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Green Bonds for Climate Resilience

A Guide for Issuers

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The Climate Bonds Initiative is an investor-focused, not-for-profit organisation working to mobilise debt capital markets for climate change solutions, to accelerate a global transition to a low-carbon and climate-resilient economy.



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1. INTRODUCTION

Globally, many sovereigns, sub-sovereigns and corporates are at various stages of addressing climate resilience and developing and implementing adaptation plans and programmes - including COVID-19 recovery programmes – that will require significant finance. A handful have already tapped the green bond market, attracting substantial finance at relatively low rates with long-term maturity from a variety of investor groups (including institutional investors) for a wide variety of climate resilience action.

For example, the Fijian government issued a green bond to rehabilitate and strengthen thousands of schools and related structures impacted by cyclones, and improve drainage and coastal protection (first issuance: 11/2017; FJD100mn to date). The Dutch government issued a green bond to finance sustainable water management, including reducing flood risks in coastal and low-lying areas (first issuance: 05/2019; EUR8.9bn to date). And the European Bank for Reconstruction and Development (EBRD) issued a 'Climate Resilience Bond' fully dedicated to support climate resilient infrastructure, climate-resilient businesses, and climate-resilient agriculture and ecological systems (issuance: 01/2020; USD1.15bn to date).

This Guide is intended to encourage and support a greater number of actors, and the banks that are financing them, to issue green bonds to tap the capital markets to raise the finance needed for climate adaptation and resilience. Encouraging and supporting these early movers would in turn help to create a virtuous cycle of greater issuer and investor experience, and confidence to catalyse the mobilisation of finance for climate resilience action at scale.

The Guide provides practical guidance to issuers of all types - sovereigns, sub-sovereigns, financial institutions and corporates - on how to raise capital in the green bond market for investment in climate adaptation and resilience (hereafter referred to more simply as climate resilience). It can also act as a useful guide for investors to refer to when evaluating the credibility of climate resilience claims by issuers. It is designed as a practical tool, addressing and providing solutions to some of the most common challenges faced by those issuing bonds for climate resilience investments, drawing on an emerging but growing body of regulatory and market guidance and the experience of others who have gone before.

BOX 1: DEFINING CLIMATE RESILIENCE INVESTMENTS

This Guide uses the definition of climate resilience in the context of investment as set out in the Climate Bonds Initiative's Climate Resilience Principles, namely: Resilience investments improve the ability of assets and systems to persist, adapt and/or transform in a timely, efficient and fair manner that reduces risk, avoids maladaptation, unlocks development and creates benefits, including for the public good, against the increasing prevalence and severity of climate-related stresses and shocks.

The focus on climate resilience specifically as the capacity to persist, adapt and transform in the face of change is of critical importance, being a fundamental prerequisite for and at the heart of sustainable development and the achievement of the SDGs.

As the COVID-19 pandemic has dramatically highlighted, the consistent prioritization of short-term economic growth over the long-term well-being of people and the environment has exposed systems that are highly vulnerable to shocks. Pandemics, heat waves, volatile weather, population displacement and increased conflict are all but certain features of the 21st century, and all are intertwined with the physical impacts of climate change.

BOX 2: OPPORTUNITY TO FINANCE CLIMATE RESILIENCE VIA THE GREEN BOND MARKET

The companion paper to this Guide '*Green Bonds for Climate Resilience: State of Play and Roadmap to Scale*' notes that 1,265 green bonds that include climate resilience components have been issued to date (i.e. up to September 2020). However, this represents only 16.4% of all green bond deals. The associated total finance for climate resilience is difficult to assess because issuers do not commonly report the allocation of proceeds to different projects or environmental goals. What is certain is that green bond issuance that is directly invested in resilience is a small fraction of the trillions of annual investments that are required for addressing the resilience financing gap. This gap is often cited at around USD300bn annually by 2030 for developing countries. However, when accounting for developed countries as well as mainstreaming resilience across all existing and future infrastructure, the adaptation gap is likely to be in the scale of trillions rather than billions annually. This represents a significant missed opportunity to leverage one of the most prominent innovations in the area of sustainable finance over the past decade. The green bond market taps the USD100tn global fixed income market to fund new and existing projects, which have environmental benefits. It is also a broad enough umbrella under which mitigation, adaptation, SDGs and other thematic goals can be financed, reducing the risk of creating an illiquid asset and fragmenting market demand for resilience investments.

