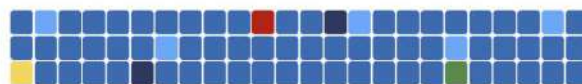


Draft white paper
for policymakers
and Practitioners





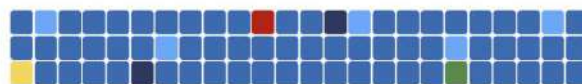
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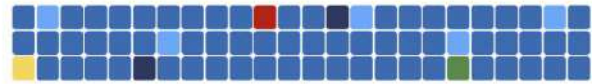


List of Contents

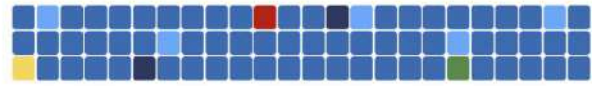
1	INTRODUCTION	4
2	State of the art: an EU adaptation policy analysis	6
2.1	European level.....	6
2.1.1	The EU's strategy for adaptation	6
2.1.2	The EU Sustainable Finance Framework	9
2.2	National and Regional Levels.....	14
3	Macro-economic analysis: Policies for adaptation.....	17
3.1	Relevant macro-fiscal policies.....	17
3.2	Macroeconomic impacts of climate change risks	17
3.3	Overarching barriers to adaptation finance (focus on market barriers - market failures).....	19
3.3.1	Enabling finance (through enabling conditions).....	21
4	The role of public authorities in unlocking private investments.....	21
4.1	Regulatory support and incentives to encourage private investments ...	22
4.2	Public-private partnerships (PPPs).....	27
5	The Role of Financial and Investment Entities: the experience of the market on adaptation finance policies	31
6	Mainstreaming adaptation finance: guidelines for policymakers and practitioners.....	31

List of Tables and Figures

Figure 1: CLIMATEFIT's position within the EU regulatory, policy, and project landscape.....	8
Figure 2: Major climate risks for Europe and the urgency to act on them.....	9
Figure 3: How does the EU Taxonomy fit the sustainable finance framework.....	12
Figure 4: Climate-Related Risks, Opportunities, and Financial Impact.....	18



The paper aims to provide policy recommendations to Public Authorities (PAs) and financial and investment entities (FIEs) for unlocking public and private financing. It will analyse the barriers, drivers, enablers, and opportunities in the regions involved in CLIMATEFIT, providing guidelines for policymakers and practitioners. It will also outline how funding from public sources can attract additional financing from the private sector and integrate macroeconomic impacts into policy design.



1 INTRODUCTION

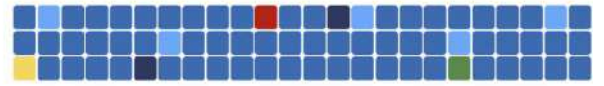
Ambitious mitigation and adaptation actions must address unavoidable and ongoing climate change. This requires a **coordinated effort from all political, public, and economic actors**, especially in scaling up climate adaptation investments. Addressing the challenges of adaptation financing goes beyond relying solely on public funding: **the private sector must play a central role** in contributing to practical solutions.

As stressed in deliverable 1.1, the Climate Policy Initiative's "Global Landscape of Climate Finance 2023" report reveals that while **adaptation finance** reached an all-time high of USD 63 billion, representing a 28% increase from 2019/2020, it **remains significantly below the estimated annual need of USD 212 billion** for developing countries by 2030. Public actors account for 98% of adaptation finance, with the private sector's contributions being minimal and fragmented. **Challenges in tracking adaptation finance**, especially from the private sector and local governments, **impede a clear understanding of progress**. These challenges include defining what counts as adaptation, linking climate risks to measures, lacking impact metrics, and confidentiality issues. Despite these difficulties, **increasing private sector investment in adaptation is crucial, as it can yield economic benefits ranging from 2 to 10 times the investment**.

To pursue CLIMATEFIT's contribution to bridging the adaptation financing gap, this paper aims to provide **policy recommendations to Public Authorities (PAs) and financial and investment entities (FIEs)** based on the results of workshops and interviews conducted in WP1 and WP2, which provide **insights to climate adaptation policy and macroeconomic analysis** and contributes to establishing the **enabling conditions to unlock public and private financing** for new resilient investment opportunities. This draft exploits the insights provided by the interviews undertaken in WP1 (Stocktake, understand and capitalise), with PAs and FIEs active in the territories covered by the project and interested in opening their investment portfolios and methodologies for investment assessment to identify new opportunities. It will leverage workshops and one-by-one interviews organised with the participation of different financial market operators, stakeholders, policymakers, and supervisory authorities in the project context.

The present analysis will consider the **barriers, drivers, enablers, and opportunities in the regions involved in CLIMATEFIT**, as presented in deliverables D1.1 (Adaptation Investment Landscape), D3.1 (Report containing guidelines to build investment plan), and D3.2 (Guidance document on suitable Incentive Mechanisms), to elaborate guidelines for policymakers and practitioners.

Starting with an **overview of the European Landscape**, the draft paper will comprehensively analyse the current EU adaptation policy under the Mission on Adaptation to Climate Change, which is crucial for the project activities, showcasing the project territories learning stories, and the bigger picture of the investment landscape of supply and demand approaches in association with the Paris Agreement and the 2030 Agenda for Sustainable Development.

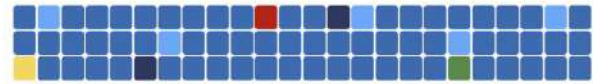


Subsequently, the following section explores the **EU Sustainable Finance Framework**, which is centred around mapping macroeconomic aspects of adaptation financing. It specifically examines the **impacts of climate change risks on the broader economy** in alignment with the **EU Taxonomy, EU Green Bond Standard, CSRD, and SFDR** and maps the overarching barriers to adaptation, considering the results of D1.1.

Expanding further on EU regulation targeting financial markets, this paper introduces **additional measures for specific financial operators** regarding the risk-based forward-looking framework and the role of the insurance sector in reducing the escalating uninsured economic losses from climate-related hazards. Aimed at advancing adaptation upscaling from the local to the national and regional levels, **integrating localised risk assessments was emphasised** for mainstreaming climate risk awareness into business and investment decision-making processes at all governance levels.

After outlining this general framework, the paper delves into the application of macroeconomic analysis for climate adaptation policies and the **impact of climate change transition and physical risks**. Findings from D1.1 helped provide an overview of the overarching barriers to adaptation finance (focus on market barriers - market failures) and the **role of public authorities as enablers and facilitators** in encouraging private sector investments in adaptation measures. The following sections explore the **involvement of the private sector and the regulatory support and incentives** required to push private sector, financial and investment entities, showcasing examples from the Flanders and drawing insights from existing market practices and adaptation finance policies. These sections will be further developed throughout the project, incorporating the findings and insights from D6.3 and D6.4. This comprehensive examination aims to provide insights into **how public and private sectors can collaborate effectively** to enhance resilience against climate risks through coordinated financial strategies and policy frameworks. The paper's final section closes by outlining the **principles of Public Private Partnership (PPP)** and their role in delivering innovative solutions to address climate challenges that can guarantee informed and balanced allocation of risks between the parties and offer stability by compensating climate risk uncertainty with the predictability of long-term contracts.

Based on the analysis conducted, this paper aims to set the scene for a **comprehensive overview of the state of the art and identify potential contradictions and shortcomings**. At the same time, it will provide guidelines on how funding from local, regional, national and EU public sources can catalyse and unlock additional financing from other sources, mainly the private sector. To be further developed following the results of D6.3 (Further Draft of White Paper for policymakers and practitioners) and D6.4 (Final White Paper for policymakers and practitioners), this paper will focus on providing guidelines on how funding from local, regional, national, and EU public sources can leverage and catalyse additional funding from other (private) sources. Also, it will elaborate guidelines on how to better integrate macroeconomic impacts into models and tools to design macro-fiscal policies.



2 State of the art: an EU adaptation policy analysis

2.1 European level

2.1.1 The EU's strategy for adaptation

The European Union is dedicated to enhancing climate resilience through a comprehensive framework to increase public and private adaptation funding. The EU's first Strategy on Adaptation to Climate Change¹ was established in 2013 and integrated into several relevant policies.

The Multiannual Financial Framework 2014-2020² pledged to allocate at least 20% of the **European budget to climate-related expenses**, covering adaptation and mitigation efforts. This figure **increased to 25% in the Multiannual Financial Framework 2021-2027**³.

The principle of subsidiarity⁴ guides the EU's adaptation efforts, fostering collaboration among stakeholders at all levels. As part of this, the European Commission has established **Mayors Adapt**, a key initiative under the Covenant of Mayors⁵. This initiative aims to mobilise urban centres to implement adaptation measures.

The 2019 European Green Deal⁶ aims for climate neutrality by 2050, reinforced by the European Climate Law, which mandates Member States to enhance adaptive capacity and reduce climate vulnerability. This includes adopting and updating national adaptation strategies based on comprehensive assessments and the latest scientific evidence.

