

DESIGNING A CLIMATE RESILIENCE CLASSIFICATION FRAMEWORK

TO FACILITATE INVESTMENT
IN CLIMATE RESILIENCE
THROUGH CAPITAL MARKETS



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RESILIENCE THROUGH CAPITAL MARKETS

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01

INTRODUCTION AND PURPOSE





A. CONTEXT AND OBJECTIVES

This white paper presents a **blueprint for the development of a climate resilience classification framework** (hereafter referred to as the climate resilience framework or “the Framework”), with the primary objective of promoting and facilitating the much-needed investment in climate resilience through capital markets.

According to the Sixth Assessment Report published by the Intergovernmental Panel on Climate Change (IPCC), **approximately 3.3–3.6 billion people live in settings that are highly vulnerable** to climate change, as ecosystems and people are becoming increasingly exposed to severe climate hazards.¹ The urgency of building resilience to climate change impacts is also reflected in the Sendai Framework for Disaster Risk Reduction,² which calls for “the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries”. At the same time, markets and wider society are waking up to the reality of a changing climate and to the realization that climate resilience is both an inevitable and necessary priority.

Urgent mechanisms and connections need to be built to bridge the gap between high-level objectives and the practical realities of directing capital flow towards investments that will make economies and societies more climate resilient. This requires recognizing and pursuing the considerable potential for investment in climate resilience: US\$ 1.8 trillion of investment in climate resilience is needed up to 2030 alone, which will result in an estimated **US\$ 7.1 trillion in economic benefits**.³

In this context, the Framework has the potential to make a significant contribution to the advancement and expansion of climate resilience financing. It will go

beyond the kinds of process-based and compliance-driven approaches that have hitherto been used to define climate resilience (or adaptation) financing. To achieve this, it will provide an **evidence-based approach that enables issuers, investors and other stakeholders to identify climate resilience investments, assets and entities and to facilitate the flow of capital towards them**.

The Framework will present clear definitions and criteria that both investors and issuers can employ to systematically, consistently and transparently classify climate resilience investments. The Framework will fulfil this requirement by offering a classification system and screening criteria for climate resilience investments in various measures (e.g. a project), assets, activities or entities, with the primary goal of promoting greater capital flows towards climate resilience investments, including those that contribute to disaster risk reduction.

The Framework will be broad and inclusive, reflecting the fact that **climate resilience cuts across all sectors and activities**. This breadth will generate new opportunities and innovation by shedding light on several sectors less commonly associated with climate resilience but where the needs and investment opportunities related to climate resilience may be significant, e.g. health, social protection and natural capital, among others. It will also create space for new kinds of investments and investees, e.g. climate-vulnerable sovereigns that have significant climate resilience investment needs but face tight fiscal conditions and, in some cases, worsening credit ratings due to climate risk exposure.

The Framework will provide an opportunity to showcase the power of taxonomies – specifically, how systematic and granular approaches to defining credible climate resilience investments can help convert good intentions, such as making human health more climate resilient, into specific, actionable and investable opportunities that can generate measurable contributions to improved climate resilience.

1 Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Cambridge and New York, Cambridge University Press, 2022).

2 United Nations Office for Disaster Risk Reduction (UNDRR), *Sendai Framework for Disaster Risk Reduction 2015-2030* (Cairo, 2015).

3 Global Commission on Adaptation, *Adapt Now: A Global Call for Leadership on Climate Resilience*, (Rotterdam, 2019).

B. FINANCING NEEDS FOR CLIMATE RESILIENCE

The United Nations Environment Programme estimates that in developing countries alone, adaptation and climate resilience financing needs amount to US\$ 300 billion per year by 2030,⁴ while global adaptation and climate resilience financing needs would be significantly higher. However, current reported finance flows for climate resilience are way below these estimated needs. Meanwhile, disaster risk reduction (DRR), which is closely linked to climate change impacts, continues to be underprioritized. For every US\$ 100 spent on total development aid between 2010 and 2018, as little as 47 cents were allocated for DRR.⁵

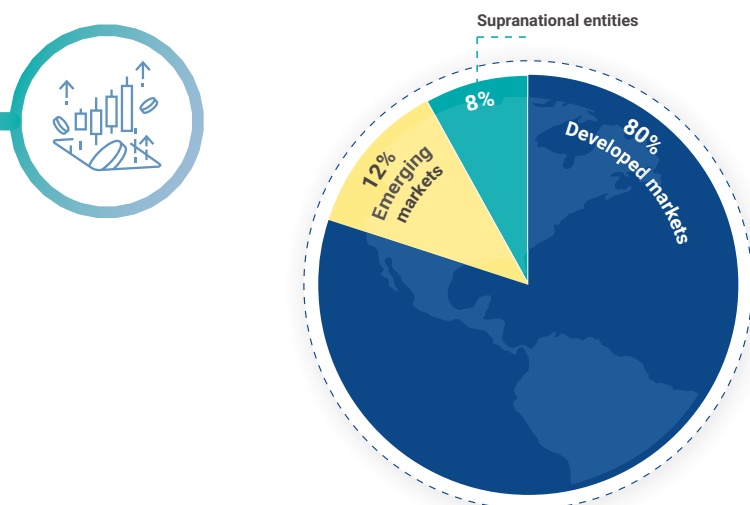
In 2021, the Climate Policy Initiative found that reported finance flows related to climate resilience (i.e. adaptation finance) were only US\$ 46 billion per year, out of total reported climate finance flows of US\$ 632 billion per year.⁶ **Almost all adaptation finance comes from the international public sector, including development finance institutions, while less than US\$ 1 billion comes from private finance sources.**

Meeting the financing needs of this scale through official development assistance flows, or even through government expenditures more broadly, will be extremely difficult, especially given the fiscal pressures that many governments are currently under, particularly in the developing world. Therefore, improving access to capital markets for meeting these financing needs must be prioritized.

The sustainable bonds market has evolved into a major vehicle for channelling finance from capital markets into sustainable activities. By the end of 2022, **more than US\$ 3.7 trillion of finance had been channelled through green, social, sustainability, sustainability-linked and transition bonds.** However, a February 2023 analysis carried out by the Market Intelligence Team of the Climate Bonds Initiative (Climate Bonds) found that only a modest proportion of these capital flows are currently targeting climate resilience.

Of the 33,849 green, social, sustainable, sustainability-linked and transition (GSS+) debt instruments recorded by Climate Bonds at the end of 2022, 6,494 (19 per cent) were identified as having some degree of climate resilience-related use of proceeds (UoP). As figure 1 shows, most (around 80 per cent) of these originated from developed markets, and smaller proportions from emerging markets and supranational entities (e.g. multilateral development banks).

FIGURE 1. Breakdown of GSS+ issuances with climate resilience UoP by market type



4 United Nations Environment Programme, *Adaptation Gap Report 2021: The gathering storm – Adapting to climate change in a post-pandemic world* (Nairobi, 2021).

5 UNDRR, *Global Assessment Report on Disaster Risk Reduction*, (Cairo, 2019).

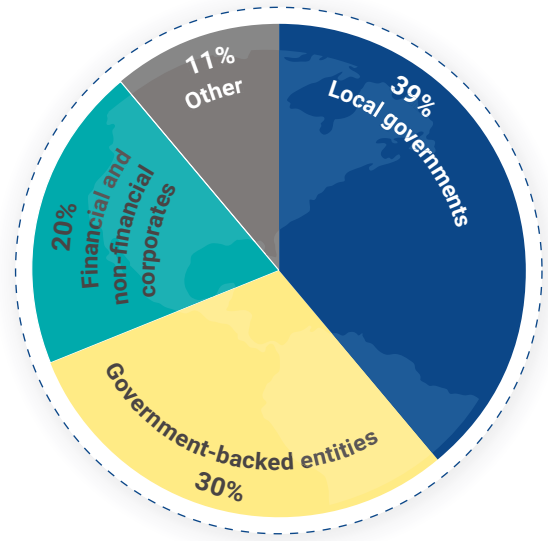
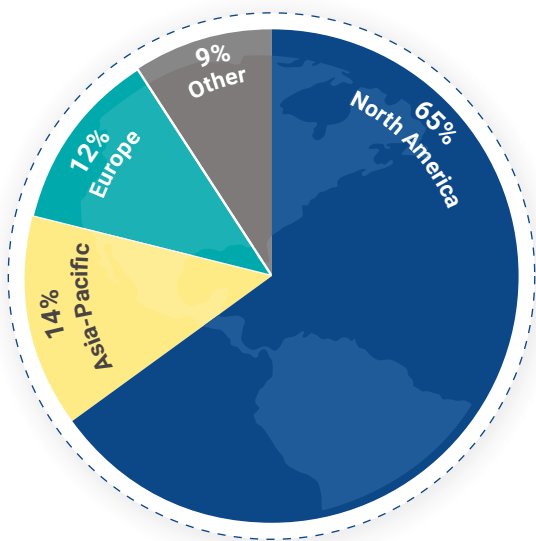
6 Barbara Buchner and others, *Global Landscape of Climate Finance 2021* (San Francisco, Climate Policy Initiative, 2021).

As **figure 2** shows, most of the developed market issuances originated in North America (almost entirely in the United States of America) with smaller proportions originating in the Asia-Pacific and Europe regions.

Figure 3 shows that most of these issuances originated from public sector entities (local governments and government-backed entities), while a lower proportion was issued by private sector entities (financial corporate and non-financial corporates). Of the 145 different local governments that issued thematic bonds with climate resilience-related UoP since 2012, a large portion were municipalities or state authorities of the United States.

FIGURE 2. Breakdown of developed market GSS+ issuances with climate resilience UoP by region

FIGURE 3. Breakdown of GSS+ issuances with climate resilience UoP by issuer type



C. PURPOSE OF THIS WHITE PAPER

The purpose of this white paper is to provide proposals, direction and scope on how to approach the development of the Framework based on literature review and leveraging Climate Bonds' expertise on taxonomy-based approaches for sustainable finance.

This white paper sets out proposals under each of the below topics:

- The context and rationale for the development of the Framework
 - Parameters for defining the eligibility of investments under the Framework:
 - The range of use cases for the Framework, i.e. the different types of investments that it is intended to screen.
 - An approach for defining whether an investment makes a Substantial Contribution (to climate resilience as a key starting point for defining eligibility under the Framework).
 - An approach that encompasses i) a white list of automatically eligible investments, ii) investments that require standardized checks to confirm eligibility and iii) investments that require further assessment against screening criteria in order to determine eligibility.⁷
 - Proposed thematic structure and priorities for the Framework:
 - A set of proposed climate resilience themes that set out the rationale for prioritizing investment that builds climate resilience across economies, societies and nature.
- An initial overview of how the Framework will be populated with eligibility definitions and screening criteria:
 - A partial example of how the Framework structure has been populated (see annex I), using one of the identified climate resilience themes as an illustrative example. These draw on an evidence base assembled through a comprehensive literature review of other taxonomies, classification systems and technical guidance that are relevant to climate resilience.

Building on this white paper, the Framework's finalization will be guided and informed by a range of stakeholders and partners who will consider the above topic and provide feedback.

This will include high-level consultation with funders of this work programme, including the United Nations Office for Disaster Risk Reduction (UNDRR), as well as expert guidance and advice from a **Resilience Technical Advisory Group (RTAG)**,⁸ which will play an important role in steering the Framework's development. In addition, Technical Working Groups (TWGs) may be established in due course to work on the detailed development of priority climate resilience themes.

The phasing of this work will be as follows:

- RTAG will review, use and build on the analysis and recommendations contained in this white paper to inform the development of the Framework
- TWGs will be established, composed of suitably qualified and experienced experts who will be tasked with advising on eligibility definitions and the development of specific screening criteria where needed

Throughout this work, the recommendations and approaches adopted by other relevant taxonomies, classification systems and other relevant technical guidance will be brought into the Framework when it is deemed that such approaches are compatible (including sufficiently ambitious) and technically sound.

⁷ The terms "white list", "standardized checks" and "further assessment" are **working definitions only** and may be revised and replaced as required, as part of the further development of the Framework.

⁸ See Annex II for the Terms of Reference for the RTAG.

D. EVIDENCE-BASED DEFINITION OF CLIMATE RESILIENCE

The development of the Framework is based on authoritative, evidence-based definitions of climate change impacts and of appropriate responses to those impacts. In particular, IPCC⁹ is the most prominent source of comprehensive, authoritative and extensively peer-reviewed evidence-based information on climate change as well as its impacts and corresponding responses. In the IPCC Sixth Assessment Report (AR6),¹⁰ resilience is defined as “the capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure”.¹¹ UNDRR provides another authoritative definition, which defines resilience as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management”.¹²

For the purposes of the Framework, a more streamlined definition of climate resilience is proposed: **“the capacity of economic, social or ecological assets or systems to resist, absorb, accommodate, adapt to, transform and recover from the current and projected impacts of climate change, both direct and indirect, maintaining their basic structure and function”**. Direct impacts refer to the exposure to physical climate hazards such as increasing heat stress or flood risk (including multi-hazard exposure), whereas indirect impacts refer to the effects of climate-driven changes in natural or human systems. This wording has the explicit intention of being clearer and more understandable for the kinds of market participants who are expected to use the Framework. Although IPCC does not use the terminology of direct and indirect impacts, its definitions have been used to define proxies as set out in **table 1**. *Direct impacts* are taken as the climate-impact drivers defined in the Working Group I contribution to AR6,¹³ and *indirect impacts* are taken as the “observed impacts of climate change on ecosystems and on human systems” defined in the Working Group II contribution to AR6.¹⁴



9 See: [IPCC – Intergovernmental Panel on Climate Change](#).

10 IPCC’s AR6 cycle is still under way. The final Synthesis Report is expected to be released by early 2023.

11 J.B. Mathews and others, “Annex VII: Glossary”, in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, V. Masson-Delmotte and others, eds. (Cambridge and New York, Cambridge University Press, 2021).

12 UNDRR, “Resilience”, undated.

13 Intergovernmental Panel on Climate Change, *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge and New York, Cambridge University Press, 2021).

14 Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability*.

TABLE 1. Standardized list of climate change impacts based on IPCC definitions

Direct/indirect	Category	Impacts
Direct	Heat and cold	Mean surface temperature; extreme heat; cold spell; frost
	Wet and dry	Mean precipitation; river flood; heavy precipitation and pluvial flood; landslide; aridity; hydrological drought; agricultural and ecological drought; fire weather
	Wind	Mean wind speed; severe windstorm; tropical cyclone; sand and dust storm
	Snow and ice	Snow, glacier and ice sheet; permafrost; lake, river and sea ice; heavy snowfall and ice storm; hail; snow avalanche
	Other	Air pollution weather; atmospheric CO ₂ at surface; radiation at surface
	Coastal	Relative sea level; coastal flood; coastal erosion; marine heatwave; ocean acidity
	Open ocean	Mean ocean temperature; marine heatwave; ocean acidity; dissolved oxygen
Indirect	Impacts on ecosystems	Changes in terrestrial ecosystem structure; changes in freshwater ecosystem structure; changes in ocean ecosystem structure; terrestrial species range shifts; freshwater species range shifts; ocean species range shifts; changes in terrestrial phenology; changes in freshwater phenology; changes in ocean phenology
	Impacts on human systems	Water scarcity; changes in agricultural crop production; animal and livestock health and productivity; fishery yields and aquaculture production; infectious diseases; heat, malnutrition and other health impacts; mental health; displacement; inland flooding and associated damages; flood-/storm-induced damage in coastal areas; damages to infrastructure; damages to key economic sectors

E. COMPLEMENTARITY WITH EXISTING GUIDANCE

The Framework will **draw on existing materials and guidance on climate resilience and green/sustainable bond markets**. This includes the Climate Bonds Climate Resilience Principles,¹⁵ which were launched in 2019 based on the work of an Adaptation and Resilience Expert Group convened by Climate Bonds. This sets out clear process guidance for integrating climate resilience principles into thematic bond issuances. It will also include guidance materials on green bonds and climate resilience released in 2021 by Climate Bonds and the Global Center on Adaptation, covering the “State of Play and Roadmap to Scale”¹⁶ and “A Guide for Issuers”,¹⁷ which also covered the status and challenges of finance for climate resilience.

