Developing an Adaptation Investment Plan

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EXECUTIVE SUMMARY

This guidance aims to help public authorities meet their climate adaptation needs by incentivising increased private sector investment and delivery of adaptation and resilience actions. It sets out a comprehensive, robust and scalable methodology to develop Investment Plans as part of the wider CLIMATEFIT adaptation investment approach.

It provides detailed, practical guidance that can be used by public authorities in partnership with Financing and Investment Entities (FIEs) to operationalise their existing adaptation plans and investment strategies in order to produce investment plans for the territory. Investment plans include pipelines of potential bankable adaptation projects together with an action plan for improving the enabling conditions for financing. Following this process helps identify those actions and areas where further development of the financing approach is required through the development of the Investment Concepts, noting the development of these is covered in separate guidance.

Section 1 introduces the guidance and key concepts, including its scope and audience, and an overview of what Investment Plans are and why they are needed.

Section 2 is the main part of this guidance. It presents the five Investment Planning modules covering their purpose, methods, and the steps and actions involved, tailored to the European CLIMATEFIT context. These involve:

1. Refining or setting investment objectives and an economic rationale
2. Undertaking a climate diagnostic and adaptation prioritisation
3. Costing adaptation packages
4. Building the economic and financial case
5. Compiling the Investment Plan

Each module includes information about the purpose of the module, inputs and pre-requisites, as well as the skills, expertise and inputs required, key issues to consider. They also signpost to further reading, guidance and resources, and includes practical explanations and examples. Given the limited resources within CLIMATEFIT, the guide also includes specific information on how to undertake a more limited application for those PAs and FIEs within the project,

For public authorities, the guidance will help them to identify, select and then develop financing approaches for priority adaptation options in line with adaptation objectives, and will help them identify potentially interested parties in the private sector.

For private sector financing and investment teams, the process described in the guidance will help to improve the quality and bankability of investment projects for adaptation activities in the territory and increase the visibility and awareness of such opportunities.

The approach has been designed to address many of the barriers and challenges associated with financing adaptation. The Objective setting stage helps more tangibly define the outcomes desired in the context of uncertainty, the climate diagnostic stage and sequencing focuses on developing investment-relevant climate information, and early optimisation of economic and financial benefits. The costing module helps generate more robust estimates of adaptation investment needs, whilst the module on the economic and financial case helps quantify the benefits of the adaptation. The final module focuses on identifying which projects are bankable compared to those which need development of dedicated Investment Concepts, as well as the enabling actions required. This includes a particular focus on maximising private sector resources as far as possible (e.g. where there are revenue streams or financial returns), to ensure public funds are used strategically for crowding in private sector action, for innovation, or for public goods. In taking such a strategic approach, and developing financing it is hoped the guidance will help address many of the common barriers to adaptation financing, boosting skills, knowledge and capacity of PAs and FIEs,

1 SECTION 1 : Introduction

Welcome to the CLIMATEFIT Investment Plan guidance. This guidance sets out how Public Authorities (PAs) and Financing and Investment Entities (FIEs) can work together to develop Investment Plans for climate adaptation within their territory.

1.1 Scope of the guidance

The overall investment approach for CLIMATEFIT covers three stages – Investment Strategies, Investment Plans and Investment Cases. This guidance relates to the second part of the wider climate adaptation investment planning process being developed and piloted in CLIMATEFIT. An overview of Investment Planning and Investment Concept stages, and how they are being applied in the project is shown below:

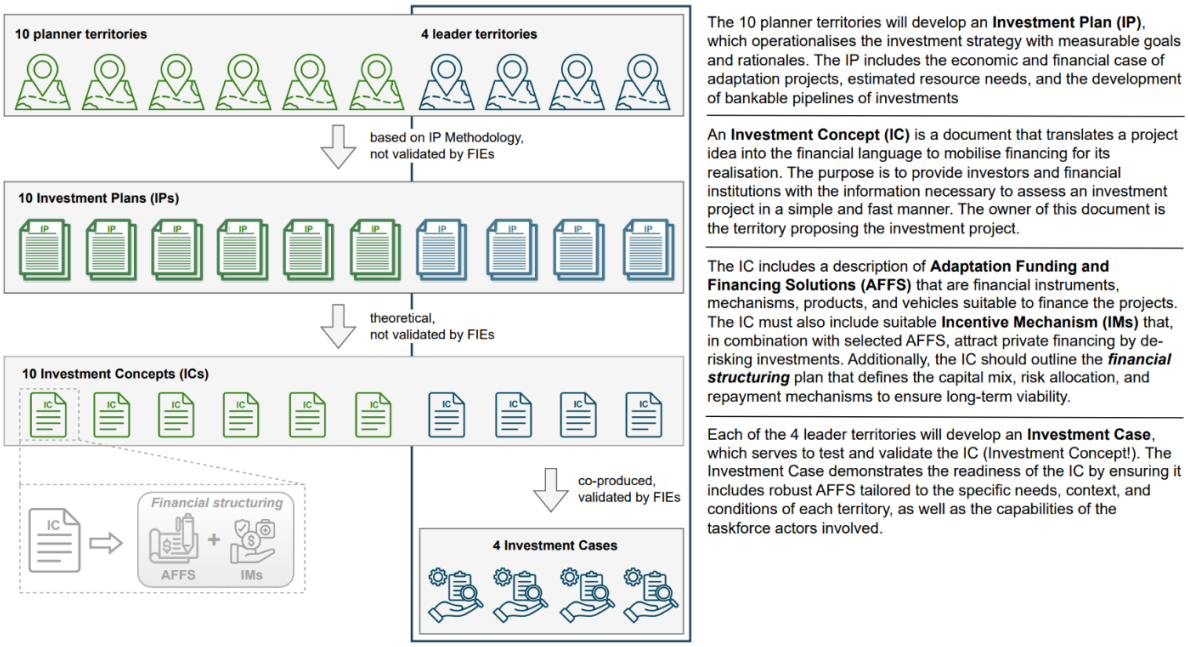


Figure 1: Overview of the application of Investment Planning and Investment Concept stages. Source: Authors

Within each stage, CLIMATEFIT has developed a number of modules to guide the development of each of these outputs.

1.2 How to use this guidance

The Investment Plan guidance is split into two sections. Section 1 (this section) provides an introduction to the guidance and to Investment Plans in general. It sets out the purpose of the guidance, how to use it, as well as covering basic information on Adaptation Investment Plans, why they are needed, the core steps, the audience and how to get started.

Section 2 provides detailed guidance for each of the five core Investment Plan modules.

Each module contains information on eight different aspects :

- **Purpose of the module** - What the module is for, why it is important for developing projects, from both the public and private sector perspectives.
- **Inputs and prerequisites** – What can you draw on for this task? Inputs are resources that can be used; prerequisites are actions that need to be taken or have been taken prior to starting work on the module
- **Skills and expertise required** - The relevant skills, knowledge and experience required to undertake the activities described]
- **Activities and effort** - The key activities involved to complete the module, practically described, along with an indication of the level of effort and description of which activities are essential and which optional.
- **Stakeholders to involve and the role of the LRT** -The relevant stakeholders to potentially involve – from within the PA and external stakeholders and the roles of the LRT, codesign etc.
- **Outputs from the module** – The documents, such as the completed templates, descriptions, write-ups, graphs and analyses that were produced when completing the module.
- **Key issues to consider** - Relevant insights or key considerations for undertaking the actions outlined; guiding questions; starting points; templates
- **Further reading, guidance, resources and case studies -** primary resources that can be useful to complete the modules; worked examples.

The guidance in these two sections should also be read in conjunction with the other stages of the CLIMATEFIT methodology for climate adaptation investment planning: the methodology to build an Investment Strategy (D2.3) and the Investment Concept Handbook. The subsequent stage, investment concepts, develops the actions that are not yet bankable into written descriptions of projects with business and financial models that would successfully allow their funding and/or financing.

The guidance is designed to be read in order. However, it can also be used as a reference document – helping to support the ongoing Investment Planning processes. We also provide implementation support materials including templates, examples, and workshop exercises connected to each of the IP modules available in the CLIMATEFIT shared space: IP implementation support templates and examples.

Throughout the guidance, we have included boxes to provide more information on particular concepts and how they can be applied within the scope of the project.

Green boxes contain information relating to how the IP guidance should be applied within the CLIMATEFIT project. Whilst CLIMATEFIT has been funded to develop a method which advances the state of the art in financing and delivering private sector adaptation, the limited resources of the project overall means participating PAs or FIEs may not have the time, capacity or resources to complete the tasks in full. Therefore, these green boxes provide guidance on which of the modules and the actions within it are essential to complete, and how to complete a more light-touch approach.

Blue boxes provide further background information on concepts and approaches referred to in the guidance. This provides more in-depth, theoretical underpinnings to the method and approach.

This document sets out a step-by-step process for the Leader and Planner territories to follow, which points territories and project developers towards suitable methods to apply and prioritises private sector participation (see Project note 1).

CLIMATEFIT Project note 1: Private sector focus.

CLIMATEFIT is focusing on investment planning where there is a specific role for the private sector, either in terms of financing or delivery of adaptation plans (see Box 2). The private sector is diverse and includes those in the real economy (small and medium-sized enterprises and large corporations), as well as financing institutions (Financing and Investment entities, or FIEs). who might finance or co-finance an activity through private or blended approaches. Thus, it is important to understand FIEs perspectives on Investment Plans and activities, and develop an Investment Plan with them in mind, alongside requirements of more traditional public sector sources.

CLIMATEFIT will develop Investment Plans which include pipelines of specific projects which may attract different private investors. Doing so, it will also be important that Public Authorities move towards a more commercial mindset. This means taking a more strategic approach to the use of public finance, considering how projects that might traditionally have been publicly funded could involve the private sector as partners with the appropriate commercial structure. It means considering private perspectives on the value of an investment (see Box 9) and also the critical skills and capabilities that the private sector can bring.

Likewise, PAs will need to be seen by FIEs more as partner and potential client and not only as a regulator of private sector activities or as a competitor (i.e. where PAs are potentially responsible for crowding out private investors). To do so, the PA will need to work on providing bankable pipelines as well as improving the enabling conditions for investment, as set out in the process below. It is also why we consider FIE engagement as critical to this process. The guidance suggests some ways that PAs may engage FIEs and at which points in the development of an Investment Plan this should be considered.

1.3 How this guidance was developed

The guidance was developed iteratively. SEI Oxford (supported by Paul Watkiss Associates), reviewed the early draft of the Investment Strategy methodology to understand the entry point for the Investment Planning, From this, as well as the review of the literature undertaken in WP1 the authors developed an early iteration of the Investment Planning process. This also drew on foundational knowledge of emerging Investment Planning approaches from Pathways2Resilience (England et al., 2024)[1] and Asian Development Bank (ADB,

[1] Pathways2Resilience (2024) Developing Regional Climate Resilience Investment Plans: Implementation Guidance to support regions to finance the Regional Resilience Journey in line with the EU Mission on Adaptation. Authors: England, K., Qian, C., Yovtcheva, A., Dellis, K., Corvaro, M., Eltinay, N., Palomar, L.

2022)[2]. This was further developed through meetings with the WP partners (SEI Asia, UA, ENVIROS, WCF).

A first draft of the guidance was shared for internal review with the CLIMATEFIT consortium. It was also shared with FONDUL ROMAN PENTRU EFICIENTA ENERGIE (FREE), FIE Advisory partners, and Flanders PA to review and reflect their perspectives. The CLIMATEFIT advisory board was also involved throughout. We are grateful for the comments from Vivian Depouis from I4CE, and Bridgit Boulle (Climate Bonds Initiative). The authors then revised the guidance to account for their comments and developed a first version for submission.

This Investment Planning Guidance builds upon D2.3 IS Methodology and will feed into D4.3 'Guidelines for PA on manual for leveraging finance'.

Future versions of the guidance will be updated and revised based on the learning from the application within CLIMATEFIT as well as to reflect the emerging state of the art within the wider adaptation landscape during the project's lifetime.

1.4 What are Climate Adaptation Investment Plans?

For the purposes of CLIMATEFIT, Adaptation Investment Plans are documents which translate the high-level ambitions developed in a territory's adaptation strategy or action plan into a pipeline of bankable projects, including Investment Concepts where private sector financing is needed. Other key terms, and how they relate to one another are explained in the box below:

Box 1: Key terms and definitions.

The CLIMATEFIT project uses a common terminology to describe key aspects of the Investment Planning process. These are as follows:

Investment Plan (IP) – A document which operationalises an existing adaptation plan or a new Investment Strategy. It includes adaptation objectives, a pipeline of potentially bankable projects and an action plan to improve the enabling conditions. The pipeline should include projects which the territory is seeking private sector financing for.

Project pipeline - specific, upcoming investment opportunities in adaptation within regions (OECD)

Fundable project – a project is fundable when it meets the criteria of those willing to provide the funding for it – for example it achieves specific objectives. Typically, fundable projects don't deliver financial return or revenues.

Bankable project - A project is bankable, whether from public or private sources, when its risk-return profile meets investors' criteria and can secure financing to implement the project. Key criteria for bankability include the probability of meeting the project's financial, environmental, and social goals, sufficient estimated cash flows to cover costs and produce returns that meet investor expectations, and whether the project will be implemented by a creditworthy entity.

[2] ADB (2023) Climate Adaptation Investment Planning: A program to bridge the gap between Climate Adaptation Planning and Financing. https://www.adb.org/sites/default/files/publication/927306/caip-brochure.pdf

Enabling conditions – a set of measures and conditions which support the overall bankability of adaptation projects within a territory. This also includes policies, regulations, incentives, data, access to finance, and governance, as well as capacity building measures and domestic financing to implement them (institutional strengthening, improvements to government information).

Investment Concepts (IC): Document that translates an investment project idea into the financial language to mobilise financing for its realisation. The IC includes a description of Adaptation Funding and Financing Solutions (AFFS) and suitable Incentive Mechanism (IMs) that in combination with selected AFFS, attract private financing by de-risking investments. Additionally, the IC should outline the financial structuring plan that defines the capital mix, risk allocation, and repayment mechanisms to ensure long-term viability

Incentive Mechanisms (IM) – Any measure or scheme to attract/reward FIEs to support an Investment Concept. This can range from changes/introduction of enabling laws/regulations, to providing grants/subsidies/tariff support to investment concepts, to introducing new investment/financing schemes. Incentive mechanisms are proposed and offered by the public sector (EU, national, regional or local) to the private sector to attract/mobilise private financing, de-risk innovative solutions and overcome funding/financings barriers for climate adaptation projects.

Adaptation Funding and Finance Solutions - (AFFS): Any funding/financing/guarantee scheme/grants, or a combination thereof necessary to finance the investment project. E.g., Including but not limited to green bonds, PPP, blended finance, pooled finance, land value capture, grants, co-funding crowdsourcing, resilience mortgages, impact bonds, deep green bonds, climate resilience bonds, municipal bonds, adaptation bonds, philanthropic support, sustainable performance bonds.

More detail on each of the key terms is introduced throughout the document in the relevant sections.

CLIMATEFIT Project note 2: Bankability of projects

The IP methodology assembles a pipeline of potentially bankable projects. However, on completing an Investment Plan, many projects will not be bankable outright and will need further work to develop bespoke Investment Concepts (ICs), involving dedicated Adaptation Funding and Financing Solutions (AFFS), and associated Incentive Mechanisms (IMs). Each Leader and Planner territory will develop ICs for their selected project.
Note also that:
- Strategist territories within CLIMATEFIT are not expected to take forward the development of an Investment Plan.
- Within CLIMATEFIT, only the four Leader Territories will take forward the development of Investment Cases (detailed the Report on the tested ICs; Deliverable 4.2).

1.5 Why are Adaptation Investment Plans needed?

Many territories struggle to mobilise the finance needed to deliver their adaptation plans and strategies. This is because there are a large set of strong financial, economic, and informational barriers to adaptation finance, which often prevent their mobilisation (Machiels et al,, 2024, Watkiss and Frontier Economics, 2022, Dellis et al, 2023 - see also Section 1.8 below). In addition, adaptation strategies and plans often lack the detailed information on the activity required

for finance, and activities are developed without a process which systematically identifies and addresses such barriers.

A comprehensive Investment Plan addresses these issues by providing a clear roadmap for financing and implementing adaptation projects. It facilitates engagement with stakeholders and funders, ensuring that everyone involved understands the plan's objectives and methodologies.

The Investment Plan should operationalise the Investment Strategy and provide detailed analysis of the overall funding needs as well as of the individual actions and how each will be paid for. Since an important role for public finance is mobilising private investments, the plan should consider economic and financial analysis and financial structuring processes as well as business model development to help ensure that investments proposed are more likely to become bankable.

1.6 What is the process for developing an Investment Plan?

The study uses five modules to develop an Investment Plan. The IP modules help territories to identify and develop a series of packages of adaptation options/projects in line with adaptation objectives, sequenced over time. The approach then focuses on the resulting packages of near-term options to 2030. These options are then costed and evaluated for their suitability for private sector financing or delivery and turned into a pipeline of potentially bankable projects that fit within available fiscal space and capital. Projects that require further development to become bankable are then developed into bankable Investment Concepts (see Project note 2). The IP is informed by the Local Resilience Taskforces (LRTs) which are multi-stakeholder working groups employing a social innovation approach and targeting the financing of adaptation actions. The interaction with the LRT, as well as the summary of modules, purposes and methods is shown in Figure 2 below:

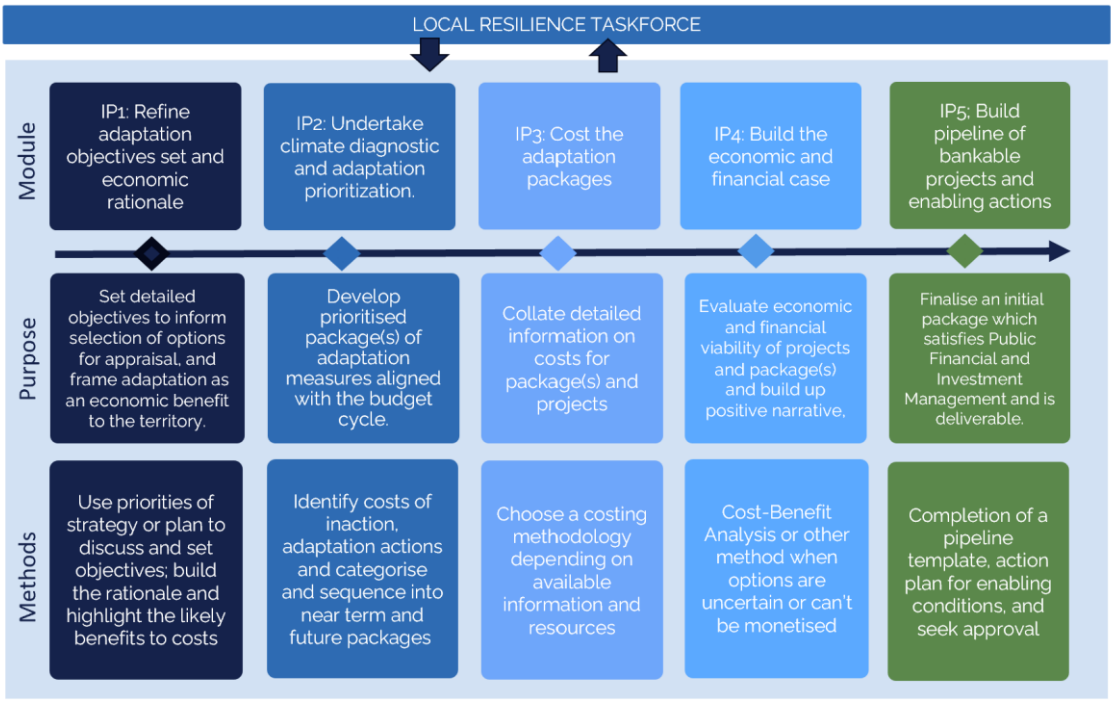


Figure 2 2: The CLIMATEFIT Investment Plan process, and its interactions with Local Resilience Taskforces. Source: Authors.

