services, and logistics, alongside light industry and warehousing.
- **Governance** – Denmark is a unitary state on a decentralized basis with central, regional, and municipal levels of government. Køge Bay is not an administrative unit but rather an area made up of 11 municipalities. These municipalities are located within the two regions Region Zealand and the Capital Region of Denmark. The national level has legislative power, while municipalities and regions have self-governing capacities and can pass binding local/regional level spatial regulations. Municipalities levy taxes, while regions depend on the central and municipal funding. The main responsibility of the regions is to provide health and hospital services.
- **Regulatory instruments** – The revised national Planning Act (PA 2018) obliges the municipalities to consider coastal flooding and erosion in physical planning and propose adaptation measures for exposed areas. This is overseen at the state level. Financial packages and plans for safeguarding measures have been adopted recently. Other plans include the National Climate Adaptation Plan I (2024), the proposed (but not yet approved) National Climate Adaptation Plan II (2026), as well as the Acceleration Package for Coastal Protection (2025).
- **Financial instruments** – Financial instruments include national funds and dedicated budgets at the municipal level. Adaptation projects are also financed by landowners and utility companies through tariff-based revenue, long-term investment planning, loans, bonds, and Public-Private Partnerships (PPPs). Project-related funding includes a national fund for sustainable urban projects and European projects.
- **Informational instruments** – Knowledge is mobilised through national agencies (national meteorological institute, geological service), research institutions, think tanks and local engagement processes, including citizen assemblies and stakeholder forums. Regional and local projects support knowledge exchange and participatory planning.

⁹ The RRMM self-assessment of Køge Bay no longer reflects the current context. This is due to the “Agreement on Healthcare Reform” adopted by the Danish government in November 2024, which removed the regional mandate to work on climate development projects as of December 2025. As a result, since the start of 2026, regional authorities no longer support municipal climate adaptation.

STRENGTHS

- **Robust information ecosystem:** Denmark provides high-quality climate services, risk assessments, and networks. The city of Køge plans to use data from the Danish Meteorological Institute to update its climate adaptation plan, e.g. to map flood risks, drought and heat island effects¹⁰. The Greve municipality also uses hazard and risk-mapping data from the National Coast Directorate to build a flood protection map for critical infrastructure¹¹.
- **Citizen involvement:** Several municipalities developed platforms to foster knowledge transfer (Climate Forum, Green council, digital citizen panel...). For instance, in Greve, a Climate Citizens' Assembly enabled citizens to formulate recommendations and proposals for policy action¹¹.
- **Diverse financial instruments:** Financial instruments include national funds for research, coastal protection, and forest restoration. Additional financing comes from utility companies through tariff-based revenues and investment planning, EU programmes, and cost-sharing mechanisms requiring benefiting landowners to contribute to project funding.
- **Nature-based Solutions:** For municipalities that apply for cofinancing of coastal protection (Pulje til Kystbeskyttelse), the Danish Coastal Authority will prioritize projects that give special consideration to nature, the environment, and the landscape, and that integrate these aspects as part of the technical solution. Emphasis is placed on solutions that are inspired and supported by nature while also being cost-effective, delivering environmental, social, and economic benefits, and supporting the development of resilience.

AREAS OF IMPROVEMENT

- **Low awareness:** Despite having a diverse network of actors working on climate issues, the survey identified gaps related to a general understanding at the local level of the differences between adaptation and other green transition issues, as well as an understanding of the general benefits of adaptation measures.
- **Multi-level coordination:** There is an unclear division of responsibilities and weak coordination across administrative levels in Denmark. In 2024, the health reform ("Sundhedsreformen") abolished the regions' responsibilities for regional development, including their possibility to engage voluntarily in areas such as climate adaptation development projects⁹. Before the reform, the regions facilitated collaboration between municipalities, supporting access to EU funding and promoting strategic adaptation efforts. The reform, therefore, represents a step backwards for multi-level climate governance, as effective climate adaptation depends on strong coordination across local, regional, and national levels.
- **Horizontal coordination:** Sectoral goals are not always aligned or coherent. Coordination of adaptation to shared risks across municipalities along shared ecosystems, such as the bay, may be weaker now that the regional level is no longer able to work on adaptation.
- **Municipal collaboration:** Municipal collaboration is not formalised and can often be very difficult. Climate adaptation projects are complex, and collaboration across municipal borders further complicates them. However, municipal coordination is informally supported by the Climate Alliance, a collaboration network between Local Government Denmark and Concito, a green think tank. They support all Danish municipalities in implementing their climate action plans and also share good practices across the municipalities.

¹⁰ DK2020 Climate Plan of Køge municipality (2020)

¹¹ Climate Action Plan 2050 of Greve municipality (2023)

Pärnumaa

- **Geography** – Pärnumaa is a coastal county in southwestern Estonia along the Gulf of Riga (5,407 km²; population around 85,700). The region faces risks from coastal flooding, erosion, declining river water levels, groundwater movement, heat, landslides, and declining winter ice coverage.
- **Economy** – Key sectors include industry and seasonal tourism, requiring careful balancing with environmental pressures. The region expects to grow due to the upcoming Rail Baltica corridor which will connect Estonia to Central Europe.
- **Governance** – Estonia is a unitary state where legislative power is held at the national level (Parliament), while municipalities exercise local self-government. Counties function as administrative units without independent legislative authority but play an important role as cooperation platforms between municipalities. In this capacity, counties support coordination and implementation of nationally defined policies at the regional level. Local authorities are responsible for managing local affairs, ensuring the provision of services, and addressing residents' needs in accordance with the law. In Pärnumaa, the Association of Local Authorities of Pärnu County acts as a key regional coordination body, facilitating cooperation between municipalities, stakeholders, and development initiatives.
- **Regulatory instruments** – Adaptation is guided by the National Adaptation Plan (2017) and municipal-level plans. The Pärnumaa Strategic Energy and Climate Action Plan (SECAP) (part of the County Development Plan) supports regional coordination, while a national Climate Resilient Economy Act has been drafted and has undergone consultation, but has not yet been approved. The Pärnumaa SECAP covers all the municipalities in the county, except for Pärnu City, which has its own SECAP. According to the RRMM analysis, this law is expected to strengthen integration across governance levels.
- **Financial instruments** – Financial instruments for adaptation include incentivising instruments with KredEx loans, EU project funding (Horizon and Interreg), and a regional budget allocated for expenditure on flood detection systems.
- **Information instruments** – Knowledge is generated and shared through a combination of regional, national and international initiatives. Regionally, the LEADER rural development programme and the Innovation Hub KOBAR quadruple helix collaboration platform, which supports cross-sectoral innovation, play a central role. International cooperation projects further strengthen regional capacities by enabling transnational knowledge exchange, piloting and transfer of good practices. Demonstration initiatives, such as the "Nature House" (Pernova Smart Park) in Pärnu, serve as focal points for public education and awareness-raising on climate change and sustainability.