The Framework will not duplicate the process guidance (i.e. for issuers) that is already set out in these materials but will instead complement them by translating them into a classification system with associated criteria. This Framework will also refer to and build on, as appropriate, other relevant sustainable finance taxonomies, such as the European Union (EU) Sustainable Finance Taxonomy (Adaptation), the ASAP Taxonomy, the United Kingdom Green Taxonomy, the United Nations Development Programme (UNDP) Sustainable Development Goals Finance Taxonomy, the UNDRR IIED DRR and Climate Change Adaptation Taxonomy for Public Budget Tagging and the Sendai Framework for Disaster Risk Reduction (see annex III for further details).

It is also intended that the Framework can be applied across a range of existing sustainable bond/sustainable finance labels, as set out in annex IV.

- 15 Climate Bonds, *Climate Resilience Principles – A framework for assessing climate resilience investments* (London, 2019).
- 16 Global Center on Adaptation, *Green Bonds for Climate Resilience – State of Play and Roadmap to Scale* (Rotterdam, 2021).
- 17 Global Center on Adaptation, *Green Bonds for Climate Resilience – A Guide for Issuers* (Rotterdam, 2021).



F. LITERATURE REVIEW OF RELEVANT MATERIAL

A comprehensive literature review was carried out as a key part of the development of this white paper. This covered a broad range of materials covering the climate science basis, the policy context for sustainability and climate action, existing definitions and taxonomies for sustainable finance including climate resilience/adaptation where available and an extensive range of sector-specific climate resilience guidance materials. These are summarized in annex V. The information obtained from these materials was foundational for confirming the basis for the Framework and ensuring that it was grounded in best practices in the field of sustainable finance and climate action. They were also instrumental in defining many of the potential

climate resilience investment types that are used for the initial population of the Framework (e.g. as done in annex I). **However, the literature review also revealed a paucity of information across the market on specific performance thresholds related to climate resilience in the context of investments.** Of all the materials reviewed, only a very small number provided specific information on such thresholds. This suggests that the work on setting such thresholds for climate resilience investments, as part of the further development of this Framework, is urgently needed and will make an important contribution towards advancing practical approaches for financing climate resilience.



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02

INVESTMENT ELIGIBILITY





This section of the white paper sets out the scope, definitions and categories of investments that are eligible under the Framework and which can therefore be included in bond issuances and other financial instruments on the grounds of climate resilience. This covers a broad range of investment types encompassing measures, assets, activities and entities. The section defines core criteria for determining investment eligibility in the form of i) Substantial Contribution to climate resilience ii) avoiding maladaptation and iii) avoiding significant harm to other sustainability objectives. These in turn are used to categorize investments in terms of how their eligibility should be assessed. Eligible investments may then be financed through a range of different financing instruments, such as bonds and loans, as set out in annex IV.

to create or enhance the climate resilience benefits of those assets and activities. The Framework also serves to **assess the overall operation of assets and activities, and ultimately the entities operating those assets and activities, to determine whether they sufficiently contribute to climate resilience outcomes at the asset/activity/entity level** and should thus be eligible for resilience-targeted financing. Therefore, in this white paper, the term “investment” encompasses investments in measures, assets, activities and entities, which are defined in table 2.

The eligibility criteria under the Framework are defined at the levels of **measures** and **activities**, as detailed in annex I and illustrated in **table 2**:

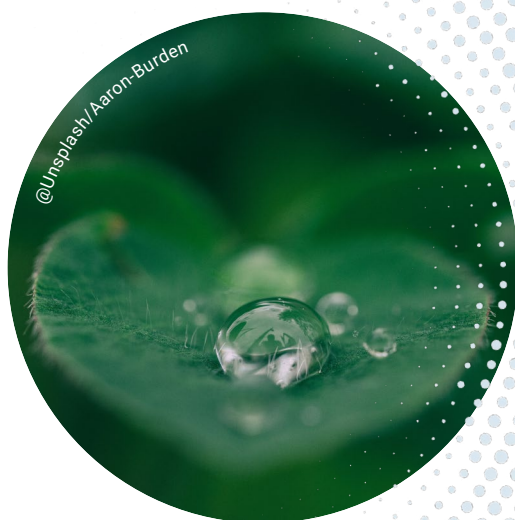
- **Assets** will often be the basis of activity level assessments, so activity-focused criteria will generally be expressed in a way that can be applied to the overall activity or to the key asset underpinning them.
- **Entities** may typically be evaluated based on the **activities** undertaken. This presents a challenge of establishing and meaningfully aggregating an appropriate climate resilience outcome across these activities while taking into account other **activities** of the entity that may have positive, neutral or negative impacts on climate resilience. **It may thus be necessary in future phases of this work to provide suitable guidance on how to apply the Framework criteria at the entity level.**¹⁸

A. FRAMEWORK SCOPE

Measures, assets, activities, entities

Table 2 outlines how the Framework is intended to apply to a variety of types of investments.

This broad scope allows the Framework to serve various functions at several scales. One of them is **enabling the financing of additional climate resilience measures, i.e. specific interventions within assets and activities,**



¹⁸ This may be covered in RTAG’s scope of work, drawing on the cross-sectoral criteria for entities already developed by Climate Bonds for the certification of corporate decarbonization transitions.

TABLE 2. Investment types within the Framework scope

Investment type	Definition	Examples	Uses of financing	Use cases
Measure	Specific intervention within an asset, activity or entity over a defined period of time that creates substantial additional resilience benefit or services by the asset/activity/entity the measure is undertaken within	The installation of new equipment within a production facility or the adoption of new technologies, practices or operational changes within said facility	Costs of the measure associated with contributing towards a climate resilience outcome that could include capital expenditures (CAPEX), operating expenditures (OPEX), subsidies, research & development (R&D), capacity-building, etc.	<ul style="list-style-type: none"> • Loans • UoP bonds • Other targeted debt
Asset	Specific physical asset, e.g. infrastructure, equipment or some other physical subcomponent of an entity's operations, that substantially contributes to climate resilience	A production facility, a farm, a desalination plant	Any cost associated with the asset if it is overall deemed to be contributing to climate resilience of the asset, which could include CAPEX, OPEX, subsidies, R&D, capacity-building, etc	<ul style="list-style-type: none"> • Loans • UoP bonds • Other targeted debt
Activity	An activity ¹⁹ delivering goods or services that substantially contribute to climate resilience	Production of crops, production of steel, wastewater management	Costs associated with contributing towards a climate resilience outcome which could include all the above (CAPEX, OPEX, etc.), and/or any costs associated with the activity if it as a whole contributes towards a climate resilience outcome	<ul style="list-style-type: none"> • Loans • UoP bonds • Other targeted debt • Sustainability-linked bonds
Entity	An entity practising activities and using its assets to deliver goods and services that substantially contribute to climate resilience	Business (i.e. a real economy or non-financial corporate), financial institution, subnational or subsovereign (e.g. municipality, city authority or state), a sovereign	Costs associated with contributing towards a climate resilience outcome by the entity which could include all of the above (e.g. CAPEX, OPEX, etc.), and/or any costs associated with the entity if it as a whole contributes towards a climate resilience outcome	<ul style="list-style-type: none"> • Sustainability-linked bonds • General purpose debt • Equity investment • Other

19 Please note that an economic activity may be economic/paid for or it may not. This is because an activity might not be profitable at the activity level given the system benefits that are not paid for.

Adapted and enabling investments

The scope of the Framework also encompasses adapted investments and enabling investments:

- **Adapted investments** integrate measures to reduce material physical climate risks to the asset, activity or entity that is the subject of the investment
- **Enabling investments** enable the climate resilience of other assets, activities or entities

Table 3 provides some illustrations of the different kinds of adapted and enabling investments that may fall within the scope of the Framework.

TABLE 3. Examples of the types of adapted and enabling investments that may be covered by the Framework

	Measures	Asset	Activity	Entity
Adapted	<ul style="list-style-type: none"> • Upgrading an irrigation system to improve efficiency and reduce water losses • Upgrading local health clinics so that they can remain open during extreme heat episodes 	<ul style="list-style-type: none"> • Acquiring a closed loop water cooling system for installation in a thermal power station to reduce water consumption • Installing passive ventilation systems in buildings to maintain healthy interior temperatures during extreme heat episodes 	<ul style="list-style-type: none"> • Agri-value chain (high-value perishable export crop) with cool logistics & storage • Telecoms services that ensure community connectivity even during extreme storms 	<ul style="list-style-type: none"> • Company with corporate water footprint targets to reduce overall water consumption by [X] % year-on-year • City authority with comprehensive flood mitigation scheme including nature-based solutions and evacuation centres for affected communities
Enabling	<ul style="list-style-type: none"> • Launching a new product line of weather forecasting equipment for small farmers • Integrating desalination equipment facilities into municipal water supplies to ensure service continuity during droughts 	<ul style="list-style-type: none"> • Setting up an additional weather monitoring station by a state meteorological agency that provides weather & climate information to farmers in a part of the country not previously covered • Constructing coastal defences to protect communities, businesses and infrastructure from increasing flood risk 	<ul style="list-style-type: none"> • Producing heat-tolerant road surfacing materials that enable road transport to become more resilient to extreme heat events • Launching new immunization services to protect populations from infectious diseases with wider vector coverage due to shifting temperature patterns 	<ul style="list-style-type: none"> • Company that manufactures smart agriculture equipment that minimizes water demand in crop production • State agency running a catastrophe risk pool mechanism that provides payouts to households affected by extreme weather events

The adapted/enabling dichotomy is central to the EU Sustainable Finance Taxonomy (Adaptation) that was set out in EU legislation in 2021. It is similar, though not identical, to the asset/system dichotomy set out in the Climate Bonds Climate Resilience Principles in 2019,²⁰ which define asset-focused and system-focused investments as follows:

- **Asset-focused investments:** are intended to maintain or enhance the climate resilience of an asset or activity to climate change, specifically to ensure that the asset's or activity's performance is fit for purpose over its design lifespan. In many cases, this will also contribute climate resilience benefits to the system of which the asset or activity is a part, depending on the type of product or service the asset or activity provides.
- **System-focused investments:** are intended to deliver climate resilience benefits to the broader system (i.e. going beyond merely ensuring an asset's or activity's performance over its design lifespan). To be effective, such an asset or activity will also need to have a sufficient degree of resilience to climate change.

As the EU Sustainable Finance Taxonomy (Adaptation) definitions are more recent and more widely recognized across the market, its terminology of adapted/enabling is used in this draft white paper. Nonetheless, in the context of this white paper, adapted investments may be taken as relating more to asset-focused investments, and enabling investments as relating more to system-focused investments.

B. DEFINITION OF ELIGIBLE INVESTMENTS

The Framework will provide a common framework for issuers, investors, market regulators, observers and policymakers to identify and/or develop measures, assets, activities and entities that make significant, consistent and verifiable contributions to climate resilience.

It will facilitate the strategic, top-down identification and prioritization of high-impact climate resilience investments leading to greater mobilization of investment for climate resilience. To achieve this, it is important to establish clear definitions and screening criteria for eligible investments under the Framework. This may involve evaluating existing eligibility definitions (as presented in other taxonomies, standards, tools, etc.) where possible and the development of new ones where necessary.

Key principle 1: Substantial Contribution to climate resilience

To be eligible under the Framework, investments must deliver meaningful (or substantial) contributions towards achieving climate resilience outcomes in response to relevant climate change impacts. This is important for ensuring that the Framework channels capital towards investments that build climate resilience at the required scale given the severity of projected climate change impacts. A starting point for defining the eligibility of an investment is to test whether it delivers a Substantial Contribution to climate resilience.



20 Climate Bonds, *Climate Resilience Principles – A framework for assessing climate resilience investments*.

Building on the EU guidance on Substantial Contributions to sustainability objectives,²¹ it can be said that a Substantial Contribution to climate resilience (or adaptation) may be delivered through:

- i. **directly responding to climate change impacts (direct or indirect)**, e.g. coastal defences in response to flood risks and immunization programmes in response to climate-driven infections
- ii. **reducing pressures that exacerbate and/or are exacerbated** by climate change impacts (direct or indirect), e.g. reducing water consumption in response to increasing water stress
- iii. **enabling either of the two previous types** (with relevance for enabling investments)

The EU Sustainable Finance Taxonomy Regulation²² defines a Substantial Contribution to adaptation as i) a substantial reduction of the risk of adverse current/future climate impacts or ii) a substantial reduction of those adverse impacts, both without increasing the risk of an adverse impact on people, nature or assets.²³

Substantial Contributions to climate resilience may be defined in quantitative, qualitative or process-based terms, including quantifiable thresholds, relative improvement, or they can be practice-based. In all cases the Substantial Contribution should be sufficiently ambitious in terms of the scale of the intended improvement (i.e. risk reduction, impact reduction or climate resilience dividend).

In practice, the definition of Substantial Contributions to climate resilience will reflect the diverse and context-specific nature of climate change impacts, of the affected sectors, subsectors and of the wide range of potentially appropriate climate resilience responses. These will have to be relevant and material for a given investment, corresponding to investment-specific climate change impacts. **Therefore, there are no one-size-fits all solutions for defining Substantial Contributions to climate resilience across different sectors, subsectors and investments.**

Setting quantitative thresholds (where appropriate) for Substantial Contributions to climate resilience will be a granular process that draws upon detailed technical expertise in specific sectors and subsectors, for example through the work of TWGs. For that reason, this paper does not attempt to set quantitative thresholds for Substantial Contributions to climate resilience except in cases where they have already been defined in credible external references (see annex I). One such example is a threshold of a 20 per cent reduction in water use against a defined baseline, which may be used in certain cases for Substantial Contributions to climate resilience that relate to water-use efficiency in a context of water scarcity.²⁴

In some cases, achieving a Substantial Contribution to climate resilience will be an iterative process that involves progressive improvements or pathways towards climate resilience. The Framework should create incentives for issuers to make progressive improvements in relation to climate resilience, while also creating entry points for a more ambitious, transformational approach. Therefore, if a Substantial Contribution to climate resilience is defined in incremental terms, then the issuer should also explain how this forms part of a more ambitious, transformational approach to building climate resilience.

For reasons of usability and practicality, the Framework itself does not consider context-specific exposure to climate change impacts or climate resilience needs as part of determining a Substantial Contribution to climate resilience. This is because the purpose of the Framework is to provide a reference or filter against which potential issuers can assess their investment pipeline and/or portfolios to determine the eligibility of investments for inclusion in climate resilience-focused issuances. It assumes that issuers will only have incentives to raise capital for building climate resilience in investments that they judge to be exposed to climate change impacts. The exposure of investments to climate change impacts and the corresponding needs of climate resilience financing should be determined by issuers using robust process-based guidance on climate change impacts assessment, which should accompany the use of the Framework.

21 These definitions draw upon guidance prepared by the European Commission in the context of the EU Sustainable Finance Taxonomy. European Commission, Joint Research Centre, *Substantial contribution to climate change mitigation – a framework to define technical screening criteria for the EU taxonomy* (Luxembourg, Publications Office of the European Union, 2021).

22 European Parliament and Council of the EU, “Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088”, *Official Journal of the European Union*, vol. 63 (June 2020).

23 These reductions (e.g. in the risk of adverse impacts) could, for example, be measured in the form of a resilience dividend or benefit, e.g. the number of people with access to extreme weather shelters.

24 For example, as defined in the International Finance Corporation’s Blue Finance Guidelines. See https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/resources/guidelines-for-blue-finance.

Key principle 2: Avoiding maladaptation and significant harm to sustainability objectives

In addition to making a Substantial Contribution to climate resilience, eligible investments under the Framework must also avoid contributing towards i) maladaptation and ii) significant harm to other sustainability objectives. This reflects the framework of Substantial Contribution and “do no significant harm” (DNSH) that is central to the EU Sustainable Finance Taxonomy.

IPCC defines maladaptation as “... actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future”.²⁵ **In the context of this Framework, maladaptation refers especially to adverse impacts on the climate vulnerability of other parties.** This is an important consideration in evaluating the overall climate resilience contribution of the investment, in that a Substantial Contribution towards the climate resilience of one party must not come at the cost of unacceptably increased climate vulnerabilities for others.

In the same way, a Substantial Contribution to climate resilience should not come at the cost of **significant harm** to other sustainability objectives, such as unacceptably high GHG emissions or unacceptable, severe environmental impacts (e.g. habitat destruction) or social impacts (e.g. increases in inequity).



In practice, the definition of eligible investments (including the use of screening where appropriate) may require balancing the potential for a Substantial Contribution to climate resilience with the possibility of maladaptation and/or significant harm to other sustainability objectives. Particularly to consider systemic risks, decisions of this kind may take into account the principle of “net resilience gain” as defined by UNDRR.²⁶ Net resilience gain proposes to assess the overall resilience gain or improvement at the system level even as there might be potential increased risks of the investment in specific entities.