A further breakdown of the activities involved in each module, and indication of the likely level of LRT involvement in these tasks is shown in Figure 3 below. The last column can also be used to track a territory's progress in completing their IP.

Figure 3: Breakdown of main activities in each module and level of LRT involvement (L=low; M=med; H=high) Source: Authors.

1.7 Who is the audience for an Investment Plan?

Since the aim of the Investment Plan is to facilitate the mobilisation of capital for adaptation projects, the main audience for the Investment Plan is FIEs. FIEs are important external stakeholders in the process as both contributors and audiences for the plan. It should serve to demonstrate that the PA has a pipeline of projects in the territory, and that these represent attractive opportunities for financing. The plan, or parts of it, could also be a public-facing document.

1.8 How does an IP differ from an Investment Strategy?

An IS provides a much broader overview and longlist of adaptation options. In contrast the IP is more detailed, and contains new analysis targeted at building the project pipeline and mobilising investment. It focuses on prioritising and sequencing actions over time according to the urgency of actions and the potential economic and financial benefits, and producing the information required for investment

1.9 Use cases

The main use of an Investment Plan is to translate the high level vision and ambitions into a pipeline of projects. However, there are a number of additional use cases from this process, including:

- Building agreement and collaboration within Local Resilience Taskforces (LRTs)
- Seeking further approvals for project development from FIEs (Financing and Investment Entities) and the relevant committees
- Soft market testing for PAs (e.g. to identify potential interested parties or clarifying ahead of a procurement or development of a fund)
- Informing PA business cases for public sector financial support to projects.
- Identifying prospective FIEs for project financing e.g. through matchmaking
- Identifying future research and development needs
- Applications for technical assistance for further pipeline development (e.g. through InvestEU the European Investment Bank [EIB] or MIP4Adapt)

1.10 Governing plan development

The PA is the owner of the IP, and will, within CLIMATEFIT territories, normally be responsible for coordination and governance of the LRT (see Deliverable 4.5, section 4.2). Wherever possible the Local Resilience Taskforce should collectively govern the overall development of the Investment Plan. It may be the case that exiting governance arrangements are available to build on. The governance arrangements developed in Investment Strategy stages may need to evolve during development of the Investment Plans. Governance of the process (see IS guidance section 6.10) outlines how PAs could identify all the relevant actors/entities to be involved. These include internal and external stakeholders. The officer/representative body within the PA needs to give approval (or seek approval of any relevant committees) for development of the IP and consider the budget, staffing needs and timeline for developing it.

Box 2: Public and private sector roles in delivering and financing adaptation.

A key consideration in adaptation planning is who provides the financing, and who delivers the adaptation. Both of these can be provided by either the public or private sector. This typology is summarised below. For example, traditional adaptation with public good characteristics can be delivered using public agencies (top left) or using private contractors (top right). Equally, it is possible for public authorities to use private financing arrangements to address short term financing restrictions, (e.g. green bond debt: bottom left). In other cases it is possible for the private sector to deliver adaptation through its own financing (bottom right).

Whilst public finance typically focuses on public goods or non market sectors (since the private sector will underinvest), there is also an important role for the public sector in enabling the private sector to invest in a wider range of activities, by de-risking and crowding in a wider range of actors – such as through blended financing in public projects (middle left), and the provision of technical assistance, or concessional loans or guarantees. (middle right)

Table 1 : Typology of adaptation financing and delivery. Source: Authors, updated from Watkiss and Frontier Economics, 2022.

		Who delivers the adaptation?	
		Public delivery	**Private delivery**
Who finances the adaptation?	**Public**	**Public funded project delivered by public agency,** *e.g. flood defence funded through public budget, local charges or taxes, or public financial institution (e.g. EIB or structural funds)*	**Procurement of private company to deliver public adaptation**, *e.g. coastal defence project funded from public budget uses private contractor.*
	Blended	**Co-financing between public (or public financial institution) and private investors or financial markets**, *e.g. Joint Venture, PFI, PPP potentially co-financed with private investors.*	**Public finance used to de-risk private adaptation**, *e.g. EIB / Capital Hub technical assistance, innovation grants, concessional loans, equities, guarantees. Public private partnership (PPP) arrangements.*
	Private	**Private finance to provide funding**, e.g. commercial loan from private financial institution, green bond, or crowdfunding (including public crowdfunding).	**Private company delivering and funding own adaptation** *e.g. flood protection of assets.* **Private company develops new adaptation goods and services**, *e.g. new insurance products* **Private company raises finance from financial institution or investor**, *e.g. debt, shares, equity*

A further consideration is distinguishing between who provides the up front financing, and who ultimately funds of adaptation. In many cases, the private sector has a strong role in providing the financing, but in many cases public institutions or households end up ultimately paying (Watkiss and England, 2025).

The right considerations will vary in each territory, and will depend on multiple wider factors, including political choice, pre-existing decisions, market conditions, available fiscal space, and the economic and financial characteristics of the activity being developed.

However, it is important for both PAs and FIEs to consider this mix both for projects and overall. Given CLIMATEFIT is focusing on increasing private sector financing of adaptation, the IP methodology and the individual modules prioritise decision making processes which seek to maximise the role of private sector finance and delivery.

Further information
Watkiss, P. and England K. (2025) *Adaptation finance and the private sector: opportunities and challenges for developing countries*. Technical report for Zurich Climate Resilience Alliance.

1.11 What are common challenges and broader factors that influence the ability to develop Investment Plans?

There are a well-documented set of barriers to adaptation planning and financing. These relate to both practical issues (e.g. in Moser et al, 2018[3]), but also more systemic and structural barriers to adaptation – for example high

[3] Moser, S. C., Ekstrom, J.A. Kim, J, and. Heitsch, S. (2018) Adaptation Finance Challenges: Characteristic Patterns Facing California Local Governments and Ways to Overcome Them. California's Fourth Climate Change Assessment, California Natural Resources Agency. Publication number: CCCA4-CNRA-2018-007 https://www.energy.ca.gov/sites/default/files/2019-12/Governance_CCCA4-CNRA-2018-007_ada.pdf

information needs, the lack of revenues, and low or long rates of return (Mortimer et al, 2020[4], Watkiss and Frontier Economics, 2022[5]). Adaptation Investment Planning processes such as those being developed by CLIMATEFIT are increasingly being put forward as a way of addressing these barriers (e.g. England et al., 2023[6], ADB, 2023[7], Hernandez and Ceinos, 2025[8]). Whilst the Investment Plan process represents an 'ideal case' for how Public Authorities and FIES can collaborate together to develop a pipeline of bankable projects, there are a wider set of barriers and constraints which can influence its effectiveness. These can be practical and organisational (e.g. related to processes, resources and skills), but also more systemic and structural, relating to values, beliefs and attitudes, as well as financing characteristics of adaptation.

For example, there may be timing mismatches between work to develop an Investment Plan (and its adaptation-relevant project pipelines) and other budgetary or Investment decisions in the territory. There may also be skills gaps, weak governance, or pre-existing constraints such as political priorities or restrictions on use of funds. There is also a tendency for the financing aspects of the implementation of plans to not be considered until after the finalization of the plan or strategy. Similarly, more systemic issues include:

- **Over-optimistic expectations of private sector as ultimately funding adaptation** - Whilst private sector financing has a significant role in addressing adaptation finance gaps, there is an overoptimistic view of how much actors in the real economy will ultimately pay for adaptation. For example, 2/3 of adaptation needs are typically suited to public finance as they are in non-market sectors or have public characteristics (UNEP, 2024)[9]. Such overoptimistic expectations have the potential to in turn underestimate the amount of public finance needed for adaptation.
- **Unwillingness to borrow for adaptation** – Governments and politicians are rightly keen to avoid borrowing where there is not a clear approach to repaying. However the high economic and fiscal costs of inaction, as well as additional investment needs may warrant an exploration of PAs appetite for deeper fiscal reform, such as by generating additional revenues, bundling with wider projects which do have new revenue streams (e.g. mitigation) or reallocating resources from other budget lines. Relatedly, in

[4] Mortimer, G., Whelan, B. and Lee, C. (202) *Adaptation Finance: Emerging approaches to solve the climate adaptation finance gap. Climate-KIC Australia.* https://climate-kic.org.au/work/projects-programs/adaptation-finance/

[5] Watkiss and Frontier Economics, (2022) Barriers to financing adaptation actions in the UK. https://www.theccc.org.uk/publication/barriers-to-financing-adaptation-actions-in-the-uk-frontier-economics-paul-watkiss-associates/

[6] England, K., Watkiss, P. Qian, C and Plataniotis, A., (2023) *Catalogue of sources and instruments and adaptation finance process*. Deliverable 5.2 of the Pathways2Resilence project. https://www.pathways2resilience.eu/docs/delivrable/101093942_P2R_D5.2.pdf

[7] ADB (2023) *Climate Adaptation Investment Planning: A program to bridge the gap between Climate Adaptation Planning and Financing*. https://www.adb.org/sites/default/files/publication/927306/caip-brochure.pdf

[8] Hernandez, M. and Ceinos, A., (2025) *Climate Change Adaptation Investment Plans: Frequently asked questions*. https://napglobalnetwork.org/resource/climate-change-adaptation-investment-plans-faq/

[9] UNEP (2024) Come hell and high water. Adaptation Gap Report 2024. https://www.unep.org/resources/adaptation-gap-report-2024

the public sector there is sometimes a reluctance take a more commercial point of view towards project development and financing.

- **Competing priorities between adaptation and other investments** – Adaptation projects often compete for investment against other policy objectives (e.g. economic development or health) rather than being seen as mutually supportive,
- **Small project sizes in isolation, with limited ability to aggregate** – Adaptation projects are typically of smaller size than in other sectors, and developed in isolation from wider, programmatic financing approaches. This can hinder the use of larger financing instruments such as Green Bonds or EIB Framework loans, meaning they are only viable as part of wider investment plans (e.g. for mitigation or economic development).

To address these issues, the table below outlines a series of emerging barriers to the Investment Plan process, and a set of potential solutions to address them.

Table 2: Emerging barriers to successful Investment Planning processes. Source: Authors.

Type	Issue	Possible solutions
Practical	Timing mismatches mean Investment Plans don't fit with budget cycles	• Clarify timing and relationship with, key cycles such as budget cycle (PFM) or investment decisions (PIM), or FIE Investment Committee windows
	Political or restrictions on use of public funds on focus of activities	• Early political engagement to understand important political priorities • Ongoing political engagement during the Investment Plan process, particularly in the sequencing and prioritisation process.
	Lack of coordination across and within governments	• Use a Local Resilience Taskforce to develop an inclusive approach with both adaptation and financing stakeholders •
	Limited skills to complete the Investment Planning process	• Audit skills and compare with those suggested in this guidance • Integrate into staff learning and development plans • Procure consultancy support
	Limited resources for the Investment Plan process	• Applications to EU Mission projects with cascade funding to develop Investment Plans (e.g. Pathways2Resilience) • Embed commitments to an Investment Plan within wider adaptation planning
Systemic/ structural	Public sector not willing to borrow for adaptation.	• Further development of the costs of inaction and investment needs for adaptation. • Consideration of alternative measures (e.g. combining with mitigation investments) • Assessment of fiscal risks (i.e. viability of municipalities) • Identification of alternative revenues for repayment
	Limited fiscal space for further borrowing	• Explore approaches to create fiscal space (e.g. new revenues, restructuring of debt).
	Unrealistic expectations of private sector contributions to pay for adaptation	• Use of appraisal and systematic financing approach to identify those investments with strong financial cases (for private sector), vs. economic cases • Focus on existing market sectors (e.g. Agriculture), or financing models where is the potential to create revenue streams (e.g. PPPs).
	Adaptation projects siloed and competing with other investments (e.g. Health)	• Climate proofing and mainstreaming of adaptation into existing investments • Incorporate adaptation measures as part of wider programmatic investments • Quantification of associated economic benefits of adaptation (e.g. job protection) and wider co-benefits (e.g. carbon storage).

	Limited set of sources and instruments	• Consider diversification of sources and instruments in developing financing approaches, improving bankability • Develop action plan to improve enabling conditions as part of Investment Planning process.
	Low project sizes and limited ability to aggregate leading to higher transaction and financing costs and unsuitability of sources and instruments	• Consider projects as a portfolio, rather than in isolation • Seek synergies with wider investment needs
	Unclear value proposition for adaptation which limits investment in project development.	• Use of Investment Concepts process to develop bespoke project approaches and financing approaches.

Before undertaking the Investment Planning process, it is important you are aware of these challenges and potential barriers. As part of the Investment Plan process, it is likely you will have to consider rescoping or re-designing projects or Investment Concepts to address them.

2 SECTION 2: Investment Planning Modules

2.1 Getting started

The starting point for developing an Investment Plan is to build on the existing adaptation plan or strategy as well as any previous Investment Strategies developed in your territory. Before undertaking the process, it is important to define a scope and timeframe, agree available resources, and agree a governance approach and sign off route.

2.1.1 Define a scope, project plan and timeframe

Before undertaking the process, it is important to be clear about the scope of work, the skills required and the available resources.

Start by deciding the scope of work for the Investment Plan, including the hazards, risks or sectors in focus, the timeframe the plan should cover, and any particular objectives you want it to achieve. This could be influenced by the adaptation ambition, as well as practical considerations such as deadlines and available resources and skills.

The range of variables involved mean it is challenging to give a definite figure on the resources and time required – however, it is typically a 12 – 18 month process for a senior professional to lead.

Given the higher level of detail associated with Investment Planning, we recommend defining a scope based on priority/urgent climate risks and sectors rather than trying to address them all. This will allow your IP to focus on developing the required information to mobilise capital.

2.1.2 Agree resources and skills available for Investment Plan development.

In parallel with the above, you should scope the available human and financial resources available to support the plan development, as well actions to address particular gaps in skills or capacity that will need to be filled to support development of a successful plan.

2.1.3 Agree governance approach, ownership and sign off route

You should define how the Investment Plan will be governed and the sign off process, Whilst the Local Resilience Taskforce will be an essential body to help support the process, it is not a decision-making body and so it is important to define who ultimately 'owns' the Investment Plan and will be responsible for its implementation.

Note 3: The guidance provided here is only indicative for PAs, Facilitators and FIEs since it is impracticable to consider all possible activities in depth. Detailed, specific advice will be needed to apply the methodology in practice. Technical partners are committed to review this guidance in the light of experience in its use and on-going feedback from partners to improve this methodology.

2.2 IP1: Refine or set objectives and economic rationale

2.2.1 Purpose of the module

This module involves developing an overarching set of adaptation and investment objectives that aligns with the wider territory's strategic goals on adaptation and development. These objectives guide the focus and effort of the subsequent Investment Plan development. They enable the consideration of options to reach them, and underpin Monitoring, Evaluation and Learning (MEL).

The module also encourages PAs to set out the economic rationale for their Investment Plan. The investment rationale should frame adaptation as an economic issue & benefit to the territory. In turn this supports the rationale for each individual project.

2.2.2 Inputs and prerequisites

Before you start, review the priorities outlined in the territory's Adaptation Strategy or Plan and/or Investment Strategy if these are available.

It is also important to understand the fit with wider local development priorities, as well as your near-term entry points for adaptation. This could be wider local, regional or national policy objectives and plans in the next five to ten years (e.g. for economic development), as well as known private sector priorities or investments, upcoming near term decisions that could be influenced, and the existing governance arrangements across different sectors (e.g. if there are public private partnerships for waste or other sectors, or certain sectors are privatised – e.g. energy). This information will give a good overview of the current landscape which can be used to inform funding and financing approaches.

2.2.3 Skills and expertise required

- Desktop research, analysis and synthesis skills.
- Familiarity with regional public policy approaches, and regional priorities of businesses and FIEs.
- Knowledge of the existing adaptation strategies and plans from higher to local level, including the priorities and objectives set out for the municipality or territory
- Understanding of the timing of risks, costs and benefits associated with the longlisted actions from the Investment strategy

2.2.4 Activities and effort

1) ***Develop adaptation and investment objectives***

Adaptation objectives define what is expected to be achieved from the adaptation, whilst investment objectives are linked to, but different from adaptation objectives. These relate to the objectives of the investment plan themselves and describe how finance should be used and what high-level outcomes are expected.

To generate your adaptation objectives, start by reviewing the list of prioritised climate risks and sectors. Using these as a starting point, begin to develop and

define a set of overarching adaptation objectives for the IP. Where possible, they should be SMART (i.e. specific, measurable, achievable, realistic and time-bound - e.g. boost insurance coverage in agriculture to 90% of SMEs by 2030).

Where it already exists, you should draw on existing work to support this process. For example, objectives may already be defined in existing adaptation strategies and plans. E.g., 'adapting the city to the risk of heatwaves and combating urban overheating' or 'reduce disruptions to businesses' production and distribution due to flooding'. Similarly, there may already be a pre-existing list of adaptation options which has been developed in the Investment Strategy or Adaptation Plan. Where this is the case, you can cluster them into groups of similar projects (e.g. by hazard, sector, climate risks, or actions), as an interim step to help inform the process. An example is shown below:

Table 3: Indicative clustering of actions from Investment Strategy stage. Source: Authors.