In 2021, the EU adopted a **new Strategy on Adaptation to Climate Change**⁷, with goals **to improve data availability** on climate risks, **implement faster adaptation solutions and integrate adaptation** into policies in both the public and private sectors, including agriculture, transport, power infrastructure, and insurance, and enhance international measures. The strategy emphasises the central role of the private sector, highlighting the need for increased collaboration between the private and public sectors in financing adaptation. To achieve this goal, the strategy aims to **assist the private sector** in identifying risks and directing investments towards adaptation and resilience interventions, thereby avoiding maladaptation and reframing adaptation as an investment rather than a burden. Additionally, it seeks to enhance comprehensive and harmonised data availability, which is crucial for making informed climate-related decisions, by promoting common standards for recording and collecting data on climate-related losses

¹ Communication: "An EU Strategy on Adaptation to Climate Change", COM (2013) 216: <https://shorturl.at/iLqcx>

² Long-term EU budget 2014-2020: <https://shorturl.at/SOQdT>

³ 2021-2027 Long-term budget: <https://shorturl.at/bkunj>

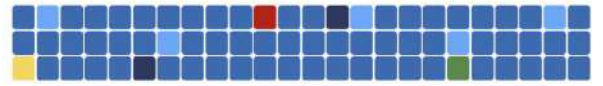
⁴ The subsidiary principle is one of the pillars of the EU action; it holds that decision-making authority is best placed a) as close as possible to the level at which the actions will be taken, and b) where responsibilities for the actions will occur. See, for more information:

<https://www.europarl.europa.eu/factsheets/en/sheet/7/the-principle-of-subsidiarity>

⁵ Covenant of Mayors: <https://shorturl.at/gPMr2>

⁶ Communication "The European Green Deal" COM(2019) 640 final: <https://shorturl.at/8yq55>

⁷ Communication "Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change" COM(2021) 82 final: <https://shorturl.at/VUMUN>



and physical climate risks. A vital component of this strategy is the creation of a Risk Data Hub⁸, which will centralise data registration at the EU level from both public and private sectors. The strategy also stresses the importance of initiatives within the regulatory framework on sustainable finance, which will act as a catalyst and incentive for channelling private financing towards enhancing climate resilience.

Finally, the **Mission on Adaptation to Climate Change**⁹ focuses on supporting EU regions, cities and local authorities in their efforts to build resilience against the impacts of climate change. The Mission contributes to putting the EU's adaptation strategy into practice by helping the regions to:

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

Despite various framework initiatives on adaptation, it has been reported that **Europe's current policies and adaptation actions are not keeping up with the rapidly growing risks**, considering the accelerating pace of climate change and the increasing severity of its impacts highlighted by the Climate Risk Assessment (EUCRA) (see figure 1). The **EUCRA underscores that**, in many cases, **incremental adaptation will not be sufficient**. Since numerous measures to improve climate resilience require long-term implementation, urgent action may be needed even for risks that are not yet critical.

In response to the EUCRA, the Commission's communication "Managing climate risks—protecting people and prosperity"¹⁰ outlines **critical actions that the EU and its member states must take to manage better these increasing climate risks**. The Commission aims to equip society for effective action by, among other things, creating the right preconditions for financing climate resilience. Associating interlinkages between climate adaptation and climate neutrality, Figure 1 below showcases how CLIMATEFIT is positioned, connecting PA and FIEs with the wider EU Landscape with the development of Sustainable Financing Strategies that can benefit from existing EU Taxonomy and Smart Cities Marketplace tools.

⁸ The Risk Data Hub aims to transform EU's fragmented information into collective knowledge; see, for more information: <https://data.jrc.ec.europa.eu/collection/id-00326>.

⁹ Eu Mission: Adaptation to Climate Change <https://shorturl.at/ahkqT>

¹⁰ Communication "Managing climate risks - protecting people and prosperity" COM(2024) 91 final: <https://shorturl.at/uzqkl>

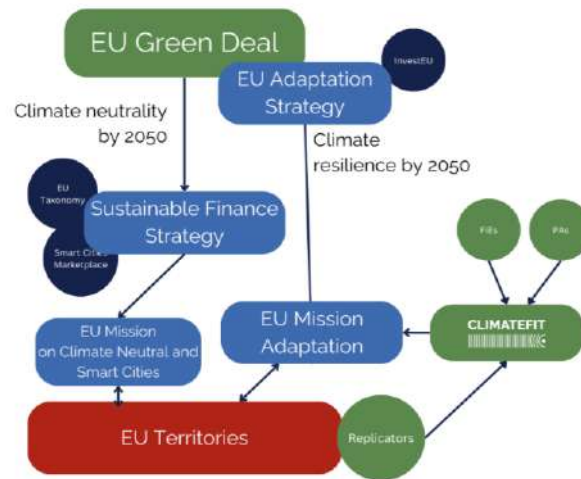
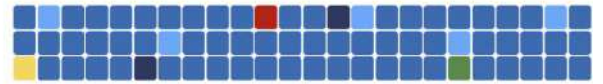
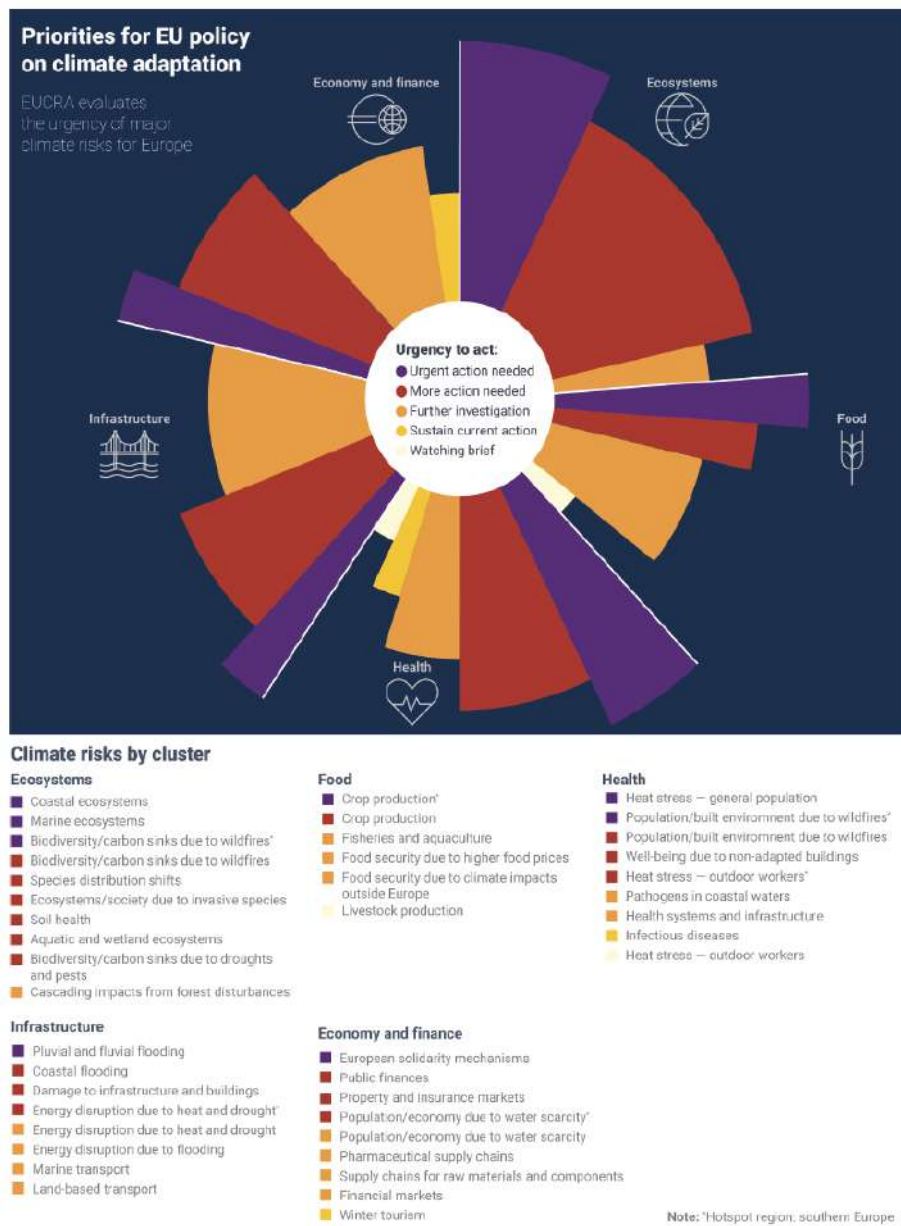


Figure 1: CLIMATEFIT's position within the EU regulatory, policy, and project landscape¹¹



¹¹ Source: ICLEI; CLIMATEFIT D6.6 Exploitation and Upscale Plan, 2023

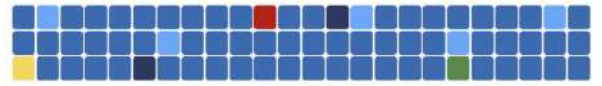


Figure 2: Major climate risks for Europe and the urgency to act on them¹²

2.1.2 The EU Sustainable Finance Framework

As anticipated in ClimateFIT Fie Landscape Report (T1.2), the need for private sector involvement has driven European institutions to establish a regulatory framework for sustainable finance, an essential focus for the EU after committing to the **Paris Agreement** and the **2030 Agenda for Sustainable Development**. Initially designed at the EU level, policies and regulatory frameworks, critical drivers of climate finance policy, have been expanding rapidly, encompassing a more comprehensive range of stakeholders, requirements, standards, and guidance. The primary aim of these initiatives is to redirect capital flows towards sustainability-related activities, including climate change initiatives and projects. Since 2018, the Commission has been working on a **comprehensive policy agenda for sustainable finance based on shared classifications, ESG (Environmental, Social and Governance) data quality and comparability, and transparency**. After the last prolific legislative term of the Commission, the main challenge will be **coordinating compliance, innovation, and resilience** in the coming years. The critical regulatory initiatives relevant to adaptation financing will be detailed in the following paragraphs.