C. ELIGIBILITY CATEGORIES

This white paper proposes three categories²⁷ of eligibility for investments under the Framework:

- **Automatically eligible:** a white list of investments that are automatically eligible under the Framework, requiring no additional assessment
- **Standardized checks:** investments that require standardized checks to confirm eligibility under the Framework
- **Further assessment:** investments that must meet specific screening criteria, through an investment level assessment, in order to be eligible under the Framework

²⁵ Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability*.

²⁶ UNDRR, “Net Resilience Gain’ concept proposed”, 5 November 2021.

²⁷ The terms “automatically eligible (whitelist)”, “standardized checks” and “further assessment” are **working definitions only** that may be revised and replaced as required, as part of the further development of the Framework.

Under each of these three categories, eligibility may be determined by assessing the alignment with robust and authoritative climate resilience assessment processes or standards, as a proxy approach. As Climate Bonds and its partners, including UNDRR, further develop the Framework, work will be carried out to evaluate several existing standards, processes, practices and tools for their alignment with the principles and approach of the Framework. If determined to be aligned, they will be included as pathways to demonstrating alignment with the Framework.



Automatically eligible (white list)

The further development of the Framework should aim, as far as possible and appropriate, to maximize the role and applicability of the white list, as this has the potential

to build momentum and traction for channelling capital flows towards investments that build climate resilience. This will be a priority for the RTAG and in turn the TWGs. However, climate change impacts are context specific, as are Substantial Contributions to intended climate resilience outcomes in response to those impacts.²⁸ This means that an important boundary around the use of the white list is the definition of when context can be disregarded so that investments are automatically included in the white list.

The proposed key tests for inclusion on the white list are that the investment (see **table 4**):

- makes a Substantial Contribution to climate resilience across a broad range of contexts
- does not have the potential for maladaptation in any context
- does no significant harm to other sustainability objectives in any context

TABLE 4. White list requirements

Test for inclusion in this category	Guidance for implementing the test	Development of recommendations	Proposed use
The investment makes a Substantial Contribution to climate resilience across a broad range of contexts	There must be sufficiently robust evidence demonstrating that the investment can deliver a Substantial Contribution to climate resilience regardless of the context	Some example interim recommendations are provided in annex I. These will be reviewed by the RTAG and updated/verified by TWGs in due course	These tests will be used in further Framework development for populating the white list
The investment does not have the potential for maladaptation in any context	There must be sufficiently robust evidence demonstrating that the investment entails no risk of unintended adverse outcomes that may increase the vulnerability to climate change of any potentially affected parties		
The investment does no significant harm to other sustainability objectives in any context	There must be sufficiently robust evidence demonstrating that the investment will not result in any significant increases in GHG emissions and presents no significant environmental or social risks to other parties		

28 See the proposed definition of Substantial Contributions to resilience (Section 2).



Standardized checks

Investments that do not pass the above tests for inclusion on the white list may be considered for the “standardized checks” category. Investments in this category make a Substantial Contribution to climate resilience across a broad range of contexts but may entail maladaptation and/or significant harm risks that need to be assessed and managed. The key tests for inclusion in this category are that the investment (see **table 5**):

- makes a Substantial Contribution to climate resilience across a broad range of contexts
- does not contribute towards maladaptation in the specific context
- does no significant harm to other sustainability objectives in the specific context

The standardized checks that will be carried out on these investments will typically cover three themes, depending on the investment:

- i. Ensuring that the equipment and/or materials used in the investment meet any specific technical specifications that are necessary for delivering the Substantial Contribution to climate resilience.
- ii. Ensuring that any environmental and/or social risks associated with the investment have been adequately addressed and managed so that, after considering the increased risks, the investment provides net resilience gains.
- iii. Ensuring that any increases in GHG emissions have been minimized to the extent possible.



TABLE 5. Standardized checks requirements

Test for inclusion in this category	Guidance for implementing the test	Development of recommendations	Proposed use
The investment makes a Substantial Contribution to climate resilience across a broad range of contexts	Robust evidence must demonstrate that the investment can deliver a Substantial Contribution to climate resilience regardless of the specific context	Annex I provides some example interim recommendations. These will be reviewed by the RTAG and updated/verified by TWGs in due course	<p>These tests will be used as part of further Framework development to identify investments that require standardized checks only.</p> <p>These standardized checks will focus on i) meeting technical specifications needed to deliver the Substantial Contribution to climate resilience, ii) managing environmental & social risks and iii) avoiding or minimizing any increases in GHG emissions</p>
The investment does not contribute to maladaptation in the specific context	A proportionate check must be carried out at the investment level to confirm that any maladaptation risks are readily assessable and manageable	Specific recommendations to be developed by the RTAG	
The investment does no significant harm to other sustainability objectives in the specific context	A proportionate check must be carried out at the investment level to confirm that any risks of significant harm to other sustainability objectives are readily assessable and manageable	Specific recommendations to be developed by the RTAG	



Further assessment

Investments that do not pass the tests for inclusion in the standardized checks category will fall into the further assessment category. These are investments that must be assessed against screening criteria in order to confirm eligibility. These screening criteria may be qualitative, quantitative or process-based, and will be developed by the TWGs using the guidance and definitions provided in this white paper (see **table 6**). The screening criteria will determine whether the investment:

- makes a Substantial Contribution to climate resilience in the specific context
- does not contribute towards maladaptation
- does no significant harm to other sustainability objectives
- does not contravene any relevant national or local climate resilience/adaptation plans and strategies

TABLE 6. Further assessment requirements

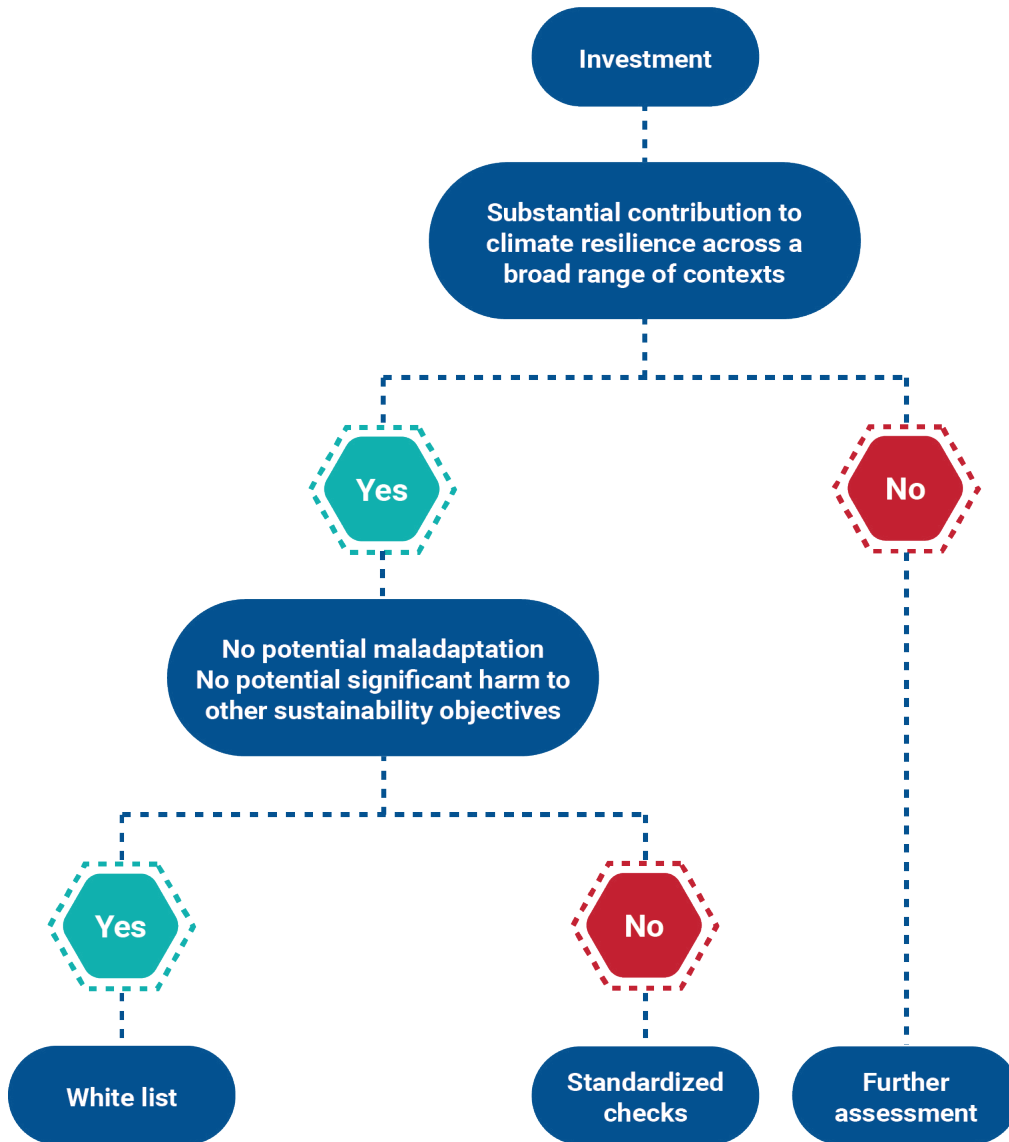
Test for inclusion in this category	Guidance for implementing the test	Development of recommendations	Proposed use
The investment makes a Substantial Contribution to climate resilience in the specific context	An investment-level assessment, taking into account the investment-specific context of climate change impacts, must demonstrate the intended Substantial Contribution to climate resilience (as defined in this White Paper) will be delivered by the investment	Screening criteria to be developed by the TWGs using guidance set out in the final white paper and provided by the RTAG	Screening criteria to be set out in Framework materials and used by issuers when structuring issuance, using the Climate Bonds Climate Resilience Principles as process guidance
The investment does not contribute towards maladaptation	An investment-level assessment, taking into account the investment-specific context of climate change impacts, must demonstrate that any potential unintended adverse outcomes on the climate vulnerability of other parties have been adequately assessed and addressed so that any such adverse outcomes are minimized. This may include the application of industry/sector best practices and guidance on climate resilience		
The investment does no significant harm to other sustainability objectives	An investment-level assessment must demonstrate that i) any potential significant increases in GHG emissions have been assessed and measures implemented to minimize them to non-significant levels; ii) any potential environmental/social risks have been assessed through an Environmental & Social Impact Assessment environmental/social audit or similar ²⁹ and any residual environmental/social risks have been managed through appropriate measures to guarantee net resilient gains at the system level		

29 These may be done in line with international practices such as the EU Environmental Impact Assessment (EIA) Directive, International Finance Corporation Performance Standards, and Equator Principles.



Figure 4 provides an overview of this process in a decision tree format that illustrates how different types of investments may fall into the above categories (i.e. white list, standardized checks and further assessment).

FIGURE 4. Decision tree outline of Framework eligibility



Proxies for determining eligibility under the Framework

Alternatively, the eligibility of investments under the Framework may be determined based on the alignment with approved robust and authoritative climate resilience assessment frameworks or standards. In some cases, it may be possible to use external, third-party certification to confirm alignment. Some examples of the kinds of external frameworks that may be used for this purpose include the following (this is a partial and non exhaustive list subject to review by an RTAG):



Principles for Resilient Infrastructure (infrastructure): The principles have been developed in consultation with over 100 countries with the support of UNDRR. They set an understanding of what resilient infrastructure constitutes, form the basis for the planning and implementation of infrastructure projects that take resilience as a core value, and assist the public and private sectors in making risk-informed policy and investment decisions.

SURE®

SURE Infrastructure Standard (infrastructure): a third-party-verified, global voluntary standard for integrating sustainability and resilience aspects into the development and upgrade of infrastructure.



Resilient Cities Network Tool (cities): a framework for assessing resilient infrastructure projects according to key criteria for social and racial equity, the creation of green jobs, and climate-readiness.



International Hydropower Association's Climate Resilience Guide (hydropower): a methodology for identifying, assessing and managing climate risks to enhance the climate resilience of hydropower projects.



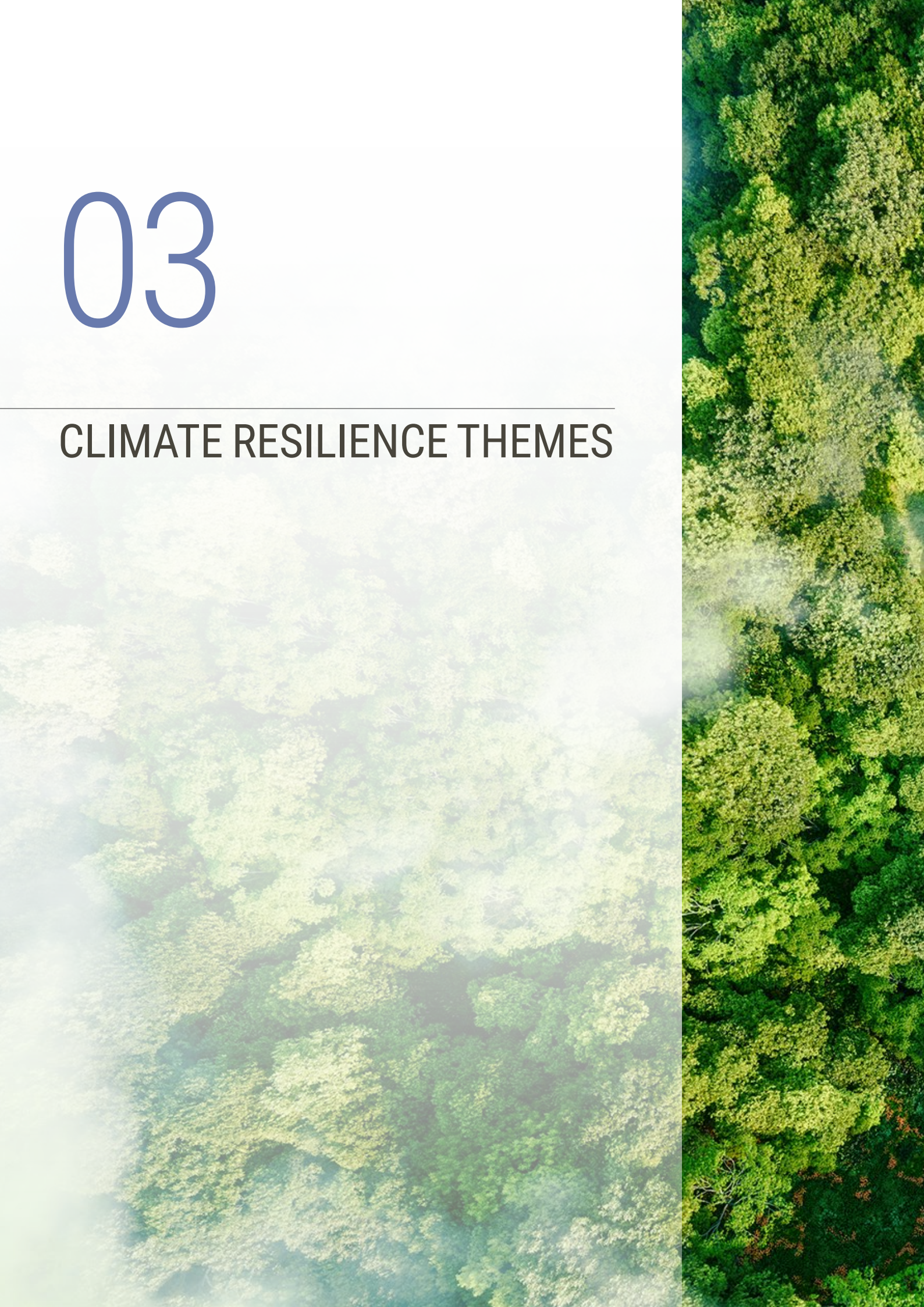
Community Development Finance Initiative's Resilience Assessment Tool (multisector): a tool for identifying, evaluating and financing projects that have high resilience potential to improve the systemic resilience of vulnerable communities.

The use of such proxies will be a critical strategy for the speed and scale of the Framework's impact. Evaluating a wide range of other guiding frameworks against the Framework creates potential for a large pipeline of eligible investments to be uncovered and identified as credible investments by investors.

The RTAG will develop a detailed process and criteria for evaluating proxies, and their alignment will be assessed by the TWGs.

03

CLIMATE RESILIENCE THEMES





This white paper proposes the Framework's structure be arranged around a set of **climate resilience themes** that establish the sectors and subsectors where investments in climate resilience are necessary.