		Cluster 1: Heat risk in built environment	Cluster 2: Water management	Cluster x....
Existing information	**Hazards**	High temperatures, heatwaves	Heavy rainfall, droughts	…
	Sectors	Health,	Infrastructure	…
	Urgent climate risks	Risks of excess morbidity and mortality	Interruption in water supplies, Damage to roads, bridges, buildings and utilities	…:
	IS Actions	Heat health warning system; rest centres, cool spaces, indoor building temperature limits; Including new green infrastructure on college campus	Water efficiency in buildings; Water efficiency and flood risk in planning guidelines; Reduction of paved public spaces for more natural landscape	…
Possible objectives	**Description**	Reduce morbidity and mortality risks to children and over 65s Reduce risks to labour productivity	Reduce flood risk to energy infrastructure; Reduce risks of disruption to businesses Reduce water use to reduce drought risk	…
	Timeframe	2050	2030	…
	Relevant climate scenarios	RCP4.5-SSP2, RCP7-SSP3.0	RCP4.5-SSP2, RCP7-SSP3.0	…
	Roles of government, private sector and households	Government to reduce risks in public spaces, and provide healthcare, early warning, private sector to reduce risks in building stock, and help upfront financing.	Households to contribute through water bills, Government to provide general flood protection and incentivise private sector participation where possible.	…

When setting adaptation objectives and investment objectives there are three key considerations which can affect the scale of the adaptation, and the associated costs and benefits

1) **The level of warming and when** (e.g. 4 degrees by the end of century). Whilst lags in the climate system mean warming trajectories for Europe are broadly similar to the 2040s, there is significant uncertainty past this point (COACCH, 2021). The timeframe chosen is important since this affects underlying factors which define the scale of risk (e.g. socio-economic change and land use change). These have important considerations for framing the level of risk.
2) **The level of resilience required and associated appetite for residual risk** – In addition to the underlying assumptions, the resilience required and appetite for residual risk are key considerations, since these contain tradeoffs which affect both outcomes and associated costs and benefits (see Box 3).
3) **Framing**. Objectives can be framed in different ways and will vary based on local hazards and socioeconomic conditions as well as affordability. They will also be influenced by national objectives. Objectives could include goals relating to a warming target, or in economic terms (e.g. limitation of damage to % of GDP). A more detailed examination of the framings, and their advantages and disadvantages is shown below:

Table 4: Illustration of different ways of expressing adaptation objectives. Source: Authors

Type	Warming target	Resilience standard	Vulnerable / Risk / Impact reduction	Economic target	Process standard
Description	Expression of target in terms of absolute resilience over time	Use of a design standard (e.g. in engineering) as a way of determining expenditure required	Objective aimed at reducing particular risks or risk components	Expresses targets relative to other economic goals or metrics	A process which supports good adaptation (e.g. covering stages in the adaptation cycle)
Example	Adapt to 4 degrees by 2100	Maintain resilience to a 1 in 200 year flood event with climate change to 2040	Minimise excess summer deaths to over 65s	Limit average annual damages to 1% of the area's GDP	Every department has a climate change risk assessment and sector-specific adaptation plan.
Advantages	Easy to communicate	Useful in existing contexts where engineering standards widely adopted	More definite target groups.	Alignment to / linkages with economic output to create compelling narrative	Fairly straightforward to implement Can gather information which supports future adaptation objectives
Disadvantages	Requires deriving a time component for	Climate change is shifting	Words like 'minimise' are	Challenging to measure progress	Blind to outcomes

	adaptation planning, still unclear what 'resilient' means – various ways to interpret. Trajectory of warming post 2040s unclear.	design standards, requiring periodic revision. Can be difficult to predict costs. Varies based on relative or absolute risk	subjective – and for example many different ways to define this (economic optimum, absolute)	High data requirements (e.g. physical impacts and then economic analysis)	being achieved Can result in policy incoherence / varying ambition
Examples	France – 4 Degrees	Netherlands – 1:100,000 standard of protection		Sendai Framework Target C1 – Direct economic loss attributed to disasters in relation to gross domestic product	

Objectives can be set by desk-based review, but should seek to involve PAs, project proposers and other stakeholders. The LRT could host this type of dialogue. This is important to get early buy in and engagement and to understand the objectives of different stakeholders. As part of this work, it may also be useful to explore the private sector motivations (e.g. business resilience, avoided costs / damages, protecting revenues, or developing new products and services) and their attitudes to risk. There are also some emerging good practice recommendations for setting adaptation objectives. See Box 4.

Box 3: Adaptation objectives and their implication for costs and residual damages

Part of setting adaptation objectives involves agreeing the desired level of climate resilience that is required from adaptation interventions. A policy maker, project developer or other decision-maker also needs to consider what is acceptable or tolerable residual climate risk. This is important since some level of risk (and associated damages and costs) is inevitable no matter much adaptation is implemented, since it is typically not affordable or cost effective to reduce the risk to zero.

Adaptation costs also vary according to the level of resilience required and approach taken. Costs increase with the amount of protection afforded and the investments can have diminishing returns, so this decision is often a trade-off, one in which financial and economic factors are important. To illustrate this, in relation to flooding, there are several approaches, each with differing levels of cost and residual damages:

- **Maintaining existing protection** – no additional enhancement or new infrastructure (that is, business as usual). Costs are low but risks (and damage) may increase over time.

- **Protection to a constant relative risk level (acceptable risk) using a risk protection standard,** (e.g. against a 1-in-100-year flood event.). The costs may increase over time to continue to provide the standard level of protection under a changing climate.

- **Protection to the (economic) optimal level of adaptation by investing** in adaptation to the point where the marginal costs and benefits are equal. It usually leads to lower levels of adaptation and costs, as investments are not in highly costly actions. This economic approach is most likely to be important from a public policy perspective.

- Investment to maximise risk reduction – such as in the Delta Programme in the Netherlands. Such investments result in a very low level of residual risk, but have very high upfront costs.

In addition to the consideration of technical risk, it is important to be aware of subjectivity in risk perception/attitudes; what is tolerable to one party may be unacceptable risk to another. There are also issues of coherence - given the need for underpinning assumptions (e.g climate scenarios, socioeconomic change, land use change) to be coherent across sectors. There can be important tradeoffs across and within sectors – e.g. higher costs for transport or agriculture from adopting resilience to an RCP8.5 climate scenario for flooding.

It is also important to highlight that in many cases, setting such objectives early in the process should be seen as preliminary. The work to develop the plan may result in a need to revise the final objectives at the end of the process (e.g. if such objectives are subsequently found to require unrealistic levels of investment).

Sources: Authors, World Bank (2024) p49

Once adaptation objectives are developed, move to develop investment objectives. Whereas adaptation objectives define what is expected to be achieved from the adaptation, investment objectives describe how finance should be used, and what high-level outcomes are expected.

Investment objectives can relate to government strategy (e.g. mobilize private investments in adaptation, accelerate the market uptake, improve access to finance for project developers, industry development, local economic growth, ensure long-term financial sustainability). They can relate to sources or instruments to prioritise (e.g. local businesses, blended finance, debt), or social goals (strengthening relationships, supporting communities to access finance, equity considerations).

These objectives help to identify the resource requirements and the appropriate stakeholders for IP development (including FIEs input). Example Investment objectives could be:

- use public investment to leverage private investment,
- maximise private sector delivery of adaptation,
- improve access to finance for project developers,
- prioritise blended finance,
- prioritise public funds towards the most vulnerable.

Investment objectives will differ for different stakeholders. CLIMATEFIT D1.1 (Machiels et al., 2024) observes the "two different worlds when considering the objectives that PAs and FIEs have regarding climate financing […] achieving climate resilience and climate neutrality are becoming priority objectives for many PAs. While many FIEs support the transition to climate neutrality and more resilience, their objectives largely remain to generate a return on investments and to focus on mitigation and net zero activities."

Motivations and Investment objectives for FIEs can vary and will depend on the type of entity, but they might involve protecting or growing company value

securing market returns on projects for which they are providing adaptation financing or growing new revenues from new products and services and markets (Cochu, Hausotter and Henzler, 2019[10], WBCSDB, 2025[11], Watkiss and England, 2025). Within this, specific investment objectives might relate to gaining access to (financial and non-financial) incentives, maximising the use of de-risking mechanisms (eg insurance backed investments), prioritizing PPPs, building reputation/image and prioritising collaboration with authorities that can provide supportive a policy environment and strong pipelines of potential projects.

For possible ideas to inform investment objectives, you should review existing documents and work e.g. Adaptation plans or Strategies or D2.5 Investment Strategy. You may also wish to explore how finance is being used in other related policy areas, such as climate change mitigation.

Box 4: Good practice recommendations for Adaptation objectives.

Recent efforts have focused on better defining the criteria for developing adaptation objectives (CCC, 2025, I4CE, 2024, World Bank, 2024). Based on these efforts, CLIMATEFIT have developed a set of criteria for setting effective adaptation objectives. essential characteristics:

• A time-bound horizon (e.g. 2050) that can serve as a focal point for long-term climate adaptation efforts as well as underlying socio-economic assumptions.
• A clear and operational definition of what climate-resilience means, identifying specific climate scenarios and associated and associated hazards or risks that the area should be resilient to.
• Clarity on how measurable climate-resilience sectoral goals can be developed consistently with the national objective, and how these goals will be monitored.
• Clarity on the roles of government, the private sector, and households in delivering the objective.
• An ability to define and cost specific programmes, projects which contribute to the objective
• A process for how the objective and associated sector-specific targets will be reviewed and updated over time as necessary

Source: Authors, based on Climate Change Committee, 2025[12], I4CE, 2024.

2) Consider the economic rationale (optional)
Given an Investment Plan is likely to involve a significant involvement and/or financial support from the public sector, it is important to define an economic rationale – an economic (societal) reason as to why action on adaptation should

[10] Cochu, Annica, Hausotter, T., and Henzler, T. (2019) The roles of the private sector in climate change adaptation – an introduction. https://adelphi.de/en/publications/the-roles-of-the-private-sector-in-climate-change-adaptation-an-introduction
[11] WBCSD (2025) Adaptation Planning for business. Navigating uncertainty to build long-term resilience. https://www.wbcsd.org/resources/adaptation-planning-for-business-navigating-uncertainty-to-build-long-term-resilience
[12] Climate Change Committee (2025) Progress in adapting to climate change: 2025 report to Parliament. https://www.theccc.org.uk/publication/ progress-in-adapting-to-climate-change-2025/

be supported. This builds on and expands the Investment Strategy rationale (the high-level, longer-term strategy for the PA, given their prioritised risks and sectors and integrated view of investment needs considering all related areas of sustainable development and other investment expenditure). The economic planning rationale should provide more detail on why the territory wants to invest in adaptation and resilience, and it should focus on what they want to do in the near term.

The investment planning rationale should frame adaptation as an economic issue and benefit to the territory. It should also set out where the government needs to step in to maximise value for overall society by addressing 'market failures' (see Box 4). This can also often be framed as addressing barriers to adaptation (see Cimato and Mullan, 2010[13], D1.3 discussion; Watkiss and Frontier Economics 2022[14]). But there also distributional issues that may warrant government involvement – such as uneven impacts of climate change on the most vulnerable. The investment planning rationale is likely to have elements that are common to many PAs as well as some that are more specific.

There is no standardised approach to formulating the rationale but territories could consider identifying the types of market failures that the public authority will address, including welfare efficiency, public goods and services, the lack of information and tools, or mispricing of climate risk. For examples see (see Box 5).

You should also focus on what the territories' challenges are to accessing finance and would happen without further government action. Additionally, you could highlight the benefit to cost ratios for the broad types of adaptation involved, based on available literature.[15] You could also develop a written justification for intervention in each area. Some good examples which describe the rationale per area can be seen in Climate Ready Clyde (2021).

The investment objectives and economic rationale are meant to cover the Investment Plan as a whole. That is, all investment in adaptation that is foreseen in the territory over the near-term future – recognising that these may be more detailed and/or specific for particular parts.

Box 5: The economic rationale for adaptation

Public institutions typically use the perspective of welfare economics to justify intervention in the economy and public spending. Such justifications are typically based on the need to address market failures and improve social welfare when the free market fails to achieve an equitable or fair outcome.

[13] Cimato, F., and Mullan M. (2010) Adaptation to climate change: analysing the role of government. https://assets.publishing.service.gov.uk/media/5a79c1b4ed915d07d35b7dff/pb13341-analysing-role-government-100122.pdf

[14] Watkiss and Frontier Economics, (2022) Barriers to financing adaptation actions in the UK. https://www.theccc.org.uk/publication/barriers-to-financing-adaptation-actions-in-the-uk-frontier-economics-paul-watkiss-associates/

[15] Watkiss, P., & Brown, K. in CCC (2021). CCC (2021). Independent Assessment of UK Climate Risk. Advice to Government For The UK's Third Climate Change Risk Assessment (CCRA3). Climate Change Committee.

An economic rationale should set out reasons for developing and implementing a territory's Strategy and Action Plan, as well as the Investment Plan from this perspective – i.e. the benefits for stakeholders and society as a whole. This may involve a range of reasons:

- **Delivering improvements in public services**. Your region could seek to improve efficiency of services, improve the quality or quantity of services, provide a new service, comply with new policies or legislation, or to continue certain activities. For example, a region could seek to extend the coverage or improve the quality of a flood or heat alert or early warning system.
- **Fiscal or economic returns** – investment in adaptation can result in future cost savings, such as reductions in damages, or protecting public finances.
- **Economic growth and development** – Investment which protects existing jobs or creates new ones, builds infrastructure to stimulate economic activity and promote investment.
- **Addressing market failures** – for example by providing social/public goods – things that are not provided at a satisfactory level by the market alone – for example flood defences, or nature-based solutions. Another example could be in making healthcare services climate resilient. Another example is providing information to address situations where climate risk is mispriced such as in the evaluation of coastal real estate or climate risks to supply chains. Mispricing can also result in underinvestment and/or unmet social needs, for example where availability of insurance for certain hazards may be limited.
- **Improving the welfare efficiency of existing private sector markets** - An example of this may be to impose new temperature standards for buildings which improve working conditions, lowering impacts on workers.
- **Achieving social objectives considering ethical or distributional issues -** for example fair access to health or education. This is particularly relevant for adaptation since people from lower socio-economic backgrounds are disproportionately exposed to climate change and have more limited resources to adapt. Similarly, geographical variations in hazards and exposure (e.g. in coastal area, or through urban heat islands) will affect people differently.

In reality, an economic rationale for a Strategy is often a mix of all of all of these and it will vary from region to region, and for the different types of interventions or objectives set.

Source: Adapted from Pathways2Resilience (2024)[16]

2.2.5 Stakeholders to involve and role of the LRTs

The PA's goals and strategic focus and type(s) of project defines the composition of the actors you want to involve. These are likely to include:

- City authority, including officer / representative body within the PA responsible for approving Investment Plan development
- Finance department
- LRT to support and facilitate the development of the plan

[16] Pathways2Resilience (2024) Developing Regional Climate Resilience Investment Plans: Implementation Guidance to support regions to finance the Regional Resilience Journey in line with the EU Mission on Adaptation. Authors: England, K., Qian, C., Yovtcheva, A., Dellis, K., Corvaro, M., Eltinay, N., Palomar, L.

- FIEs to contribute to and review the strategy and objectives

The LRT should review the initial outputs from the IS, and ensure that the draft adaptation and/or investment objectives accurately reflect stakeholder views on the adaptation ambition, as well as taking into account any initial longlist of adaptation options identified in the IS process. They should also broker discussion about the scope, ambition of objectives to reach a collective view that is collectively agreed across the territories. The economic rationale and investment objectives can also be a useful engagement tool to bring FIEs into the discussion to understand their needs and raise their awareness of future engagement opportunities.

2.2.6 Outputs from the module

The outputs from this module are an initial list of adaptation and investment objectives for the Investment Plan. If significant public sector participation is envisaged, these should be supported by an associated economic rationale for intervening.

2.2.7 Key issues to consider

- Whilst setting investment objectives early can be helpful to guide development of options and actions, there is a risk it commits PAs and FIEs to a high level of expenditure without all having all of the available information. Therefore, these should be iteratively revisited and revised throughout the process to avoid locking in such costs early in the process.
- Note that the underlying assumptions (e.g. on future warming) as well as desired objectives may vary between the actors involved. For example, in a project considering overheating risks to buildings, public authorities may have a preference for higher levels of protection from overheating than that of tenants or building owners. In such cases, it is important that the objectives are co-designed and co-owned by the LRTs to broker a degree of agreement and coherence which enables further conversations on adaptation planning.

2.2.8 Further reading/ guidance and resources

- World Bank (2024) Climate adaptation costing in a changing world – This illustrates the issues associated with setting differing expectations.
- I4CE (2024) Anticipating warming of 4 degrees. What are the costs of adaptation in France?
- Mullan and Cimato (2010) Adapting to climate change: Analysing the role of government
- WBCSD (2024) A business leader's guide to adaptation and resilience – sets out some of the private sector reasons for adapting to climate change.
- Climate Ready Clyde (2021) Glasgow City Region Climate Adaptation Strategy and Action Plan – Annex 1: Economic and Financial Assessment analysed an economic rationale for adaptation across 11 intervention types.
- Mullan and Ranger (2022). Climate-resilient finance and investment. OECD Environment Working Papers - This focuses on the alignment of finance

flows with adaptation and resilience by means of improving the pricing and management of physical climate risks by financial institutions.
- Watkiss and Frontier Economics, (2022) Barriers to financing adaptation actions in the UK.

2.3 IP2: Undertake climate diagnostic and adaptation prioritisation

2.3.1 Purpose of the module

Having set initial objectives, this module aims to develop packages of measures which achieve them, sequenced over the near, medium and long-term. It involves building an understanding of climate impacts in particular sector(s) or from particular hazards using a targeted assessment of current and future climate trends, with an investment focus. PA's and FIEs then identify and asses the range of measures to meet the objectives (including those already identified in the Investment Strategy), before prioritising and sequencing them into package(s) of adaptation measures. This helps optimise the economic and financial benefits of adaptation, as well as helps ensure that adaptation costs are more likely to fit within available fiscal space. It also helps keep the amount of analysis needed manageable.

2.3.2 Inputs and prerequisites

The set of adaptation and investment objectives and the information about the decision-making context from the IS are the main inputs to this module.

2.3.3 Skills and expertise required

- Relevant sector knowledge including financial/economic aspects
- Use and interpretation of climate projections and impacts
- Climate change risk identification and assessment
- Evaluation of adaptation actions in terms of their costs, their effectiveness etc. as well as practical considerations
- Gender equality, equity and social inclusion expertise

2.3.4 Activities and effort

1) ***Diagnose the current situation, observed trends and future climate impacts***

For each adaptation objective, produce a short baseline of the current context. This baseline builds on IS modules and data collected earlier (in the modules *'Assess and prioritise climate risks'* and *'Get overview of context PAs operate in')* but is more detailed than that produced in the Investment Strategy stages. It has a greater emphasis on informing the adaptation and is undertaken at the sector or system level. It involves the use of multi-hazard risk analysis as well as considering cross sectoral risk linkages. It uses existing information, but is also supported by targeted new investigation to develop risk profiles over time that reflect key uncertainties.

Start by setting out what matters as part of the adaptation plan. This should include the sector context, national, regional and local policy priorities and governance arrangements, and the relevant indicators or metrics you will be trying to improve (e.g. Km of road at risk of flooding, number of buildings at risk of

overheating). Undertake an analysis of current climate impacts and associated costs on the relevant objectives (for example damages in the transport or agriculture sector). Then build this up to include the observed trends in the underlying climatic conditions.