2.1.2.1. EU Taxonomy, EU Green Bond Standard, CSRD, SFDR

The **Taxonomy Regulation**¹³, with climate adaptation as one of its six environmental objectives, is a **key instrument in promoting transparency for companies and investors**. It provides clear insights into investments in sustainable projects and economic activities, **fostering a more informed and sustainable investment landscape**.

The EU Taxonomy was introduced to provide a transparent and standardised tool to **classify economic activities based on their environmental impact**, helping investors, companies, and public authorities. Indeed, it establishes criteria for determining whether an economic activity qualifies as environmentally sustainable¹⁴, thereby enabling the assessment of an investment's degree of environmental sustainability. To be EU Taxonomy-aligned, an **economic activity must:**

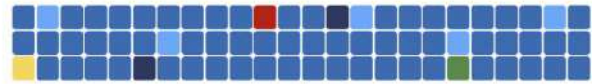
1. contribute substantially to one or more environmental objectives;
2. do not significantly harm any environmental objectives;
3. be carried out in compliance with minimum social safeguards at the entity level.

The EU Commission has further specified the criteria for determining the conditions under which a particular economic activity qualifies to significantly contribute to and establish climate change mitigation or adaptation in the EU

¹² Source: EEA, 2024

¹³ Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088

¹⁴ Article 1, 1, Regulation (EU) 2020/852



Taxonomy Climate Delegated Act¹⁵. This regulatory process is designed to provide stakeholders with a clear and reliable framework for their investment decisions.

The activities that contribute substantially to the objectives of climate adaptation are those that considerably reduce the adverse effects of current and expected future climate change and activities that prevent an increase or shift **in the adverse effects** of climate change. Regarding the **do not significant harm principle**, the generic approach applicable to each activity is based on the following: **robust climate risk and vulnerability assessment**; for activities with a more than ten years lifespan, a "state of the art" modelling must be used under 10 to 30 years of climate scenario projections. For other investments, less sophisticated models can be used; **implementation of physical and non-physical solutions** to reduce the most significant physical climate risks relevant to that activity, where those activities do not affect adaptation efforts of others; **nature-based solutions** or **blue or green infrastructure**; **consistency with other adaptation efforts**; **monitoring and measurement** against **pre-defined indicators**, remedial action considered where those indicators are not met; **compliance with the DNSH criteria for that activity** (in other words, the climate mitigation activities they relate to must themselves not cause significant environmental harm).

This comprehensive classification system helps (FIEs) **identify investment opportunities that align with the EU's environmental sustainability objectives** and design their investment portfolios to support the transition to a greener and more resilient economy and society. Users can access all EU Taxonomy criteria on the online tool **Taxonomy Compass** under the website **EU Taxonomy Navigator**¹⁶.

The **Sustainable Finance Disclosure Regulation (SFDR)**¹⁷, in force since March 2021, has improved **financial market transparency**. It mandates that institutional investors and asset managers integrate ESG factors into their risk management processes, promoting better risk management practices. The SFDR requires financial institutions to **disclose ESG factors**, encouraging investors to **better account for sustainability risks and impacts**.

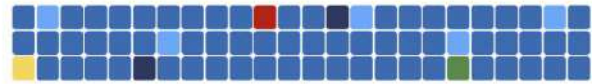
The market categorises funds as follows:

- **Dark green funds** (SFDR, Art. 9): Aiming for a positive impact on sustainability;
- **Light green funds** (SFDR, Art. 8): Promoting environmental or social characteristics;
- **Grey funds** (SFDR, Art. 6): Without specific sustainability objectives.

¹⁵ Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives.

¹⁶ EU Taxonomy Navigator: <https://ec.europa.eu/sustainable-finance-taxonomy>

¹⁷ Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector



The **Corporate Sustainability Reporting Directive (CSRD)**¹⁸ is crucial in promoting transparency. It mandates certain companies to disclose information about their risks, opportunities, and impacts on various environmental and social issues, including climate, biodiversity, water, and employees in the value chain.

The primary objective of the CSRD is to **provide external stakeholders, notably investors, customers, and the public, with a clearer understanding of companies' risks related to ESG factors and their readiness for the transition.**

The **reporting must follow the European Sustainability Reporting Standards (ESRS)**. A specific climate reporting standard, **ESRS E1**, mandates companies to disclose extensive information regarding their impact on climate change and the effects of climate change on their operations, recognising climate change as a material concern for the company. This standard outlines the **disclosure requirements for climate-related hazards that can result in physical climate risks for the organisation and its adaptation strategies to mitigate these risks.**

CSRD's reporting requirements align with international standards like the Global Reporting Initiative (GRI)¹⁹ and the International Sustainability Standards Board (ISSB)²⁰. The framework created by the Task Force on Climate-related Financial Disclosures (TCFD) recommendations²¹ is just as relevant.

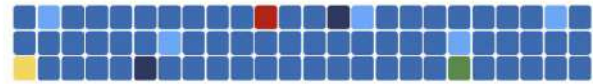
The EU Taxonomy, the SFDR and the CSRD are closely interconnected (see Figure 3.). Financial market participants under the SFDR and companies under the CSRD can use the EU Taxonomy to classify and report their economic activities regarding environmental sustainability. Other classification systems may be used for social and governance sustainability, as the EU Taxonomy focuses solely on environmental aspects. In the figure below, you can see a graphical representation of this interconnection.

¹⁸ Directive (EU) 2022/2464 of the European Parliament and of the Council of December 14, 2022, as regards corporate sustainability reporting

¹⁹ <https://www.globalreporting.org/>

²⁰ www.ifrs.org/groups/international-sustainability-standards-board/

²¹ <https://www.fsb-tcf.org/recommendations/#overview>



Two examples of when the taxonomy will be used: in disclosures of financial products and reporting by large companies and listed companies.

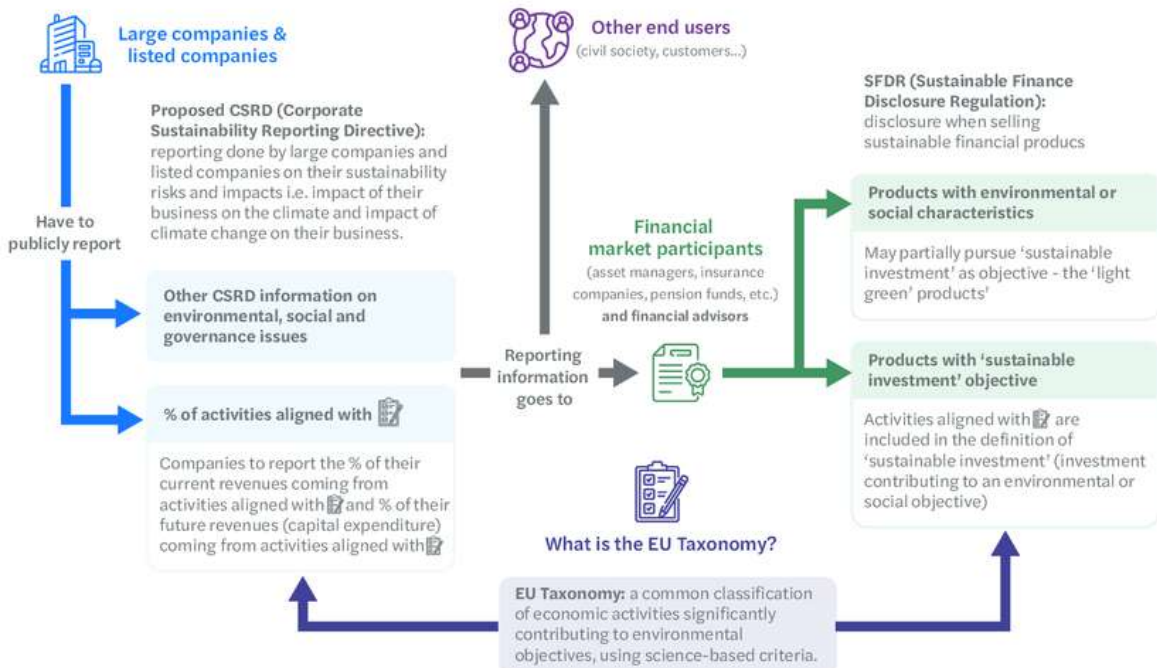


Figure 3: How does the EU Taxonomy fit the sustainable finance framework²²

The European Green Bond Regulation²³ introduced the **European Green Bond Standard (EU GBS)**, a voluntary label based on the EU Environmental Taxonomy. With this regulation, the EU aims to bolster the European green bond market's **effectiveness, transparency, and credibility** by introducing a **voluntary standard**. This standard seeks to eliminate barriers hindering issuers from raising funds for green projects and assets.

The EU GBS's emphasis on the **use of proceeds is a critical** feature that ensures the financing aligns directly with the issuer's sustainability objectives. This requirement, which mandates that proceeds **must finance or refinance economic activities contributing to at least one of the six taxonomy environmental objectives**, including climate change adaptation, promotes transparency and sustainability in the market.

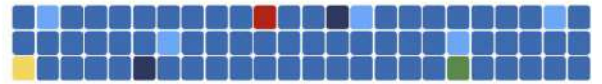
2.1.2.2. Risk-based forward-looking framework: Solvency II and CRR/CRD III

Expanding on EU regulation targeting financial markets, additional measures have been introduced for specific financial operators regarding the **risk-based forward-looking framework**.