This section details the climate resilience themes and provides the basis for the Framework's approach to qualifying specific investment types and establishing screening criteria to confirm eligibility.

The subsequent sections of this white paper elaborate on these concepts. Section 4 provides a more extensive overview of the proposed Framework structure.

In line with the evidence-based approach to the Framework's development, the identification of the climate resilience themes is based on detailed, **evidence-based analysis of relevant, authoritative information sources** including:

- AR6 analysis and recommendations on climate change impacts, vulnerabilities and adaptation priorities: this is a fundamental part of an evidence-based approach to identifying climate resilience priorities.

- Sustainable Development Goals (SDGs) and climate resilience priorities for ensuring progress towards SDG achievement in the face of climate change impacts: as SDGs provide an authoritative, widely recognized framework for pursuing sustainable development, the extent to which a climate resilience theme contributes to SDG achievement in the face of climate change impacts is important.
- The Sendai Framework for Disaster Risk Reduction 2015–2030 priorities for substantially reducing disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.
- Nationally determined contributions (NDCs) and country-level climate resilience priorities in response to projected climate change impacts: these provide important information on nationally owned climate resilience priorities, which should also be an important consideration in defining climate resilience themes.



Table 7 provides a summary of the analysis carried out on these information sources, with fuller details provided in annex VI.

TABLE 7. Summary of the climate resilience themes or priorities identified in the key information sources

United Nations Sustainable Development Solutions Network “Six Transformations”	UNDP SDG Finance Taxonomy	World Meteorological Organization (WMO) “Climate Indicators and Sustainable Development”	AR6 key impacts on natural and human systems
<ul style="list-style-type: none"> • Sustainable food, land, water and oceans • Sustainable cities and communities • Education, gender and inequality • Health, well-being, and demography • Energy decarbonization and sustainable industry • Digital revolution for sustainable development 	<ul style="list-style-type: none"> • Food security • Affordable housing • Health • Education, technology and culture • Financial services • Affordable basic infrastructure 	<ul style="list-style-type: none"> • Food security • Agricultural and fishing yields • Cultural heritage • Health • Livelihoods • Displacement • Conflict management • Soil & water • Tourism • Built infrastructure 	<ul style="list-style-type: none"> • Ecosystems • Food and water security • Human health • Urban settlements • Economic activity • Humanitarian crises
AR6 system transitions	Sharm-El-Sheikh Adaptation Agenda	2022 NDC Synthesis Report	Sendai Framework for Disaster Risk Reduction
<ul style="list-style-type: none"> • Land and ocean ecosystems • Urban and infrastructure systems • Energy systems • Cross-sectoral 	<ul style="list-style-type: none"> • Food security and agriculture systems • Water and nature systems • Human settlement systems • Ocean and coastal systems • Infrastructure systems 	<ul style="list-style-type: none"> • Food production and nutrition security • Urban areas and other human habitats • Human health • Livelihoods and poverty • Freshwater resources • Terrestrial and wetland ecosystems • Ocean ecosystems • Coastal and low-lying areas 	<ul style="list-style-type: none"> • Understanding disaster risk • Strengthening disaster risk governance to manage disaster risk • Investing in DRR for resilience • Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction

The high degree of commonality and agreement across the external sources presented in **table 7** leads to the identification of seven proposed climate resilience themes for the Framework. These are:



Resilient Agrifood Systems



Resilient Industry & Commerce



Resilient Cities



Resilient Nature & Biodiversity



Resilient Health



Resilient Societies



Resilient Infrastructure

Table 8 presents proposed high-level goals for investments in each of the Climate Resilience Themes. Annex I, which provides an illustrative breakdown of the Resilient Infrastructure theme, details the more specific sectors and subsectors within each climate resilience theme. These sectors and subsectors in turn have their own, more specific climate resilience outcomes. These climate resilience outcomes correspond to specific climate change impacts (see **table 1**) to which these investments may be exposed, for example i) wastewater treatment more resilient to flooding or ii) power generation more resilient to water stress.

TABLE 8. Proposed climate resilience themes

Theme	Scope	Climate resilience goal	Mapping against SDG/climate resilience priorities
Resilient Agrifood Systems	Systems for the production and provision of food and other related products, encompassing primary production, processing, logistics, storage, wholesaling and retail, including the capacities and knowledge of policymakers, service providers (public and private) and populations	To ensure that agrifood systems are resilient to the current and projected future impacts of climate change, so that the provision, availability and affordability of food and related products, and food security, are not adversely affected by such impacts, and that these benefits are extended to climate-vulnerable populations	<ul style="list-style-type: none"> • Sustainable Development Solutions Network: Sustainable food, land, water and oceans • UNDP: Food security • WMO: Food security • Sharm-El-Sheikh: Food security and agriculture systems • NDCs: Food production and nutrition security
Resilient Cities	Human settlements whether large (e.g. cities) or small (e.g. villages), urban or rural, encompassing buildings (residential, commercial & public), planning, development & management of urban areas and settlements, and cultural heritage ³⁰	To ensure that cities and other human settlements are resilient to the current and projected impacts of climate change, from the micro level (e.g. buildings) to the macro level (e.g. urban planning) so that the health, safety, security, livelihoods and economic potential of their inhabitants is not adversely affected by such impacts, and that these benefits are extended to climate-vulnerable populations	<ul style="list-style-type: none"> • Sustainable Development Solutions Network: Sustainable cities and communities • UNDP SDG: Affordable housing • WMO: Cultural heritage • AR6: Urban and infrastructure systems • Sharm-El-Sheikh: Human settlement systems • NDCs: Urban areas and other human habitats • Sendai Framework: Disaster risk governance at the city level, investment in disaster risk prevention/reduction at the city level including “build back better”

30 This does not include water/wastewater, transportation, ICT or electricity infrastructure, which are instead covered under Resilient Infrastructure.

<p>Resilient Health</p>	<p>Systems, facilities, services and capacities for protecting and improving human health and for pre-empting and responding to new health challenges and health-related emergencies, including the capacities and knowledge of policymakers, service providers (public and private) and populations</p>	<p>To ensure that the adverse impacts of climate change on human health are minimized to the extent possible, by ensuring that the provision of health-care services and facilities is resilient to current and future climate change impacts and able to respond to emerging human health priorities that are driven by climate change impacts issues,³¹ and that these benefits are extended to climate-vulnerable populations</p>	<ul style="list-style-type: none"> • Sustainable Development Solutions Network: Health, well-being and demography • UNDP SDG: Health • WMO: Health • NDCs: Human health • Sendai Framework: Health sector governance, investment and preparedness for disaster risk prevention, reduction and responses
<p>Resilient Industry & Commerce</p>	<p>Industrial and commercial operations encompassing extractive industries, manufacturing and service-based industries (e.g. professional services, financial services, tourism, leisure, etc.)</p>	<p>To ensure that industrial and commercial operations are resilient to the projected and future impacts of climate change so that their economic output, operational safety, affordability of products and services and the provision of employment are not adversely affected by such impacts</p>	<ul style="list-style-type: none"> • Sustainable Development Solutions Network: Energy decarbonization and sustainable industry • WMO: Tourism
<p>Resilient Infrastructure</p>	<p>Infrastructure that provides essential services on which populations and wider economic activity depend, e.g. water & wastewater, transportation, information & communication technology (ICT) and electricity</p>	<p>To ensure that the provision of essential infrastructure services (water/wastewater, transportation, ICT and electricity) is resilient to the current and future impacts of climate change, so that the reliability, safety, access and affordability of these services are not adversely affected by such impacts and that these benefits are extended to climate-vulnerable populations</p>	<ul style="list-style-type: none"> • UNDRR: Principles for Resilient Infrastructure • UNDP: Affordable basic infrastructure • WMO: Built infrastructure • AR6: Urban and infrastructure systems, energy systems • Sharm-El-Sheikh: Ocean and coastal systems, infrastructure systems • NDCs: Coastal & low-lying areas • Sendai Framework: Key role of infrastructure governance, investment and preparedness for disaster risk prevention, reduction and responses

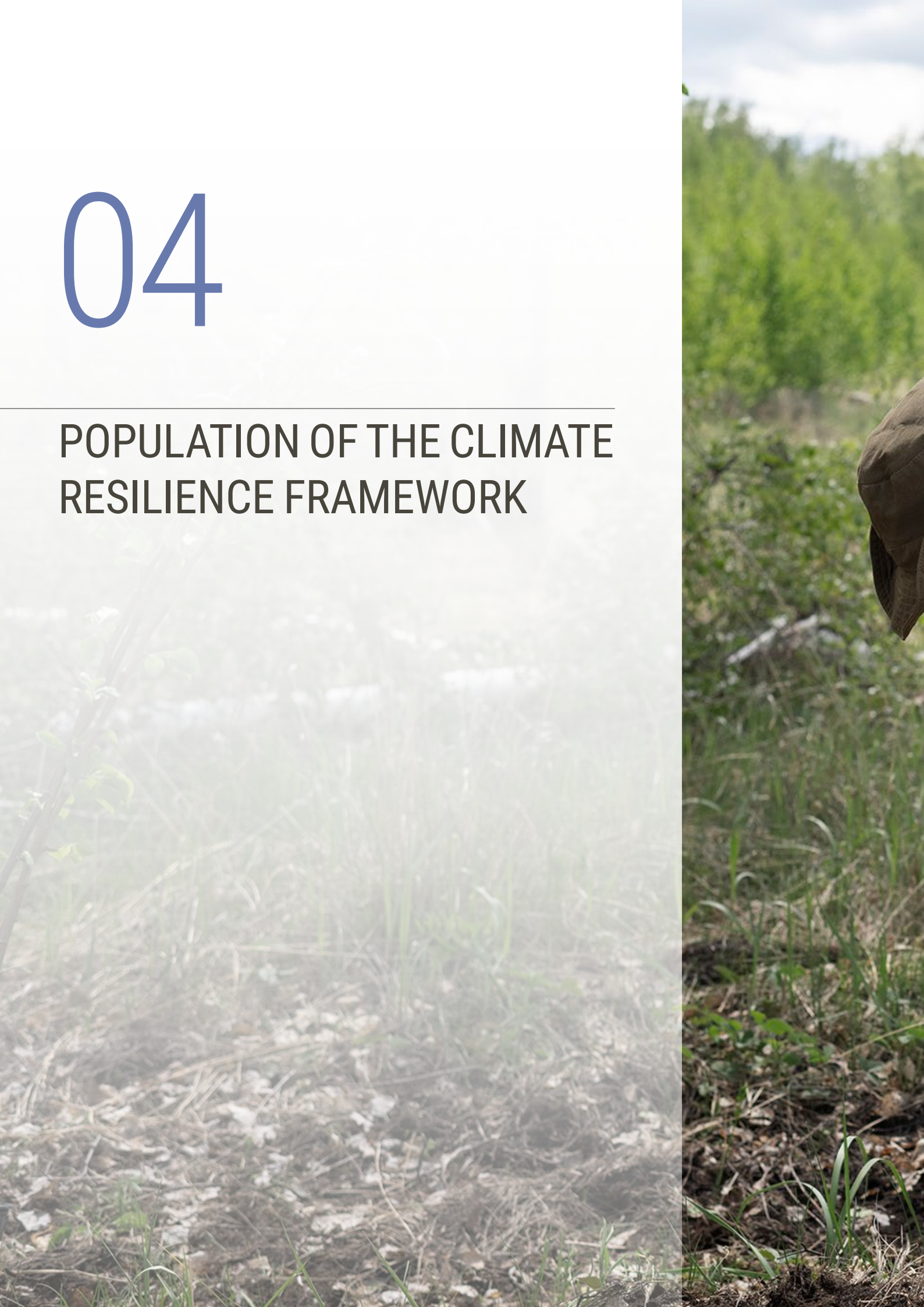
31 This may include, for example, i) making health facilities (e.g. hospitals and clinics) more resilient to climate change impacts such as floods or heatwaves, ii) introducing new or modified health services and treatments such as immunizations against diseases with altered vector ranges due to climate change, and iii) training and capacity development for health sector professionals so that a wider range of climate-informed health services can be provided. These definitions will be developed further through further Framework development.

<p>Resilient Nature & Biodiversity</p>	<p>Terrestrial, freshwater, coastal or marine ecosystems and the biodiversity they support and the natural capital and ecosystem services (e.g. freshwater provision, flood management, oxygen replenishment, etc.) that they provide</p>	<p>To ensure that natural ecosystems including their intrinsic biodiversity, natural capital, ecosystems services and cultural significance are not adversely affected by current or future climate change impacts</p>	<ul style="list-style-type: none"> • Sustainable Development Solutions Network: Sustainable food, land, water and oceans • WMO: Soil & water • IPCC AR6: Land and ocean ecosystems • Sharm-El-Sheikh: Water and nature systems, ocean and coastal systems • NDCs: Freshwater resources, terrestrial and wetland ecosystems, ocean ecosystems
<p>Resilient Societies</p>	<p>Systems and services for ensuring social well-being, safety and the creation/protection of social capital across populations, covering social protection, education, financial inclusion, digital inclusion, disaster risk (DRR and emergency services), and including the capacities and knowledge of policymakers, service providers (public and private) and populations</p>	<p>To strengthen systems and services for building societal resilience to current and projected future climate change impacts and to ensure that these systems and services are themselves climate resilient, so that populations, communities, households and individuals are better prepared for and able to cope with climate change impacts</p>	<ul style="list-style-type: none"> • Sustainable Development Solutions Network: Education, gender and inequality • UNDP SDG: Education, technology & culture, financial services • WMO: Livelihoods, displacement, conflict management • NDCs: Livelihoods and poverty • Sendai Framework: Public understanding and awareness of disaster risk, plus governance, investment and preparedness for disaster risk prevention, reduction and responses at the societal and community levels



04

POPULATION OF THE CLIMATE RESILIENCE FRAMEWORK







A. FRAMEWORK STRUCTURE AS SEEN BY EXTERNAL USERS

The proposed Framework will provide clear criteria for identifying and screening eligible investments, organized by sector and subsector under each climate resilience theme to make it easier for users operating in specific areas to navigate.

An example of this organizational structure can be seen in **table 9**, which uses a partial example from the Resilient Infrastructure theme’s water sector. Additionally, Climate Bonds intends to create an interactive online tool that allows end users to filter and search for investment activities and their corresponding requirements.

TABLE 9. Illustration of the finalized Framework structure as seen by external users – partial example of Resilience Infrastructure theme’s water sector

Sector	Subsector	Investment	Climate resilience outcome	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
Water	Flood management	Stormwater warning systems	Other sectors more resilient to flooding	n/a	n/a
	Water storage	Groundwater storage	Water supplies more resilient to water stress	Further assessment: • Resilience of other water users	Standardized checks: • Environmental and social (E&S) impacts
	Wastewater treatment	Construction/ expansion/ operation/ upgrade of wastewater treatment system	Wastewater treatment more resilient to flooding	Further assessment: • Flood risk mapping • Resilient to [x] year flood • Resilience of affected parties	Standardized checks: • E&S impacts



- **Transport infrastructure**, covering land-based transport (roads) and waterborne transport (maritime and riverine)
- **Energy infrastructure**, covering electricity generation (thermal, hydropower, wind power) and electricity transmission and distribution.

Annex I presents additional information that will inform the work of the RTAG and TWGs, but which will not appear in the finalized, external version of the Framework.

This includes information on the following:

- i) Whether each respective investment is an **“activity”** or a **“measure”** as outlined in section 2 of this white paper
- ii) Whether each respective investment is **“adapted”** or **“enabling”**
- iii) **The proposed interim eligibility category of each investment** (white list, standardized checks or further assessment) pending further recommendations by TWGs and based on:
 - whether the investment delivers the **Substantial Contribution to climate resilience across a broad range of contexts**
 - whether the investment has the **potential for maladaptation**
 - whether the investment has the **potential for significant harm to other sustainability objectives**
- iv) **The type of Substantial Contribution to climate resilience**, i.e. quantitative, qualitative or process-based, as explained in section 2 of this white paper
- v) Considerations to be taken into account by **TWGs** in the development of **screening criteria**
- vi) **External references** (where available) that substantiate the identification of the investment as a (potential) climate resilience investment

B. ADDITIONAL INFORMATION FOR TWGS AND RTAG

However, to inform further Framework development, it is necessary to provide additional information that will be required by TWGs. This is an internal process that will not feature in the external Framework materials as the one outlined above in **table 9**.