Once you have a baseline and observed trends, begin to move into future risks and associated costs and damages, considering the range of uncertainty, as well as how the risks are distributed both geographically and across incomes. It is important to note any major thresholds that exist – such as temperature limits for rail infrastructure, or for morbidity and mortality – and when they may be breached. This is important for the sequencing over time (below)

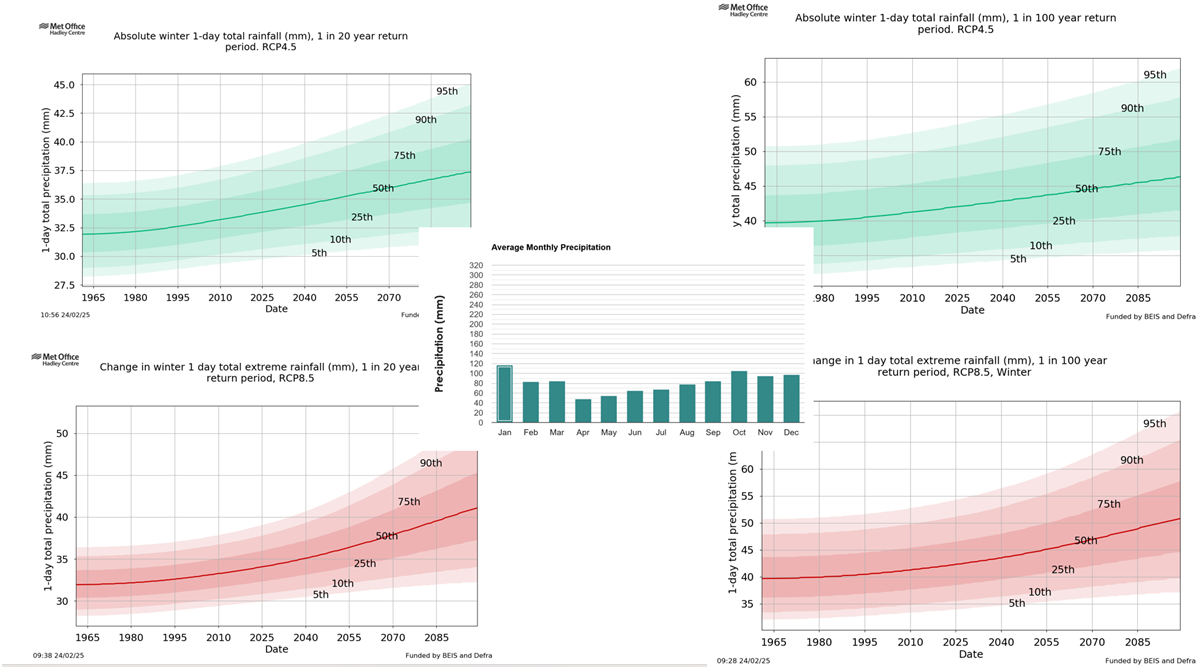


Figure 4: Illustrative climate diagnostic for a UK nature-based solutions project. Graphs show change in 1-day total extreme winter rainfall for a series different return periods and climate scenarios vs a baseline. Source: Authors, based on England and Watkiss, 2025..

As part of the diagnostic it is important to identify who is initially best placed to address the risk – i.e. the local, regional or national government, the private sector, and/or individual households—as this helps in determining priority investments that require public sector financing, especially to protect poorer and more vulnerable communities.

2) Develop, prioritise and sequence packages of adaptation measures

Having built up the relevant knowledge and background information, the next step is to develop initial packages of adaptation options that a Public Authority can work with FIEs and wider stakeholders to implement over time. This involves 3 steps:

Step 1: Group initial options into packages of adaptation measures linked to objectives. Take the lists of proposed actions identified in the Investment Strategy and organize them around the objectives set in Module IP1. You should add any additional credible options that could meet the objectives. This is to ensure that the appraisal does not include any subjective biases of individuals. For example, a grey flood risk infrastructure project OR a nature-based solutions programme may be able to reduce flood damage to a specified level. Or an

information and awareness campaign on heat risk may achieve heat risk reduction alongside other physical interventions. Priority adaptation investments are typically "packages" of key adaptation activities designed to meet the objectives set for the sectors and risks in focus. These could include a combination of hard infrastructure options, nature-based options and soft measures aimed at behavioural or institutional processes.

Step 2: Conduct a light-touch evaluation of the initial options to prioritise measures for further analysis. Evaluate each of the proposed actions identified in Step 1 using a set of criteria to generate a shortlist of options to take forward for more detailed evaluation. This could include ranking of options, or a (weighted) multi-criteria analysis. We recommend using six key criteria for an initial appraisal. Namely these are implementation cost (how expensive is the measure to implement: purchase, operate and maintain over the whole life), effectiveness (at reducing risks or damages), and acceptability (how much are stakeholders likely to be able to implement it in practice – e.g. politically, practically). The six also include private sector attractiveness (is it something that the private sector might fund or deliver), bankability (is the project viable to be financed and does it capture avoided costs, and revenue streams etc.) and co-benefits (will it create wider economic, social or environmental benefits such as jobs, carbon savings, biodiversity benefits etc.). However the final chosen criteria should be the ones that you agree to be the most relevant for the territory. An example of potential ranking using an MCA (and some standard evaluation criteria) is below. The numbers in Table 5 are indicative of how well or how poorly the option is thought to perform (ranging from 1=very poor to 10=very good)

Table 5: Illustrative MCA of longlist of options for addressing heat in the built environment. Source: Authors.

Objective	Adaptation Option	Evaluation criteria					
		Implementation Costs	Effectiveness	Private sector attractiveness	Bankability potential (typical)	Acceptability / legitimacy / deployability	Total
Maintain internal building temperatures of 25 degrees in summer.	Green Roofs	4	5	5	5	6	25
	Green Walls	4	5	6	4	5	24
	Cool roofs	3	7	5	5	7	27
	Air conditioning	6	10	7	8	9	30
	Solar shading	3	6	3	7	5	24
Objective 2….	Option 1…						
	Option 2…						
	…						
	…						
	…						

Such evaluation can be undertaken as an individual or group activity, and as a desk-based evaluation, or in a workshop setting. You may wish to use individual criteria for each type of economically effective measure (e.g. no regrets, climate smart or adaptive management). This can improve the quality of evaluation by focusing on criteria which ensure the robustness of each option under that type of category. An example of such an approach used in Glasgow City Region is shown below:

Table 6: Example criteria used for MCA in Glasgow City Region. Source: Climate Ready Clyde (2020)

Decision type	No/Low regrets	Early decision / climate-smart decision making	Iterative / Long Term / Transformative
Focus	Short term characteristics	Dealing with uncertainty	Planning for the long term / systemic, transformative shifts
Common Criteria	• Implementation Costs (low to high) • Societal Benefits (effectiveness and efficiency) • Acceptability / legitimacy / Deployability • Mitigation synergies (net zero) • Co-benefits (win wins)		
Additional criteria	• Low regret characteristics (good under current climate) • Urgency • Practicality • Equity	• Robustness (performs well over long term) • Flexibility • Urgency • Practicality	• 'At scale' system change • Transformative characteristics • Persistent, future focus • Domain of change (Inclusive / wider sustainability)

Other important criteria include contributions to gender equality, social equity and inclusion, and biodiversity and other co-benefits.

Box 6: Economically effective adaptation options using a 'building block' approach.

It is important to prioritise the most effective adaptation in a way that maximises the societal benefits within available resources. This prioritisation of adaptation options is influenced by both the timing of the risk and the timing of the decision, noting that for many risks and adaptation responses there is a need to address the challenge of deep uncertainty – i.e. where the probability of risks is not known.

To help PAs prioritise, CLIMATEFIT has built on a well-established literature (Watkiss and Betts, 2021, World Bank, 2024) and uses a building block approach to categorise activities into one of three main priorities for early adaptation activities which are likely to pass an economic test. These types of actions are:

- **No and low regrets** – actions which deliver benefits now by reducing risks associated with current climate variability as well as building future climate resilience, or to enhance opportunities.

- **Climate-Smart Design** - actions designed to ensure adaptation is considered in near-term decisions that have long lifetimes, such as major infrastructure to avoid 'lock-in' future climate risk. This can include the use of decision making under uncertainty (DMUU) concepts (i.e., flexibility, robustness).

- **Adaptive management activities** - Fast-track early adaptive management actions, especially for decisions that have long lead times or involve major future

change, including planning, monitoring, and research. This can enhance learning and allows the use of evidence in forthcoming future decisions, for either risks or opportunities.

These are shown below. On the left of the figure, there are current decisions or actions that can be taken now to address current climate risks, leading to an immediate benefit and into the future. In the centre of the figure there are near-term decisions which will be exposed to future climate change risks and there is a one-off opportunity (e.g. in major infrastructure investment). Finally on the right, there are future decisions which may need to be implemented to address major climate change in the future. These take time to develop and some benefit from improved information and learning. In such cases it makes sense to start planning now. In reality, in an Investment Plan all three of these adaptation options are needed, and this requires portfolios of interventions for each individual risk or opportunities.

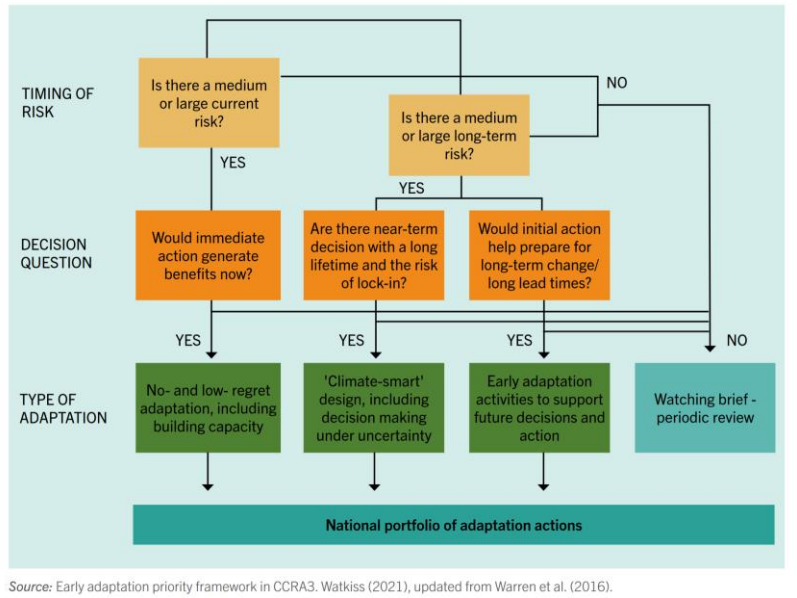


Figure 5: Three types of early adaptation with strong economic rationales. Source: World Bank (2024), updated from Watkiss & Betts, 2021

The specific costs and benefits of particular actions can be quantified during the economic and financial appraisal process in IP4, but this framing ensures an early focus on actions which are more likely to deliver economic benefits.

Step 3: Prioritise and sequence the priority options. Taking the top scoring options from the evaluation, PAs and FIEs should then classify each option into an economically effective action type (see Box 6) and begin to decide when they should be delivered – for example in the near-term (As part of the European Adaptation Mission), or in future budget periods.

Deciding when actions should be delivered involves considering both adaptation criteria and economic criteria. Adaptation criteria focus on the potential regrets, effectiveness, timing of limits and indicative co-benefits, as well as the lead time to implement the measures. The economic criteria focus on the urgency of the action (i.e. is it a current and/or future risk, is it being managed, and are there benefits in the next five years), size of the economic benefits, and when the costs

and benefits arise, recognizing that these can differ. Considering these aspects can inform when the action should be delivered (e.g. short, medium or long term).

For example, in the case of flooding, effective, urgent, no regret actions such as early warning systems, with near term costs and benefits should be prioritized in the near term. In contrast, resettlement activities, with coastal and river planning which involve adaptive management, and long lead times, and where costs and benefits are typically in future can be left until long-term (i.e. next 10 years), acknowledging there may be value in a complementary package of evidence studies on sea level rise impacts given the long lead times in deciding upon actions.

This type of analysis is then used to input into a pathway of action for each area of activity. An example of such sequencing for flood risk management is shown below:

Table 7: Example initiative (quantitative) sequencing approach to adaptation pathways for flood risk management. Source: England et al. (2024).

Options		Adaptation criteria					Economic criteria				Pathways Input		
Name	Option type	Potential regret	Adaptation effectiveness*	Timing of adaptation limit*	Indicative co-benefits**	Lead time***	Urgency of action	Indicative economic benefits	When costs arise	When benefits arise	When should the action happen?		
											Short	Med	Long
Early warning system extension	No-regrets	Low	Exposure reduction (casualties): Med	Expected annual casualties > threshold: 2035	Addresses social vulnerabilities: Low	1 year	High	High	Now	Now	X		
Resettlement with coastal and river planning	Adaptive management	High	Exposure reduction (damages): High	Flooding EAD > threshold: 2100+	Climate smart spatial planning, addresses social vulnerabilities, restores coastal/river biodiversity, etc.: High	25+ years	Low	Medium	Future	Future			X
Climate proof highways	Climate Smart	Low	Exposure & Vulnerability reduction (damages): High	Flooding EAD > threshold: 2075	Maintains transport corridors and associated economic activities, aids in disaster response/recovery: Med	5 years	High	High	Now	Future	X		
NBS in built environment	No-regrets	Low	Hazard reduction (runoff, delays flood peaks): Med	Flooding EAD > threshold: 2045	Restores biodiversity, addresses heat stress, provides public recreation areas, etc.: High	10 years	Med	Med	Now	Now		X	

* Risk reduction impacts and timings can be expressed either quantitatively or qualitatively depending on your selected assessment methodology. Separate impact assessments should be completed for each option against each of the primary adaptation objectives.
** Secondary impacts can be expressed either quantitatively or qualitatively depending on your selected assessment methodologies. Separate impact assessments may be completed for each option against each of the secondary resilience objectives.
*** Lead time refers to the length of time to address any implementation feasibility concerns and/or for the likely emergence of favourable opportunity conditions (based on analyses completed in Task 3.1.2)

Territories should develop their own classification and sequencing for all priority measures to include in their adaptation package(s) using this template above (or a similar one). As a further – optional - step, it is also worth considering where actions are required as inputs into further adaptation actions -e.g. for future action. This type of thinking can be used to illustrate the future investment pathway for the territory.

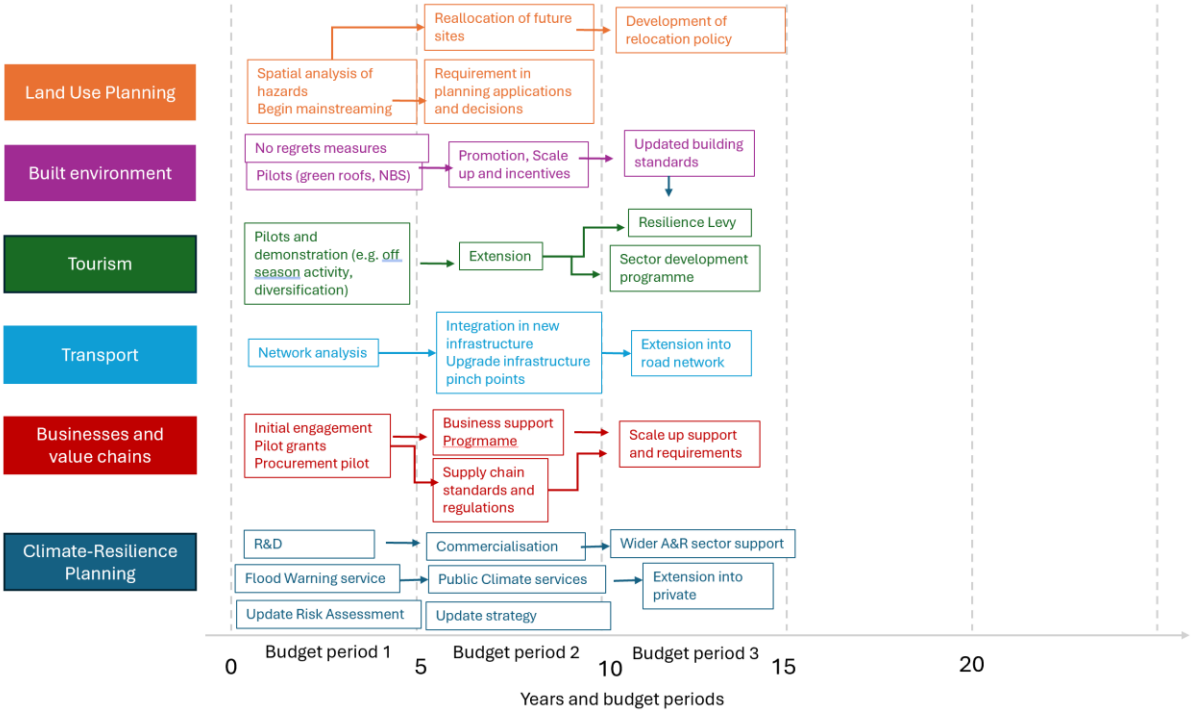


Figure 6: Indicative illustration of the timing and sequencing of adaptation. Source: Authors, based on ADB (forthcoming)

Following this activity, you should have a clear sense of the priority activities to be taken forward for further development and which can wait until later, recognising that all will be included in the project pipeline of the Investment Plan to some extent.

CLIMATEFIT Project note 4: A focus on near-term packages.
CLIMATEFIT territories should focus on one (or a small number of) near-term packages to 2030. This could mean selecting one key sector or hazard to focus on, and placing less emphasis on sequencing. This is to help keep the amount of work manageable, in terms of the number of options that need to be costed and then appraised in later steps. The 2030 timeframe for planning is important for the objective of the EU Mission: Adaptation to Climate Change and the EU's adaptation strategy, as well as the implementation target for the Paris Agreement. Under this timeframe, the near-term could include the five-year period of years 2026-2030, distinguished from future actions beyond 2030. This suggestion should be considered bearing in mind that the package must be aligned with the territory's longer-term priorities and thinking (see Fig 6).

2.3.5 Stakeholders to involve and role of the LRTs

- Sector specialists including financial teams
- Businesses that might benefit from improved profitability or reduced losses resulting from adaptation
- Communities - including stakeholders that represent those most affected – to discuss their support of proposals

LRTs can be involved in selecting criteria for evaluation of the long list of options in the MCA, as well as potentially inputting into the evaluation themselves, by participating in the scoring workshops. They also have an important role in

validating the initial packages of options and the pathway for investment over time.

2.3.6 Outputs from the module

The output from this process is a set of packages of adaptation measures, that are sequenced over time, with near-, medium- and long-term measures.

2.3.7 Key issues to consider

- If your Investment Strategy did not generate specific options for particular objectives, then you will need to generate a list – this can done by reviewing the literature, including case studies from Climate-ADAPT.
- The use of MCA to initially appraise options and then the sequencing of options over time is designed to limit the resources required to produce an Investment Plan, by focusing effort on what is most important in the near term.
- MCA typically tends to focus on effectiveness, implementation costs and acceptability. However, it may be that in early stages, PAs and FIEs also wish to prioritise those projects which are attractive to private sector investors, or are typically more bankable than others. They can also serve as important learning opportunities if such collaborations have not previously been done.
- Whilst running workshops to undertake the MCA and rank options can be resource intensive, it can also help generate engagement and buy in, and increase the legitimacy of final actions included in the pipeline. Therefore it is recommended to have representation from groups or citizens that represent those most affected by climate risks, or the implementation of particular adaptation actions.
- As well as costs information and effectiveness, you will also need to gather information on the equity implications of each action. It is also important to look at equity and justice in terms of who pays for the adaptation. These aspects may require specific expertise on gender equality and equity.
- It is important to see the near-term actions in each package as part of the long-term pathway to address current and future risks. Not all adaptation is required today, and if it were to happen, could lead to over or under-investment. Instead, the aim of the sequencing is to identify the immediate priorities in your regions but also subsequent investments over time – with actions aligned to an adaptive management approach.
- The sequencing process is also important since once decisions are made on the financing of particular actions or packages, it can be challenging to re-open them (e.g. to re-negotiate a grant or loan agreement or reallocate proceeds from a green bond). By providing a structured approach, aiming to consider all potential options and their timing, their financing needs are less likely to be overlooked.