The **insurance sector is crucial** in reducing the escalating uninsured economic losses from climate-related hazards. With extreme weather events rising and adaptation measures falling behind, there is a pressing need to bolster climate

²² https://www.researchgate.net/figure/How-does-the-EU-Taxonomy-fit-with-the-sustainable-finance-framework-65_fig2_364650373

²³ Regulation (EU) 2023/2631 of the European Parliament and of the Council of 22 November 2023 on European Green Bonds and optional disclosures for bonds marketed as environmentally sustainable and for sustainability-linked bonds



insurance coverage. The European Commission is at the forefront of addressing these issues through:

- **climate resilience dialogue:** enhancing communication among insurers, policymakers, and stakeholders to close the climate protection gap;
- **promotion of best practices:** working with the European Insurance and Occupational Pensions Authority (EIOPA) to identify and promote effective financial risk management practices;
- **exploration of innovative solutions:** investigating broader use of financial instruments and creative solutions to manage climate risks.

Furthermore, EIOPA has issued an Opinion on **integrating climate change scenarios in the Own Risk and Solvency Assessment (ORSA)** and **additional guidelines for national supervisory authorities**. This guidance underscores the pivotal role of insurers in including climate change risks in risk management and governance. Despite the limited use of scenario analysis for these risks, often only for the short term, EIOPA advocates a forward-looking approach to ensure industry solvency and viability, promoting short- and long-term risk assessments. Supervisors should collect data through regular reports, and EIOPA will commence monitoring compliance two years after publication.

According to Solvency II, (re)insurance undertakings must integrate sustainability risks into risk management and governance. **Insurers must include sustainability in their investment and underwriting strategies, monitored by risk management and actuarial functions.** As part of the prudent person principle, **insurers must also consider the potential long-term impact** of their investment strategy and decisions on sustainability factors. In addition, remuneration policies also must consider integrating sustainability risks into their risk management systems and include information on how their policy does so.

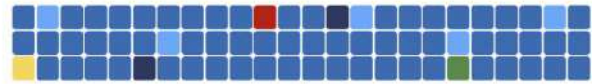
Through regular stress testing, disclosure requirements, and the Own Risk and Solvency Assessment (ORSA), **Solvency II promotes transparency and resilience**, positioning the insurance sector as a crucial player in the EU's broader strategy for sustainable finance and climate adaptation (EIOPA).

The banking and investment sector also faces increasing pressure to address climate change impacts and align with sustainability goals. Central banks and regulators worldwide are recognising their role in managing climate and environmental risks. Initiatives like the **Networking for Greening the Financial System (NGFS)** and the **Institutional Investors Group on Climate Change (IIGCC)** aim to analyse and manage these risks while mobilising finance for a sustainable economy.

On the regulatory side, the last versions of the **Capital Requirements Regulation (CRR)**²⁴ and the **Capital Requirements Directive (CRD)**²⁵ stress the critical role of sustainability risk assessment and integration and their **potential impact on bank**

²⁴ Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012

²⁵ Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC Text with EEA relevance



capital requirements. More in detail, CRR III introduces new rules that mandate the consideration of ESG risks in both Pillar 1 and Pillar 3²⁶. These regulations are built upon standardised ESG definitions and supplemented by corresponding Pillar 2 requirements outlined in CRD VI.

- Some of the critical requirements introduced in 2024 include: Under CRR III:
 - identifying, disclosing and managing **ESG risks**;
 - implementing **Technical Standard (ITS)** on reporting amended to consider ESG risks reporting;
 - extending **disclosure of ESG risks** to all banks;
- Under CRD VI:
 - Addressing climate change risks via the Systemic Risk Buffer (SyRB);
 - incorporating ESG risks to assess internal capital needs and governance;
 - introducing **sustainability** in the **prudential framework** to ensure identification, measurement, management and monitoring of ESG risks;
 - including **ESG risks** in the **supervisory review** and evaluation process (SREP) and developing standard methodologies to stress test ESG risks.

In addition, CRR introduces a **Pillar 3 data hub** maintained by the European Banking Authority (EBA). Banks, except small ones, must submit data at each reporting period to be published on the hub, with the EBA proposing specific disclosures for small institutions. New disclosures under CRR III include ESG risks, market risks, and crypto assets.

2.2 National and Regional Levels

In addition to defining policies for adaptation at the European level and establishing a regulatory framework for sustainable finance, **adaptation actions require measures at the local level.** To this end, the European Commission adopted a new set of guidelines in July 2023 to assist Member States in updating and implementing comprehensive national adaptation strategies, plans, and policies following the European Climate Law and the EU Strategy on adaptation to climate change. **Guidelines on adaptation strategies and plans** aim to help Member States upgrade their preparations for the rapidly intensifying impacts of climate change²⁷.

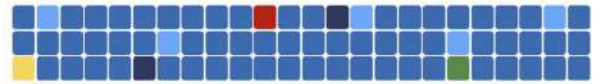
To better address these guidelines' impact and scope of work, it is crucial first to **acknowledge the bottlenecks for adaptation action at national and regional levels.** Starting with the availability of and access to finance, this comes as a top priority to help drive investment in a range of adaptation solutions, to help advance adaptation **upscaling from the local to the regional and national levels**, and best

²⁶ In the Basel Framework, specifically Basel III, the pillars refer to different components of bank regulation and supervision:

Pillar 1: Pillar 1 focuses on minimum capital requirements. It establishes the minimum amount of regulatory capital banks must hold to cover their credit, market, and operational risks. Pillar 3:

Pillar 3 focuses on market discipline and transparency. It requires banks to disclose key information on their risk exposures, risk management practices, and capital adequacy to stakeholders.

²⁷ https://climate.ec.europa.eu/news-your-voice/news/building-climate-resilient-future-2023-07-26_en



empower communities for locally led, locally appropriate action²⁸. Here, the guidelines indicated the need to “identify the projected or already incurred costs of nonadaptation (i.e., the financial loss and damage associated to climate change) as it may justify re-allocating existing funds to adaptation”²⁹.

EU funding instruments play a significant role in funding adaptation. There is a wide range of these instruments that could be utilised, such as the EU's critical **funding programme for research and innovation** (Horizon Europe), the **European Regional Development Fund**, the **Cohesion Fund**, through investment in the environment and Trans-European Transport Networks, and the **Just Transition Fund**. These funds can be instrumental in alleviating the negative impacts of the transition for territories most affected by the transition to climate neutrality and resilience. However, bridging the national and private funding gap is crucial to address the adaptation finance gap.

Exploring further the term "**Adaptation Financing Gap**", the United Nations Environmental Program (UNEP, 2022) Adaptation Gap Report introduced this term about **insufficient finance for adaptation in developing countries**, with an estimation of that the annual cost of adaptation in developing countries alone will be between \$160-340 billion by 2030. Suggesting that public budgets will not be able to address the financing challenge alone, this can also relate to the EU context, as indicated in the recent World Bank and the European Commission 2024 Report on “Economics for Disaster Prevention and Preparedness in Europe”, that indicates that in the EU, climate change adaptation costs up to the 2030s are estimated (based on extrapolation from national studies) to be between €15 billion to €64 billion.

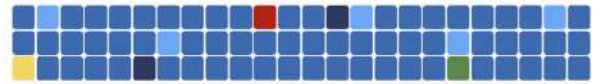
The report also indicates that “Risk data, analytical tools, and examples can guide decision-making toward high-priority areas and enable a strategic approach that maximises benefits of investing in resilience”. Thus, **applying localised risk assessments becomes crucial** because of inadequate climate data and the uncertainty surrounding the necessary funding due to unpredictable climate risks and impacts. These assessments categorise climate risks into two main types: **transition risks**, which stem from shifts towards a low-carbon economy, such as policy changes, and **physical risks**, which arise from the direct impacts of climate change, like increased frequency of extreme weather events.

Climate physical risks arising from the impact of natural hazards (e.g. hurricanes, floods, droughts) on physical assets lead to plant destruction, lower firms' productive capacity and output, and lower value of firms' financial contracts. This, in turn, **negatively affects the value of the portfolio of financial actors** (e.g. banks, insurance, pension funds) who hold such contracts. For instance, a firm whose productive capital is destroyed by severe floods and has borrowed from a bank may not be able to repay the interests and principles of the loan, affecting the recovery rate and the bank's balance sheet.

Climate transition risks stemming from a disorderly transition to a low-carbon economy, defined as a situation in which climate policies (e.g. carbon tax) and

²⁸ <https://climatepromise.undp.org/news-and-stories/what-climate-change-adaptation-and-why-it-crucial#:~:text=NAPs%20are%20also%20crucial%20because,effective%20strategies%20to%20build%20resilience.>

²⁹ Guidelines on Member States' adaptation strategies and plans



regulations are implemented too late to reach the climate targets and cannot be fully anticipated by investors. In this context, **high-carbon firms are expected to experience higher costs and lower revenues**, giving rise to “carbon stranded assets” (Leaton, 2011; Ploeg & Rezai, 2020; Cahen-Fourot et al., 2021). Carbon stranded assets, in turn, can lead to significant adjustments in asset prices, with potential implications on economic and financial stability (Gros et al., 2016; Battiston et al., 2017; Stolbova et al., 2018).