STRENGTHS

- **Synergies between sectors:** The Association of Local Authorities of Pärnu County voluntarily coordinates the adaptation planning of the municipalities and aligns its work with Pärnu City's adaptation planning. As the SECAP is a part of the county development plan, the two policies (adaptation and development) are aligned.
- **Climate-proof infrastructures:** The region contributes to adaptation and DRR by adapting infrastructure to extreme temperatures based on evidence-based decision making. Planned measures include ensuring

sufficient drinking water during heat waves, upgrading stormwater systems¹², implementing greener parking solutions, enhancing building insulation and revising building standards¹³.

- **Increased risk preparedness:** Both county and city are including preparedness and crisis response topics within their adaptation planning and are involved in projects to collaborate on these topics^{12,14}. To reach the goal, the city intends to build the knowledge and capacities of officials, social workers and social service providers through participation in rescue exercises and to increase preparedness in critical services.
- **NbS planning:** The region has an aligned approach to NbS with mentions in the RDP and a more detailed approach described in the city and county SECAPs. The city recognises the benefits of those solutions (weather buffer, natural carbon sink...) and plans to restore wetlands and expand wetland planning more widely¹⁴. The city also aims to increase the proportion of natural areas and to develop a compensatory landscaping program for developers¹⁴.

AREAS OF IMPROVEMENT

- **Financial instruments:** Financial resources are limited, largely project-based or funded by EU programmes and not supported by a dedicated or continuous budget at the regional or local level. The private sector is not engaged, nor incentivised or required to participate in adaptation. Public-private partnerships are not widely used to mobilise investment for resilience, e.g. with utilities.
- **Informational instruments for innovation:** The national Estonian Smart Specialisation Strategy (S3) highlights the importance of research, development, and innovation in increasing the wellbeing and cohesion of society in the face of several challenges, including climate change adaptation. While local and county level informational instruments promote stakeholder engagement, e.g. LEADER, KOBAR innovation hubs, local and regional representatives are not systematically utilising them to incentivise and support innovation around climate adaptation and resilience, or in climate-proofing other areas of technological development.
- **Inclusive engagement in adaptation:** Despite existing stakeholder engagement instruments in the region, the county and city adaptation plans acknowledge that social vulnerability has been overlooked in adaptation planning^{12,14}. The Regions4Climate project is working on accounting for this in relation to heat stress, but the vulnerability to other climate risks remains unknown. Practitioners across different groups (e.g., healthcare professionals, social workers, and social service providers) have limited knowledge of how to adapt to climate risks.
- **Climate resilience coordination:** According to the RRMM analysis, governance structures for coordinating climate resilience in the region remain at an early stage. Dialogue between institutions exists, but climate resilience is not yet a major policy priority, and coordination often occurs on a voluntary basis. Local-regional collaboration is constrained by limited institutional capacity and the absence of dedicated climate specialists, although existing climate and energy plans provide a foundation for further coordination. The analysis also points out that although the regional and municipal climate and energy plans provide a framework for adaptation actions, the integration of resilience considerations into regulatory and planning frameworks remains limited.

¹² Pärnumaa Climate Plan 2030 (2023)

¹³ Development Strategy Pärnumaa 2035+ and Action Plan 2022-2027 (2022)

¹⁴ Pärnu Climate Plan 2030 (2022)

Uusimaa

- **Geography** – Uusimaa is Finland’s most urbanised region, located on the southern coast (9,098 km²; population around 1.7 million). The region has 230 km of coastline. It includes major cities such as Helsinki, Espoo and Vantaa, and faces climate risks related to warming temperatures, reduced snow and ice cover, and coastal impacts.
- **Economy** – Uusimaa is Finland’s economic engine, generating around 40% of national output. Key sectors include health and social services, wholesale and retail trade, as well as professional, scientific and technical activities.
- **Governance** – Finland is a unitary decentralized state with national, regional, and municipal levels of governance. Sub-national legislative powers are at the municipal and wellbeing services county level, while self-government at the regional level is limited. Based on municipal law (2015), municipalities have regulatory power and a high degree of autonomy in terms of decision-making, including land-use and resource allocation. Regional Councils are stipulated in Finnish law and represent mandatory joint municipal regional authorities; they have administrative duties, set regional development priorities, and prepare regional plans. Additionally, since 2026, ten newly formed regional Economic Development Centres have acted as regional arms of the Finnish state and have the responsibility to support the practical implementation of adaptation into regional development through coordination and funding (though not explicitly for adaptation).
- **Regulatory instruments** – Adaptation is guided by the Climate Act (2019) and National Adaptation Plan (NAP) (2022). While obligations are mainly at the national level, adaptation is integrated into land-use planning, with a focus on balancing development and ecosystem protection. The Climate Act (2019) obligates the relevant national authorities (ministries) to develop plans for their respective administrative branches, but does not impose obligations on regions or municipalities. The NAP sets targets and assigns responsibilities at the national level. Regional development strategies should include adaptation and mitigation as key topics. The region faces the challenge of balancing and managing the trade-offs between development and the protection or restoration of nature in land-use decisions. Uusimaa is revising its climate-related roadmaps to align with and implement the regional development plan.
- **Financial instruments** – Financial instruments are not considered highly influential in guiding regional climate resilience. There is a budget allocation for municipal flood protection works in larger cities and municipalities, and the regional partners access EU project-related funding (Horizon, Interreg, etc.). Public funding is also allocated to demonstration projects related to stormwater control schemes. Other instruments include non-compulsory agricultural and home insurance to cover extreme weather events.
- **Informational instruments** – Knowledge is generated through risk assessments, including flood maps, and research programmes. Institutions with units or projects on adaptation, such as the national Climate Unit of the regional Economic Development Centres (EKV), the Helsinki-Uusimaa Regional Council, the Ministry of Agriculture and Forestry, the Nordic Council of Ministers, and Innovation Frameworks, mobilise knowledge. Public consultations are held at the local level. While monitoring and evaluation are already in place at the local level, e.g. in Helsinki, they will be developed at the regional level in the future. Municipal networks in the region include the KUUMA network, which is made up of Hyvinkää, Järvenpää, Kerava, Kirkkonummi, Mäntsälä, Nurmijärvi, Pornainen, Sipoo, Tuusula and Vihti.

STRENGTHS

- **Regional policy development:** According to the RRMM analysis, governance structures for coordination and regional collaboration in Uusimaa are developing as a result of the regional adaptation strategy process. The regional council plays an important coordinating role with municipalities and national institutions, although its limited formal authority constrains its ability to enforce collaboration mechanisms.

Monitoring and evaluation systems are expected to be developed alongside the regional strategy in a nationally-led process. Furthermore, the regional climate adaptation strategy will serve as the primary framework for resilience planning. The strategy, together with cooperation, will also help connect the existing elements of climate resilience included in some sectoral policies and emergency preparedness frameworks. Currently, the absence of a finalized regional strategy limits integration across planning and regulatory processes.