Annex I provides an illustration of how this may look, using the Resilient Infrastructure climate resilience theme as an example. As per **table 8**, the scope of Resilient Infrastructure is defined as infrastructure that provides essential services on which populations and wider economic activity depend, specifically covering the following sectors:³²

- **Water infrastructure**, covering water supplies, water storage, wastewater treatment and flood management
- **ICT infrastructure**, covering telecoms, broadband and other connectivity services

32 Investments in all these sectors can be enabling as well as adapted if it can be demonstrated that the investment is making a wider contribution towards systemic climate resilience, for example by building the climate resilience of other sectors/activities.

05

NEXT STEPS IN THE DEVELOPMENT OF THE CLIMATE RESILIENCE FRAMEWORK



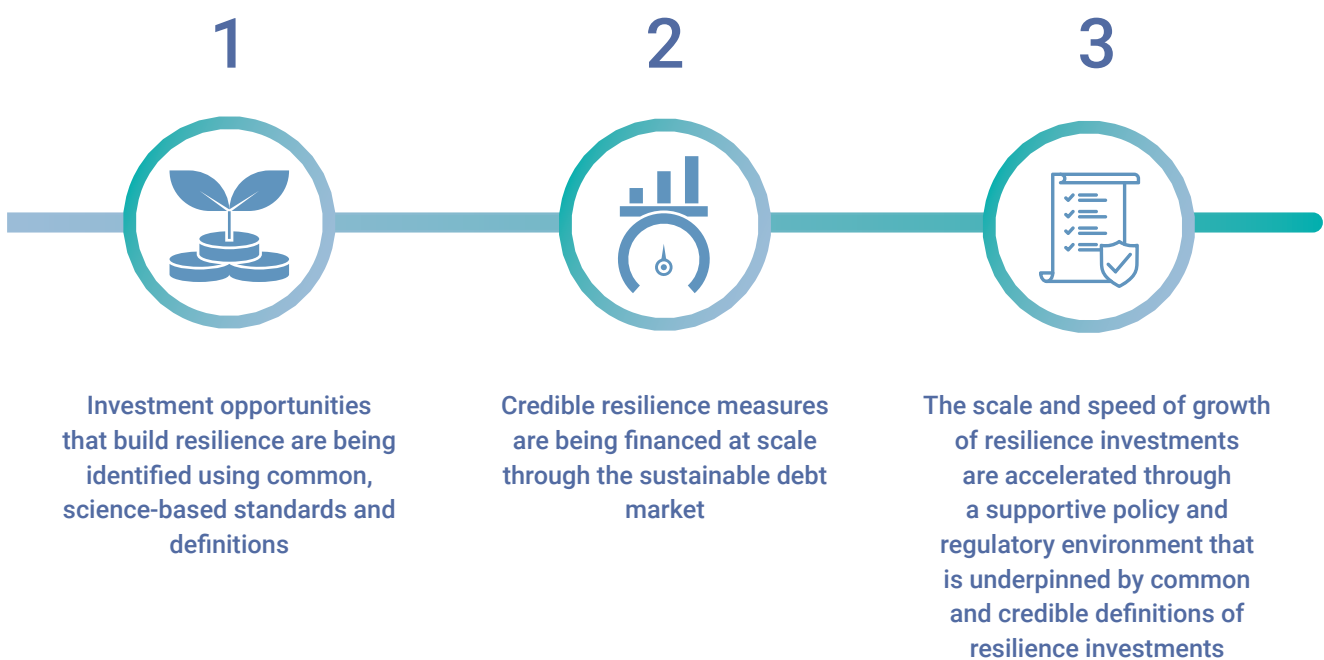


This section sets out some of the key steps in the further development of the Framework, focusing specifically on the role of the RTAG and the TWGs but also providing the context of the broader programme of work that Climate Bonds aims to implement with its partners, such as UNDRR, subject to funding and resources.

In line with UNDRR objectives, the Climate Bonds Global Resilience Programme aims to mobilize global capital for investments in climate resilience of physical, social,

ecological and financial systems. It will achieve this by catalysing **US\$ 1.5 trillion within the thematic bond market to flow towards resilience investments by 2025** and by influencing the public sector in key geographies to put in place policy and regulatory measures that incentivize investments that enhance systemic and transformative resilience.

The programme has three expected outcomes:



The implementation of the programme will be guided and informed by a range of stakeholders and collaborators who will be convened through several working groups.

Implementation will involve high-level consultation with this work programme's funders through a Resilience Programme Steering Group, including UNDRR, which will be established to guide the overall programme strategy and support its goals.

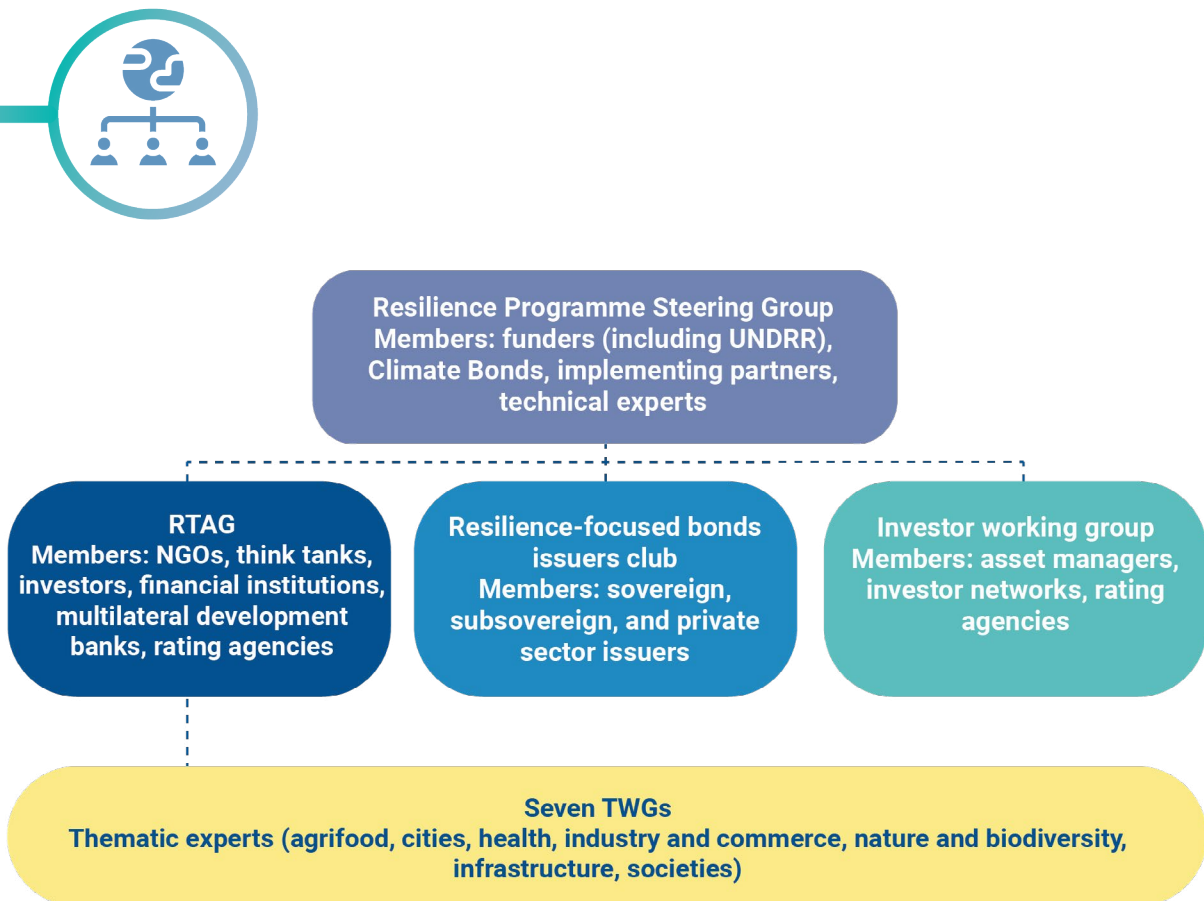
The RTAG will be convened to guide the next phase of development of the Framework by building on the foundation that this white paper has established. The

RTAG will be supported by the TWGs to work on the detailed development of specific priority resilience. TWGs will be focused on establishing eligibility criteria as well as looking at proxy pathways for establishing eligibility through existing tools, certification schemes, standards, etc.

In addition to these more technically focused groups, Climate Bonds intends to convene existing and potential issuers of thematic instruments to finance climate resilience-focused activities as well as an investor-focused group to ensure that the Framework is fit for purpose for investors.

The figure below depicts the envisioned structure for implementing the Climate Bonds Global Resilience Programme.

FIGURE 5. Global Resilience Programme working groups



A. PROPOSED ROLE OF THE RTAG

The RTAG will play an important role in reviewing the recommendations for the Framework set out in this white paper and in providing strategic advice on the further development of the Framework. The RTAG will also review the concepts and terms used throughout this white paper and any subsequent related work to ensure that the concepts and terminology used are understandable and appropriate for the intended audiences and users. This will also include considering how the Framework sits in relation to other relevant frameworks such as the EU Sustainable Finance Taxonomy (Adaptation) and others, including the justification for any divergences. It is anticipated that the RTAG will advise on the following specific issues. The terms of reference for the RTAG are included in annex II.

Prioritization of climate resilience themes

The RTAG will advise on the prioritization of the climate resilience themes for further development by TWGs. This should reflect the greatest and most urgent needs for advancing the development of the Framework and for scaling up capital flows for climate resilience. This prioritization should be clear, understandable to the market, reflect market interest (i.e. investors, issuers and other users of the Framework), and identify where

the mobilization of capital flows will result in clear benefits in terms of building climate resilience. Key considerations in this prioritization process will include:

- i) Urgency/importance – How urgent are the climate vulnerabilities that affect each climate resilience theme, and how pressing is the corresponding case for building climate resilience?
- ii) Markets/capital flows – What is the current state of play concerning capital market engagement and capital flows across each climate resilience theme? Are capital markets already aware/engaged, or is such activity still nascent?
- iii) Opportunities – What are the opportunities for market engagement and action across each climate resilience theme? Are there existing channels and instruments that could be leveraged to scale up climate resilience financing?
- iv) Political interest – What kind of political interest and/or imperative is there for each climate resilience theme? Which themes are of interest/urgency for governments and policymakers?

Table 10 sets out a comparison table in which these considerations are briefly explored for each of the proposed climate resilience themes. This information may be useful to the RTAG in forming recommendations on the prioritization of climate resilience themes and on their sequencing in further Framework development including TWGs.



TABLE 10. Initial comparison table for the prioritization of the climate resilience themes

Climate resilience theme	Urgency	Markets/capital flows ³³	Opportunities	Political
Resilient Agrifood Systems	Climate change impacts on food production and food security are pressing concerns, with impacts already being felt in many parts of the world	Some capital flows through green/sustainable bonds, although presumably not mainly for climate resilience – US\$ 99 billion for “land use” (2006–2022). Some evidence of increasing flows through sustainability-linked instruments such as sustainability-linked loans	Agrifood is a fertile area for public and private investment, including through i) government initiatives to boost food production and food security and ii) private agribusiness firms wishing to secure their supply chains. Sovereign and corporate bond issuances may be of interest here	Safeguarding food security against climate change impacts is a priority for many governments worldwide, e.g. where climate-driven spikes in agricultural commodity prices have significant political implications (e.g. wheat prices in Egypt)
Resilient Cities	Urban climate resilience is an urgent priority in many parts of the world, especially in relation to climate change impacts such as worsening flooding and extreme heat	Significant capital flows through green/sustainable bonds, although presumably not mainly for climate resilience – US\$ 590 billion for “buildings” (2006–2022)	Financing urban development and infrastructure is a major financing theme, e.g. the municipal bonds market including green and other sustainable bonds issued by municipalities	As urban populations continue to grow, urban climate resilience is moving higher up the political agenda
Resilient Health	Climate change impacts on human health are urgent priorities in various parts of the world, e.g. extreme heat in the South-West United States, new disease vectors in Southern Europe	No information on capital flows through green/sustainable bonds. However, in the wake of the COVID-19 pandemic, governments and international financial institutions are exploring innovative financial mechanisms for the health sector including pandemic bonds, ³⁴ for example	Social bond issuances are expanding rapidly and offer significant opportunities for raising capital for health-related investment. Sovereign issuances are likely to be of the greatest relevance	The COVID-19 pandemic has put human health and health-care provision in the spotlight like never before. Health is now a high political priority in countries around the world
Resilient Industry & Commerce	Climate change impacts are a concern in a number of industrial sectors, e.g. water use in mining	Some capital flows through green/sustainable bonds, although presumably not mainly for climate resilience – US\$ 16.4 billion for “industry” (2006–2022)	Corporate issuances are most likely to be relevant, i.e. corporates in exposed sectors/locations raising capital to build climate resilience	This is a priority in several specific sectors, but perhaps not at the political level

33 Information about green/sustainable bond UoP was provided by the Climate Bonds Market Intelligence Team

34 World Bank, “The Pandemic Fund announces first round of funding to help countries build resilience to future pandemics”, 3 February 2023.

<p>Resilient Infrastructure</p>	<p>The urgency around climate-resilient infrastructure is driven by i) rapid infrastructure growth in climate-vulnerable emerging markets and ii) ageing infrastructure stocks in many countries around the world</p>	<p>Very significant capital flows through green/sustainable bonds, although presumably not mainly for climate resilience – US\$ 1,320 billion for “energy”, “transport” “water” and “ICT” (2006–2022)</p>	<p>Most likely to be dominated by subsovereign issuances, e.g. water utilities or power utilities, or by sovereigns for broader issuances that include infrastructure</p>	<p>Infrastructure is always a topic that commands political interest, especially as awareness of climate change impacts (e.g. extreme weather events) on critical infrastructure continues to grow</p>
<p>Resilient Nature & Biodiversity</p>	<p>Biodiversity loss and habitat loss is accelerating at an unprecedented rate, in many cases exacerbated by climate change impacts</p>	<p>No information on capital flows through green/sustainable bonds</p>	<p>The growing focus on nature is bringing forward new opportunities for financing nature-related investments, e.g. blue bonds & sustainability-linked bonds with nature-related objectives</p>	<p>Nature has become a prominent sustainability theme over recent years (e.g. 2022 UN Biodiversity Conference) which has resulted in growing international political attention</p>
<p>Resilient Societies</p>	<p>Awareness is growing about the wider societal impacts of climate change, for instance climate-driven displacement and migration</p>	<p>No information on capital flows through green/sustainable bonds</p>	<p>Social bonds issuances are expanding rapidly, and offer significant opportunities for raising capital for a range of socially-oriented activities including education, social protection, etc. Sovereign issuances may be of most relevance</p>	<p>Potentially a more nascent topic in terms of political prioritization, although some related topics such as migration are of significant political interest</p>

Classification methodology and screening criteria

The RTAG will review, substantiate and provide guidance on the methodological approach for classifying activities, eligibility parameters and screening criteria as set out in the white paper. This includes, but is not limited to, defining Substantial Contributions, defining the DNSH approach to categorizing resilience interventions and providing guidance on detailed screening criteria for complex interventions to be proposed to the TWGs.

Populating the climate resilience framework

The RTAG will support in populating each climate resilience theme with the sectors, subsectors, investment types and climate resilience outcomes. The RTAG will deliberate on which classification category the investments will fall under (i.e. white list, standardized checks or further assessment). The areas where further technical work is required at a sectoral or thematic level will be identified and referred to the TWGs to further

develop. The composition, frequency of meetings, and modalities will be different for the TWGs, but the RTAG will serve as a forum to ensure that appropriate linkages are created between the relevant TWGs.

Inputs to the TWGs

The RTAG may also guide the identification of suitable experts for the TWGs as well as identify additional source materials that may be relevant and useful for the work of the TWGs in developing and refining eligibility definitions and screening criteria. Potentially, the RTAG could also play a role in overseeing, guiding and approving the outputs of the TWGs.

B. PROPOSED ROLE OF THE TWGS

The TWGs will play a vital role in verifying and developing the detailed eligibility definitions and screening criteria that are proposed in this white paper. TWGs will be formed to work on specific climate resilience themes, and/or sectors within those themes, the prioritization of which will be decided by the RTAG as outlined above. Specifically, this work will entail reviewing the literature review results as summarized in annex I (Resilient Infrastructure) and forthcoming similar tables that will cover the other climate resilience themes. This will be done to endorse, improve or add to the interim screening criteria contained therein, in line with the recommendations of this white paper and any forthcoming additional recommendations from the RTAG. This will entail reviewing the proposed white list investments and reviewing and completing as required all screening criteria for those investments not on the white list.