Fig. 6 above illustrates packages as being sequenced over 5-yearly periods. In reality where possible they should be aligned to the budgetary or capital investment period of the public authority. Sequencing actions over time helps meet funding or financing restrictions or limits on public funds, over these periods, ensuring that packages meet fiscal space requirements.

2.3.8 Further reading/ guidance and resources

Climate diagnostic

- England K., and Watkiss, P., (2025) Financing the Urban Tree Canopy of the Forth Climate Forest: Economic and financial analysis and review of funding and financing options.

Multi-criteria analysis:

- Mediation (2013) Decision Support Methods for Climate Change Adaptation. 6. Multi-criteria analysis.
- Base (2014) BASE Evaluation Criteria for Climate Adaptation (BECCA) – A framework and criteria set that can be used to evaluate the implementation for climate adaptation D2.3 of the BASE project.
- Climate Ready Clyde (2021) Glasgow City Region Climate Adaptation Strategy and Action Plan – Annex 4: Multi-Criteria Analysis of Potential Interventions
- Griffith University and Edwards, I. (2019) Regional Council Coastal Hazard Adaptation Strategy: Multi-criteria Analysis of Climate Change Adaptation Options

Adaptation urgency scoring and sequencing

- CLIMAAX (2024) Climate risk assessment framework
- ADB (2023) Country Climate Investment Planning.
- Watkiss, P. and Betts, R.A. (2021) Method. In: The Third UK Climate Change Risk Assessment Technical Report [Betts, R.A., Haward, A.B. and Pearson, K.V. (eds.)]. Prepared for the Climate Change.
- World Bank (2024) Climate Adaptation Costing in a changing world – Valuing climate adaptation helps us orient our compass toward effective and resilient pathways – This study outlines the key issues, consideration and approaches for costing climate adaptation options, and the frameworks for economically optimal adaptation options.

Data sources of climate impacts and economic losses

- EM-DAT – International Emergency database – Includes information on the records at the country level **human and economic losses** for a range of climate-related disasters
- JRC Risk Data Hub – Includes a disaster losses and damage dashboard allowing capture of historic weather events and associated economic impacts.
- HANZE floods databases - The database includes a multi-source, well-curated historical flood impact dataset of over 2,500 events for Europe (1870-2020) and high-resolution reconstructions of hydrological extremes, catchment alterations, exposure, flood protection levels and vulnerability since 1950.

- COACCH scenario explorer – includes projections of future economic losses due to climate change as a percentage of GDP at NUTS2 levels for a range of sectors and climate scenarios.
- Copernicus European Drought Impact Database – Provides historic and current impacts of droughts in different sectors at the NUTS2 and NUTS3 level.

2.4 IP3: Cost the adaptation packages

2.4.1 Purpose of the module

The purpose of this module is to ensure that the territory has a full cost of the project(s) within its Investment Plan. This can help inform decision making, commercial strategies and procurement, as well as informing control and performance management during the lifetime of a project. The module also ensures that the costs are designed to comply with relevant accounting and financial standards. Accurate costing also supports future evaluation of economic and financial costs and benefits, (assessed in Module IP4). Finally, costing can also inform the selection of sources and instruments for financing, by matching project size to suitable sources.

CLIMATEFIT Project note 5: Focus of costing Within the scope of CLIMATEFIT it may not be possible to cost the region's entire resilience plan, and instead the territories will opt to focus on individual projects or actions where there is a scope for private partners or financing.

During this module and subsequent modules you will also be describing and appraising **where and how** the options may be implemented. Therefore you will need to move from theoretical adaptation measures to costing concrete **adaptation projects**. This is because investment planning needs to include the detail required for financing - including for mobilising private investment – which means collecting detailed costs and benefits information associated with potential projects. As a result, from IP3 we will now mostly refer in the text to projects instead of adaptation measures.

2.4.2 Inputs and prerequisites

One or more sets of sequenced adaptation packages from IP2 and the high-level costing information from the Investment Strategy stages, where available, for each of the measures included in the packages.

2.4.3 Skills and expertise required

- Project finance and costing
- Economic and financial modelling
- Knowledge of criteria of public administrations, FIEs or other bodies require for approving investments
- Accounting and financial reporting standards.
- Experience of monitoring and evaluating past adaptation and resilience plans/programmes (particularly from an effectiveness/cost perspective)

2.4.4 Activities and effort

Cost estimation is the process of forecasting the financial and other resources needed to complete a project within a defined scope and schedule (IPA, 2021)[17]. When it comes to adaptation, there is no single method or approach which can be used for costing climate change adaptation projects. Instead, the appropriate method depends on the specific objectives and the level and types of CCA cost assessment, as well as the existing maturity of evidence, and available expertise and resources. The World Bank highlights that costing approaches depend on the approach, analysis levels, measure types and analytical methods.

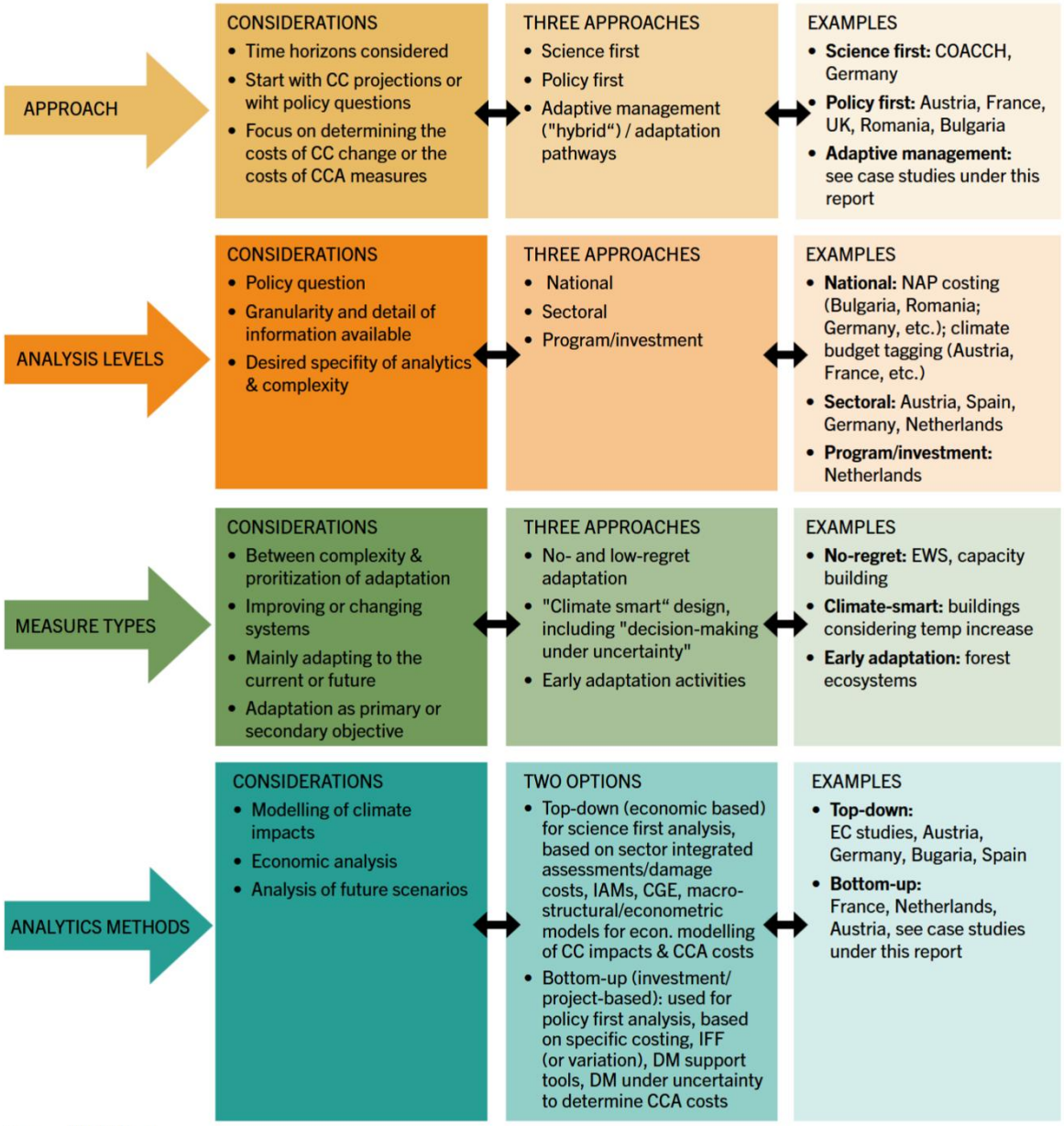


Figure 7: "Building blocks" and flow of decisions for costing CCA measures. Source: World Bank, 2024.

CLIMATEFIT adopts an adaptive management approach, and the analysis levels and measure types are addressed in modules elsewhere within the

[17] Infrastructure and Projects Authority (2021) Cost estimating guidance: A best practice approach for infrastructure projects and programmes

CLIMATEFIT's Investment planning methodology (see 2.1.1 and IP1, Box 5). However, it is important that regions consider the potential analytic methods that should then be applied. The costing of climate adaptation projects and plans can typically be generated from a modelled / economic-based approach (top down), or bottom up, from a needs-based, program-based or project-based approach.

Table 8: Summary of bottom-up methodologies for adaptation costing. Source: Authors, based on World Bank, 2024.

Methodology	Description
Top down / modelling	
Sector integrated assessment/damage costs	Use of sector models (global, regional, national, local) to assess future climate change impacts and then technical adaptation responses (and associated costs and benefits)
Integrated Assessment Models	Combine the scientific and economic aspects of climate change within a single integrated analytical framework, including the economic impacts of climate change and the costs and benefits of adaptation. Typically highly stylized.
CGE Modelling	Macro-economic models which analyse how impacts cascade across sectors of the economy as well as price effects. They often use sector impact and adaptation studies as inputs.
Macro-structural modelling	Presentation of finance flows at macroeconomic level via mapping out main economic variables in national accounts, balance of payments, labour markets, and financial sectors. They generally are consistent with both economic theory and the dynamics of real-world economy.
Econometric modelling	Econometric (statistical) analysis of current climate and economy links and use of these relationships to look at future climate impacts and in some cases adaptation.
Bottom up methodologies	
Sector, program, project or activity-based costing	Generation of project costs based on detailed local estimates from relevant technical partners e.g. designers, architects, consultants, engineers and contractors.
IFF analysis / Climate Adaptation Markups	Focus on likely costs of planned adaptation by evaluating historic and future investment needs and applying an adaptation 'markup' to investment needs in future time periods (e.g. next budget).
Climate budgeting / green budgeting	Review of possible expenditures of subset of budget lines 'tagged' as being a majority of focus on adaptation or as contributing and then application to future investments.
Decision support tools (e.g. economic appraisal)	Generation of project costs from economic and/or financial appraisal tools (e.g. cost benefit assessment, cost effectiveness analysis)

A first step is to decide on the approach(es) to be used and the scope of costs to be gathered. Start by clarifying what information and requirements are needed for the purpose of investment decisions. These typically require considerations of project costs and overall benefits but may vary between PAs, FIEs or other funding organisations such as the EIB, EU Cohesion Fund etc. For projects funded from public budgets, Public Investment Management (PIM) criteria will be important. Then begin to gather data and information to build an evidence base for the project and document the key assumptions for costing (e.g. inflation). This should include reviewing any existing costs information gathered in developing the Investment Strategy (Module IS5). You should then choose a costing methodology and produce a clear justification. Since project pipelines are focused on near term, for the purposes of CLIMATEFIT, a focus on bottom up methodologies are likely to be more relevant. This guide particularly focuses on sector or activity based costing and the use of markups.

A decision tree to guide this approach is shown below:

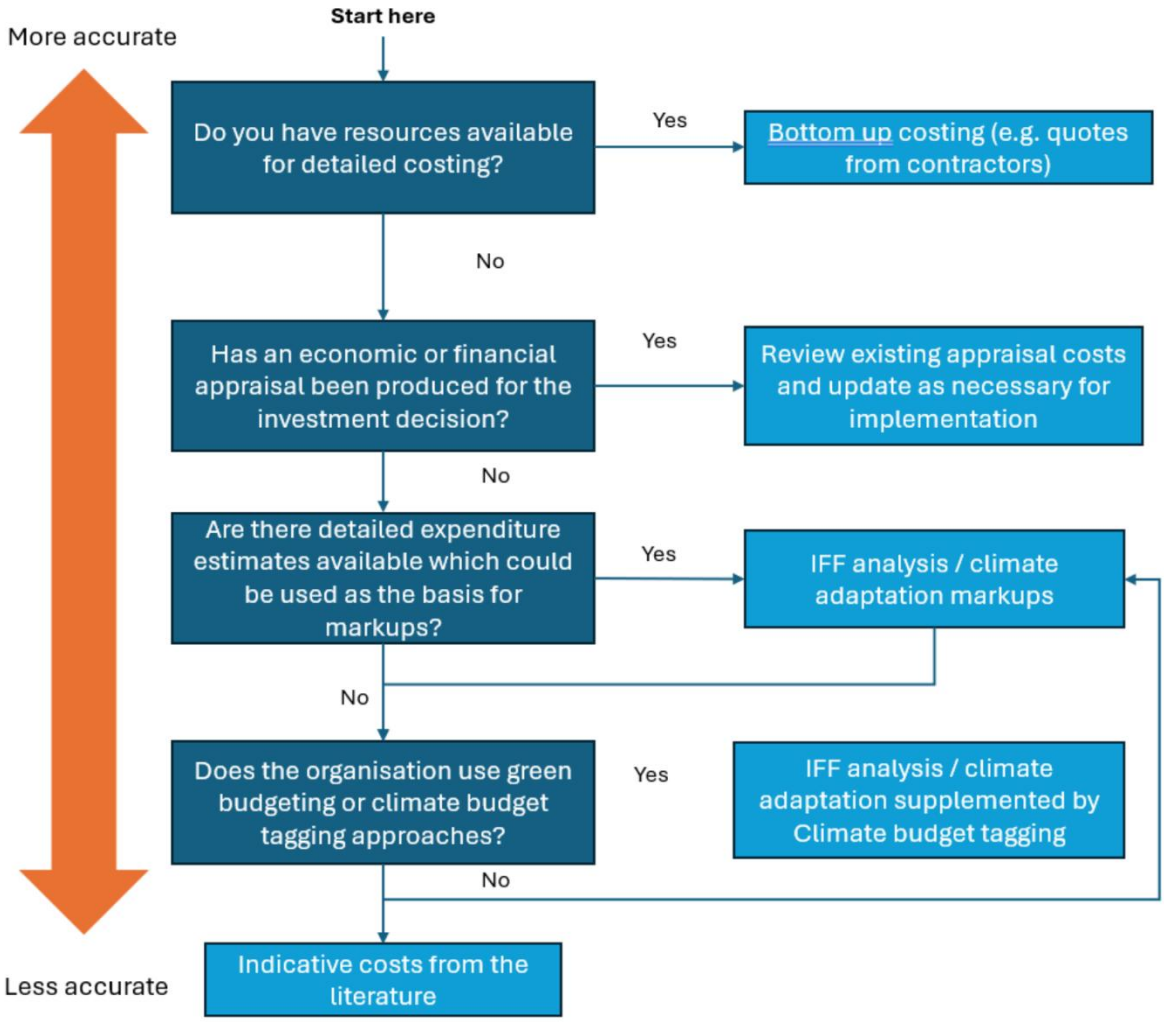


Figure 8: Decision tree for selection of bottom-up costing methodologies. Source: Authors. Note: approaches used are not necessarily mutually exclusive and entry points will vary depending on work done to date.

In reality, no single cost estimating method is appropriate across the project lifecycle. Early cost estimates can rely on top-down methods such as analogy or scenario models whilst later stages should build on the detail of the project bottom-up, for example using first principles or statistical modelling. The maturity of these estimates must be adequate for the project stage and type (i.e. based on meeting the needs of those who will approve the investment decisions and considering when these decisions need to be implemented – see Box 6). However, in general terms, the top-down methodologies are less likely to provide sufficient information needed to accurately cost the project. On the contrary, the use of bottom-up methodologies are likely to provide better information and are potentially more aligned with more traditional industry standard approaches to cost estimation.

Having chosen a method, you should then calculate a base cost estimate, along with key uncertainties and risks, and produce a cost estimate report. This should include the fullest range of costs. This includes:

- **Capital / investment costs** – the upfront costs of an investment, such as the construction costs, and associated labour costs.

- **Revenue costs** – the costs to run the project over the lifetime (for example the maintenance costs of green roofs or walls, upkeep of property level flood protection, or data monitoring and evaluation needed for evaluation or financial reporting.
- **Implementation costs** – the costs associated with delivering the proposal, such as any regulations, or permitting schemes, or setting up of new organizational functions.
- **Transaction and financing costs** – The costs of facilitating the project as well as any interest over the lifetime of the project.
- **Contingency** – a margin to address the project based on risks and mitigation measures.

Each action should also account for escalation – i.e. how prices may change over the lifetime. To do this, each project should be dated and the Investment Plan should set out how it has accounted for change in costs during a project lifecycle, such as due to inflation and market factors have been accounted for.

These costs should relate to the adaptation options designed to ensure climate resilience in line with the adaptation objectives set in Module 1. Costs should be captured in a detailed spreadsheet, which includes the line items. An example is shown below:

Table 9: Illustrative components of a cost estimate for a climate-proofed office construction project. Note costs are not representative and for illustrative purposes only. Source: Authors.

Item	Y1	Y2	Y3	Y4	Y5	Total
Capital costs						
Construction materials	€ 1,600,000	€1,600,00	€ 0	€ 0	€ 0	€ 1,600,000
Labour	€ 500,000	€ 500,000	€ 0	€ 0	€ 0	€ 1,000,000
Operational costs						
Utilities	€ 50,000	€ 50,000	€ 25,000	€ 25,000	€ 25,000	€ 175,000
Labour		€ 175,000	€ 175,000	€ 175,000	€ 175,000	€ 700,000
Monitoring		€ 5,000			€ 5,000	€ 10,000
Loan repayment (capital + interest)	€ 882,000	€ 882,000	€ 882,000	€ 882,000	€ 882,000	€ 4,410,000
Implementation costs						
Planning and development	€ 100,000					€100,000
Contingency costs						
Contingency	€ 313,200	€ 161,200	€ 108,200	€ 108,200	€ 108,700	€ 799,500
Total	€ 3,445,200	€ 1,773,200	€ 1,190,200	€ 1,190,200	€ 1,195,700	€ 8,794,500

As a realistic view, the cost estimate must include an allocation for risk and uncertainty, with results presented as a range of the final cost, which is narrowed over the development of the packages.