- **Evidence-based approach to flood adaptation:** In different municipalities in the region, flood risk is tackled through data-driven assessments and modelling, including spatial floodplain analysis¹⁵, stormwater flood risk mapping¹⁶ and the integration of updated sea-level rise scenarios into flood strategies¹⁷. These analyses inform improved planning and implementation, supported by pilot stormwater solutions¹⁷, urban flood modelling and floodway studies¹⁵ and climate-proofed infrastructure and transport design^{16,18}.
- **Diversifying responsibilities to address the climate protection gap:** Espoo's and Helsinki's SECAPs address the climate protection gap by recognising the role of insurance. Espoo plans to explore opportunities to cooperate with insurance companies, while Helsinki states that insurance can be used to transfer, share and pool risks^{17,19}. Additionally, Helsinki's adaptation plan asks citizens and private entities to take adequate insurance against floods and storms, where relevant¹⁶.
- **Synergies between adaptation and disaster risk reduction:** The KUUMA network of municipalities plans to upgrade municipal preparedness plans to integrate climate change-related emergencies in cooperation with rescue services¹⁸. The municipalities also focus on identifying the impact of climate change on vulnerable groups and on creating action plans to protect and assist them, fostering local and just resilience¹⁸.

AREAS OF IMPROVEMENT

- **Limited financial instruments:** Municipalities in the region use financial instruments to a limited extent to incentivize climate resilience. Although specific insurances cover extreme events and PPPs are used to fund adaptation, a variety of incentivizing instruments (grants or loans), tax deductions, subsidies, or penalizing instruments for not complying or not participating in adaptation are not commonly utilised. According to the RRMM analysis, financial planning for climate resilience is still evolving and closely linked to the development of the regional adaptation strategy. At present, formal investment plans or dedicated financial strategies have not yet been established, and municipalities retain considerable autonomy in allocating resources for adaptation. It is also recognised that climate-proofing investments, e.g. into infrastructure, could be a way to mainstream adaptation.
- **Bridging innovation and climate change adaptation:** The region's S3 strategy currently acknowledges climate change adaptation and resilience but focuses on promoting mitigation²⁰. In this respect, climate neutrality is promoted through circular-economy solutions, new forms of energy production, bioeconomy innovations and new materials. However, the Regional Council is also seeking to address adaptation with the private sector, recognising that the global impacts of climate change will impact businesses in the region. Furthermore, they are restructuring policies to align with and complement

¹⁵ Espoo Climate Change Adaptation Action Plan 2022-2025 (2022)

¹⁶ Helsinki Climate Change Adaptation Policy 2019-2025 (2018)

¹⁷ SECAP of the City of Helsinki (2021)

¹⁸ KUUMA municipalities Adaptation to Climate Change Plan (2013)

¹⁹ SECAP of Espoo (2019)

²⁰ Smart Specialisation Strategy for Helsinki-Uusimaa Region (2020)

the regional strategy, bringing these two policy areas together under the key target of Environmentally Smart Helsinki-Uusimaa.

- **Multi-level and horizontal coordination:** Adaptation is currently steered nationally but subnational responsibilities related to adaptation lie with municipalities and the Wellbeing Services Counties. Municipalities within the region could have stronger engagement with other regional governments (more specifically, Wellbeing Services Counties) or governance agencies (EVK, Licensing and Supervisory Authority (LVV)). It would ensure clear delineation of adaptation responsibilities and coherence and alignment of goals and competences at the regional level and from the regional to the local level. Further, a holistic view on adaptation at the regional level is currently lacking. The regional adaptation plan, currently under development, will strengthen coordination.

Synthesis

The governance and policy analysis for the Smarter Adaptation Challenge Suite ^{4,5,6} shows that Burgas, Køge Bay, Pärnumaa and Uusimaa have established important foundations for climate adaptation, particularly through investments in climate-risk knowledge, data systems, modelling, risk assessments and collaborative knowledge platforms. In Regions4Climate, they are further advancing their work on **smarter adaptation** (see Fig. 1) by strengthening the evidence base for assessing climate risks, vulnerabilities and adaptation needs. The regions also demonstrate enabling conditions for **faster adaptation**, including strong partnerships, robust engagement practices, and preparedness planning.

At the same time, the analysis highlights areas where governance and steering instrument arrangements could be further strengthened to support **faster** and **more systemic adaptation**. In some of the regions, challenges remain in ensuring consistent coordination across governance levels, sectors and municipalities; clarifying roles and responsibilities; strengthening monitoring and evaluation systems; securing stable resources beyond project-based funding; and ensuring that climate-risk knowledge is translated into regular planning, investment and implementation decisions. Addressing these gaps would strengthen the regions' ability to move from knowledge generation to faster implementation and, over time, towards more coherent, inclusive and long-term systemic resilience.

Governance and steering instrument recommendations

This section presents an **integrated set of recommendations** based on two sets of regional analyses: one focused on governance⁴ and one focused on policy and steering instruments⁵. The recommendations below reflect elements relevant to local and regional governments in each region but are not necessarily shared by all regions. More details on a broader set of recommendations for each region can be found in the specific deliverables (Regions4Climate D4.3 and D4.4). In connection with the recommendations, we also present connected good practices from across Europe identified in the Regions4Climate [Good Practice Leaflet](#).

Strengthen multi-level governance and coordination

- Clarify adaptation roles, mandates, and responsibilities across local, regional, and national levels.

- Strengthen horizontal and inter-municipal coordination, particularly where climate risks cross administrative boundaries or require action across sectors, through formal mechanisms or informal platforms.
- Improve alignment between national adaptation frameworks and regional and municipal implementation, including through clearer guidance and practical implementation support.

Good practice addressing multi-level governance challenge: The Basque Country. The region launched Udalsarea 2030 in 2002, a cooperation network to promote sustainability across Basque municipalities through shared governance and technical support. It strengthens coordination between local and regional authorities and improves support for local sustainability policies.

Mainstream climate adaptation across sectors and planning frameworks

- Integrate climate adaptation systematically into key sectoral policies, such as regional development, spatial planning, infrastructure, water management, and emergency preparedness, where relevant.
- Review and align existing planning frameworks to identify inconsistencies, gaps and trade-offs that may undermine climate resilience.
- Strengthen cross-sectoral coordination so that adaptation objectives are coherent across departments, policy areas and implementation processes.

Secure and diversify funding for climate resilience

- Embed climate resilience in stable municipal, regional and infrastructure investment cycles, reducing dependence on short-term project funding where this remains a barrier.
- Broaden and better coordinate the use of financial instruments, including dedicated budgets, co-financing, loans, insurance, grants and subsidies, according to regional and municipal contexts.
- Mobilise private-sector, utility and landowner contributions where appropriate, including through cost-sharing mechanisms, with clear incentives, responsibilities and safeguards to support public climate-resilience goals.

Improve knowledge use, monitoring, and decision-making systems

- Improve the translation of climate-risk assessments, vulnerability data and climate services into planning, implementation and investment decisions.
- Strengthen cross-sectoral knowledge exchange and accessibility to address gaps in awareness, practitioner capacity and the practical use of climate information.
- Develop monitoring and evaluation systems across municipalities and regions where gaps remain, so adaptation progress can be tracked and policy updates are evidence-based.