Integrating localised risk assessments is beneficial and essential for mainstreaming climate risk awareness into business and investment decision-making processes. This integration **facilitates more informed and efficient capital allocation** at regional and national levels. It paves the way for a smooth transition towards a low-carbon and resilient economy, ensuring that investments and strategies are well-aligned with environmental and economic sustainability goals.

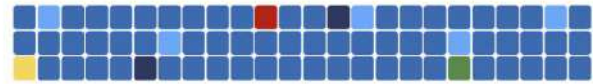
Furthermore, it is paramount to engage all pertinent stakeholders across various levels of climate governance, including those especially vulnerable to climate change. These **stakeholders play pivotal roles in both planning and executing adaptation strategies**.

Nevertheless, without the right institutional setting that can overcome coordination challenges among sectors and levels of government, the adaptation finance gap is likely to persist. This **gap is particularly pronounced at lower governance levels**, primarily responsible for implementing most adaptation measures. Here, it is essential to highlight that the World Bank and the European Commission 2024 Report underlines that “the urgency to develop “adaptation pathways” is paramount. These decision-making approaches enable countries to prepare and act amidst uncertainty, informed by current and future climate risk” (WB and EC, 2024).

Therefore, **Member States shall implement a comprehensive approach to climate adaptation policymaking**. Coordination at multiple levels and integration mechanisms are essential to address gaps in institutional, technical, and financial capacity horizontally, among different government departments, and vertically across all levels of local authorities (including regions and local administrations). This is crucial for ensuring sustainable and resilient climate-risk-informed planning and investments.

The Paris Agreement, the introduction of climate-related laws, the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations³⁰ and, most recently, the increased awareness of the risks and physical effects described in the Special Report of the Intergovernmental Panel on Climate Change (IPCC) on Global Warming 1.5°C, all guide the discussion around **enhancing the city climate governance management practices and systems, including the most minor local and regional authorities**. The matter is how to best enhance the capacity and expertise necessary for administration and implementation and to mainstream

³⁰ Task Force on Climate-Related Financial Disclosures (TCFD). <https://www.fsb-tcfd.org/>



climate physical and transition risks into business and investment decision-making.

3 Macro-economic analysis: Policies for adaptation

3.1 Relevant macro-fiscal policies

- *TO DO: To design feasible macro-fiscal policies for adaptation, the paper will also reference the results of T3.1 – started in M8 and focussing on identifying a pragmatic process for translating investment strategies into credible and scalable investment plans - and T3.2 – starting in M18 and hinged on co-development of investment plans for the planner territories.*

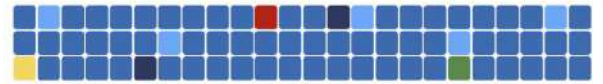
3.2 Macroeconomic impacts of climate change risks

There is already significant evidence of an unsettling connection between business and climate change. Climate change's growing impact drives unprecedented physical risks, such as rising sea levels and the increased frequency of extreme weather events. Climate change risks and opportunities permeate most economic sectors and industries. According to the European Environment Agency 2024 recent report on "Climate change impacts, risks and adaptation", between 1980 and 2021, weather- and climate-related extremes caused economic losses estimated at EUR 560 billion in the EU Member States, of which EUR 56.6 billion from 2021. Noting that Certain climate impacts, such as loss of human lives, biodiversity loss, or loss of cultural assets, are difficult to value in monetary terms, damages from climate change are expected to set the global economy back an estimated \$38 trillion a year by 2049, with a likely range of between \$19 trillion and \$59 trillion, warned a trio of researchers from Potsdam and Berlin in Germany in a peer-reviewed study published in the journal Nature (Forbes, 2024).

The two main **financial risks** associated with climate change are the **physical effects of a changing climate** and the **risks associated with the shift to an economy with net zero emissions**. An organisation's reputation, "social licence to operate," and eventual exposure to litigation threats may be seriously jeopardised by a failure to manage these risks. Analysis by the Sustainability Accounting Standards Board (SASB) indicated that 68 of 77 industry sectors across the economy are subject to material climate-related risks. At the same time, its impacts are differentiated depending on factors such as the relevant market and geography³¹. The influential Task Force on Climate-related Financial Disclosures (TCFD) has recognised vital industrial sectors that are at 'high risk' of material climate-related risk as noted below:

- **Financial services** – banks, insurance companies, asset owners (including pension funds) and asset managers.

³¹ Sustainability Accounting Standards Board, 2021, Climate Risk Technical Bulletin, Available online: <https://www.sasb.org/wp-content/uploads/2021/05/Climate-Risk-Technical-Bulletin2021-042821.pdf>



- **Energy** – oil and gas, coal, electric utilities.
- **Transportation** – air freight, passenger transport, maritime, rail, trucking, automotive, and components.
- **Materials and buildings** – metals and mining, components, construction materials, capital materials, real estate management and development.
- **Agriculture, food and forest products** – beverages, agriculture, packaged foods and meats, paper and forest products.
- **Health** - material to organisations involved in health and human services.

As noted in the previous section, **acute risks connected to an increase in the frequency and severity of extreme weather occurrences are included in the category of physical risks**, and they compound over time. They can increase the danger of physical damage to projects, power plants, and equipment and its costs and become significantly worse under high emissions scenarios. Physical risks **significantly impact supply chains, human health, the integrity of the built environment, and ecosystem loss**, resulting in increased costs and reduced revenues.

Climate change physical risks may also influence **insurance coverage**, causing consequences for uninsured loss and the need for additional capital expenditures. Disruptions to supply networks can also be caused by severe weather events, such as intense precipitation resulting in inland flooding, which have the potential to cause **disruptions to supply chains and/or operations** and significantly impact income.

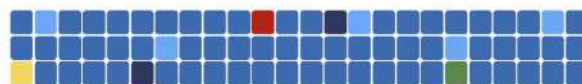
At the same time, **transition risks can include policy and regulatory responses** (such as emissions reduction laws, trade laws and tariffs, prudential regulation and heightened planning and building codes), technological developments (in areas such as renewable energy and electric vehicles) and shifts in stakeholder preferences (including of investors, insurers, customers, and the community)³².



Figure 4: Climate-Related Risks, Opportunities, and Financial Impact³³

³² Climate risk governance guide: An introductory resource for directors on climate risk governance. ACID, 2021. Available Online: <https://www.aicd.com.au/risk-management/framework/climate/climate-risk-governance-guide.html>

³³ TCFD: <https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf>



3.3 Overarching barriers to adaptation finance (focus on market barriers - market failures)

Authorities and financial operators must address various barriers and challenges in funding adaptation and manage and minimise risks. Analysing these barriers is essential for the development of an effective policy framework. Understanding how to adequately address barriers to adaptation, created mainly by market imperfections/externalities,³⁴ requires an examination of the reasons for their manifestation³⁵.

According to the analysis of the Adaptation Investment Landscape (D1.1) and literature³⁶, the most relevant barriers to the upscale of adaptation finance are **(i) lack of knowledge or advice, (ii) (adaptation) policy instability, (iii) lack of (bankable) projects and (iv) non-standardised ESG data**. The following paragraphs will focus on these and additional significant barriers.

Lack of knowledge or advice

Investors lack expertise and knowledge about climate change adaptation, hindering their ability to assess investments and make informed decisions. Other barriers revolve around understanding climate change impacts, best practices, and identifying technical solutions. Indeed, barriers related to unfamiliarity and competition with mitigation technologies hinder the adoption of adaptation measures (Glover & Granberg, 2020).

Unstable policy

Regulatory barriers hinder access to finance for adaptation, the lack of a stable policy framework covering all climate hazards, and the government's failure to provide a comprehensive vision of adaptation. Investors involved in CLIMATEFIT expressed concerns about the fluctuating climate policy and the changes in regulations on sustainable finance, disclosure, and climate risk.

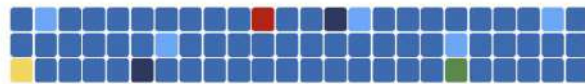
Limited projects

When making investment decisions, it is **essential to consider acceptable risk-adjusted returns**. However, investing in companies contributing to the climate adaptation objective often involves higher risks and lower returns, leading to reluctance from investors. Identifying financially feasible adaptation initiatives is challenging due to **unreliable cash flows and revenue streams**. Despite various viable financing and investment options, there is still room for improvements in the market. Adaptation projects face competition and **bias toward low-carbon and mitigation opportunities** like renewable energy, which have a proven investment track record. Developing new financing models requires suitable institutional frameworks to facilitate project bundling at the necessary scale and risk-return ratio.

³⁴ Economic activities often negatively impact the environment and impose indirect costs on society. Market failure occurs when a market fails to function efficiently, resulting in economic consequences; these 'externalities' are typically not accounted for in markets and financial transactions.

³⁵ (Bisaro & Hinkel, 2018; Frontier Economics 2022 Lu 2022; Pauw et al., 2022; Tall et al., 2021; UNEP, 2016; UNFCCC, 2022)

³⁶ Dorst et al., 2022; Knight et al., 2022; Lazurko & Pinter, 2022; Pauw et al., 2022; Sánchez-Arcilla et al., 2022; Stol et al., 2021; ADB, 2020; C40 CFF, 2020; Frontier Economics, 2022; KPMG, 2022; Stenek 2013, UCISL 2023



Lack of ESG data standardisation

The Adaptation Investment Landscape (D1.1) highlighted various **knowledge and data gaps related to adaptation and ESG**. Information and advice on low-carbon technologies are available, but the same cannot be said for adaptation. Interventions to reshape financial perspectives and monetise adaptation projects are required because measuring and monetising environmental and social benefits for accurate return calculations is challenging.