06

ANNEXES



ANNEX I: CLIMATE RESILIENCE FRAMEWORK PROPOSED STRUCTURE: ILLUSTRATION USING THE RESILIENT INFRASTRUCTURE THEME

KEY:
 - Blue shading = internal information for the Framework's development only
 - Black text = activity; grey text = measure

Does the investment make a significant contribution across a broad range of contexts (not so much context-specific)

Does the investment create a risk of maladaptation?

Can the investment create significant harm to other objectives?

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts
ICT infrastructure	ICT networks	Construction/ expansion/ operation/upgrade of ICT networks	Activity	Adapted	ICT services more resilient to storm damage	Y
				Enabling	ICT services more resilient to flooding	N
				Enabling	Access to connectivity services more resilient to storm disruption	Y

Investment for which the significant contribution is context-specific requires "further assessment"

Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people connected to storm-resilient connectivity services 	Standardized checks: <ul style="list-style-type: none"> E&S impacts

Investment for which the significant contribution is context-specific requires "further assessment"

Those investments that have potential of significant harm need to undergo "standardized check"

Sector	Subsector	Investment	Level	Adapted/enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
ICT infrastructure	ICT networks	Construction/expansion/operation/upgrade of ICT networks	Activity	Adapted	ICT services more resilient to storm damage	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
					ICT services more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
				Enabling ³⁵	Access to connectivity services more resilient to storm disruption	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people connected to storm-resilient connectivity services 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
				Access to connectivity services more resilient to flood disruption	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping [x] people connected to flood-resilient connectivity services 	Standardized checks: <ul style="list-style-type: none"> E&S impacts 	
		Mechanical strengthening of telecommunications lines	Measure	Adapted	ICT services more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: white list 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	n/a
					ICT services more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a

35 Enabling activities must meet the criteria for corresponding adapted activities in the row above plus the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts
		Wireless segments in vulnerable locations	Measure	Adapted	ICT services more resilient to storm damage	Y
		Vegetation management around transmission/ distribution lines	Measure	Adapted	ICT services more resilient to storm damage	Y
		Redundancy and backup	Measure	Adapted	ICT services more resilient to storm damage	Y
		Flood defences in data centres, substations etc.	Measure	Adapted	ICT services more resilient to flooding	N
		Relocation of data centres, substations, etc.	Measure	Adapted	ICT services more resilient to flooding	N
		Minimization of backbone dependency	Measure	Adapted	ICT services more resilient to extreme weather events	Y
		Off-grid energy use, e.g. renewables, generators, batteries	Measure	Adapted	ICT services more resilient to extreme weather events	Y
		Structural strengthening of ICT buildings, data centres, etc.	Measure	Adapted	ICT services more resilient to extreme weather events	Y

Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a
N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
N	Y	<ul style="list-style-type: none"> Resilience: white list Standardized checks: GHG emissions 	Qualitative	n/a	Standardized checks: <ul style="list-style-type: none"> GHG emissions
N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a

Sector	Subsector	Investment	Level	Adapted/enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
Transport infrastructure		Redundancy and backup	Measure	Adapted	ICT services more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Virtualization	Measure	Adapted	ICT services more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
	Ports	Construction/expansion/operation/upgrade of port facilities	Activity	Adapted	Port operations more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
				Enabling ³⁶	Waterborne mobility and trade more resilient to flood disruption	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	<ul style="list-style-type: none"> [x] people or businesses benefiting from flood-resilient waterborne mobility/trade 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Reinforcement of key structures	Measure	Adapted	Port operations more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	n/a
		Relocation/raising of key equipment	Measure	Adapted	Port operations more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	n/a
		Heightening quayside structures	Measure	Adapted	Port operations more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	n/a
		Breakwaters	Measure	Adapted	Port operations more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	n/a
		Drainage	Measure	Adapted	Port operations more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	n/a

36 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
		Backup for critical systems	Measure	Adapted	Port operations more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Redundancy and additional storage	Measure	Adapted	Port operations more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Flood monitoring and warning systems	Measure	Adapted	Port operations more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Emergency response capabilities	Measure	Adapted	Port operations more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Land-use buffers inc. nature-based solutions	Measure	Adapted	Port operations more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
	Roads	Construction/ expansion/ operation/ upgrade of roads	Activity	Adapted	Road transportation more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
					Road transportation more resilient to extreme heat	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: materials must tolerate [x] degrees Celsius 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
				Enabling ³⁷	Land-based mobility and trade more resilient to flood disruption	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x] people or businesses benefiting from flood-resilient mobility/trade 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts

37 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
					Land-based mobility and trade more resilient to extreme heat	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people or businesses benefiting from extreme heat resilient transport networks 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
		Road flood defences	Measure	Adapted	Road transportation more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a
		Road/bridge height adjustment	Measure	Adapted	Road transportation more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a
		Route adjustment	Measure	Adapted	Road transportation more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Stormwater drainage	Measure	Adapted	Road transportation more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a
		Flood pathway	Measure	Adapted	Road transportation more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Vegetation plans/nature-based solutions	Measure	Adapted	Road transportation more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
Water infrastructure		Heat resistant road surfacing	Measure	Adapted	Road transportation more resilient to extreme heat	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: materials must tolerate [x] degrees Celsius 	n/a
		Localized power sources	Measure	Adapted	Road transportation more resilient to extreme weather events	Y	N	Y	<ul style="list-style-type: none"> Resilience: white list Significant harm: standardized checks 	Qualitative	n/a	Standardized checks: <ul style="list-style-type: none"> GHG emissions
		Redundancy and contingency inc. alternative routes	Measure	Adapted	Road transportation more resilient to extreme weather events	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Relocation of road assets	Measure	Adapted	Road transportation more resilient to extreme weather events	N	Y	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Road/traffic monitoring and warning systems	Measure	Adapted	Road transportation more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Desalination	Construction/ expansion/ operation/upgrade of desalination facilities	Activity	Enabling	Access to water more resilient to water stress	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Qualitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people connected to additional clean water supply

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
	Flood management	Construction/ expansion/ operation/ upgrade of flood management systems	Activity	Enabling	Other sectors more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assistance: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Increased flood drainage capacity	Measure	Adapted	Other sectors more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of affected parties 	n/a
		Overflow reservoirs	Measure	Adapted	Other sectors more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Infiltration ponds	Measure	Adapted	Other sectors more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of affected parties 	n/a
		Flood monitoring and warning systems	Measure	Adapted	Other sectors more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Levees	Measure	Adapted	Other sectors more resilient to flooding	Y	Y	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of affected parties 	n/a
		Floodgates	Measure	Adapted	Other sectors more resilient to flooding	Y	Y	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of affected parties 	n/a
		Sand dams	Measure	Adapted	Other sectors more resilient to flooding	Y	Y	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of affected parties 	n/a

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
		Surge barriers	Measure	Adapted	Other sectors more resilient to flooding	Y	Y	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of affected parties 	n/a
		Pumps	Measure	Adapted	Other sectors more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
	Wastewater treatment	Construction/ expansion/ operation/ upgrade of wastewater treatment systems	Activity	Adapted	Wastewater treatment more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilience of affected parties Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
			Activity	Enabling ³⁸	Access to sanitation more resilient to flood disruption	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Ensure [x] people with access to flood-resilient sanitation services Resilience of affected parties 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Stormwater separation	Measure	Adapted	Wastewater treatment more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
	Water storage	Rainwater harvesting	Measure	Adapted	Water supplies more resilient to water stress	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Groundwater storage	Measure	Adapted	Water supplies more resilient to water stress	Y	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Qualitative	Further assessment: <ul style="list-style-type: none"> Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
	Water supply ³⁹	Construction/ expansion/ operation/ upgrade of water supply systems	Activity	Adapted	Water supplies more resilient to water stress	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: 	Quantitative	Further assessment: <ul style="list-style-type: none"> [20%] reduction in water consumption 	Standardized checks: <ul style="list-style-type: none"> E&S impacts

38 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.
 39 i.e. water abstraction, conveyance, treatment and distribution.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
				Enabling ⁴⁰	Access to water more resilient to water stress	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x] people with water stress resilient access to water Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Water metering	Measure	Adapted	Water supplies more resilient to water stress	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Water resource monitoring equipment	Measure	Adapted	Water supplies more resilient to water stress	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Leak detection equipment	Measure	Adapted	Water supplies more resilient to water stress	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Automated water control systems	Measure	Adapted	Water supplies more resilient to water stress	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
Energy infrastructure	Hydropower	Construction/ expansion/ operation/upgrade of hydropower plants	Activity	Adapted	Hydropower generation more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
					Hydropower generation more resilient to water stress	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x%] reduction in minimum flow Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts

40 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
				Enabling ⁴¹	Access to electricity more resilient to flood disruption	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> At least [x] people with access to flood-resilient electricity 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
					Access to electricity more resilient to water stress	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> At least [x] people with access to water stress resilient electricity 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Adjusted reservoir capacity	Measure	Adapted	Hydropower generation more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
					Hydropower generation more resilient to water stress	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x%] increase in reservoir capacity Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Adjusted spillway capacity	Measure	Adapted	Hydropower generation more resilient to flooding	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood Resilience of other water users 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Adjusted turbine capacity	Measure	Adapted	Hydropower generation more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Resilient to [x] year flood 	n/a
					Hydropower generation more resilient to water stress	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x%] reduction in minimum flow threshold 	n/a
		Monitoring, forecasting and modelling systems	Measure	Adapted	Hydropower generation more resilient to flooding	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a

41 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
					Hydropower generation more resilient to water stress	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
	Wind power	Construction/ expansion/ operation/upgrade of wind power facilities	Activity	Adapted	Wind power generation more resilient to storm damage	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
					Wind power generation more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
				Enabling ⁴²	Access to electricity more resilient to storm disruption	Y	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> At least [x] people connected to storm-resilient electricity supply 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
					Access to electricity more resilient to flood disruption	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> At least [x] people connected to resilient, reliable electricity supply 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
		Shorter blade design	Measures	Adapted	Wind power generation more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: white list 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	n/a
		Mechanical strengthening of towers	Measures	Adapted	Wind power generation more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: white list 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	n/a
		Relocation of wind power facilities	Measures	Adapted	Wind power generation more resilient to storm damage	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Avoided exposure to wind speeds exceeding [x] km/h 	Standardized checks: <ul style="list-style-type: none"> E&S impacts

42 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
		Wind power facility flood defences	Measures	Adapted	Wind power generation more resilient to flood damage	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
	Thermal power	Construction/ expansion/operation/ upgrade of [low-carbon] thermal power plants	Activity	Adapted	Thermal power generation more resilient to extreme heat	Y	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must maintain [x%] efficiency above [y] degrees Celsius 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
					Thermal power generation more resilient to water stress	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve [x%] reduction in water consumption 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
				Enabling ⁴³	Access to electricity more resilient to extreme heat	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people connected to extreme heat resilient electricity supply 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
					Access to electricity more resilient to water stress	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people connected to water stress resilient electricity supply 	Standardized checks: <ul style="list-style-type: none"> GHG emissions E&S impacts
		Resized cooling units	Measure	Adapted	Thermal power generation more resilient to extreme heat	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must maintain [x%] efficiency above [y] degrees Celsius 	Standardized checks: <ul style="list-style-type: none"> GHG emissions
		Dry cooling systems	Measure	Adapted	Thermal power generation more resilient to water stress	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve [x%] reduction in water consumption 	Standardized checks: <ul style="list-style-type: none"> GHG emissions

43 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm	
	Power generation	Construction/ expansion/ operation/upgrade of power plants	Activity	Adapted	Power generation more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> GHG emissions 	
				Enabling ⁴⁴	Access to electricity more resilient to flood disruption	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x] people connected to flood-resilient electricity supply 	Standardized checks: <ul style="list-style-type: none"> GHG emissions 	
			Relocation of power plant facilities	Measure	Adapted	Power generation more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> GHG emissions
			Power plant flood defences	Measure	Adapted	Power generation more resilient to flooding	N	N	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a
			Weather/energy use monitoring, forecasting and modelling systems	Measure	Adapted	Power generation more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
			Safety and emergency systems in power stations	Measure	Adapted	Power generation more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Power transmission and distribution	Construction/ expansion/ operation/upgrade of power transmission and distribution systems	Activity	Adapted	Power transmission and distribution more resilient to storm damage	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speeds up to [x] km/h 	Standardized checks: <ul style="list-style-type: none"> E&S impacts
						Power transmission and distribution more resilient to flooding	N	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	Standardized checks: <ul style="list-style-type: none"> E&S impacts

44 Enabling activities must meet the criteria for corresponding adapted activities in the row above plus the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm	
				Enabling ⁴⁵	Access to electricity more resilient to storm disruption	Y	N	Y	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: standardized checks 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: must achieve at least [x] people connected to storm-resilient electricity grid 	Standardized checks: <ul style="list-style-type: none"> E&S impacts 	
					Access to electricity more resilient to flood disruption	N	Y	Y	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: standardized checks 	Quantitative	Further assessment: <ul style="list-style-type: none"> [x] people connected to flood-resilient electricity grid 	Standardized checks: <ul style="list-style-type: none"> E&S impacts 	
			Mechanical strengthening of transmission and distribution lines	Measure	Adapted	Power transmission and distribution more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: white list 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speed up to [x] km/h 	n/a
			Underground transmission/ distribution lines	Measure	Adapted	Power transmission and distribution more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
			Vegetation management around transmission/ distribution lines	Measure	Adapted	Power transmission and distribution more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
			Structural strengthening of substation roofs and walls	Measure	Adapted	Power transmission and distribution more resilient to storm damage	Y	N	N	<ul style="list-style-type: none"> Resilience: standardized checks Significant harm: white list 	Quantitative	Standardized checks: <ul style="list-style-type: none"> Technical specification: equipment must tolerate wind speed up to [x] km/h 	n/a
			Flood defences in substations	Measure	Adapted	Power transmission and distribution more resilient to flooding	N	Y	N	<ul style="list-style-type: none"> Resilience: further assessment Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a

45 Enabling activities must meet the criteria for corresponding adapted activities in the row above **plus** the additional criteria in this row.

Sector	Subsector	Investment	Level	Adapted/ enabling	Climate resilience outcome	Substantial Contribution to climate resilience across broad range of contexts	Maladaptation	Significant harm	Eligibility category	Type of Substantial Contribution to climate resilience	Considerations for screening criteria – climate resilience	Considerations for screening criteria – significant harm
		Relocation of substations	Measure	Adapted	Power transmission and distribution more resilient to flooding	N	Y	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Quantitative	Further assessment: <ul style="list-style-type: none"> Flood risk mapping Resilient to [x] year flood 	n/a
		Strengthening grid configuration	Measure	Adapted	Power transmission and distribution more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Automated grid controls	Measure	Adapted	Power transmission and distribution more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Mini-/microgrids	Measure	Adapted	Power transmission and distribution more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Energy storage	Measure	Adapted	Power transmission and distribution more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Weather/energy use monitoring, forecasting and modelling systems	Measure	Adapted	Power transmission and distribution more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a
		Safety and emergency systems	Measure	Adapted	Power transmission & distribution more resilient to extreme weather events	Y	N	N	<ul style="list-style-type: none"> Resilience: white list Significant harm: white list 	Qualitative	n/a	n/a



ANNEX II: TERMS OF REFERENCE FOR THE RESILIENCE TECHNICAL ADVISORY GROUP

Context

As the effects of climate change become increasingly apparent and damaging, the urgency to direct financing from capital markets towards climate resilience grows more pressing. The United Nations Environment Programme estimates adaptation and resilience financing needs of up to US\$ 300 billion per year by 2030 in developing countries alone,⁴⁶ while global adaptation and resilience financing needs would be significantly higher. However, current finance flows for climate resilience are way below these estimated needs. In 2021, the Climate Policy Initiative found that reported finance flows relating to climate resilience (i.e. adaptation finance) were only US\$ 46 billion per year, out of total reported climate finance flows of US\$ 632 billion per year.⁴⁷ **Almost all adaptation finance comes from the international public sector such as development finance institutions, with less than US\$ 1 billion coming from private finance sources.**

The sustainable bonds market offers a substantial opportunity to bridge the gap between current finance flows and the estimated requirements for climate resilience. Green bonds, which have already channelled over US\$ 3 trillion from capital markets to sustainable activities, have emerged as a primary vehicle for financing climate action. However, despite the significant progress made by sustainable bonds, only a small portion of the capital flows are currently directed to climate resilience. **Based on Climate Bonds research, only 19 per cent of labelled green bonds were found to have any resilience-related UoP.**

Yet the demand for thematic borrowing and investment has expanded and diversified in recent years, encompassing

areas such as social, sustainability, SDG, blue and resilience. Despite this growth in the demand for labelled issuances, the supply of project pipelines still falls short, leaving investor demand unmet. The lack of clarity on what constitutes a resilient investment is a major reason for the supply and demand mismatch in climate resilience investments. This uncertainty can make it difficult for both investors and issuers to identify credible and impactful projects for inclusion in thematic instruments, hindering the flow of capital towards this critical area.