Good practice for co-development and co-production of knowledge: South Aquitaine. For over 15 years, the region's joint sustainable coastal management initiative has united academia, technology centres, and public authorities to address societal needs by utilising research results, facilitating dialogue, and enabling co-creation among stakeholders from diverse backgrounds. The main lessons show that co-development bridges science and society but requires continuous and sustainable support alongside open and respectful dialogue.

Strengthen implementation support at the municipal level for stronger regional resilience

- Provide municipalities with clearer guidance, tools, peer-learning platforms and technical support, coordinated at national or regional level, where appropriate.

Good practice for addressing stakeholder engagement in climate action planning: Køge Bay. The Climate Alliance, a collaboration network between Local Government Denmark and the green think tank Concito, supports all Danish municipalities in developing binding climate action plans through the DK2020 framework. By providing a structured template, knowledge-sharing, and individual counselling, it ensures consistent planning nationwide. With 98 plans produced and revised every four years, the main learning is that centralised technical support can effectively drive widespread local climate action.

- Improve consistency in municipal implementation across the regions, especially where shared climate risks require coordinated action across administrative boundaries.
- Where capacity gaps exist, establish dedicated adaptation officers or cross-sectoral units at municipal level to improve continuity and coherence.



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Regions 4Climate

Fostering smarter, faster and systemic adaptation in Castilla y León, Nordic Archipelago, Sitia and Troodos

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This policy brief examines the regional governance and steering instruments of four European regions in the Regions4Climate Systemic Adaptation Challenge Suite and provides recommendations for smarter, faster and more systemic adaptation.

We found that:

- Castilla y León, Nordic Archipelago, Sitia and Troodos are linking adaptation with rural development, agriculture, tourism, water management, disaster risk reduction, biodiversity and local livelihoods, but these connections need to be more systematically embedded in sectoral policies and planning frameworks.
- Local, regional and national authorities should define clearer mandates related to adaptation, ensure policy alignment across governance levels and improve cross-sectoral coordination to reduce fragmentation and support local implementation.
- Local and regional authorities need to strengthen climate-risk knowledge, vulnerability assessments, climate services and monitoring systems and better integrate them into planning, prioritisation and policy revisions across institutions and sectors.
- Stable financing, stronger local and regional implementation capacity, and better use of stakeholder networks are needed to scale adaptation beyond individual projects, emergency response and sector-specific actions.

Introduction

Climate change poses a growing threat to regions across Europe, with more frequent and severe weather events disrupting communities, economies, and ecosystems. Adaptation is essential to build resilience and protect vulnerable areas, but it requires adequate planning, coordination, and policies.

European Commission's European Missions - Adaptation to Climate Change Implementation Plan outlines three objectives: smarter, faster and systemic adaptation. The plan presents these objectives as sequential and mutually reinforcing intervention steps that build on one another to achieve the Mission's overall goals. **Systemic adaptation** involves creating impact at scale and delivering cross-border value (See Fig. 1). Systemic adaptation builds on smarter and faster adaptation by moving from robust climate-risk knowledge, partnerships and implementation pathways towards coordinated, long-term resilience across sectors, governance levels and territories.

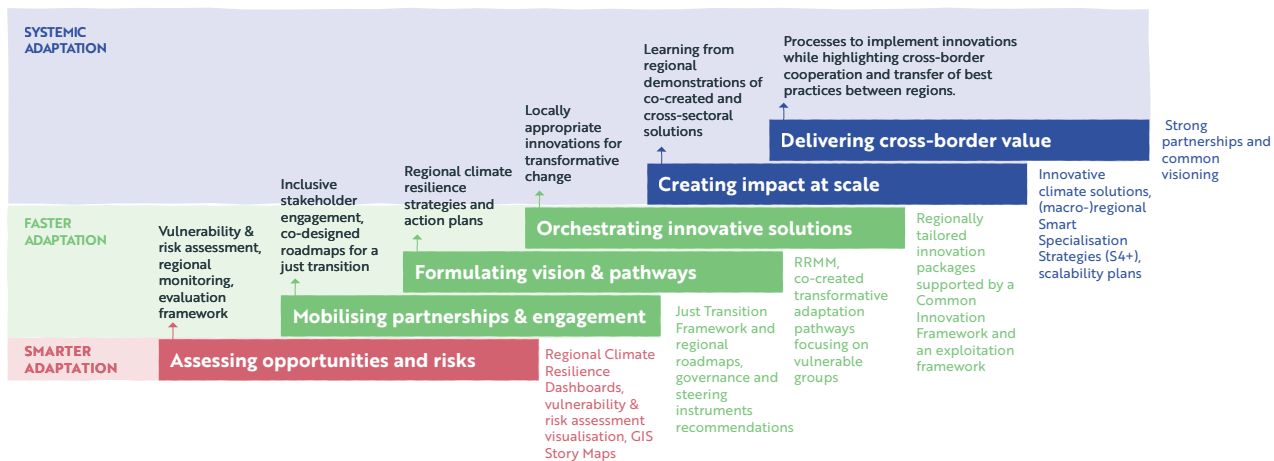


Figure 1 The implementation steps for achieving Adaptation Mission Objectives, which also align with the smarter, faster and systemic adaptation approaches. Adapted from the EU Mission on Adaptation to Climate Change – Implementation Plan. Smarter adaptation refers to step 1, Faster adaptation refers to steps 2-4, while Systemic adaptation refers to steps 5-6. Selected actions that regions are implementing in Regions4Climate are on the left of each step and selected research and innovation support examples provided by the project are on the right. These examples are not exhaustive.

This policy brief synthesises the Regions4Climate project’s governance and policy insights related to transformative adaptation for Challenge Suite 3: Systemic Adaptation in the Regions4Climate regions of Castilla y León, Nordic Archipelago (South-West Finland¹), Sitia and Troodos. In their Regions4Climate Innovation Packages, this group of regions is working to strengthen their climate resilience, with a focus on protecting strong local cultures and unique community features, and promoting innovative solutions to adapt economic activity that is vulnerable to climate pressures. Although this Challenge Suite focuses their Innovation Package activities that support systemic adaptation, the recommendations take a more comprehensive perspective based on insights related to smarter, faster and systemic adaptation.

Climate change adaptation is the process of adjusting to current or anticipated climate conditions and their impacts², enhancing adaptive capacity, strengthening resilience, and reducing vulnerability³. **Governance** is considered the combination of formal and informal institutions, procedures and mechanisms that steer policy and decision-making⁴.