Other relevant barriers may pertain to:

Low returns

Today, investors commonly perceive **adaptation as a public good rather than a source of financial and economic returns** or a valuable part of investment portfolios: monetising seems challenging, and adaptation is not perceived as their responsibility.

Difficulties in impact measurement

A comprehensive **understanding of all available knowledge**, explicit or implicit, is crucial for climate risk assessment, **impact measurement, performance evaluation** of adaptation projects, investment models, and disclosure criteria. Standardised tools and benchmarks for evaluating and communicating climate risks and investment advantages are lacking, which adds to forecasting and monetising complexity.

Technological uncertainty

A primary barrier is **uncertainty about adaptation technologies** striving to advance to commercialisation and diffusion. Investments carry increased technology risk due to their early stage and lack of a track record. Overcoming biases, lock-ins, and underused structures requires significant institutional adjustments for investors (Nemet et al., 2017).

Lack of financial products/instruments

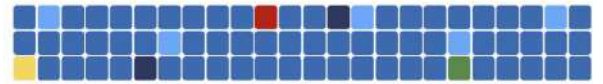
Many PAs involved in CLIMATEFIT highlighted the **lack of dedicated financing mechanisms** for climate adaptation projects. They suggested developing instruments such as adaptation bonds, resilience-linked securities, and climate adaptation credit rating agencies to encourage investment in adaptation.

Limited investment experience in analogous sectors

Investors perceive climate adaptation as risky compared to other sustainability investments. While progress has been made in financing areas like Nature-based Solutions (NBS) and green infrastructure, funding for adaptation has been limited. **Incorporating successful finance models and incentives from similar sectors** could significantly improve adaptation funding and its outcomes.

Complex investment processes

The complexity and uncertainty of investing in adaptation, combined with political controversy, lead to delays and increased costs. Due also to policy/regulatory gaps, there is a **lack of investor buy-in for adaptation finance**. There is limited potential for increasing financing without systemic changes. Public-private



partnerships and blended finance are definitely underutilised for adaptation projects (see §4.2).

Regarding other barriers, Toxopeus and Polzin (2021) identify **coordination between private and public financiers as one of two overarching barriers** to NBS finance, and the UK Climate Change Committee (2023) stresses the need for brokerage or mediating bodies between the two parties.

The literature, therefore, suggests addressing these challenges through **regulatory changes and increased awareness and understanding of market dynamics** (UNEP, 2023). The literature also calls for diverse investment actors beyond governments to accelerate the diffusion of adaptation finance, creating a space for private investors in adaptation (GCA, 2023; UNEP, 2016). Proposed interventions are outlined in sections 4.3 and 5.6 of D.1.1.

3.3.1 Enabling finance (through enabling conditions)

The paragraph will be developed based on the analysis in WP2 (T2.1 and T2.2), which will directly involve Public Authorities and FIEs at several training levels. Additional insights will be collected through tailored interviews with relevant stakeholders if necessary.

4 The role of public authorities in unlocking private investments

Public authorities can take up **multiple roles to enhance private investments** in climate adaptation projects. Depending on the context, the following roles often are combined to a certain extent.

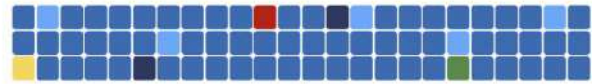
1. Public authority as an enabler

Occasionally, private investments in climate adaptation are not possible within specific contexts. In such cases, **an authority can take up the role of enabler**. Indeed, a government may have the **appropriate standing** to shape the existing regulatory, fiscal, authoritative and collaborative frameworks, subsequently allowing private investments. An authority is the appropriate organisation to set up completely new systems and frameworks to allow such investments if needed. Some examples of the enabling role a public authority can take up are:

- changing regulations and legislation;
- creating new regulations and legislation;
- establishing governance structures;
- restructuring authorisations, allowing organisations to take on new responsibilities they previously were not able to;
- launching new subsidy calls for beneficiaries;
- imposing new obligations or standards, such as fees.

2. Public authority as a facilitator

Legislative, fiscal, authoritative, and collaborative frameworks are sometimes implemented to allow private investments in climate adaptation projects. However, certain thresholds and barriers may still prevent stakeholders from using them. In such cases, a **public authority can be the proper organisation to**



facilitate and provide instruments to reduce or remove these thresholds and barriers.

Some examples of the facilitating role a public authority can take up are:

- **providing more information** on the topic by creating a website, a guideline, a training or education, organising a webinar, information moment, etc.;
- **bridging gaps** by bringing together stakeholders through the creation of multi-stakeholder platforms;
- **providing incentives**, for example, financial incentives such as subsidies;
- **improving current systems and frameworks**, for example, by making it easier to navigate through websites or forms;
- **support projects**, for example, by taking on administrative or organisational tasks or providing co-financing.

3. Raising awareness as a public authority

The systems and frameworks may be in place to allow private investments in climate adaptation projects, but more is needed to activate the stakeholders to use them. This can be due to a lack of awareness or a sense of urgency on the topic within stakeholder groups. In such cases, a public authority can be the appropriate organisation to reach out to these stakeholders to encourage them to recognise the topic's urgency. Given its extensive range, authority, and powers, a public authority should be considered the best-suited organisation to take up such a role. Some examples of the **awareness-raising role** a public authority can take up are:

- organising awareness-raising campaigns;
- facilitating the joint involvement of different stakeholders in processes to increase ownership, commitment and support.

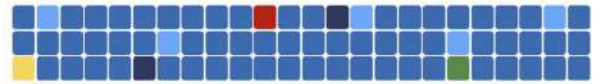
4. Enthuse and inspire as a public authority

Public authorities can further incentivise stakeholders by providing benefits that can be accessed by participating in the investment process but are separate from the process itself. Some examples of the **enthusing and inspiring role** a public authority can take up are:

- **increasing the positive image of stakeholders**, for example, by providing them with acknowledged certificates;
- **showcasing organisations as ambassadors and their activities** as good practices;
- **providing benefits**, such as financial benefits, for example, premiums or tax reduction;
- **gaining access to specific systems and frameworks**, such as trading systems.

4.1 Regulatory support and incentives to encourage private investments

While the previous section introduces the general roles (enabler, facilitator, awareness raiser and inspirer) public authorities may play in engaging the private sector in addressing public issues, such as climate adaptation, this section presents **measures** that public authorities may **take to encourage and support private investments**. Particular attention is dedicated to **regulatory and financial**



incentives for encouraging investment in initiatives and projects contributing to climate change adaptation.

From the perspective of financing and investment entities, based on findings from research activities in WP1 and previous studies, the following measures ought to be adopted by public authorities:

1. Policy and Regulation

- a. a stable, credible, **long-term** adaptation **policy framework**
- b. further sustainable finance policy requiring all businesses to disclose and assess their **climate risks and impacts** in a standardised fashion
- c. Integrated and congruent **public regulations** across different economic sectors, namely urban planning, water management, and environmental conservation, where climate adaptation is applied.
- d. changes in public regulation addressing complex **property rights issues**, such as property value gains resulting from adaptation solutions

2. Financial incentives and capital de-risking

- a. public actors to provide more capital-intensive, high-risk finance for climate adaptation **innovative solutions**
- b. preferential **rates of debt** for early-stage technology and innovation enhancing, therefore risk-adjusted returns
- c. **tax reduction and exemptions** applicable to the issuance and trade of bonds dedicated to the implementation of projects contributing to climate adaptation
- d. Provision of concessional and/or non-concessional finance using **financial instruments** such as loans, guarantees, and grants.
- e. **co-investment** and use of **private-public partnerships** (see below)

3. Institutional arrangements

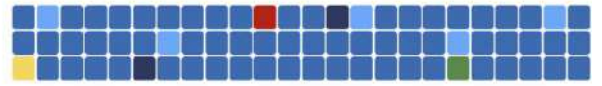
- a. Fostering collaboration between private and public actors by establishing efficient **public organisational structures and processes**
- b. Establishing **multi-stakeholder institutional arrangements** that support partnerships with the private sector
- c. Supporting the establishment of **collective investment vehicles** (project preparation facilities and funds), connecting investors with bankable projects, administering and implementing those projects
- d. Boost public authorities' **capacity** and financial acumen, such as competencies on bankability and blended finance
- e. **Public leadership** and political support nurturing public trust

4. Bankable project pipeline

- a. developing a well-structured **project pipeline** to attract investment
- b. scaling up adaptation project size to reduce **transaction costs** covered by investors
- c. improve the **bankability of projects** by applying solid business models with attractive income streams, resulting in the provision of bankable adaption projects

5. Data and information

- a. **transparency** on adaptation finance needs
- b. producing and disseminating examples of **best practice**, showcasing financial sources, instruments and actors involved



6. Vision and sense of urgency

- a. state a well-articulated **vision** as well as a **sense of urgency** to climate adapt the economy and society
- b. encourage the financial sector to view adaptation as an area for active **risk management and opportunities**

Below are some examples of how VO DOMG is encouraging private investments:

Examples from Flanders:

1. *The [tool Groenblauwpeil](#) ("green blue level") [klimaataadaptatietools](#) ("climate adaptation tools")*

The public authority of Flanders was one of the leading partners in setting up the tool Groenblauwpeil. This tool allows civilians and professionals to enter **data on plots and projects**, allowing them to score it on their **"blue" and "green" levels**. The tool ends with a general score for the plot or project and provides **several recommended examples of measures** if the user wishes to optimise their score. The Vlaamse Milieu Maatschappij ("Flemish Environment Agency") provides a tool, [klimaataadaptatietools](#), with a similar set-up at a project level.