A green bond with resilience features would see the same benefits as traditional green bonds (i.e. those focused on low-carbon investments) including:

1. Access to **low-cost capital** to finance investment pipeline;
2. Demand far outstrips supply and **broadens the investor base** of issuers;
3. Suitable for **large-scale projects** that require capital investment ahead of revenues and **longer investment horizons**;
4. Unlock **blended finance** facilities and funds;
5. **Greater visibility and recognition** of the commitment to resilience goals;
6. **The opportunity to refinance** a portfolio of assets which may lead to an improvement in the characteristics of their financing;





A number of factors indicate we are at an opportune time to change the trends, and mainstream resilience into the promising growth trajectory of the green bond market. These include:

- The first green bond was issued only in 2007. In the early years of the market, it was important to build momentum and experience by keeping things simple. By only including low-carbon assets, which are by nature less complex to identify and report against, the market was able to grow rapidly, with USD1tn issued by September 2020. However, the market has matured and diversified significantly in recent years, with a wide variety of issuers, sectors, environmental objectives and labels being successfully brought to market in variations of the green bond format, illustrating the readiness and appetite for greater diversity and complexity.
- Globally, much greater attention is now being paid to climate resilience due to the direct impacts of climate change already being felt, and the intent to 'build forward better' from the COVID-19 pandemic that has highlighted the need to urgently address the shocks and stresses we will increasingly face this century, at the heart of which is climate change.
- There have been significant developments in guidance, methodologies and tools that enable the identification, evaluation and reporting of climate resilience-related investments, which are essential for the necessary project selection and reporting required to raise finance via the green bond market. Nevertheless, it is noted that further work is required to further advance this aspect.
- Investors are much more aware of resilience and comfortable with investing in it, in part due to their greater exposure to such investments as a result of the points above, but also due to the increasing policy and regulatory push for climate risk disclosure, especially the Task Force on Climate-related Financial Disclosures (TCFD) framework, through the prominence of climate adaptation in the EU Sustainable Finance Taxonomy, and through the responses of Central Banks to the destabilising impacts of climate change on financial systems. More broadly, investors are hungry for green bonds, with demand currently outstripping supply.

2. HIGH LEVEL GUIDANCE

Green bonds are those for which the finance raised is allocated to projects, assets or activities that deliver environmental benefits. In all other respects, green bonds are identical to regular ‘vanilla’ bonds. This means that green bonds are structured in the same way as conventional investment grade bonds, with the exception that the bond has a ‘use of proceeds’ clause that states that the financing will be used for green investments. This means that, unlike vanilla bonds that finance the general working capital of the issuer, green bonds are used for financing or re-financing only eligible projects or assets. At the same time, the buyer of a green bond has recourse to the issuer’s entire balance sheet, meaning that the investor is not exposed directly to the financial risks of the specific projects the green bond finances.

Figure 1 summarises the key steps to issuing a green bond according to international best practice. These steps are the same when all or part of the proceeds of a green bond are allocated to climate mitigation, climate adaptation or any other green objective. Nevertheless, issuers of green bonds with proceeds for climate resilience investments face a number of more specific challenges arising from that climate resilience investment focus. These climate resilience specific aspects are summarised in Table 1 and discussed in more detail in Section 3 using a Questions & Answers (Q&A) format based on questions that are commonly asked by issuers.

Step 1 – Adopt guidance: Select the guidance that will govern the Green Bond, including green project selection criteria, management and controls for tracking and allocation of proceeds, management of unallocated proceeds, assurance mechanisms and reporting requirements. A range of options are available from market-led initiatives and regulators.

Step 3 – Develop Green Bond Framework: Prepare a framework document articulating the policies and procedures governing the Green Bond that will ensure the requirements of the selected guidance are met.

Step 5 – Set-up tracking and reporting: Robust management and controls for tracking and allocation of proceeds ensure the proceeds are used in line with the terms of the bond as laid out in the Green Bond Framework, providing critical transparency to investors.

Step 7 – Report regularly: Confirm annually that the funds are still allocated to eligible green projects. Best practice includes reporting on the environmental impact of the bond. Reports should be publicly available and accessible.



Step 2 - Identify qualifying Green projects and assets: Screen portfolio, pipeline, balance sheets, etc. against the adopted guidance and associated green project selection criteria to select appropriate green assets and projects for the bond.

Step 4 – Arrange independent verification: Best practice includes obtaining independent, external assurance that the elements outlined in the Green Bond Framework have been complied with. Assurance options include certification of the bond under the Climate Bonds Standard and Certification Scheme or the use of specialised consultants, often referred to as Second Party Opinion (SPO) providers.