This policy brief draws on conclusions from the Regions4Climate Governance recommendations (D4.3)⁵, draft Policy recommendations (D4.4)⁶, as well as the regions’ self-assessment results using the Regional Resilience Maturity Model (RRMM)⁷. The RRMM evaluates adaptation readiness across multiple dimensions and indicators. For this policy brief, we draw on the results focused specifically on governance- and policy-

- 1 The D4.3, D4.4 and the RRMM defined the scope of Nordic Archipelago differently due to the availability of information. Therefore, the policy and governance analysis will focus solely on South-West Finland which was covered by all three analyses.
- 2 IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 p
- 3 Singh, C., Iyer, S., New, M.G., Few, R., Kuchimanchi, B., Segnon, A.C., Morchain, D., 2022. Interrogating ‘effectiveness’ in climate change adaptation: 11 guiding principles for adaptation research and practice. *Climate and Development* 14, 650–664. <https://doi.org/10.1080/17565529.2021.1964937>
- 4 Levi-Faur, D. 2012. *The Oxford Handbook of Governance*. Edited by D. Levi-Faur. Oxford: Oxford University Press. p. 8
- 5 Malmström, et al. 2024. Regions4Climate D4.3 Governance Recommendations.
- 6 Tuhkanen, et al. 2025. Regions4Climate D4.4 draft Policy and Steering Instrument Recommendations.
- 7 Manuelli, et al. 2023. Regions4Climate D4.1 Regional Resilience Maturity Model and Framework.

related dimensions, namely Dimension 1: Regional Governance and Institutional capacity, Dimension 2: Plans and policy instruments, and Dimension 6: Finance and resources. The overview of relative maturity patterns across regions helps contextualize the strengths and gaps identified in the governance and steering instrument analysis. This analysis assesses how regional governance strengths and gaps contribute to faster, smarter, and systemic adaptation. The brief aims to share integrated governance and policy recommendations for adaptation with local and regional authorities within the Challenge Suite 3, as well as with local and regional governments across the EU more broadly.

Climate adaptation governance can be understood through considering aspects such as structure or the effective coordination among local, regional, and national authorities, key actors driving decision-making and implementation, as well as mechanisms, such as the steering instruments. These include regulatory instruments, such as regulatory frameworks and policies; financial instruments, such as financial incentives and penalties, dedicated funding, etc., and informational instruments, such as collaborative platforms, networks, etc. Clarifying responsibilities, empowering key actors, and optimising the tools used to achieve governance objectives enable policymakers to strengthen climate adaptation governance.



Map 1 The four regions of Challenge Suite 3

Governance and policy analysis

Castilla y León

- **Geography** – Castilla y León is a landlocked autonomous community in northwestern Spain, bordering Portugal and several Spanish regions (94,216.91 km²; population around 2.4 million). The region is characterised by an inner plateau surrounded by mountains and drained by the Duero River. Rainfall is scarce and concentrated in spring and autumn, resulting in marked summer droughts and a high risk of forest fires.
- **Economy** – The economy is based on agriculture and livestock, followed by the manufacturing industry. The region is experiencing demographic decline, particularly in rural areas and small towns, with outmigration to urban centres and an ageing population.
- **Governance** – Spain is a decentralised unitary state with an asymmetrical division of powers and legislative competences at the sub-national level. Castilla y León is an autonomous community composed of nine provinces.
- **Regulatory instruments** – Adaptation is guided by Spain's Climate Law and National Adaptation Strategy. At the regional level, the Regional Climate Strategy provides the main framework. Policies focus on sustainable economic activity in rural areas, including climate-adapted technologies and practices, support for entrepreneurship among women and young people, educational programmes for primary producers, and the promotion of green social business models and sustainable food production. The region Castilla y León is currently developing a new Climate Resilience Strategy⁸, along with an updated Climate Change Action and Investment Plans.
- **Financial instruments** – Financial instruments include funds allocated for disaster risk reduction and adaptation, European funding such as European Regional Development Fund (ERDF) grants, green bonds to finance sustainable projects, and publicly funded demonstration projects on ecosystem restoration.
- **Informational instruments** – Knowledge is mobilised through regional networks and platforms, including local action groups, the REDCyL network of municipalities for sustainability, and the URCACYL regional cluster of agricultural cooperatives. Additional instruments include the LIFE Soria ForestAdapt project, which engages with local and traditional knowledge on adaptation and resilience, the annual environmental sustainability report (ISACYL) used for monitoring and evaluation, and an environmental education portal for public outreach.

STRENGTHS

- **Broad stakeholder engagement and strong networks:** Adaptation involves public, private, and third-sector actors. The region has strong existing platforms for knowledge mobilization, transboundary cooperation and learning, including the REDCyL, URCACYL and a regional network of local action groups.

⁸ Castilla y León is currently developing a new Climate Resilience Strategy, along with Climate Change Action and Investment Plans, as the current Climate Change Action Plan (CCAP) is outdated. Due to the CCAP's age, the regional analysis and recommendations will be less detailed and narrower in scope than the other R4C regional results.

- **Diverse funding for adaptation:** The region uses diverse instruments to support adaptation measures such as ecosystem restoration and climate-resilient infrastructure. For instance, the regional development plan identifies grants and public procurement as funding sources for adaptation measures, e.g., the renaturalisation of educational centres and other public buildings through permeability and landscape restoration⁹. Additionally, the region has issued green bonds to finance and encourage further investment in climate-resilient infrastructure, energy efficiency and renewable energy.
- **Robust regulatory framework:** Climate adaptation is supported by a strong policy framework, including the national climate law and an adaptation plan, and sectoral strategies related to water management, forestry and biodiversity. According to the RRMM analysis, a new regional adaptation strategy is under development to replace the outdated one. Together, these will provide a clear legal or strategic basis for action and define responsibilities across governance levels.
- **Formally defined responsibilities across governance levels:** Responsibilities for adaptation are established and legally defined between national and regional levels through the national climate law and adaptation plans at the national and regional levels. This provides clarity in mandates, supports alignment of objectives across governance levels, and enables coherent vertical implementation of adaptation policies.

AREAS OF IMPROVEMENT

- **Financial instruments** – Despite diverse funding sources, financing remains largely project-based or funded by national or EU programmes and not supported by a dedicated or continuous budget at the regional or local level. Moreover, according to the RRMM, the funding remains fragmented and linked to sectoral initiatives rather than a comprehensive regional financing strategy. The use of incentivising and penalising instruments remains limited.
- **Limited climate services and analytical tools** – While networks support knowledge exchange, regional policies lack dedicated climate services, including regular climate risk, vulnerability, and exposure assessments, as well as analytical tools to support monitoring, evaluation, and evidence-based adaptation planning.
- **Piloting and testing:** While the region has strong networks, current policies do not systematically support piloting, testing, and scaling of adaptation solutions. Strengthening the role of these networks could enable learning, replication, and wider uptake of effective measures. Existing platforms and networks could be better leveraged to support experimentation, learning, and replication. More structured co-ordination may be needed to support replication across the region.
- **Collaboration between regional and national authorities:** Collaboration exists but could be improved operationally. According to the RRMM, monitoring systems remain fragmented across sectoral institutions. Creating intersectoral coordination bodies, developing integrated strategies across sectoral policies, and implementing unified systems for monitoring and managing shared data between institutions would improve resilience planning.