This is an example of an authority taking on the combined role of enabler and facilitator. The government sets up an entirely new system and provides more concrete information for project initiators to make their projects more adapted to climate change.

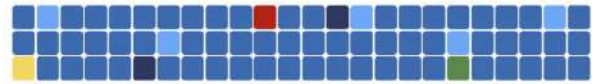
2. *The [Green Deal collaborative projects in Flanders](#)*

The Flemish Green Deals (which should not be mistaken for the European Green Deals) are initiatives of the Flemish **Government to make businesses and sectors "greener"** with projects on water, food, circular economy, adaptation, etc. These are voluntary, ambitious agreements between companies, organisations and the government to realise sustainable actions together in the short term. This collaboration ensures that businesses are better supported when they want to invest to become "greener".

This case is an example of a public authority taking up the role of facilitator, and it also raises awareness by facilitating the **joint involvement of different stakeholders**.

3. *The policy instrument ["stedenbouwkundige lasten"](#) (urban development fees)*

Activities that reasonably impact the environment may only be carried out in Flanders if a permit is obtained. The authority to approve this permit lies with the public government, which is also authorised to impose additional obligations in certain circumstances. One of these obligations is "stedenbouwkundige lasten" (**urban development fees**). They originate from the benefit a beneficiary derives from their permit and the additional tasks a government must assume by implementing this permit. This 'fee' can take a **financial form** or the form of **additional activities** that have to be performed on the plot in question by the beneficiary. If a financial fee is imposed on a permit, the beneficiary of the permit must pay a certain amount of money to the public authority. The authority, in return, can only spend the collected money on the implementation of spatial policy, including climate adaptation projects. The Flemish government has set up this legal framework, and the 'fees' can be applied by the local, provincial and regional governments in their permit policy. This case is an example of a



government taking up an enabling role by creating a framework and imposing a new system.

4. [Tax on water pollution in Flanders](#)

A tax is a measure by which the government imposes a compulsory contribution to its general expenditure. Against a tax, there is no individually identifiable performance by the government. So, **there must always be some public interest at stake in imposing a tax**. Anyone who consumes water from a water company or their own water catchment or discharges water must pay a wastewater treatment fee. Households usually pay this contribution through the water bill, while large consumers must submit a declaration of their water every year. This way, both households and businesses indirectly invest in cleaner water. This case is an example of a public authority taking up the enabler role by imposing an obligation on water consumers to pay for wastewater treatment.

5. [Financial compensations in Flanders](#)

Sometimes, the government can restrict private plots, such as limiting construction rights because the plot is in a flooding zone. In such cases, the **government is obligated to financially compensate such imposed restrictions** to the owner of the plot. Some examples are:

- [vergoeding vrijwillige bedrijfsreconversie](#) (compensation for voluntary business conversion);
- [compenserende vergoeding overstromingsgebied](#) (compensation for flooding zone);
- [compenserende vergoeding natuurinrichting](#) (compensation for nature development).

This case is an example of a public authority taking up the enabler role by imposing an obligation and setting up a system as compensation.

6. [Purchase obligations in Flanders](#)

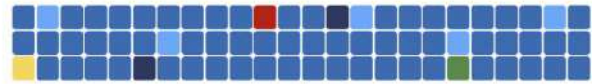
In some instances, **the owner of a plot can oblige the government to purchase it**. This can happen **when the government imposes plans or activities** that could severely compromise existing business operations or plots within designated nature areas. Some examples are:

- [koopplicht landinrichting](#) (purchase obligation land development);
- [koopplicht natuur](#) (purchase obligation nature);

This case is an example of a public authority taking up the role of enabler by setting up a framework to compensate others.

7. [Budget funds in Flanders](#)

Generally, a government's resources are collected and spent globally. This means that all **aggregate revenue is earmarked for aggregate expenditures**. An **exception to this principle is provided in the form of budget funds**. In this way, specific revenue can be allocated to specific expenditures. This allows the government, for example, to allocate money to a fund that can only be spent on climate adaptation projects. The **money invested** by the government in these projects **can, in turn, activate private capital investments**.



This case is an example of a public authority taking up the role of enabler by setting up a regulatory framework for money to be spent only on a specific expenditure, such as climate adaptation.

8. The web page on Green economics in Flanders

The Department of Environment & Spatial Development has a web page dedicated to green economics and the department's related activities and operations. The web page contains more information on the topic and links to other websites, projects and initiatives. **Sharing this information can inspire others to invest in projects contributing to the green economy.**

This case is an example of a public authority facilitating by providing more information and redirecting to other initiatives.

9. Grondenbank (land bank) in Flanders

A land bank can be considered an inventory of different plots owned by the government. The government can use these plots to trade with other plots in projects. This can be considered an **alternative to financial resources used to buy and sell plots**. The Flemish government established this framework but can also be established on other levels, such as the local level.

This case is an example of a public authority taking up the role of an enabler by setting up the regulatory framework.

10. Administrative fine in Flanders

The offender in an environmental infringement, environmental crime or urban planning infringement will receive an **administrative fine**. This will increase the government's resources, which it may later invest in, such as climate adaptation.

This case is an example of a public authority taking up the role of enabler by imposing an obligation on offenders of the legislation in force.

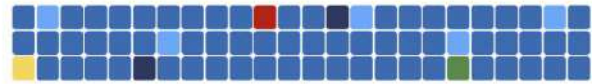
11. The Blue Deal in Flanders

The Blue Deal is an ambitious programme that tackles water scarcity and drought on the ground. It comprises diverse actions and activities. The Flemish government funded the programme through public funding. In addition to the public funding, the **various actions are financially supported by investments from (agricultural) companies, local governments, sector organisations, knowledge institutions and non-profit associations.**

This case is an example of a public authority taking up the role of enabler by setting up the regulatory framework.

12. Subsidies from the Flemish government

The Department of Environment & Spatial Development uses subsidies to implement its policies. Certain subsidies issued by the Department are intended for physical investments in infrastructure and realising projects on the ground. In recent years, several subsidy initiatives have been launched on climate adaptation, green-blue landscaping, and biodiversity, as well as dealing with and supporting SMEs to reconcile their business and economic activities with climate-adaptive and nature-based measures. These subsidies are directed towards provinces,



local governments, research institutions, nature and environmental associations, landscape organisations and the private sector in realising these various projects. These subsidies are mainly organised on a one-off basis. Some examples of such subsidies are:

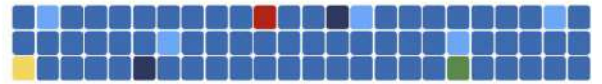
- [Groenblauwe dooradering in de bebouwde ruimte](#) ("Green-blue veining in urban areas"). This subsidy is part of the **Flemish Blue Deal**, and the Flemish government employed financial support from the European Recovery and Resilience Facility. Subsidies were attributed to local governments that applied to the call with ambitious climate adaptation and development projects.
- [Groenblauwe parels](#) ("Green-blue pearls"). Like the example above, this subsidy is part of the Flemish Blue Deal. It has a similar focus but targets projects on a smaller scale. The subsidy targets various target groups, such as local governments, non-profit organisations, inter-communal associations, etc.
- [KMO's in een omgeving voor de toekomst](#) ("SMEs in an environment for the future"). With this subsidy, the Flemish government wants to encourage SMEs to combine their business and economic activities with climate-adaptive and nature-based measures. This call was aimed at organisations, associations, local authorities, companies, and partnerships between them. This is an example of a public authority taking up the role of facilitator, as it facilitates the implementation of climate adaptation projects by providing financial support to realise the projects.

4.2 Public-private partnerships (PPPs)

PPPs are **long-term agreements between a contracting public authority and one or more private entities to implement projects against payments by the contracting authority or users**. They encompass different models and contracts, from projects that transfer the demand risk to the private partner (**concession PPPs**) to projects where such risk is borne by the public partner (**government-pay PPPs**). If well structured, they can be used to deliver innovative solutions to address climate challenges, as they can guarantee informed and balanced allocation of risks between the parties and offer stability by compensating climate risk uncertainty with the predictability of long-term contracts.

Recognising the potential of PPPs to **promote an efficient and cost-effective development and provision of public services and infrastructures**, as well as the limitations of traditional models, the United Nations Economic Commission for Europe (UNECE) has developed the "PPPs for SDGs" approach. The aim is to design a type of PPP precisely fit to implement the Sustainable Development Goals, which, among the targets included in "Goal 13: Take urgent action to combat climate change and its impacts", call for strengthening the adaptive capacity to climate-related hazards. The approach aims to **create value for people and the planet** by focusing on **five desirable outcomes**: accessibility and equality, economic effectiveness and fiscal sustainability, environmental sustainability, replicability and stakeholder involvement.

To assist governments with developing and implementing such PPPs, **UNECE issued in 2022 a set of guiding principles** that build upon the already present



guidance and aim at delivering enhanced projects. The **ten principles** stress the importance of listening to people's necessities, delivering more straightforward projects, allowing local authorities to develop them directly, improving officials' skills and ensuring women's involvement. Policy inclusiveness, zero corruption tolerance, information disclosures, and commitment transparency are also highlighted, as the need for risk balancing between the public and private sectors. Criteria for project selections should be set out and manifestly aligned with the actual purpose of achieving the SDGs while including environmental sustainability as a fundamental evaluation component. Finally, it is vital to ensure that blended finance is genuinely employed to foster a scaling up of investments towards projects that private investors would not otherwise finance. It also ensures the fiscal sustainability of projects to avoid debt traps and minimise hidden liabilities and the impacts on public budgets.