If considering the costs of several projects or a pipeline, you should capture these costs over time to build up a picture of investment needs over the useful lifetime of investments. For PAs, this is important to ensure that any public contributions fit (and continue to fit) within their fiscal space of the budgetary cycle or capital investment programmes, whilst for other stakeholders this is about understanding the potential demands for capital within the business planning cycle. You should also consider the aggregate costs of projects as and when funding or financing sources are known or confirmed. This is because the cost of the pipeline of bankable projects (as well as the economic and financial analysis) may be influenced by aggregate approaches – for example the cost of debt from a green bond to finance a whole Adaptation Strategy, compared to a mix of EIB lending and grant funding.

Costs should be documented in a way which complies with the accounting standards for the relevant parties. For example this includes International Financial Reporting Standards (IFRS) for listed companies, as well as Directive 2013/34/EU, known as the Accounting Directive for limited companies. The suite of standards define how a range of items such as property, plant and equipment, guarantees, grants and tax should be treated for the purpose of financial reporting.

Finally, you should develop an assumptions register for each project. The assumptions register will document the key assumptions for costing (e.g, inflation, transactions costs, contingencies) as well as further assumptions made in later work, e.g. on financial appraisal.

2.4.5 Stakeholders to involve and role of the LRTs

- Project director/manager to lead on deciding the costing approach and scope
- Climate change adaptation specialist
- Technical or project specialists (e.g. architects, designers, consultants, cost estimators, quantity surveyors)
- Those involved in potential project delivery/contractors to provide estimates
- Estimating team
- Finance teams and accountants to put together the cost estimate report
- Reviewers and assurers

2.4.6 Outputs from the module

The output from this module is a cost estimate report which translates the project from high level costs into the detailed information needed for decision making, development of a financial model, procurement and monitoring. It is supported by a risk register, assumptions register and any observations or recommendations captured in the review and assurance.

2.4.7 Key issues to consider

- **The cost of projects in isolation might differ to the aggregate costs.** This is because there may be economies of scale in thinking about the projects

a bundle. This could be as a result of reduced unit costs, lower costs of finance (i.e. one set of transaction costs from an individual provider or more limited set of providers), or reduced borrowing costs. For example, an EIB framework loan which is provided for a portfolio of projects for a PA has a typical lower borrowing cost than for individual project finance.

- **The costs of a project may vary depending on the levels of warming considered and adaptation objectives, as well as it's lifetime.** This uncertainty can lead to the potential for over or under investment in the economic and financial appraisal. If resources allow, it is worth considering whether there is merit in undertaking more significant analysis to estimate of the costs for achieving the adaptation objectives under two or more climate scenarios, such as a medium (RCP4.5) and high emissions (RCP7.0/8.5), noting that such information will be needed for Module 4. This will depend in part on the value of the investment, the project lifetime and timing of climate risks.
- **Bottom-up costing may not accurately reflect the adaptation costs associated with levels of climate resilience.** Whilst project-based costing is relatively simple and provides practical information for implementation, it may not provide a full estimate of the adaptation costs. For this reason, we suggest that project costing is cross-referenced with the desk-based study used for the economic and financial appraisal to provide confidence on the robustness of the results.
- **You should also consider what level of detail will be required for approval of the investment decision.** For example, economic and financial appraisal may be suitable for early business cases in public administrations or FIEs but more detailed costing may be needed to proceed to the development of the full Investment Concept. Such approvals may also depend on whether the project proposer is seeking funding for individual projects or portfolios (e.g. an EIB Framework Loan).
- **Be aware that some sources may only fund certain types of costs.** Whilst the specific sources of funding or finance may not be typically known as projects or plans are developed, there may be some known target entities. In such cases, you should identify any specific costs that may be ineligible. For example, some funders may provide funding for capital costs but not revenue / operational costs.

CLIMATEFIT Project note 6: Requirement for professional advice and due diligence. Financial reporting and accounting frameworks can be complex and subject to frequent modification. Whilst important, they are beyond the scope of CLIMATEFIT. Therefore It is essential to stay up to date with the latest regulations that apply for your project. Seeking professional advice will help you navigate the accounting landscape effectively and make informed decisions about project finance options.

2.4.8 Further reading/ guidance and resources

- Bosch, P. and Pásztor, A. (2012) Guideline Costs of Adaptation Measures.

- World Bank (2024) Climate Adaptation Costing in a Changing World – provides a range of methods to costing adaptation projects.
- Infrastructure and Projects Authority (2021) Cost estimating guidance: A best practice approach for infrastructure projects and programmes
- European Commission: Directive 2013/34/EU, known as the Accounting Directive
- Ministry of Economy's Climate Change and International Cooperation Division (2020) Costing Methodology for Fiji's National Adaptation Plan – example of approach applied by a national government to generate cost estimates for adaptation over the 2021-2025 period.

2.5 IP4: Build the economic and financial case

2.5.1 Purpose of the module

The purpose of this module is to assess the economic benefits and/or profitability of the near-term packages and projects. Financial and economic appraisal is a systematic process for examining and exploring alternative uses of resources. The process focuses on evaluating options based on needs and objectives. It explores the options to meet the objectives, and their associated costs and benefits, as well as risks, funding and affordability. In doing so, it helps define the problems and find solutions that offer best value for money for use of public resources.

Box 7: Economic and financial returns

While they are closely related, economic and financial appraisal are different.

Economic appraisal – as used by Governments and Multi-lateral Development Banks (MDBs) – is based on the principles of welfare economics, and aims to assess the ability of a policy, programme, investment or project to improve social welfare or wellbeing. It is therefore carried out from the perspective of society and includes the economic valuation of non-market effects, such as environmental benefits and costs. This enables assessment of the socio-economic costs, benefits, and other dimensions of alternative choices.

Financial appraisal is different and considers the incremental revenues and costs generated by a programme, investment or project, and the ability to generate cash flows, recover the financial costs (capital and recurrent), and repay debt/generate profits. It is therefore carried out from the perspective of an investor, not the perspective of society. A financial analysis only uses market prices – it excludes environmental or social benefits. A financial analysis will also consider the cost-recovery objectives and mechanisms, and it will often also undertake a financial and fiduciary analysis of the implementing and executing entity.

Economic and financial analysis both involve the identification of benefits and costs and convert these cost and benefit stream/cash flows to present values using discount schemes. Both generate net present value (NPV) and can be used to estimate the internal rate of return (IRR) indicators.

Results of an economic appraisal or cost-benefit analysis can be expressed as the Net Present Value (NPV)[18], the benefit to cost ratio[19], or the Economic Internal Rate of Return (EIRR)[20]. In the financial appraisal, the analysis assessed the financial NPV (FNPV) or financial IRR (FIRR) (or other similar metrics, such as the payback period and the cash flow estimation).

[18] The Net Present Value (NPV) is the sum of future values (in real prices) that have been discounted to bring them to today's value (HMT, 2019) and is estimated as the total present value (discounted) benefits divided by total present value of costs.
[19] Total present value of benefits divided by total present value of costs.
[20] The rate at which the NPV is zero, which can be compared with the discount rate to assess if a project generates a sufficient return on investment to be viable.

2.5.2 Inputs and prerequisites

Inputs are the set of adaptation packages and projects and their costing information.

2.5.3 Skills and expertise required

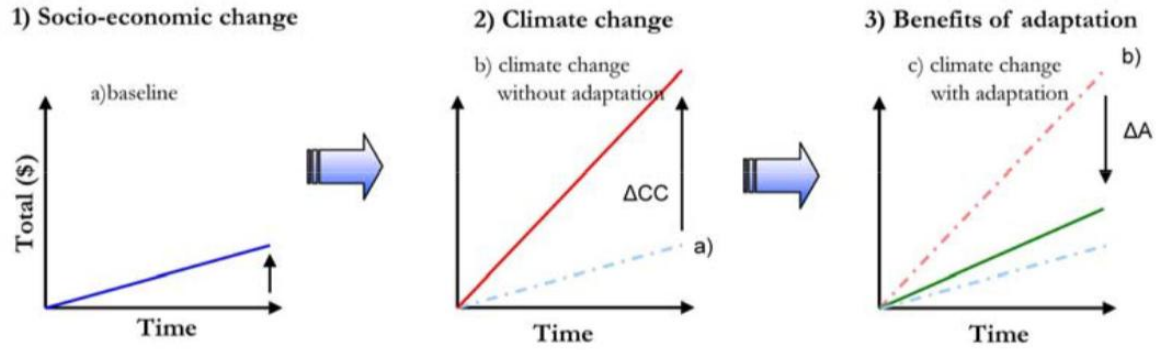
You will need the following skills, knowledge and experience to support this module:

- Economic and financial appraisal and development of business cases.
- Generation and manipulation of climate information and cost data
- Information on different appraisal requirements or criteria from relevant funders and financers
- Stakeholder engagement expertise to refine and validate the criteria to be applied

2.5.4 Activities and effort

An economic or financial appraisal is typically a key source of information for public and private institutions to make a decision whether to proceed with a project. Public bodies are typically interested in the economic case – that is, the costs and benefits to society, including non-market benefits, such as carbon storage, or health improvements. In contrast, private organisations are typically focused on the total amount of private value created, and the rate at which the project makes a return, which is a measure of financial performance. Economic and financial appraisal therefore consider different things (see Box 7), and the viability of a project and merits of investing in it will be different depending on what criteria are used (see Box 8 for some common metrics).

Assessing costs and benefits in adaptation is quite straightforward conceptually. This involves assessing the current and future costs of climate change (i.e. the losses from climate impacts), the extent to which adaptation can reduce these impacts (the benefits), (UNFCCC 2009, Boyd and Hunt 2004)[21]. There is also a further trade-off with the residual damages that remain after adaptation since it is rarely cost-effective or possible to reduce the damage to zero. This is illustrated in the diagram below. In Fig. 9 Panel 1 the blue line shows the baseline costs of the climate to society, as a result of socio-economic change, absent climate change. The red line in panel 2 shows the increase in costs as a result of climate change (ΔCC), whilst panel 3 highlights the benefits with of adaptation (ΔA)



[21] UNFCCC (2009) Potential costs and benefits of adaptation options: A review of existing literature. Technical Paper. https://unfccc.int/resource/docs/2009/tp/02.pdf

Figure 9 Benefit and Costs of Adaptation and Residual Impacts of Climate change. Source: UNFCCC, 2009 adapted from Boyd and Hunt, 2004.

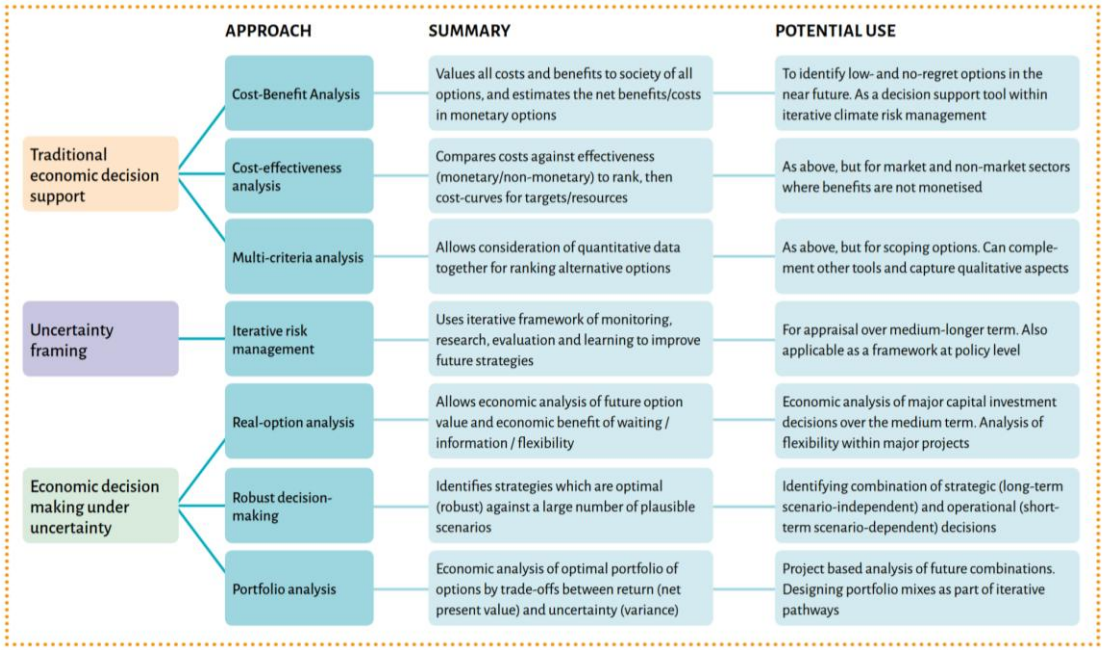
A strong appraisal process will help stakeholders navigate these tradeoffs and identify solutions which meet the objectives in the most effective way. However, the final financing approach will affect the mix of costs and benefits of different options – as explored in Module 5 and the Investment Concept handbook.

Box 8: Key metrics in financial and economic appraisal
Financial and economic appraisal typically involves calculating a range of different metrics to assess whether a project makes sense to invest in. These can include overall benefits related to costs, but also the rates of return. An overview of the common metrics are summarised below:
- **Cost Benefit Ratio (CBR)**: The ratio of total discounted costs to the total discounted benefits.
- Internal Rate of Return (IRR) – The IRR is a discount rate at which the NPV of all cash flows equals zero. A higher IRR indicates higher profitability. The IRR should exceed the project's cost of capital – often referred to the hurdle rate. Cost of capital is the minimum return that a company must earn on its investments or projects to satisfy its investors, creditors, and other stakeholder. IRR are complex, and vary by project type, sector, location, institution and market conditions. However, low risk investments in developed countries typically demand 3-6% whilst higher risk investments can be in the range of 8-15%.
- Net Present Value (NPV): The difference between the present value of cash inflows and the present value of cash outflows. An NPV of zero is the breakeven point, whilst a positive NPV suggests a potentially profitable investment.
- Payback Period: The Payback Period indicates the time needed for an investment to recover its initial cost. Investments with a shorter payback are more preferable as the capital is at risk for a shorter period.
- Return on Investment (ROI): A percentage that compares the profit of an investment to its cost. IRR can be used to estimate an annualised ROI if required.

Note that these metrics can either be calculated from a private perspective (e.g. for an organisation), but also from a societal (economic) perspective. In such cases the prefix of E or F is used to distinguish (e.g. FIRR / EIRR, ENPV/FNPV).

To undertake the economic and financial appraisal, take the set of packages of adaptation measures developed in IP2 and costed in IP3, and complete the following steps.

Select appraisal methods
Once you have the options to be appraised, select an appropriate appraisal method. The most common decision support methods are Cost Benefit Analysis (CBA), Cost Effectiveness Analysis (CEA) and Multi-Criteria Analysis (MCA). There are also a wider set of techniques that can be used in specific cases where there is a high degree of uncertainty or a large risk (for example where decisions have the potential for lock in or a high degree of irreversibility). However, these are often very resource intensive and suited for particular contexts. In many cases, a CBA, CEA or MCA will be suitable for the projects under consideration. An overview of methods and their strengths and weaknesses is shown below:



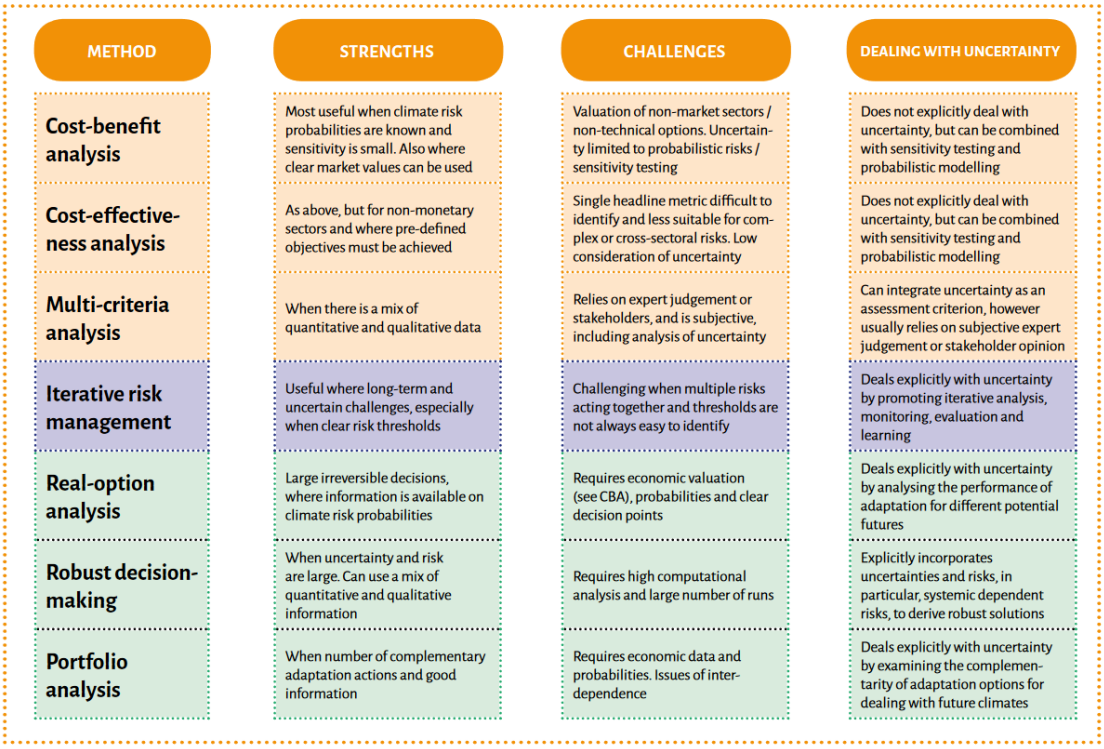


Figure 10: Main groups of methods in adaptation economics and their potential use (top), and Strengths and limitation to support adaptation decision making (bottom). Source: Trolsch et al, 2017[22]

However, the choice depends on the number of objectives, whether impacts are measurable and whether benefits can be valued in monetary terms (see Box 9). A decision tree on the most typical decisions to help inform financial and economic appraisal is shown below:

[22] Tröltzsch, J., Rouillard, J., Tarpey, J., Lago, M., Watkiss, P., Hunt, A. (2016). The economics of climate change adaptation: Insights into economic assessment methods. ECONADAPT Deliverable 10.2.