⁹ Programme of Castilla y León FEDER 2021-2027 (2023)

Nordic Archipelago¹: South-West Finland

- **Geography** – The Nordic Archipelago region covers the archipelago areas of Finland and Sweden, as well as the Autonomous Region of Åland. However, this policy brief only covers Southwest Finland¹. Turku is the region's capital and largest city, with over 209,000 inhabitants. This area of Southwest Finland covers 10,910 km² of land and has a population of 485,570, on average of 44 inhabitants per km². The area has around 20,000 islands near the coast.
- **Economy** – Southwest Finland is characterised by summer tourism, maritime industry, pharmaceutical and health technology, vehicle manufacturing, and the production and processing of agricultural products. The seasonal influx of tourists puts pressure on regional resources, while the transport sector faces challenges related to fleet modernisation, seasonal demand fluctuations, and the organisation of ferry connections.
- **Governance** – Finland is a unitary decentralized state with national, regional, and municipal levels of governance. Sub-national legislative powers are at the municipal and wellbeing services county level, while self-government at the regional level is limited. Based on municipal law (2015), municipalities have regulatory power and a high degree of autonomy in terms of decision-making, including land-use and resource allocation. Regional Councils are stipulated in the Finnish law and represent mandatory joint municipal regional authorities, have administrative duties and set regional development priorities and prepare regional plans. Additionally, since 2026, ten newly formed regional Economic Development Centres have acted as regional arms of the Finnish state and have the responsibility to support the practical implementation of adaptation into regional development through coordination and funding (though not explicitly for adaptation).
- **Regulatory instruments** – Adaptation is guided by the Climate Act (2019) and National Adaptation Plan (NAP) (2022). While obligations are mainly at the national level, adaptation is integrated into land-use planning, with a focus on balancing development and ecosystem protection. The Climate Act (2019) obligates the relevant national authorities (ministries) to develop plans for their respective administrative branches, but does not set obligations for the regions or municipalities. The NAP sets targets and assigns responsibilities at the national level. Southwest Finland has a regional adaptation strategy for 2011–2020, which is under revision. At the local level, Turku has a climate plan (SECAP) which includes an assessment of the state of adaptation and adaptation measures.
- **Financial instruments** – Regional adaptation planning is funded by EU-funded projects (Horizon, ERDF, etc.). The region is involved in several EU projects related to adaptation, including Regions4Climate, RESIST, Precilience, and CLIVAS. There is no earmarked public funding for adaptation on the national, regional or municipal level. The private sector participates in adaptation on a voluntary basis.
- **Informational instruments** – Knowledge about adaptation is generated both nationally, regionally and locally, e.g. through the Finnish Climate Guide (Ilmasto-opas.fi), as well as general and sectoral risk assessments conducted for the region through projects. The City of Turku is also a member of the Covenant of Mayors.

GOVERNANCE AND POLICY-RELATED STRENGTHS

- **Long-standing adaptation planning:** Southwest Finland adopted its first adaptation strategy already in 2011 as part of its regional climate strategy. The strategy included a framework for climate risk assessment and sector-specific vulnerability, and concrete adaptation measures have since been conducted. The Climate Roadmap is being updated, and the new roadmap will have a strengthened focus on climate risks and sector-specific measures.

- **Strong local example of evidence-based adaptation:** Turku aims to strengthen its understanding of climate risks through enhanced environmental monitoring and allocates resources to support this goal¹⁰. Turku conducts decision making based on climate risk assessments and impact monitoring, in alignment with its Covenant of Mayors (CoM) framework.
- **Integration of nature-based solutions (NbS):** Regional and local adaptation planning promotes NbS, including sustainable forest management and ecological corridors, respectively supporting resilience to extreme weather and biodiversity protection^{10,11}.

AREAS OF IMPROVEMENT

- **Policy coherence for adaptation:** According to the RRMM analysis results, municipalities and regional actors participate in national and EU adaptation initiatives, but a comprehensive regional adaptation strategy has not yet been established. Some sectoral plans, such as the Southwest Finland Forest Programme (Lounais-Suomi metsäohjelma) 2026–2030, incorporate resilience considerations. However, integration across planning frameworks remains limited due to a lack of clear responsibilities, resources and indicators, which originate from the national level. Also, Southwest Finland’s development plan and S3 strategy¹² addresses adaptation to a limited extent through general statements of support. Connections between the policies could be made more complete to support innovative adaptation across the region.
- **Governance structures and policies:** According to the RRMM, the governance structures for climate resilience are still emerging. Despite long-standing work with adaptation, strategic coordination at the regional level is lacking and adaptation planning does not have a strong role in the current regional Climate Roadmap (2021). While municipalities in the region cooperate, coordination across sectors and governance levels for adaptation is developing. Still, it remains limited due to the absence of a dedicated regional strategy and constrained institutional resources. Responsibilities are divided among municipalities, regional councils, national authorities, wellbeing services counties and the third sector. Collaboration exists but often relies on project-based initiatives.
- **Private sector engagement:** Private sector participation in adaptation remains largely voluntary, with few targeted financial incentives and no regulatory instruments to systematically steer businesses towards action. While collaboration with property owners works well, it should be extended to other private sector actors as well. Engaging the private sector could help diversify financial instruments beyond national programmes and EU-funded project schemes.
- **Climate services:** Climate information and risk data are produced by multiple actors, including national climate service providers (e.g. Regional Councils), boundary organisations, and municipalities. The absence of a centralized regional adaptation data, e.g. in the “Lounaistieto” (Southwest data) open access platform, where mitigation data is stored, limits accessibility, consistency, and systematic use of climate knowledge in municipal decision-making.

¹⁰ Turku Climate Plan 2029 (SECAP) (2022)

¹¹ Southwest Finland’s Climate Roadmap (2021)

¹² The Regional Strategy of Southwest Finland 2040+ (2021)

Sitia

- **Geography** – Sitia is a municipality located in Lasithi province in the easternmost part of the island of Crete, Greece (1,800 km²; population around 76,000). The Sitia region, as a Regions4Climate region, includes the Sitia municipality and neighbouring areas and is characterised by a mountainous coastal landscape and is among the most exposed regions in Europe to thermal drought, making it a climate hotspot. It is strongly dependent on the climate–energy–water–food–society nexus.
- **Economy** – The region hosts the Sitia UNESCO Global Geopark, attracting significant tourism and providing recreational opportunities. The area is also known for its high-quality Protected Denomination of Origin extra-virgin olive oil.
- **Governance** – Greece is a decentralised unitary state without legislative powers at the sub-national level. There are three levels of government: national, regional, and municipal. Regional and municipal authorities are self-governed and responsible for planning and implementing policies within their competences, under the principles of sustainable development and social cohesion and in line with national and EU frameworks.
- **Regulatory instruments** – Adaptation is guided by the National Adaptation Strategy and implemented through regional adaptation action plans. Crete’s Regional Plan for Climate Change Preparedness (2021) defines vulnerability and adaptation priorities across sectors and territories. It supports the development of municipal adaptation plans and promotes sustainable economic activities.
- **Financial instruments** – Financial instruments include EU funding programmes (e.g. LIFE, Horizon, Inter-reg), national loans for resilience, and the Greek Regional Development Corporate Agreement 2021-2027 fund, alongside support from local organisations such as agricultural cooperatives. There are also fines for not clearing wild grass from abandoned fields to reduce fire risk. According to the RRMM analysis, adaptation funding also remains largely project-based and linked to sector-specific investments, e.g. through EU loans for renewable energy. In the case of Sitia, municipal funding is influenced by the level of risk and emergency conditions affecting the area, as well as population-related needs, particularly following its characterisation as being in a state of emergency. Most current actions are financed through emergency and recovery funding mechanisms and focus primarily on prevention and immediate response measures rather than on the development of comprehensive climate adaptation plans.
- **Informational instruments** – Knowledge is mobilised through cooperative networks, including geopark networks, volunteer networks, and local action groups. Water management activities generate local and traditional knowledge through flood exercises. Monitoring and evaluation are supported by climate stations implemented within the Regions4Climate project. Public outreach is promoted through events, tourism activities, festivals, and cultural centres.