Step 6 – Issue Bond: The usual steps apply here as for any other conventional bond, including: 1) structuring the bond, working with an investment bank or advisor and 2) marketing and pricing the bond. The offering circular should discuss the project or assets and the green project selection criteria used.

Table 1: Summary of guidance to issuers relating to the climate resilience aspects of their issuance.

	Frequently asked questions (FAQs)	Headline guidance
STEP 1: Adopt guidance	FAQ 1: Should I use externally defined project selection criteria?	Issuers have full discretion to set their own project selection criteria and processes. However, it is now rare to see green bonds that do not align with externally recognised guidelines. Many investors do not have the technical expertise or time to carry out extensive due diligence, so they rely on the use of externally guidance and standards to assess credibility.
	FAQ 2: What project selection criteria are available for screening climate resilience investments specifically?	The Climate Bonds Standard and Certification Scheme, the Climate Bonds Climate Resilience Principles, the Green Bond Principles (GBPs), EU Sustainable Finance Taxonomy, Multilateral Development Bank (MDB) Joint Methodology for Tracking Climate Change Adaptation Finance, and the People's Bank of China's (PBOC) Green Bond Catalogue all include some level of guidance on project selection criteria for climate resilience.
	FAQ 3: Which project selection criteria should I use?	There is a high degree of consistency between the approach to project selection criteria across much existing guidance. Often it is process based in recognition of the highly context specific nature of climate resilience needs and measures. Which guidance the issuer selects will be influenced by the jurisdiction in which they operate and/or are issuing and/ or targeted investors. Some guidance provides a greater degree of granularity for further direction and support, for example the EU Taxonomy or the Climate Bonds Standard and its associated Climate Resilience Principles.
	FAQ 4: Should I address other environmental and social objectives as well as climate resilience?	Investors are increasingly looking for products that contribute to not just one environmental or social goal, but a number of these goals simultaneously. The most developed guidance today on how to deal with multiple objectives is the EU Sustainable Finance Taxonomy, which ensures that investments make a substantial contribution on one goal without doing significant harm to other goals. Beyond this, issuers would benefit from, and may need to, undertake their own assessments of how best to achieve multiple objectives
STEP 2: Identify qualifying green projects and assets	FAQ 5: What counts as a climate resilience investment?	Two types of climate resilience related investment are consistently recognised: 1) Investments in assets or activities whose primary purpose is to deliver climate resilience benefits to the broader system ("system-level adaptation"); and 2) Investments aimed at adapting to climate change an asset or activity whose primary purpose is not addressing climate change ("asset-level adaptation" resulting in "adapted activities or assets"). For either of these types, Green Bonds for Climate Resilience can be used.
	FAQ 6: How do I demonstrate the investment targets a critical climate resilience need?	A robust climate risk assessment forms the basis of the development of risk mitigation measures and associated investments. While there are numerous available tools for conducting climate risk assessments, specific guidance on how green bond market participants can use these are still being developed. For investments that lead to the adaptation of other activities, communities or systems, the adaptation benefits of the measures being financed must also be demonstrated. Most issuers will likely need external support to carry out the assessment given the technical expertise required. Alternatively, issuers can reference regional, national, and local climate projections and risk assessments.
	FAQ 7: How do I identify climate resilience investments in my portfolio, balance sheet or investment plan?	Relevant projects and investments can be identified through screening of existing portfolios, loan books, balance sheets, etc. This tagging exercise can be steered by more detailed market guidance which identifies likely appropriate climate resilience investments and contexts, and by any assessments of climate resilience needs, such as National Adaptation Plans (NAPs) or corporate level climate risk assessments.