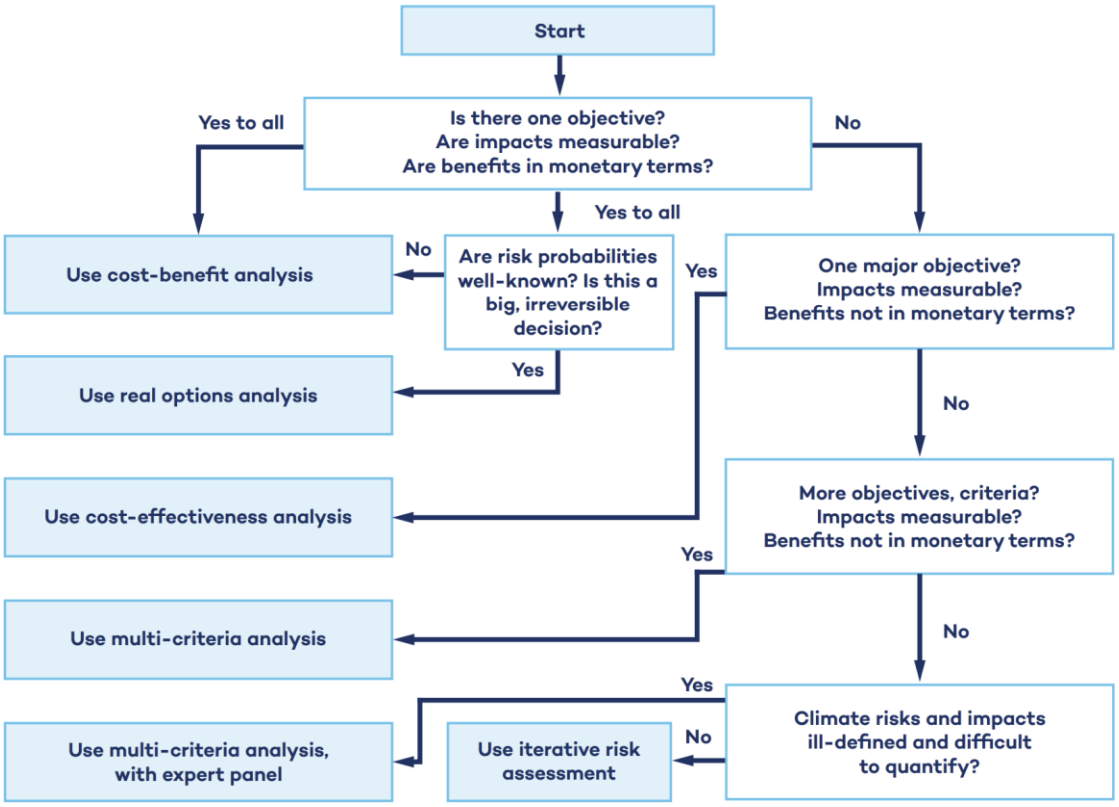


Figure 11: Decision tree of possible approaches for assessing the costs and benefits of adaptation options. Source: Government of Fiji (2020[23]) updated from UNFCCC 2011[24].

You should then make arrangements to involve LRTs and other relevant stakeholders (such as those involved in design or delivery of projects) in the design. This could involve shaping the scope of, or criteria used in the appraisal, or it could involve participation in the appraisal process itself to include their expertise or perspectives directly.

Box 9: Quantifying benefits of adaptation projects

Identifying ways to monetise benefits and generate revenues for adaptation projects is challenging, This is because:

- **Limited revenue streams**. Many outcomes and assets of adaptation activities have no revenue streams, and the benefits are avoided costs. For example cool spaces or early warning systems. In essence, these are public goods which have economic benefits, but no revenues
- **Difficulties capturing value** - Many assets have revenue streams that are difficult to monetise, for example energy savings, use of green spaces, increased business revenues from tourism
- **Timing of costs and benefits** - The benefits from adaptation tend to accrue over the medium and longer term and the potential revenues in the future could

[23] Government of Fiji. (2020). Costing methodology for Fiji's National Adaptation Plan. Government of Fiji and NAP Global Network/International Institute for Sustainable Development (IISD)

[24] UNFCCC (2011) Assessing the costs and benefits of adaptation options. An overview of approaches. https://unfccc.int/resource/docs/publications/pub_nwp_costs_benefits_adaptation.pdf

be less attractive to investors when compared to projects with more immediate benefits (Tragedy of Horizons).
- **Uncertainty** - Assessing the benefits is challenging because of uncertainties in the climate system and future impacts, especially over longer timeframes (see also 3.4.6)
- **Sector and activity context** - Benefits and revenues arising from projects are very different depending on the sector and activity type, and need to consider different interests

These factors are a main barrier to accessing private finance (see D1.3 discussion; Watkiss and Frontier Economics 2022). In addition, the revenues from adaptation are often not high enough for many private investors, given the levels of risk involved (see Box 8). However there are also many examples where benefits have been monetised and mobilisation of private finance for adaptation has succeeded (see Machiels et al ,2024[25]).

Adaptation benefits are often quantified in terms of avoided damage/reduced losses, but there is less often captured as revenue streams.

Some examples of adaptation benefits or co-benefits that can also provide revenues include:
- **Consumer bills** – Existing business models can be used to accommodate additional upfront adaptation costs e.g. by recouping investments in the water sector from consumer bills over the long-term.
- **Contractual payments** which reflect the value of avoided wildfire risk.
- **Property rental fees** – Where rental fees can be increased to reflect reduced energy bills and increased property value uplifts
- **Charges for use** of community forest areas for recreation etc.

Revenue streams are a main way to meet delivery costs and pay back investors in a project. In many cases, the co-benefits drive much more significant revenues than the adaptation. Revenues can occur within the project, or from activities elsewhere within an organisation. In many cases, project revenues are unlikely to be sufficient to cover all costs: additional funding or incentives might also be required. Several of these projects may also allow opportunities for revenue stacking (see Box 10).

Box 10: Innovations in economic and financial appraisal for improving bankability.
A project is bankable when its risk-return profile meets investors' criteria and can secure financing to implement the project. The criteria (and metrics) vary depending on whether the investor is a public body or in the private sector. In recent years, there have been significant efforts in economic and financial appraisal to improve the case for investment. For example, in infrastructure investment, institutional investors have begun developing methods for costing the impact of climate change in the base case in infrastructure investments to

[25] Machiels, T., Srivastava, V.(2024). CLIMATEFIT International best practices research https://climatefit-heu.eu/wp-content/uploads/2024/07/00

improve the attractiveness of climate proofing investments (GCA and ADB 2021[26], CCRI, 2021[27], IIGCC, 2024)[28]. In addition, the valuation and stacking of project co-benefits has been used to support investments in nature-based solutions (IGNITION, England et al., 2023[29], InnoFINS 2024[30]). Some early thinking has also begun to consider the stacking of benefits, placing avoided losses and co-benefits or projects alongside wider synergies and systemic opportunities (e.g. Resilient Futures Investment Roundtable, 2024)[31].

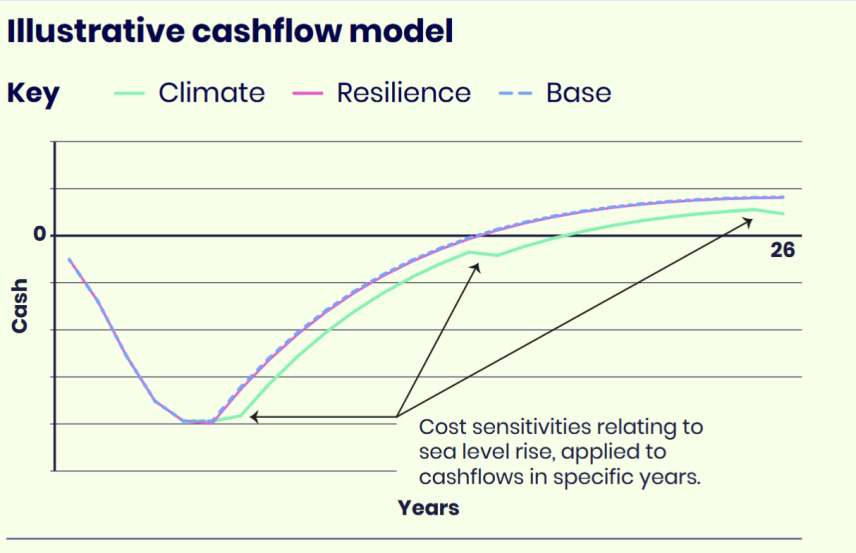


Figure 12: Illustrative cashflow model for a coastal windfarm assessment with considering base, climate and resilience options. The Base case considers the cashflow not accounting for physical climate risk, whereas the Climate and Resilience cases quantify the risks such as SLR and their financial effects (in the case of "doing nothing" vs. adaptation respectively). Source: IIGCC, 2024.

It is also important to define the key criteria used for the analysis – such as the lifetime of the investment, and the discount or hurdle rate (for private sector this is typically the cost of capital, whilst for public sector, this varies by institution).

Compare results of the analysis

Compare the results of the options appraisal to determine the preferred option(s). For private sector financing and projects this would involve considering the FIRR, the FNPV, and the payback period, whilst public entities will be interested in the economic benefits (BCR, EIRR, ENPV). If completing CBA, this would be the option with the highest benefits (average expected NPV). For CEA, this would be the lowest cost per unit of impact (e.g. €'s per l of water saved for a water efficiency project), whilst for MCA, it would be the option with the highest score.

[26] GCA and ADB (2021) A system-wide approach for infrastructure Resilience https://gca.org/wp-content/uploads/2021/01/A-System-wide-Approach-for-Infrastructure-Resilience.pdf

[27] Coalition for Climate Resilient Investment (2022) The physical climate risk assessment methodology (PCRAM) Guidelines for Integrating Physical Climate Risks in Infrastructure Investment Appraisal https://storage.googleapis.com/wp-static/wp_ccri/c7dee50a-ccri-pcram-final-1p.pdf

[28] IIGCCC (2024) PCRAM in Praticice: Outputs and insights from climate resilience in action. https://www.iigcc.org/resources/pcram-in-practice-climate-resilience-risk-assessment-case-studies

[29] England, K., Hunt, A., and Watkiss, P., (2023) *Adaptation Finance Case Study 2023 - Craigleith Retail Park Demonstrator* https://adaptation.scot/app/uploads/2024/09/adaptation-finance-case-study-2023.pdf

[30] InnoFINS (n.d.) Financing the urban transition. https://www.uantwerpen.be/en/projects/innofins/

[31] Resilient Futures Investment Roundtable (2024) *Concept Paper: A Pathway Towards Systemic Resilience Investment.* https://resilientfuturesroundtable.com.au/conceptpaper/

However, in reality, the metrics that will inform the decision making will vary depending on the stakeholders concerned. A summary of common metrics is included in Box 7.

Table 10 below is an illustrative example of a CBA for appraising a stormwater management project financed through a bond.

Table 10: Hypothetical CBA example for a stormwater management investment. Source: Authors

Item	Initial investment (€ 000s)	1	2	3	4	5	Total
Benefits (€ 000s)							
Property-related wastewater tariff (consumer bills)		€ 300	€ 500	€ 650	€ 700	€ 700	**€ 2,850**
Service 2		€ 0	€ 0	€ 0	€ 0	€ 0	**€ 0**
Residual value						€ 25	
Total benefits		**€ 300**	**€ 500**	**€ 650**	**€ 700**	**€ 725**	**€ 2,875**
Total benefit (discounted)		**€ 278**	**€ 429**	**€ 516**	**€ 515**	**€ 493**	**€ 2,230**
Operational costs (€ 000s)							
Total operating costs		€ 50	€ 60	€ 80	€ 80	€ 80	**€ 350**
Initial investment in stormwater management	€ 1,500	€ 0	€ 0	€ 0	€ 0	€ 0	**€ 1,500**
Replacement		€ 0	€ 0	€ 0	€ 0	€ 0	**€ 0**
Bond repayment (capital + interest)		€ 0	€ 0	€ 100	€ 100	€ 100	**€ 300**
Total costs	**€ 1,500**	**€ 50**	**€ 60**	**€ 180**	**€ 180**	**€ 180**	**€ 2,150**
Total costs (discounted)	**€ 1,500**	**€ 46**	**€ 51**	**€ 143**	**€ 132**	**€ 123**	**€ 1,995**
Net cash flow (discounted)	**-€ 1,500**	**€ 231**	**€ 377**	**€ 373**	**€ 382**	**€ 371**	**€ 235**
Financial metrics							
Cost of capital (Discount rate):*		8.00%					
NPV (Discounted)		€ 235					
CBR (Discounted)		11					
IRR (Discounted)		4.77%					
Cumulative cash flow (discounted)	-€ 1,500	-€1,268.52	-€891.29	-€518.19	-€135.97	€234.95	
Payback period (discounted) in years	4						

*Enter the cost of capital of the financier (ie. Financial Discount Rate or Weighted Average Capital Cost)

2.5.5 Stakeholders to involve and role of the LRTs

- Economists and finance staff working in local government, municipalities or public financial institutions.
- External consultants with additional expertise in assessing adaptation actions, or in using alternative economic and financial appraisal methods.
- LRTs can help identify the scope of financial and/or economic appraisal and selection of the appraisal the method.
- LRTs can also help define the range of metrics to be developed for the investment, and the criteria required for projects to meet to proceed to implementation.

2.5.6 Outputs from the module

The outputs from the module are a set of economic and financial analyses for the near-term mission projects and /or the Investment Plan as a whole.

2.5.7 Key issues to consider

- There are some key principles of appraisal. Regardless of which approach you use, it should be practical, relevant, robust, comprehensive and proportionate. Whilst economic appraisal is valuable, it can be resource intensive, Therefore, it will be important to take a proportionate approach to the application, using appropriate techniques that suit the decision context. Economic and financial appraisal is less commonly used in decision making in Europe than in some other places (e.g. UK). In some cases (e.g. near-term, low-cost projects), the PA or FIE may consider that economic and financial appraisal is not necessary, or such rules may not be required as part of the Public Investment Management (PIM) or Public Financial Management (PFM) criteria.
- There are three groups of methodological issues as to why appraisal of climate adaptation projects is more challenging than in other sectors. These relate to uncertainty, valuation and discounting, and equity.
    - **Uncertainty** - There is significant uncertainty associated with valuation of costs and benefits. These relate to uncertainties around future socio-economic change, the extent of climate change and the associated impacts, as well as the performance of adaptation options. There are also significant uncertainties in the climate models themselves that are used to generate the assessments of impacts and benefits of adaptation options. This is not an excuse not to act, but instead it is important to be aware of these issues and ensure that they are considered in decision-making.
    - **Valuation and discounting** – Projects typically use discount rates to assess the costs and benefits of a project in today's values. This is because the costs occur today, whilst the benefits occur much later. For projects with long lifetimes (e.g. roads or buildings), the benefits occur much later and so are heavily discounted. In contrast, for near term actions, a short-term appraisal, such as 5-10 years can result in very low benefits since the impacts of climate change are not felt until much later in the century. Private sector discount rates are typically higher than the public sector, making it more challenging to meet the hurdle rates.
    - **Equity** – Climate change will not affect everyone equally, and so it is important to assess the impacts of the option on different groups – particularly in terms of who pays for the adaptation and who benefits. It is often hard to quantify the impacts on equity, which complicates the use of CBA for this. It can be done by weighting results, but this involves subjective judgements. Appraisals typically present aggregate and distributional results and let decision-makers make a final decision.[32] In addition, where equity concerns are an

[32] Rouillard, J., Tröltzsch, J., Lago, M., Markandya, A., Sainz de Murieta, E., Galarraga, I. (2016). Distributional objectives and non-monetary metrics. FP7 Econadapt project, Deliverable 2.3.

important consideration, MCA can employed with an explicit benefit criterion included.

2.5.8 Further reading/ guidance and resources

- Tröltzsch, J., Rouillard, J., Tarpey, J., Lago, M., Watkiss, P., Hunt, A. (2016). The economics of climate change adaptation: Insights into economic assessment methods. ECONADAPT Deliverable 10.2.
- GIZ (2013) Economic approaches for assessing climate change adaptation options under uncertainty
- UNFCCC (2011) Assessing the costs and benefits of adaptation options: An overview of approaches.
- EIB (2023) The Economic Appraisal of Investment Projects at the EIB. 2nd Edition.
- European Commission (2021) Economic Appraisal Vademecum 2021-2027 - General Principles and Sector Applications_- This is also supported by an excel tool for CBA, CEA and MCA.
- European Commission (2014) Guide to Cost-Benefit Analysis of Investment Projects for Cohesion Policy 2014-2020
- EIB Advisory Hub (2022) Climate change adaptation and economics and investment decision making in the cities. 'How to' guide and case studies.
- Department for Environment, Food and Rural Affairs (2025) Green book supplementary guidance: Accounting for the effects of climate change

2.6 IP5: Compile Investment Plan

2.6.1 Purpose of the module

The purpose of this module is to compile the pipeline of near term projects, assess which are currently bankable and which need further development through investment Concepts. This is complemented by developing an accompanying action plan to improve the enabling conditions in the territory. This ensures that the final Investment Plan contains bankable or fundable projects, *and* those which have been included in the pipeline for further development.

CLIMATEFIT Project note 7: Timing of Investment Plans and Investment Concepts. Investment Concepts will typically be developed following assembly of the Investment Plan. Within the CLIMATEFIT project, the development of Investment Concepts will overlap with the development of Investment Plans as they are due in Month 30 (whilst implementation of Investment Plans are due to complete in Month 26 for Leaders/Month 30 for Planners). As a result, these activities have to run in parallel.

2.6.2 Inputs and prerequisites

Inputs to this module are the packages and projects with their financial and/or economic appraisals, as well as the information about the potential sources of finance outlined in module IS9.

2.6.3 Skills and expertise required

- Knowledge of the different financing models and mechanisms available and which ones are the most suitable for the territory; knowledge of the enabling conditions for adaptation investments as well as the main barriers.
- Specific knowledge of the economic and financing characteristics of the actions or project within the Investment Plan.

2.6.4 Activities and effort

Determine financing approach, fundability/bankability and investment readiness of near-term actions

Review the near-term actions or projects in each of packages, and group them based on their financing approach (private, blended, public). For each, check whether it is fundable (e.g. a grant is secured) / bankable (i.e. it has an AFFS approach in place), and whether it is Investment Ready (with an execution plan). You should also consider whether the project is ready for implementation – e.g. whether there are significant regulatory, policy or legal risks. You may wish to use an Investment Readiness checklist to help with this work (GIB Foundation, 2018).

Box 11: Investment Readiness vs bankability.

In compiling an Investment Plan, it is important to have a focus on ensuring actions are both bankable and Investment Ready. Whilst there is some overlap, there are key distinctions.

Bankable projects are those that are able to meet the terms at which a financier is prepared to lend – regardless of the finance source. In contrast, **Investment readiness** is a broader term, which refers to the overall readiness of the project for investment – such as whether the project is well planned and ready for implementation, with an execution plan, has appropriate governance in place, and all types of implementation risk have been assessed and managed.

You may also develop a risk register for each project. A risk register will document the likelihood and impact of risk (typically as low, medium or high), assign a rank to the risk and mitigating actions to respond to the risk. You should also identify an 'owner' for each project risk who will be responsible for managing the risk. You should also have a process for monitoring the risks, adding new risks, and updating progress on any mitigating actions. If you will be developing an Investment Concept you will find more information about risk assessment in the IC Handbook Part III: Risk & Barrier Analysis.