STRENGTHS

- **Strong climate risk knowledge base:** The larger Crete region uses risk monitoring technologies, including smart systems for sustainable coastal and marine tourism¹³, monitoring pandemics, and natural hazards¹⁴. It draws on data, indicators and tools from the European Climate-ADAPT platform to support adaptation planning, strengthening the evidence base for decision-making¹⁵. According to the RRMM analysis, monitoring and evaluation mechanisms are partially in place to track progress in resilience-related actions.

¹³ Smart Specialisation Strategy for the region of Crete for the 2021-2027 programming period (2021)

¹⁴ For the Crete of 2030 Plan (2023)

¹⁵ Crete’s Regional Plan for Climate Change Preparedness (2022)

- **Engagement in regional adaptation planning:** Climate adaptation actively involves a broad range of actors, including public authorities, the private sector, third sector organisations, and households, supporting inclusive planning processes and shared responsibility across different stages of adaptation. This is reflected in Crete's regional adaptation plan¹⁵, where, e.g., civil society is involved in monitoring implementation, raising awareness to support reforestation activities, and developing coordinated approaches to address climate-related health risks. According to the RRMM analysis, governance arrangements for climate resilience in Sitia are relatively developed, with coordination mechanisms linking municipal actors and regional authorities.
- **Cross-border knowledge exchange:** Crete's regional adaptation plan includes measures to transfer awareness and know-how from other regions of Greece for improved implementation, utilising Greece's National Council for Adaptation to Climate Change, an advisory platform for the sharing of good practices¹⁵.
- **Diverse financial instruments:** The region has access to various financial sources, including grants, economic incentives, loans and penalizing instruments, many of which are not adaptation-specific, to support climate adaptation and resilience-related measures. For example, the Crete provides grants to livestock farmers affected by extreme weather events and financial incentives for the transfer of livestock production from high-risk to low-risk areas¹⁵.

AREAS OF IMPROVEMENT RELATED TO GOVERNANCE AND POLICY

- **Adaptation and resilience planning:** According to the RRMM analysis, Sitia does not have a local adaptation or resilience plan and relevant directions and actions related to adaptation and resilience are mainly developed at the regional level through the strategies and plans of the Region of Crete. Further, resilience parameters and considerations are integrated into various sectoral plans and emergency preparedness frameworks, and policy instruments increasingly acknowledge aspects of socially just transitions. Sitia could update its SECAP (2015) to also cover adaptation and increase cooperation with neighbouring municipalities in the Lasithi Region, or initiate the development of an adaptation plan for Eastern Crete if it is relevant for tackling cross-border risks more locally.
- **Limited strategic scaling of NbS:** While NbS are mentioned in the regional policies (Crete's regional development plan and adaptation plan), they are limited to specific projects rather than being part of a broader approach that supports the use and scaling of NbS. A comprehensive NbS approach could also be a focus of local adaptation planning.
- **Financial instruments:** Due to the reliance on project-based funding, adaptation-aligned funding, as well as emergency and recovery funding, Sitia (or the region) could explore a more comprehensive strategy for funding adaptation. This could include the various financial instruments used in the region, but could also explore the use of new instruments, such as dynamic water pricing, to support adaptation and mitigate drought-related risks.
- **Horizontal fragmentation:** According to the RRMM analysis, cross-sectoral coordination exists but remains constrained by administrative silos and limited policy coherence. Indeed, although Crete's adaptation plan includes sector-specific actions, responsibility for implementation and funding is dispersed across multiple sectors and administrative levels, with no single coordinating body to ensure horizontal coherence, align actions, or consolidate resources across the adaptation policy cycle.

Troodos

- **Geography** – Troodos is a mountainous and forested area in the centre of Cyprus (1,476.8 km²; population around 27,695) that spans the Limassol and Nicosia Districts. It covers approximately one-third of the territory of the Republic of Cyprus and is sparsely populated.
- **Economy** – The economy is based on agriculture, including vineyards and traditional products, as well as handicrafts that support tourism. Cyprus aims to diversify tourism by promoting the Troodos Mountains and local communities as key destinations. However, projected decreases in rainfall and increases in temperature are expected to impact forests and agriculture negatively, affecting key economic activities and livelihoods.
- **Governance** – Cyprus is a centralised state with legislative powers at the national and local levels. National laws allocate administrative responsibilities to local governments (municipalities). It is ruled based on the principle of local self-administration. Districts act as administrative units of the central government, ensuring the implementation of national policies. Local governance is organised through municipal and community councils. Troodos, as a R4C region, is not an administrative unit, but rather a geographical and cultural region that is governed by local community councils. According to the RRMM analysis, most governance responsibilities for climate resilience rest with national institutions, while regional coordination primarily occurs through project-based initiatives.
- **Regulatory instruments** – Adaptation is guided by the National Adaptation Strategy and National Adaptation Plan (2025), with the Department of Environment of the Ministry of Agriculture, Rural Development and Environment responsible for climate policy. There is currently no requirement for municipalities to develop local adaptation plans. Regional efforts focus on promoting climate-neutral and regenerative tourism, including training for local businesses and authorities, supporting renewable energy use, reducing waste, and improving connectivity, with oversight from a destination management board. A Sustainable Energy and Climate Action Plan (SECAP) will be completed by August 2026. The plan includes a qualitative climate risk assessment using downscaled regional projections.
- **Financial instruments** – Financial instruments include nationally managed support schemes, particularly for forest fire protection, as well as project-based funding through national programmes, EU funds, and grant schemes to support adaptation to high temperatures in rural councils. Local community councils can request additional funding from the Ministry of Interior. Innovative funding approaches include a project that supports local communities in developing identities and their competitiveness based on traditional agricultural products.
- **Informational instruments** – Knowledge is mobilised through projects, like Regions4Climate, that promote local knowledge, as well as through the SECAP, which the region is in the process of developing to join the Covenant of Mayors network. Policy efforts also aim to strengthen risk assessments and information-sharing platforms.

GOVERNANCE AND POLICY-RELATED STRENGTHS

- **Active local level leadership:** The active local community councils that collectively govern the Troodos region have managed to develop a nationally recognised strategy for developing their mountain communities. Despite the current lack of local adaptation plans or established vertical coordination, they have been able to support overall resilient development using national adaptation funds available for rural community councils.