To overcome this challenge, **Climate Bonds is developing a “climate resilience taxonomy” in collaboration with partners (e.g. UNDRR) that will provide a classification system and screening criteria for climate resilience investments.** This taxonomy will promote a more consistent, transparent and systematic approach to defining and identifying such investments. The development of the climate resilience taxonomy is just one of several key levers for mobilizing finance for climate resilience that Climate Bonds is pursuing as part of its Global Resilience Programme, which is further described below.

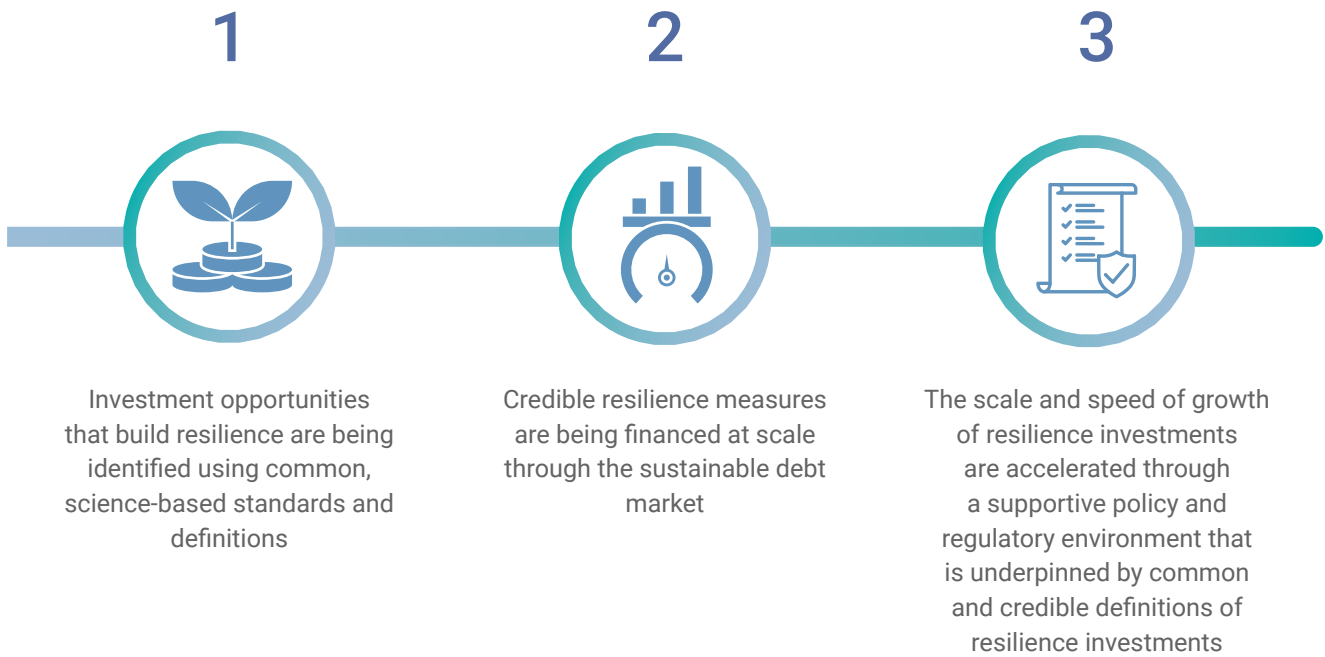
Climate Bonds Global Resilience Programme

The Climate Bonds Global Resilience Programme aims to mobilize global capital for investments in the climate resilience of physical, social, ecological and financial systems. It will achieve this by catalysing US\$ 1.5 trillion within the thematic bond market to flow towards resilience investments by 2025 and by influencing the public sector in key geographies to establish policy and regulatory measures that incentivize investments that enhance systemic and transformative resilience.

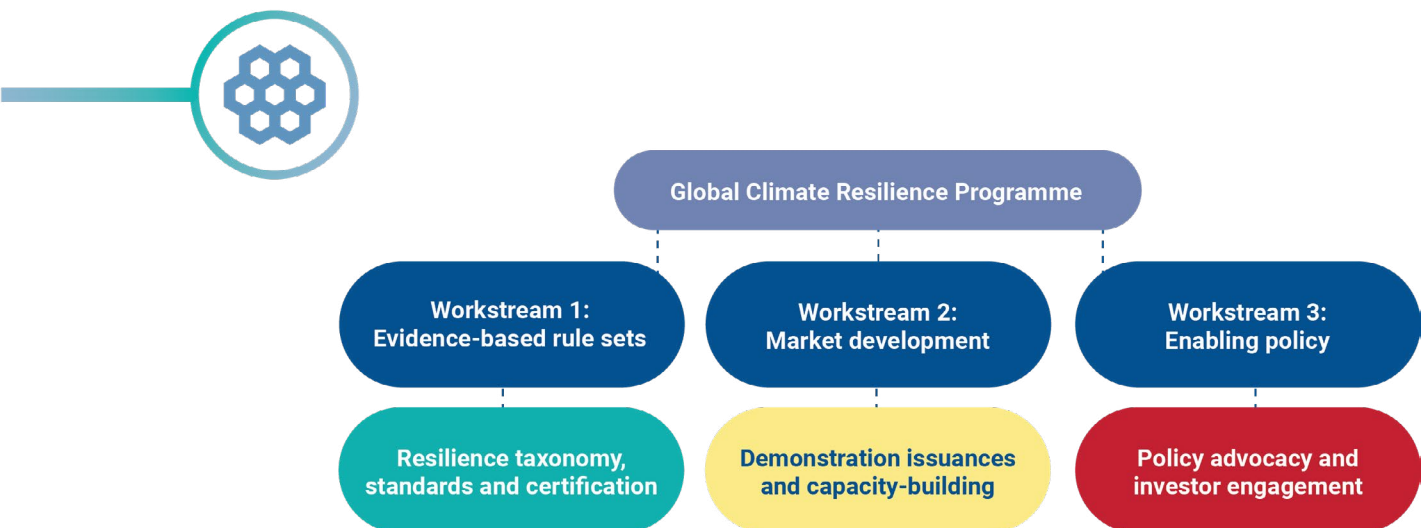
46 [Adaptation Gap Report 2021](#); UNEP, 2021

47 [Global Landscape of Climate Finance 2021](#); Climate Policy Initiative, 2021

The programme has three expected outcomes:



Climate Bonds will implement its strategy for this programme through three workstreams as depicted below:



Workstream 1: Evidence-based rule sets

Develop guidance (definitions, criteria and screening tools) to enable sovereign, subnational and corporate debt issuance to finance projects that increase physical, social, economic and ecosystem dimensions of resilience. This includes primarily the development of the climate resilience taxonomy as well as updating the Climate Bonds Standards and Certification Scheme to enable the certification of resilience-focused bonds.

Workstream 2: Market and pipeline development

Provide training, capacity-building, technical assistance and tools that enable demonstration issuances (sovereign, subsovereign and corporate) to kick-start markets and create a global movement around resilience finance. The geographic priorities of this work include Africa, the Association of Southeast Asian Nations, EU, the Latin America and Caribbean Region, South Asia and the United States of America. Through this workstream, Climate Bonds will also strategically engage investors both to educate and inform, but also to ensure that definitions, reporting and transparency are decision-useful for investors. Climate Bonds also intends to create a platform for knowledge exchange and technical support for issuers and early movers in the market.

Workstream 3: Enabling policy

Embed resilience definitions into national and regional taxonomies (Climate Bonds is advising 20+ countries, including China, the EU and India). Advocate for policy measures and regulations that incentivize investments in resilience (e.g. credit support and guarantee schemes, preferential lending and regulatory and fiscal measures). Climate Bonds will put forward actionable policy recommendations to policymakers, backed by partners and global investors. Engaging investors to support policy action forms a critical leverage point of our strategy.

Programme working groups

The implementation of the programme will be guided and informed by a range of stakeholders and collaborators. This will include high-level consultation with funders of this work programme through a Resilience Programme Steering Group; expert guidance and advice from an RTAG to steer the development of the resilience taxonomy; TWGs to work on the detailed development of specific priority resilience themes in the climate resilience taxonomy; Resilience Bonds Issuers Club composed of a group of issuers to exchange knowledge and enable cross-pollination among first movers and potential issuers; and an investor group to ensure that the outputs are fit for purpose for investors. See the **figure 1** below for further details.

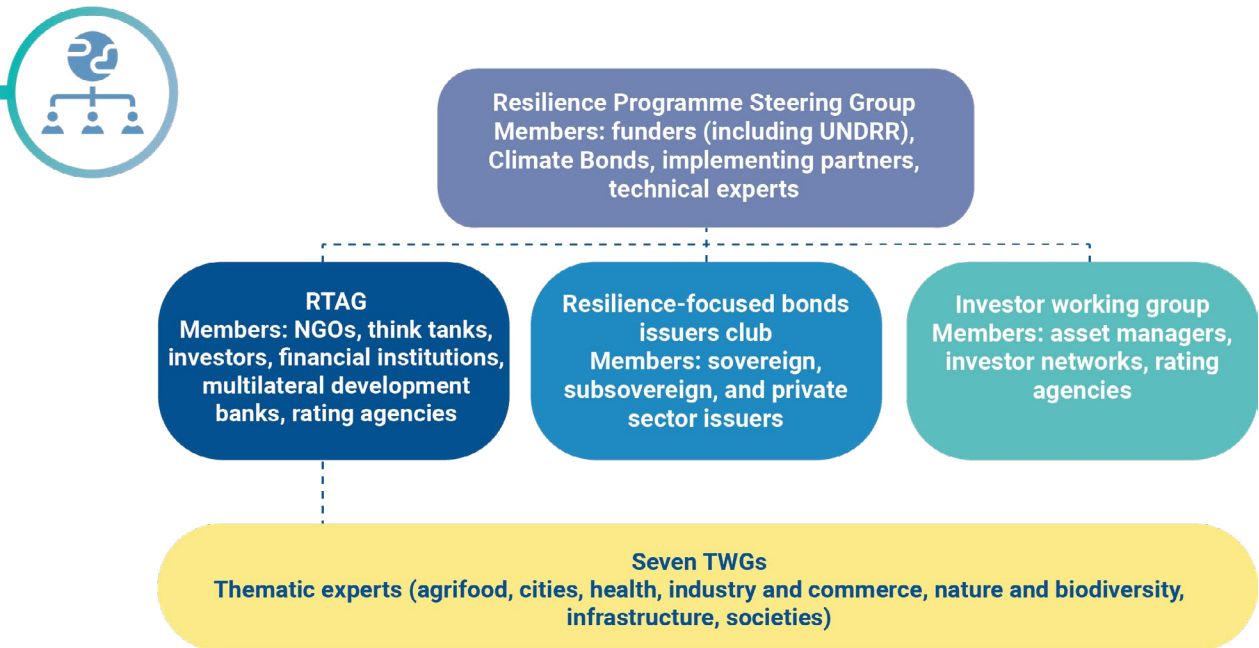
Progress to date: white paper on developing a climate resilience classification framework

With support from UNDRR, Climate Bonds has developed a white paper on developing a climate resilience classification framework. This white paper sets out a blueprint for the development of the climate resilience taxonomy.

The white paper sets out proposals under each of the below topics for consideration and feedback from the RTAG and other stakeholders:

- The context and rationale for the development of the climate resilience taxonomy
- Proposed thematic structure and priorities for the climate resilience taxonomy
- Parameters to guide the population of the climate resilience taxonomy including use cases, screening and eligibility criteria and usability considerations
- An initial overview of how the climate resilience taxonomy will be populated with eligibility definitions and screening criteria, including a partial example

FIGURE 1. Global Climate Resilience Programme working groups



Resilience Taxonomy Advisory Group

Purpose and role of the Resilience Taxonomy Advisory Group

The RTAG’s purpose is to assist Climate Bonds in the development of the climate resilience taxonomy. The white paper on developing a climate resilience classification framework already provides the RTAG with a starting point with recommendations on the structure and approach. The RTAG will review the recommendations set out in the white paper and provide strategic advice on the further development of the Framework.

As part of this, it is anticipated that the RTAG will advise on the following specific issues.

Climate resilience themes

Developing a comprehensive climate resilience classification framework requires significant resources and time. Our approach is holistic and cross-cutting, covering social, economic and ecosystem resilience. Despite the challenge, urgency demands immediate action, and prioritizing resilience themes can help achieve impact and scale quickly.

The RTAG will advise on prioritization and sequencing for further development by TWGs, with a focus on the most urgent needs for advancing the framework and scaling up capital flows for resilience. Prioritization must be clear, understandable, reflect market interest and identify where mobilization of capital flows will result in clear benefits in terms of building climate resilience.

Classification methodology and screening criteria

The RTAG will provide guidance on the methodological approach for classifying activities, eligibility parameters and screening criteria. The white paper will provide initial proposals for these aspects, and the RTAG will review and endorse them or refer to TWGs for more sector-specific insight. This includes, but is not limited to, defining Substantial Contributions, defining the DNSH approach to categorizing resilience interventions, and providing guidance on detailed screening criteria for complex interventions to proposed TWGs.

Populating the climate resilience framework

The RTAG will support Climate Bonds in populating each resilience theme with the sectors, subsectors, investment types and climate resilience outcomes. The RTAG will deliberate on which classification category the investments will fall under (i.e. white list, standardized checks or further assessment). The areas where further technical work is required at a sectoral or thematic level will be identified and referred to the TWGs to further develop. The composition, frequency of meetings, and modalities will be different for the TWGs, but the RTAG will serve as a forum to ensure that appropriate linkages are created between the relevant TWGs.

Responsibilities of the RTAG

As a technical advisory group, the responsibilities are detailed below.

- Review the white paper on designing a climate resilience classification framework in detail and provide feedback and insights
- Review materials that will be provided prior to biweekly RTAG meetings
- Attend RTAG meetings on a biweekly basis for six months and then on a monthly basis for another one year period
- Make suggestions and recommendations for the Climate Bonds team to consider and evaluate
- Incorporate challenge and rigour into the programme to ensure it is fit for purpose
- Be prepared to engage in discussions to explore potential pitfalls and unintended consequences with other panel members

- Highlight potential risks, offer wise counsel and expertise to resolve issues
- Disseminate the climate resilience taxonomy and support market adoption

Membership and time commitment

To reflect the global reach of capital markets, and in the interests of diversity of expertise and views, every effort will be made to ensure that the RTAG will be drawn from institutions and include individuals:

- in and representing both developed and developing countries
- in and representing diverse groups of stakeholders, particularly those most vulnerable to climate impacts
- in and representing a range of financial sector organizations and other key stakeholder groups (including environmental NGOs, research institutions and other expert organizations)

Members should have knowledge or experience in green debt instruments and/or expertise in climate resilience, show firm commitment to Climate Bonds and the Global Climate Resilience Programme's objectives, and be able to meet the required time commitment.

The RTAG will be made up of no less than 10 members and no more than 30. Members will commit to a minimum period of 1.5 years. We expect up to 1.5 days of time commitment per month for the first six months, followed by 0.5 days per month for the subsequent one-year commitment.

Operations and proceedings

The RTAG will largely undertake its role through online group meetings, and from time to time on a one-on-one basis. An agenda and supporting information for all agenda items will be sent at least one week in advance of the meeting. The RTAG will be chaired by Climate Bonds.