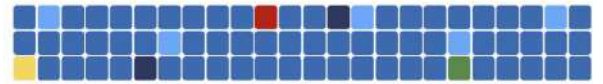
Together with the other initiatives, EU countries and local authorities can use such principles to build knowledge, start mainstreaming practices and fill the gap in exploring alternative funding options.

To establish the legal framework for "PPPs for SDGs" and provide support, **UNECE also published in 2023 the Standard on Public-Private Partnerships/Concession Legal Framework in support of the Sustainable Development Goals and its Accompanying Guide**. It is structured as a ready-to-use document containing contractual principles, institutional arrangements, rules and procedures that could be easily transposed and adapted to national legislations, assisting countries in delivering fit-for-purpose PPPs.

Following the 8th edition of the International PPP Forum, UNECE also focuses on the nexus of climate resilience, economic recovery, and reconstruction, stressing the need to develop green and sustainable PPP projects. A first draft document providing recommendations and guidelines for green and sustainable policy and procurement is already available; however, work on official guidance is ongoing.

Focusing on integrating climate resilience, adaptation and mitigation into infrastructure investments and PPP agreements, the Global Centre on Adaptation identifies within **its Knowledge Module on Public-Private Partnerships for Climate-Resilient Infrastructure (2021)** a series of crucial tools and capacities that actors need to develop, such as stakeholder engagement, climate risk assessment, decision-making under uncertainty and prioritisation analysis.

To facilitate the mobilisation of private capital and advance projects that genuinely enhance resilience, the **public party should build up knowledge of climate risks and trends and invest proactively** in adaptation and mainstream climate standards. In contracts, a clear investment pipeline should be provided with clear deadlines, economic and financial stability should be ensured, and technical and financial support should be provided. On the other side, **the private partner should be responsible for the design and implementation of the project**: best practices of climate resilience are to be integrated into infrastructure investment, design, operations, and maintenance. Furthermore, a key role should be played by the end users and the community at large, as they have direct knowledge and will be the first to be affected by both the climate risks and the implementation of the projects.



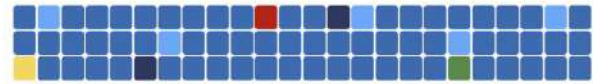
Standards are essential for outlining a systematic risk identification and management process and setting technical and managerial norms. They can also establish criteria and guidance for assessing climate resilience throughout the project lifecycle.

Resilience should be embedded in the framework of the PPP, considering absorptive capacities, adaptation and recovery capacities. During the identification phase, the public authority must scan projects, areas and beneficiaries to identify and evaluate risks and outline the projects' resilience-enhancing features. Then, technical feasibility should be appraised, considering risks and challenges and the project's suitability for delivery as a PPP. Climate adaptation and mitigation considerations need to be incorporated in the entire tender and award phase, from the definition of the terms of the contract to evaluating received bids. Finally, during the contract management phase, monitoring and evaluation mechanisms, including climate-specific Key Performance Indicators (KPIs), should be implemented to ensure the delivery of the identified services, continued affordability and appropriate risk transfer.

On the same note, the **World Bank Group developed 2022 Climate toolkits for infrastructure PPPs,** which outline the framework and describe practical actions to incorporate climate aspects in all the steps of the PPPs cycle. Starting with the selection phase, the project should align with climate policies and agendas, including assessments of climate change risks and adaptation and mitigation potential. Besides, climate actions need to be accounted for in the project's overall economic value and affordability, acknowledging costs and benefits estimations that affect the project's net present value and recognising the role of the private sector and the suitability of the PPP model.

In the next stage, risk and life cycle assessments, identification of externalities and exploration of different options should all encompass climate considerations to inform evaluations of technical and commercial feasibility/bankability. The former requires defining plans, identifying adaptation strategies and mitigation measures, and simulating the project's effectiveness across different climate projections. The latter calls for explicitly accounting for the costs and benefits of climate-related actions, updating the Value for Money analysis.

When the contract document is laid out, climate aspects must be embedded in the allocation of risks and the financial structure. In contrast, climate requirements should be integrated into the procurement process. Contractual definition and categorisation of risks are essential, in conjunction with a clear allocation based on the different risk appetites of the various stakeholders, employing risk transfer mechanisms. There should be flexibility in the financial structure and payment mechanisms, balancing incentives for climate innovation and penalties in case of failure in the application of the technical design. Costs related to long-term adaptation may be partially funded in different ways, e.g. by increasing the availability payment, introducing a fixed element in the revenues or guaranteeing a certain usage level. Several financing options and alternative funding opportunities need to be explored. It is also vital that the procurement process defines output specifications and technical characteristics in line with established standards, introduces KPIs that comply with climate-resilient objectives and demands that climate requirements be included in the operational procedures.



The toolkit also guides the tender process, teaches how to specify documents, draft technical and operational standards, and define evaluation criteria for select bidders. Such criteria should encompass sustainability, climate resilience, innovation, excellence, and inclusivity. It is recommended that the public authority set up an objective methodology to evaluate climate-related factors and assess bids and that the private actor's responsibilities be clearly defined throughout the contract cycle.

In the EU, within the Climate-ADAPT platform³⁷, the **LIFE CITYAdap3 project**³⁸ aims to improve the Covenant of Mayors and involve **the private sector in financing urban climate change adaptation** through developing PPPs and incorporating adaptation into Corporate Social Responsibility. The initiative, running from 2020 to 2024, puts in place public-private mechanisms to finance urban adaptation measures involving local private actors from 4 municipalities in Spain and Italy, defining transferable and replicable collaboration schemes and models of agreement.

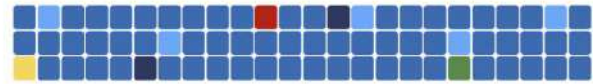
Examples of PPP for climate adaptation measures include a project in Malmo where the Western Harbour stakeholder partnership helped the city realise a more effective investment in addressing the frequent flood-related overflow of sewage systems and shifting its former brownfield site into a sustainable "eco-city". Applying effective adaptation measures such as green roofs, green areas, stormwater management measures, and co-creation of public and private consultations involved different stakeholders in the early urban design stages to help leverage financing of climate adaptive environmental measures. This helped transform the local economy from shipyard and heavy industries to reach higher levels of sustainable and knowledge-based urban development standards without overburdening the city authority with the financial responsibility for its execution³⁹.

For what concern examples of agreement models from PA and FIEs [Scholen van morgen](#) ("Schools of tomorrow") is a public-private partnership between the Flemish government and AG Real Estate and bank BNP Paribas Fortis. To realise this collaboration, a DBFM (design, build, finance, maintain)-limited liability company was established between the partners. AG Real Estate acts as delegated construction manager. A supervisor appointed by the Flemish government exercises control and supervision over the DBFM-limited liability company. The federations of educational institutions and the municipal education system receive a subsidy from the Flemish government to support the DBFM program. The program includes designing, constructing, financing and 30-year maintenance of 182 school building projects. Each school is a unique project based on local needs and vision and meets all modern sustainability, comfort and flexibility requirements.

³⁷ <https://climate-adapt.eea.europa.eu/en/metadata/projects/financing-cities-adaptation-to-climate-change-through-public-private-partnerships-and-corporate-social-responsibility>

³⁸ <https://www.lifecityadap3.eu/?lang=en>

³⁹ <https://climate-adapt.eea.europa.eu/en/metadata/case-studies/optimization-of-the-mix-of-private-and-public-funding-to-realise-climate-adaptation-measures-in-malmo>

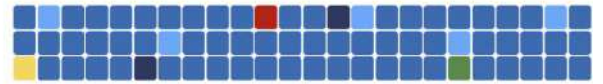


5 The Role of Financial and Investment Entities: the experience of the market on adaptation finance policies

Chapter to be prepared at the end of the project.

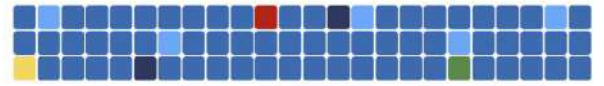
6 Mainstreaming adaptation finance: guidelines for policymakers and practitioners

Chapter to be prepared at the end of the project.



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The CLIMATEFIT project aims to support EU territories in their just and transformational journey toward climate resilience by bridging the financial gap, providing critical insight and building the capacities of (i) Public Authorities (PAs) to identify, orchestrate and attract various public and private financing sources and (ii) Financing & Investment Entities (FIEs) to identify and access resilient investment opportunities. CLIMATEFIT opens a significant opportunity to foster innovative resilience investments in vulnerable EU territories and to boost competitiveness and EU leadership in a growing market. The project will build on a deep understanding of existing initiatives to sustain systemic and catalytic resilience investments by engaging its Technical Partners, PAs and FIEs in the co-creation of twenty innovative investment strategies, ten concrete and scalable investment plans and four bankable transformational investment cases, increasing the bankability of resilient project pipelines across a diversity of scales, financing gaps, contexts, barriers to financing, climate risks and vulnerabilities, biogeographical regions, adaptive capacities and maturity regarding climate change represented from its twenty case studies grouped in three clusters: Northwestern, Eastern and Southern.