- **Climate services:** The national S3 strategy supports the use of remote sensing and climate change monitoring to support risk assessment and reduction across various key innovation sectors, e.g. agrifood, cultural heritage, and construction¹⁶.
- **Integration of adaptation and disaster risk reduction:** Cyprus's adaptation plan mitigates risks related to wildfire, extreme heat and flooding. Adaptation measures, such as climate-proofing tourism infrastructure and building construction standards, are complemented by measures to improve early warning systems¹⁷.
- **Sustainable water management:** The Troodos region is concerned with ensuring a continued freshwater supply and, therefore, plans to redefine its water institutions' missions to focus on sustainable water management and irrigation efficiency¹⁸. Cyprus's adaptation plan also reflects this concern with measures related to irrigation, industrial water use, and urban areas, as well as water-related ecosystems¹⁸.

AREAS OF IMPROVEMENT RELATED TO GOVERNANCE AND POLICY

- **Nature-based solutions:** While the national level adaptation plan supports the application of NbS, e.g. through the use of resilient species, protection of water systems, ecological corridors, and habitats, the Troodos development plan does not apply NbS as a concept to promote ecosystem-based development.
- **Multi-level coordination:** Climate adaptation responsibilities are not clearly defined or allocated across national, regional, and local levels, resulting in fragmented implementation, as well as limited accountability and vertical coordination between authorities and local communities.
- **Financial instruments:** Adaptation in Troodos relies mainly on project-based funding and sector-specific resources, with no dedicated or continuous funding covering the full adaptation policy cycle, including planning, implementation, monitoring and evaluation. According to the RRMM analysis, local community councils rely primarily on central government funding and have limited capacity to allocate resources for resilience planning. Financial planning for climate resilience is currently constrained by the absence of dedicated regional governance structures and adaptation strategies.

Synthesis

The governance and policy analysis for the Systemic Adaptation Challenge Suite^{5,6,7} shows that Castilla y León, Nordic Archipelago (South-West Finland), Sitia and Troodos have established important foundations for advancing adaptation across sectors, territories and governance levels. These regions demonstrate elements that support systemic adaptation, including cross-border stakeholder networks, cross-sectoral cooperation platforms, and policy instruments that connect adaptation with rural development, agriculture, tourism, water management, disaster risk reduction and ecosystem resilience. In Regions4Climate, they are further advancing their work on systemic adaptation by collectively implementing 27 sets of innovation packages linked to new agricultural and integrated pest management practices, promotion of female entrepreneurship, energy renovations, promotion of local way of living, changing of energy and transport patterns in isolated areas, and protection against climate extremes. Together, these elements show that the regions have

¹⁶ Cyprus Smart Specialisation Strategy 2030 (2023)

¹⁷ Cyprus's Climate Change Action Plan (2017)

¹⁸ Summary of the National Strategy for Development of the Troodos Mountain communities (2019)

important foundations for smarter adaptation through climate-risk knowledge systems, while also creating enabling conditions for faster adaptation through regional and local strategies, stakeholder engagement, local leadership, and implementation-oriented planning.

At the same time, the analysis highlights that progress towards fully systemic adaptation remains uneven. In the regions, challenges remain in coordinating adaptation across governance levels, sectors, and local actors; translating national or regional strategies into consistent local implementation; and embedding adaptation into sectoral policies, financing systems, and monitoring frameworks. Climate services, vulnerability assessments and monitoring systems are fragmented or underdeveloped in some cases, while financing often remains project-based, sector-specific or emergency-oriented rather than stable and continuous. Addressing these gaps would help the regions move from individual strategies, projects and networks towards more coherent, long-term and system-wide adaptation, where knowledge, financing, governance and implementation capacity are better aligned to deliver resilience at scale.

Shared policy and governance recommendations

This section presents an integrated set of recommendations based on two sets of regional analyses: one focused on governance⁵ and one focused on policy and steering instruments⁶. The recommendations below reflect elements relevant to local and regional governments in each region but are not necessarily shared by all regions. More details on a broader set of recommendations for each region can be found in the specific deliverables (Regions4Climate D4.3 and D4.4). In connection with the recommendations, we also present connected good practices from across Europe identified in the Regions4Climate [Good Practice Leaflet](#).

Strengthen multi-level governance and coordination

- Clarify mandates and responsibilities for climate adaptation across national, regional, and local levels to reduce overlaps and gaps in implementation.
- Improve alignment between national strategies and local plans to ensure that adaptation objectives are translated into coherent on-the-ground actions that serve to protect the local society and economy.
- Strengthen coordination mechanisms across sectors and administrative levels, particularly where responsibilities are distributed across institutions or rely on voluntary collaboration.

Good practice addressing multi-level governance challenge: The Basque Country. The region launched Udalsarea 2030 in 2002, a cooperation network to promote sustainability across Basque municipalities through shared governance and technical support. It strengthens coordination between local and regional authorities and improves support for local sustainability policies.

Mainstream climate adaptation across sectoral policies and planning

- Integrate climate adaptation systematically into sectoral policies, regional development strategies, and spatial planning frameworks to ensure consistent consideration of climate risks.
- Define shared cross-sectoral resilience objectives to guide implementation and reduce fragmentation between policy domains.
- Strengthen the strategic use and scaling of NbS by embedding them into planning processes rather than limiting them to project-based applications.

Secure and diversify funding for climate resilience

- Move beyond reliance on project-based funding by developing more stable and continuous financing approaches for adaptation.
- Diversify financial instruments across the adaptation policy cycle, including the use of incentives, public procurement, and innovative tools where appropriate.
- Strengthen the mobilisation of private sector investment and partnerships to support implementation and expand the resource base for adaptation actions.

Strengthen climate knowledge systems and their use in decision-making

- Improve the availability and use of climate risk, vulnerability, and exposure assessments to support evidence-based planning, prioritisation and implementation of adaptation actions.
- Strengthen monitoring and evaluation systems where gaps remain so that adaptation progress can be tracked and policy adjustments informed by evidence.
- Enhance coordination and interoperability of climate data across institutions, sectors and governance levels to ensure that knowledge is effectively used in decision-making processes.

Good practice for centralised climate data governance: Castilla y León. Since 2015, the region has operated a GIS-based geoportal providing georeferenced, real-time risk information on wildfires, floods, and other hazards to authorities and the public. The platform integrates open data from weather stations and wildfire reports, supporting coordinated disaster response and continuous updates to cartographic and risk data.

Strengthen implementation capacity and coherence at the local level

- Support municipalities and local actors, such as active community councils, as key implementers of adaptation, through clearer guidance, peer-learning opportunities, tools, and coordination platforms.
- Improve consistency in implementation across municipalities communities, sectors and regional networks to reduce fragmentation and uneven progress.
- Strengthen administrative capacity and continuity where needed, including through dedicated roles or coordination mechanisms that support cross-sectoral collaboration and replication of effective measures.

Good practice for cross-sector collaboration in climate adaptation: Nordic Archipelago. The Nordic Archipelago Inspirational Forum brings together decision-makers, stakeholders, and communities across borders to develop shared strategies on sustainable transport and renewable energy systems. This cross-sectoral network has grown into an independent entity, demonstrating how structured stakeholder engagement can generate lasting inter-regional collaboration beyond the lifespan of individual projects.



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