ANNEX III: OTHER RELEVANT RESILIENCE-RELATED TAXONOMIES

EU Taxonomy

The EU taxonomy for sustainable activities, whose purpose is to help bring the EU's economy in line with the European Green Deal, includes climate change adaptation as the second of six environmental objectives. Recommendations for technical screening criteria under the adaptation objective cover 68 activities across eight sectors. Overall, the EU taxonomy is process focused rather than outcome focused, in respect of adaptation and resilience. The taxonomy uses principles of Substantial Contribution and DNSH. For any given activity making a Substantial Contribution to one objective (e.g. climate change adaptation), it must also do no significant harm to any of the other five objectives (e.g. climate change mitigation) in order to stay aligned with the taxonomy. DNSH thresholds are defined separately for each activity, with an average of seven DNSH requirements for each adaptation objective. Adaptation Substantial Contribution criteria are approached in a different way from mitigation criteria to reflect the context- and location-specificity of adaptation activities, being subject to generic considerations rather than stringent minimum standards. Adaptation activities should – among other things – involve an assessment of climate risk and vulnerability, favour nature-based solutions and be monitored and measured for progress over time.

ASAP Taxonomy

In the ASAP Taxonomy, adaptation is defined in terms of risk reduction and impact reduction, while resilience is defined in terms of system strength and the capacity to withstand shocks. The taxonomy seeks to identify small and medium-sized enterprises (SMEs) that provide adaptation solutions in developing countries (where adaptation is considered a high priority) and identify those SMEs' support needs. Eligible SMEs are termed "adaptation SMEs" and their identification is the first step in the ASAP strategy to unlocking their potential in helping developing countries adapt to climate change, either by helping to address systemic barriers to adaptation or by helping to prevent and reduce material risk. Adaptation SMEs can either provide intelligence solutions, such as monitoring and forecasting, or provide products and services; their contribution to climate adaptation must be quantitatively measurable. The taxonomy is intended to

be applicable to any sector. The taxonomy comprises four elements: a definition of "adaptation SME", eligibility criteria, a classification of adaptation SMEs, and a results climate resilience framework to report on outcomes. It describes a results chain of activities, inputs, outputs, outcomes and impacts. Solutions are classified in multiple ways: by type, by industry sector, by risk addressed (which can be chronic or acute) and by geographical region.

United Kingdom Green Taxonomy

The main purpose of the United Kingdom Green Taxonomy is to address greenwashing. Inspiration is largely drawn from the EU taxonomy, but the taxonomy is tailored to reflect the United Kingdom's own circumstances and climate goals. The role of DNSH criteria is under review, with EU DNSH requirements judged to be complex and restrictive if used for judging baseline eligibility rather than for ensuring transparency. For adaptation, the taxonomy has been using EU technical screening criteria as its basis and, accordingly, has a focus on process rather than outcomes. A lack of policy surrounding adaptation and resilience in the UK has been an obstacle in developing relevant criteria.

UNDP SDG Finance Taxonomy

The UNDP SDG Taxonomy, made with China in mind but internationally adaptable, is designed to identify finance projects that help to achieve the 17 United Nations SDGs. The SDGs are diverse and not confined to climate targets, with a large focus on security and equality, and the taxonomy is the first to have a focus on creating socioeconomic equality. Relevant SDG targets are mapped onto each eligible project. Climate change adaptation, along with mitigation, is considered part of SDG 13 (climate action), which is also one of six SDGs that explicitly mention resilience. Food and agriculture, cities, energy and materials, and health and well-being are acknowledged as the four areas into which the 60 biggest market opportunities for sustainable development can be categorized.

UNDRR Budget tagging and tracking of national expenditure accounts

The UNDRR is working on a taxonomy to help governments tag and track public expenditures related to DRR and climate change adaptation (CCA). The definitions of DRR and CCA may vary between locations, and the two alone are different: CCA is restricted to climate hazards while DRR also includes geophysical, technological, biological and environmental hazards. As part of these efforts, UNDRR is working with the International Institute for Environment and Development to get lessons from countries' experiences with DRR and CCA tagging and tracking, developing guidance and training materials for designing a DRR and CCA budget tagging, and developing a DRR and CCA taxonomy.

Sendai Framework for Disaster Risk Reduction 2015–2030

The Sendai Framework defines resilience as “The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions”. Investing in DRR for resilience is one of four priorities for action, divided into national-/local-level aims (generally focused on policy and governance and looking to strengthen sectors) and global-/regional-level aims (focused on international cooperation and collaboration). Resilience measures should be “cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation”. Seven targets are given as indicators of progress against the framework. These include indicators of material damage (loss of life, affected people, economic loss, infrastructure damage) and of capacity for disaster management (risk reduction strategies, international cooperation, capacity for knowledge). These targets are to be measured at a global level.

ANNEX IV: APPLICATION OF THE FRAMEWORK ACROSS DIFFERENT SUSTAINABLE FINANCING INSTRUMENTS

The Framework may also be applied across a range of sustainable finance instruments and other levers that can be pulled to influence capital flows towards resilience. These may include UoP bonds, non-UoP bonds and other sustainable finance instruments as detailed below. This is similar to the way that low-carbon (mitigation) taxonomies may also be applied across a range of financing instruments.

UoP bonds for resilience

- **Green bonds:** these raise financing for projects with environmental benefits, especially low-carbon objectives, but they may also support climate resilience objectives, as set out in Global Center on Adaptation/Climate Bonds guidance on green bonds for climate resilience.⁴⁸ They may be especially suited to issuers such as corporates, utilities subsovereigns or sovereigns that wish to raise capital for specific investments in equipment, systems or infrastructure that contribute towards climate resilience.
- **Blue bonds:** these are a subset of green bonds, raising financing specifically for marine- and ocean-based projects with positive environmental, economic and climate benefits. They may have a particular fit with climate resilience priorities related to ocean ecosystems and fisheries.
- **Transition bonds:** these raise financing for the issuer's transition to reduced environmental impact, most commonly to reduce GHG emissions, and in that case they are a subset of green bonds. They could support resilience priorities in cases where the issuer needs to pursue decarbonization and resilience objectives at the same time, e.g. industrial or energy generation operations that are vulnerable to climate change impacts.
- **Resilience bonds:** these are bond issuances, normally a subset of green bonds, in which the proceed target investments that make a positive contribution towards building climate resilience in addition to managing relevant physical climate risks. For example, the European Bank for Reconstruction and Development made an inaugural climate resilience bond issuance in 2019 based on a portfolio of investments that had been assessed both for physical climate risk management and for their contribution to delivering positive climate resilience outcomes.
- **Social bonds:** these raise financing for projects with positive social outcomes such as job creation/safeguarding, better health services, better housing, access to vital services for the vulnerable, financial inclusion, education and culture. They are generally issued by public entities such as governments (central or local), or other public sector agencies – although private issuance is not impossible. It is therefore possible that social bonds may offer opportunities for raising financing for climate resilience priorities that intersect with better social outcomes, e.g. better protection, access to services or access to finance for groups that have been adversely affected by climate change impacts.
- **Sustainability bonds:** these raise finance for both green and social projects. Sometimes these may be separate (e.g. a mix of renewable energy projects and health projects) and sometimes there may be overlaps (e.g. social housing with high energy efficiency rating). Sustainability bonds may raise finance for resilience relating to social and climate priorities.

48 Global Center on Adaptation, *Green Bonds for Climate Resilience – A Guide for Issuers* (Rotterdam, 2021).

Non-UoP bonds

- **Catastrophe bonds:** these raise financing for insurance companies in the event of a natural disaster, and as such may play a role in ensuring that the insurance industry is able to extend cover to a greater scope of vulnerable assets and households. This may be relevant to increasing the climate resilience of vulnerable business and households through better financial inclusion.
- **Sustainability-linked bonds:** these have variable financial and/or structural characteristics linked to the achievement of predefined sustainability objectives. While this category is rapidly growing, experience of the fit with climate resilience is still at an early stage. They may be potentially relevant to entity-level issuances across a range of climate resilience themes, subject to the definition of suitable climate resilience-related metrics against which the issuer's performance could be benchmarked and financing terms adjusted accordingly.

Other sustainable finance instruments

Beyond bond instruments, the Framework may also be used to screen a variety of other levers important for redirecting capital flows such as public subsidies, credit enhancement facilities, green export credits, debt-for-nature swaps, general entity financing, and others (see also **table 3**).

ANNEX V: INFORMATION SOURCES USED IN THE LITERATURE REVIEW

Climate science

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Policy context

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- United Nations Office for Disaster Risk Reduction. *Sendai Framework for Disaster Risk Reduction 2015-2030*. Cairo, 2015. <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>.
- Climate Bonds Initiative. *Climate Resilience Principles: A framework for assessing climate resilience investments*. London, 2019. <https://www.climatebonds.net/climate-resilience-principles>.
- Global Center on Adaptation. *Green Bonds for Climate Resilience – State of Play and Roadmap to Scale*. Rotterdam, 2021. <https://gca.org/reports/green-bonds-for-climate-resilience-state-of-play-and-roadmap-to-scale/>.
- Global Center on Adaptation. *Green Bonds for Climate Resilience – A Guide for Issuers*. Rotterdam, 2021. <https://gca.org/reports/green-bonds-for-climate-resilience-a-guide-for-issuers/>.

Other sustainable finance/resilience/adaptation taxonomies

- Trabacchi, Chiara, and others. *Adaptation Solutions Taxonomy*. New York and San Francisco, The Lightsmith Group, 2020. https://lightsmithgp.com/wp-content/uploads/2020/09/asap-adaptation-solutions-taxonomy_july-28-2020_final.pdf.
- Central American Bank for Economic Integration. *Green and Blue Bond Framework*. Tegucigalpa, 2022. <https://www.bcie.org/en/investor-relations/green-bank/green-bond-framework>.
- Climate Bonds Initiative. *Climate Bonds Taxonomy*. London, 2021. <https://www.climatebonds.net/standard/taxonomy>.
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- United Nations Development Programme. *Technical Report on SDG Finance Taxonomy (China)*. Beijing, 2020. <https://www.undp.org/china/publications/technical-report-sdg-finance-taxonomy>.

Sector-specific and industry-specific guidance

- Eurelectric. *The Coming Storm – Building electricity resilience to extreme weather*. Brussels, 2022. <https://cdn.eurelectric.org/media/6254/the-coming-storm-h-5CA0B9BE.pdf>.
- International Energy Agency. *Climate Resilience*. Paris, 2021. https://iea.blob.core.windows.net/assets/62c056f7-deed-4e3a-9a1f-a3ca8cc83813/Climate_Resilience.pdf.
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- International Finance Corporation. *Building Resilience Index: User Guide*. Washington, D.C., 2021. <https://www.unicef.org/rosa/media/18011/file/Towards%20Climate%20Resilient%20Education%20Systems.pdf>.
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ANNEX V: EVIDENCE BASE FOR THE IDENTIFICATION OF FRAMEWORK CLIMATE RESILIENCE THEMES

The AR6 analysis on climate change impacts, adaptation and vulnerability⁴⁹ presents compelling scientific evidence of more frequent and intense climate and weather extremes, including acute, extreme events and chronic, longer-term trends. These have widespread and pervasive impacts – covering both climate shocks over near-term horizons and progressive climate shifts over longer-term horizons – on a broad range of natural and human systems,⁵⁰ including ecosystems, food and water security, human health, urban settlements, economic activity and humanitarian crises. These impacts are multicausal and overlapping, with complex interactions between interlinked systems, meaning that climate vulnerabilities are context specific, resulting from both direct climate change impacts (e.g. lack of precipitation resulting in water stress), and from indirect climate change impacts (e.g. extreme heat harming agricultural production, which in turn leads to population displacement).

According to AR6, there is also significant complexity involved in the process of defining climate resilience priorities in response to these climate vulnerability contexts.

There are multiple possible pathways by which communities, nations and the global community can achieve climate-resilient development⁵¹ while balancing synergies and trade-offs between different options, interests and values.

Sustainable Development Goals and climate-resilient development

Building on the evidence-based foundation of IPCC analysis, the definition of priority investment themes and sectors for the Framework should also take account of the SDGs,⁵² and specifically the definition of actions that support the achievement of the SDGs in the face of current and projected future climate change impacts.⁵³ SDGs have the advantage of being widely recognized by markets and a wide range of other stakeholders as an authoritative framework for understanding progress towards sustainable development across a wide range of dimensions and perspectives. They provide an authoritative and widely recognized framework for pursuing sustainable development, which is also highly relevant for setting priorities for climate-resilient development. The 17 SDGs are displayed in **figure 1** below.



Copyright: United Nations, 2019

49 Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability. Summary for Policymakers* (Cambridge and New York, Cambridge University Press, 2022).
 50 Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability. Summary for Policymakers*, Figure SPM.2.
 51 E. Lisa F. Schipper and others, "Climate Resilient Development Pathways", in *Climate Change 2022: Impacts, Adaptation and Vulnerability*, Edward R. Carr and others, eds. (Cambridge and New York, Cambridge University Press, 2022).
 52 United Nations Sustainable Development Group, "The 17 goals", undated. Available at <https://sdgs.un.org/goals>.
 53 In a parallel way, the Climate Bonds Taxonomy for low-carbon activities prioritizes sectors with the greatest potential for achieving GHG emission reductions, and for market traction.

Given the relatively large number of SDGs and the complexity of the SDG framework, there have been several attempts to set out the SDGs in a more streamlined and efficient fashion, to aid their application and delivery, as outlined here:

- **The United Nations Sustainable Development Solutions Network “Six Transformations”:**⁵⁴ a simplified framework for SDG operationalization based on: i) education, gender and inequality; ii) health, well being and demography; iii) energy decarbonization and sustainable industry; iv) sustainable food, land, water and oceans; v) sustainable cities and communities; and iv) digital revolution for sustainable development.
- **The UNDP SDG Finance Taxonomy:**⁵⁵ a framework with a focus on financing sustainable development based on i) affordable basic infrastructure; ii) affordable housing; iii) health; iv) education, technology and culture; v) food security and vi) financial services.

There have also been several attempts to map the SDGs against climate change impacts/vulnerabilities and to define SDG-based climate resilience priorities. These include the following:

- WMO’s analysis of “Climate Indicators and Sustainable Development”⁵⁶ examines how a range of climate indicators (i.e. climate risks) threaten the achievement of the SDGs. Priorities for building climate resilience are defined as managing food security, agricultural and fishing yields, cultural heritage, impacts on tourism, livelihoods, conflicts, health impacts, water scarcity, displacement, built infrastructure and soil and water resources.
- AR6⁵⁷ identifies four priority “system transitions” for the achievement of the SDGs in the light of identified climate change impacts and vulnerabilities, with several corresponding climate responses/adaptation options, all of which are estimated to deliver benefits for the achievement of the SDGs. These are i) land and ocean ecosystems, ii) urban and infrastructure systems, iii) energy systems and iv) cross-sectoral.

- The 2022 Sharm-El-Sheikh Adaptation Agenda:⁵⁸ released at the Twenty-seventh Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in November, this United Nations framework sets out five “impact systems” for advancing action on adaptation (or climate resilience), mapped against the SDGs. These are i) food security and agriculture systems, ii) water and nature systems, iii) human settlement systems, iv) ocean and coastal systems, and v) infrastructure systems (as well as two cross-cutting themes: planning and finance).

Nationally determined contributions and climate resilience

NDCs are the country-level building blocks of the Paris Agreement, through which the signatory countries set out their respective contributions to the achievement of the Paris Agreement’s objectives, based on their nationally owned priorities. The 2022 NDC Synthesis Report,⁵⁹ released by the United Nations Framework Convention on Climate Change in advance of the Twenty-seventh Session, identified the following climate resilience (adaptation) priorities with synergies for the achievement of the SDGs: i) food production and nutrition security, ii) freshwater resources, iii) urban areas and other human habitats, iv) key economic sectors and services (infrastructure, energy, tourism, transport, cultural heritage, industry and mining), v) terrestrial and wetland ecosystems, vi) ocean ecosystems, vii) coastal and low-lying areas, viii) livelihoods and poverty, and viii) human health. These various information sources on SDGs and climate resilience priorities that have been reviewed in this section give broadly similar but slightly different breakdowns, and are largely overlapping.

54 Sustainable Development Solutions Network, “Six transformations to achieve the Sustainable Development Goals (SDGs)” (Paris, Kuala Lumpur and New York, 2019).

55 Xu Qing and Christoph Nedopil Wang, *Technical Report on SDG Finance Taxonomy* (China) (Beijing, UNDP, 2020).

56 WMO, *Climate Indicators and Sustainable Development: Demonstrating the Interconnections* (Geneva, 2021).

57 Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability. Summary for Policymakers*.

58 United Nations Framework Convention on Climate Change, *Sharm-El-Sheikh Adaptation Agenda* (Bonn, 2022).

59 United Nations Framework Convention on Climate Change, *Nationally determined contributions under the Paris Agreement. Synthesis report by the secretariat* (Bonn, Germany).