Actions requiring additional development

The actions or projects which are not yet bankable will require additional development. A key decision is whether some light touch work can help make the project fundable or bankable, or whether a dedicated Investment Concept is required. To decide this, review the work to date and discuss with relevant stakeholders to see if there is an obvious immediate solution to make the action fundable/bankable. This can involve reviewing existing funding and financing solutions, or seeing if there are fairly straightforward amendments to the project scope or enabling conditions that can be made to unlock different sources and instruments to support the project.

To support this work, you can also review the existing and preferred sources outlined in module IS9 (matchmaking), the financial landscape mapping (D1.1)., and different financing models and mechanisms, such as public-private partnerships, grants, loans, and equity investments based on which are most suitable for the territory's needs. If it is not possible to secure a financing approach with a light touch structuring, further work may be undertaken for these actions in the development of an Investment Concept.

An illustrative set of outputs from this process is shown below:

Table 11: Appraisal of suitability of projects for inclusion in the Investment Plan pipeline. Source: Authors.

#	Investment Plan Horizon	Financing approach	Package #	Action/Project	AFFS in place?	Action is Investment Ready?	Bankable?
1	Near Term Actions	Private financing	1 – Built Environment adaptation	Climate proofing of new development	Yes - regulation	Yes	Yes – Include in pipeline
2		Blended finance	2 – Infrastructure adaptation	Climate proof metro system – 5-	Yes – Mainstrea	No	No Include in pipeline,

				year capital programme	ming into PPP		develop, and improve enabling conditions
			4 – Flood risk	Drainage infrastructure investment	Yes – Households / Utility Bills	Yes	Yes – include in pipeline
3			1 – Built Environment Adaptation	Green roofs in built environment	Partial – high level financial model developed	Yes	Consider if additional structuring can make the project bankable.
4		Public	3 – Land use and coastal change	Early warning system extension – Phase 1 (localised heat coverage)	Yes – Grant funding	Yes	Include in pipeline
5			3- Land use and coastal change	Resettlement with coastal and river planning – Implementation of adaptive planning approach	No	No	Develop action and Investment Concept
6	Future actions (6-10)	…	…	…	…	…	…
7		…	….	….	…	…	…

Develop action plan to improve enabling conditions

In addition to assessing the actions and compiling the pipeline, It is also important to identify improvements to the enabling conditions (see Box 12). to improve the general bankability of projects within the territory to help ensure that near-term actions can be successfully implemented. For CLIMATEFIT we are using the following five broad types:

- Policy – including regulations, subsidies and incentives.
- Data – e.g. climate data for investment planning, or partnerships with research centres, or measures to improve quality and availability
- Budget and finance – e.g. measures to mobilise domestic public or private finance, and use of green budgeting
- Governance and Coordination – including vertical (national government or sub-PA) and horizonal (e.g. across sectors, territorial boundaries)
- Resources and skills – including training, knowledge, and financial resources

Review the longlist of actions and projects in the pipeline appraisal and identify existing or potential enabling conditions that are important to project success, Document these and outline whether you need to pursue any further actions to ensure they are relevant. You should also review any broader results of previous work during module IS3 “Barriers and enabling conditions”.

The objective is to identify areas that would improve bankability of these potential projects. This might include measures such as enhancing project design to meet investor criteria, improving stakeholder engagement to ensure community support, or developing partnerships with private sector entities to share risks and benefits. You may also wish to consider known or potential future policy changes (e.g. new regulations, changes to funding regimes). By addressing these enabling conditions, territories can enhance the feasibility and attractiveness of their projects, making them more likely to secure funding and succeed in implementation.

Box 12: Enabling conditions for adaptation finance

The concept of enabling conditions for private adaptation finance typically refers to a set of measures and conditions which support the overall bankability of adaptation projects. Governments can create conditions which incentivize domestic private sector adaptation, as well as international private sector activities and adaptation financing, to mainstream climate risks and capitalize on business opportunities (Pauw, 2014)[33] CLIMATEFIT is focused on enabling conditions for both domestic private and public sector adaptation and adaptation financing.

There is no single definition of what constitutes a strong set of enabling conditions. The precise structure of these arrangements will vary based on climate hazards and the structure of the economy as well as the collective view on the roles of public and private sectors and within them (e.g. across firms and households). They are also multi-level, with national, regional and local institutions all having a role in shaping them.

However, there have been a number of efforts to define common building blocks. Enabling conditions include capacity building measures and domestic financing to implement them (e.g. institutional strengthening, improvements to government, information), as well as the enabling environments (policies, regulations, incentives, access to finance) (Fayolle et al, 2019)[34].

Stenek et al. (2013)[35] used a literature review and field observations to define five important areas: data and information, institutional arrangements, policies, economic incentives and communication, technology and knowledge. More recently, the OECD (2024)[36] highlights six components: Strategic planning and policy coherence, regulatory alignment, insurance and risk transfer, public finance and budget, sustainable finance, and support and incentives for private investment.

There are also practical barriers and enabling conditions to allow implementation (Ekstrom and Moser, 2014)[37]. Machiels et al (2024)[38], proposed three enabling conditions which allow proposers to develop and implement AFFS – resource and transaction

[33] Pauw, P. (2014) Not a panacea: private-sector engagement in adaptation and adaptation finance in developing countries. Climate Policy, 15, 5. 583-603. https://doi.org/10.1080/14693062.2014.953906

[34] Fayolle, V., Fouvet, C., Soundarajan, V., Nath, V, Acharya, S., Gupta, N. and Petraulo, L,. (2019) Engaging the private sector in financing adaptation to climate change: Learning from practice. https://weadapt.org/wp-content/uploads/2023/05/act-private-sector-paper_final_web-res.pdf

[35] Stenek, V., Amado, J.C., and Greenall, D. (2013) Enabling Environment for Private Sector Adaptation. An index assessment framework. https://www.ifc.org/content/dam/ifc/doc/mgrt/Enabling-Environment-for-Private-Sector-Adaptation-Stenek-Amado-Greenall.pdf

[36] OECD (2024) Climate Adaptation Investment Framework, Green Finance and Investment, OECD Publishing, Paris, https://doi.org/10.1787/8686fc27-en

[37] Ekstrom, J. and Moser, S. (2014) Identifying and overcoming barriers in urban climate adaptation: Case study findings from the San Francisco Bay Area, California, USA. Urban Climate. 9, 54-74 http://dx.doi.org/10.1016/j.uclim.2014.06.002

[38] Machiels, T., Srivastava, V., Whittaker, S., Carreira Silva, M., Jaunet, A., Porko Beugnet, S. & Simonet S. (2024). *Adaptation Investment Landscape*. CLIMATEFIT (Deliverable 1.1). https://climatefit-heu.eu/wp-content/uploads/2024/08/CFIT_D1.1-AIL_vf.pdf

costs, legal conditions, and financial risks and derisking mechanisms. More recent efforts focusing at the City Scale have begun to blend these different dimensions together. For example the recent work by the Cities Climate Finance Leadership Alliance has focused on Climate Policy, Budget and Finance, Climate Data and vertical and Horizontal Coordination (CCFLA and ESCAP, 2024)[39]

Whilst individual arrangements vary, it is important for both FIEs and Public Authorities to understand the current structure and the extent to which they encourage/ discourage investment in adaptation, as well as how they can be improved.

Data and information	**Economic incentives**
1. Climate and hydrological projections	11. Government incentives
2. Direct and indirect impacts	12. Finance
3. Adaptation measures, costs and benefits	13. Full-cost accounting for water and energy
4. Community vulnerability, risk and adaptation	14. Environmental trading markets
Institutional arrangements	**Communication, technology and knowledge**
5. Institutions and forums	15. Information and communication technologies
Policies	16. Technology and knowledge
6. Building standards and/or codes	
7. Public infrastructure	
8. Local zoning rules	
9. Permitting and impact assessments	
10. Investor relations and/or stakeholder management	

Figure 13: Country indicators to Evaluate how favourable enabling conditions are to promoting private sector climate adaptation. Source: Stenek et al., 2013.

This step will result in the development of a table mapping existing enabling conditions and identified action plan for enabling conditions – a sample is shown in the table below. As part of this process you will also need to consider how you will finance any of these actions which have resource implications.

Table 12 Example table describing existing enabling conditions for the project pipeline and those to be developed. Source: Authors.:

Enabling condition	Type	Description	Action required?	Relevant packages/projects
Existing				
Water regulation	Policy/ regulation	Planned changes to Water regulations to allow water efficiency contracts to be signed between asset owners rather than billpayers.	Monitor and ensure they are implemented	
Current and future urban heat modelling data	Data	New city data needed to baseline risk and assess effectiveness	Procure updated data	
Green budget tagging	Data		Continue to implement	
To be developed				

[39] Cities Climate Finance Leadership Alliance (CCFLA) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). 2024. Assessing Subnational Enabling Framework Conditions for Urban Climate Finance: A Tool and Guide by CCFLA and Urban- Act. Available at: http://unescap.org/kp/2024/assessing-enabling-conditions-subnational-climate-finance-tool-and-guide-ccfla-and-urban

Credit rating	Financial	Indicate creditworthiness to a rating agency by improving budgetary planning and increasing revenue generation	Procure a ratings agency	
Green finance framework	Policy	Development of framework to describe use of proceeds for green bonds and crowdfunding	Develop a draft green finance framework and seek approval	
Regulatory mainstreaming	Policy	Changes to infrastructure regulation to allow adaptation to be included in domestic bills.	Engage with utility companies and national government on possibility.	

Compile and approve Investment Plan

At the end of this module, you will be ready to bring together both the fundable and bankable projects and the action plan to improve the enabling conditions alongside the work from the other Modules into a single coherent and comprehensive Investment Plan document. The final Investment Plan should include

1. Adaptation objectives and rationale
2. The climate diagnostic,
3. Adaptation packages and costing, and economic and financial analyses.
4. A detailed project pipeline and
5. An action plan to improve the enabling conditions.

It should also outline the approach for monitoring, evaluation, learning, and reflection. An Investment Plan template will be included in future on the CLIMATEFIT website. In the interim, a sample project pipeline output is shown below. This contains the minimum amount of information required – you may choose whether to include further information, such as a detailed breakdown of investment over years.

There are a number of decisions to make about the ultimate level of detail to include, and whether certain aspects should be public or private. This includes whether to include information on future packages of investment, and whether you wish to include information on investment concepts under development,

Once a draft of the Plan is complete, you should seek political approval from relevant authorities to legitimise and support implementation. You should present the plan to senior political figures or committees identified at the start of the plan development process, making sure to address any concerns.

Once the plan has been approved, decide on the appropriate channels for publishing the plan. You should determine the level of detail to provide publicly

versus privately and consider submitting the plan to financing platforms like the InvestEU portal, or private dealrooms (secure online platforms which are used to support financial transactions). The InvestEU portal is a publicly available platform which connects project promoters with investors seeking projects to invest in. An alternative would be to include them within your region's own Inward Investment pitchbook – a bespoke brochure with information on investment opportunities for investors.

	Horizon and financing type		Project information						Fundability / Bankability		
#	Investment Plan Horizon	Financing approach	Package #	Action	Project type	CAPEX (€m)	OPEX (€m)	Economic and financial case (CBR and/or IRR/NPV	AFFS in place?	Investment Readiness?	EU Taxonomy Aligned?
1	Near Term Actions	Private financing	1 – Built Environment adaptation	Climate proofing of new development	Climate proofing				Yes - regulation	Yes	Yes
2		Blended finance for public/private delivery	2 – Infrastructure adaptation	Climate proof highways – 5-year capital programme	Climate Proof	€10m		CBR 1:3	Yes – Mainstreaming into PPP	Yes	No
3			1 – Built Environment Adaptation	Green roofs in built environment	Climate Proofing	€5m			Partial – high level financial model developed	No	Yes – in development
4		Public	3 – Land use and coastal change	Early warning system extension – Phase 1 (localised heat coverage)	Dedicated adaptation				Yes – Grant funding	Yes	No
5			3 – Land use and coastal change	Resettlement with coastal and river planning – Implementation of adaptive planning approach	Dedicated adaptation		€1m		No	No	No
6	Future actions (6-10)										
7											
8											
9											

Figure 14: Indicative project pipeline for a PA. Source : Authors

2.6.5 Stakeholders to involve and role of the LRTs

During pipeline development, stakeholders should be involved to help determine if any actions can easily be made fundable or bankable, thereby improving the pipeline. When finalising the module, you should consult the LRT and other relevant stakeholders for final feedback and validation of the Investment Plan to ensure it is supported by all parties involved.
As noted above, the process will require buy-in from senior leadership who can give approval and support to the plan. Otherwise, it will be challenging to implement plans and to attract private sector investment.

2.6.6 Outputs from the module

The output from this module is the final Investment Plan, including a pipeline of projects, containing fundable and bankable near term projects and future projects which need Investment Concepts developed, as well as an action plan to improve the enabling conditions for financing.

2.6.7 Key issues to consider

Maximising private sector participation - When compiling the pipeline, it is important to maximise the number and size of projects in the pipeline which are suitable for private finance/delivery. The economic and financial characteristics of the activity are a key determinant of this, since they indicate the extent to which projects can offer market level risk-adjusted returns. To determine the extent to which the different near-term actions are potentially suitable for private sector financing and delivery (and the associated role of Government), review the economic and financial analysis conducted in IP4, and screen the projects against the decision tree below. This will also inform the range of additional actions to improve the enabling conditions you may need to consider (see Figure 15 below).

Some projects will more easily meet bankability criteria of investors than others. Those with a single beneficiary may be more straightforward than those with multiple beneficiaries where different instruments need to be combined to make them bankable. When it comes to improving bankability of potential projects, the main challenge will be finding revenue streams for adaptation to pay back investors.

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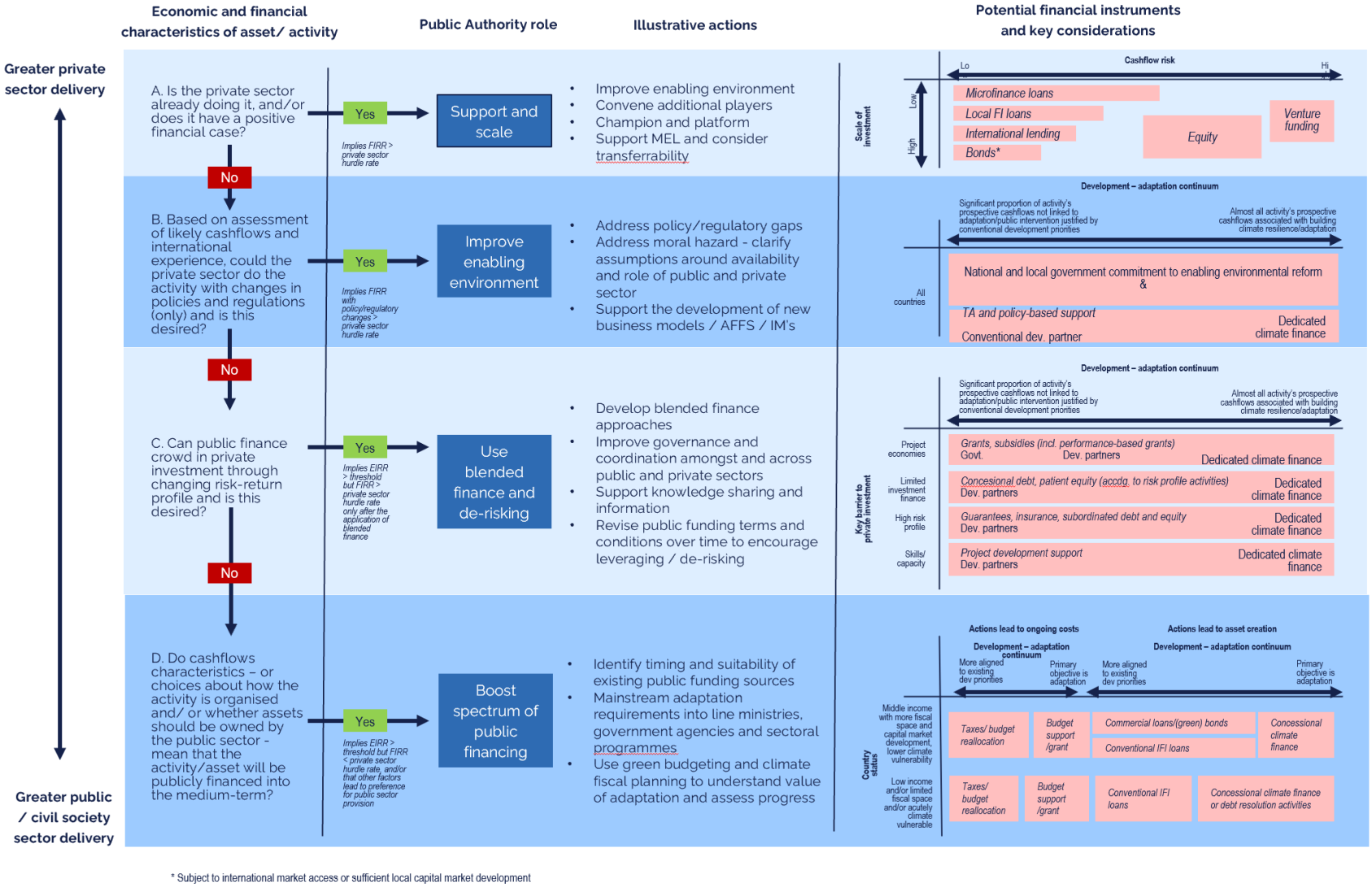

* Subject to international market access or sufficient local capital market development

Figure 15: Decision tree for determining private sector suitability of activities, and associated roles of government. Source: Authors, based on ADB (forthcoming), and World Bank (2019).

Including early stage or future projects - Whilst the focus is on near-term actions for each adaptation package, you may also want to define a pipeline that details the investments across future phases. We suggest including the next five years (e.g. 2026-2030), and years (2031-2035) , depending on the timeframe desired for the territory's investment plan, as well as budgetary cycles, This ensures that the Investment Plan includes additional projects for future development (ie. in years 6-10). You may also wish to include information on earlier-stage projects, for which financing approaches and Investment Concepts may be developed. e.g. investments to be developed.

2.6.8 Further reading/ guidance and resources

- European Commission - InvestEU Portal
- World Bank Group. 2019. Bangladesh Climate-Smart Agriculture Investment Plan: Investment Opportunities in the Agriculture Sector's Transition to a Climate Resilient Growth Path
- Pathways2Resilience (2024) Climate Resilience Investment Pipeline template
- GIB (2018) Guidance Checklists: Preparation of Sustainable and Resilient Infrastructure Projects.
- Cities Climate Finance Leadership Alliance (CCFLA) and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). (2024). Assessing Subnational Enabling Framework Conditions for Urban Climate Finance: A Tool and Guide by CCFLA and Urban-Act.

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The CLIMATEFIT project aims to support EU territories in their just and transformational journey toward climate resilience by bridging the finance 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. CLIMATFIT 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.

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