	Frequently asked questions (FAQs)	Headline guidance
STEP 2: Identify qualifying green projects and assets		For sovereign and municipal issuers, it is a best practice to set up an inter-governmental and multi-ministerial steering committee lead by the ministry of finance and comprising senior government decision makers, for the selection of eligible expenditure and ongoing monitoring and reporting. This ensures accountability, consistency and transparency across government sector ministries and departments.
	FAQ 8: Can I count the whole asset value or just the climate resilience investment cost?	The entire cost of an activity contributing to “system-level adaptation” (per the terms of the project selection criteria) is eligible. In the case of “asset-level adaptation” only the costs of adapting the asset can be counted, not the revenues or expenditure associated with the whole activity. For example, a project involving the retrofitting of a building to withstand more intense hurricanes or flood risk would count, but the cost of the building itself would not. Potential investors may be more confident of the inclusion of the entire cost of adapted assets or activities where issuers can demonstrate that the adapted activity is critical indirectly to broader systemic resilience (i.e. public buildings, critical infrastructure, etc.).
	FAQ 9: What if I don't have enough climate resilience-related projects in the pipeline to get to the scale needed for a bond?	The majority of institutional investors look for a minimum bond size of USD200 million in developed countries and USD100 million in developing countries, which can be a hurdle to issuing a green bond. Aggregation mechanisms to bundle individual projects where climate resilience needs are fulfilled through small-scale resilience projects can be an effective solution. More broadly, a climate resilience-related green bond does not need to be matched with 100% climate resilience assets and can include other suitable assets that meet other green goals. (See FAQ 12 on labelling.)
STEP 3: Develop Green Bond Framework	FAQ 10: What evidence do investors look for to reassure them of the climate resilience credentials?	Investors will look to an issuer's green bond framework to ascertain the credentials of the bond. The green bond framework should clearly articulate: 1) Adherence to credible project selection criteria (per the FAQs above); 2) Independent review of that (per FAQ 11); and 3) Ongoing monitoring of climate risks and benefits (per FAQ 15). Issuers should also plan for additional roadshow efforts to engage existing and new investors about the specifics of the resilience components in their green bond framework and to highlight the alignment to their sustainability and/or green policies and governance. Investors also look at the issuer's green credentials and targets beyond the green bond. Clear adaptation targets in Nationally Determined Contributions (NDCs), robust National Adaptation Plans (NAPs) and strong climate policies are key to build a good reputation and ensure the quality of the credentials of sovereign and sub-national bond issuers.
STEP 4: Arrange Independent Verification	FAQ 11: Where do I find expertise for reviewing the climate resilience credentials of my green bond framework?	Certifying against the Climate Bonds Initiative's Standard and Certification Scheme is considered best practice, and 25% of the labelled green bond market is Climate Bonds Certified. Second Party Opinions are also a popular option whereby independent verification is conducted by qualified parties such as auditors to verify the green bond framework, underlying asset sustainability or issuers' claims. Issuers should seek consultants that are well-versed in adaptation and resilience methodologies and tools.

	Frequently asked questions (FAQs)	Headline guidance
STEP 5: Set up tracking and reporting	FAQ 12: What are the tracking and reporting requirements for climate resilience related bonds?	For any green bond (climate-resilience focussed or otherwise), the issuer will need you set up robust management and controls for the tracking and allocation of proceeds, to ensure both that the proceeds are used in line with the terms of the bond as laid out in the Green Bond Framework, and that investors have transparency on that.
STEP 6: Issue Bond	FAQ 13: How should I label my bond?	The label should reflect what the proceeds are going towards. Using a dedicated 'Climate Resilience Bond' label enables clear marketing and high visibility to the focus of the bond. Alternatively, using a green bond label is perfectly legitimate given climate resilience is squarely part of the green agenda, and has the advantages of facilitating access to (and supporting) the large and liquid green bond market, well developed and trusted guidance and reporting mechanisms established for the green bond market, and reaching larger issuance size with a mixed use of proceeds (see FAQ 9). Combining these in a label such as "Climate Resilience Green Bond" may offer the best of both worlds.
	FAQ 14: Should I issue my bond domestically or internationally?	Domestic and international green bond issuances have different target investor and resourcing requirements. A domestic green issuance will appeal to the usual class of institutional investors, and may present an opportunity to reach new domestic investor classes attracted by the green label, or retail investors. However, an international issuance provides the opportunity to appeal to a much wider set of established green investors. Currency considerations will be a factor in selecting whether to opt for domestic or international issuance. Whether domestic or international, roadshows will need to take care to explain the nature of the green bond.
	FAQ 15: How do I attract investors, particularly those who may not have a good understanding of climate risk and resilience?	Green bonds are regularly oversubscribed, illustrating their attractiveness to investors. Within the green bond market, if the issuer is aligned with international guidelines and an independent review has been conducted, it is very likely to attract mainstream investors who increasingly recognise the importance and validity of investing in climate resilience. Mainstream investors have developed trust in and familiarity with the green bond market, so by adhering to the prevailing green bond guidelines and practices, and where possible, certification – investors are likely to come.
	FAQ 16: Can I access concessional capital for financing climate resilience related bonds?	While issuing green or resilience bonds does not necessarily lead to access to blended finance, it significantly improves the probability of matching with blended finance objectives. By carrying out a robust process for selection of resilience projects for a green bond, issuers are able to demonstrate their impacts on resilience goals, which can also be used for accessing public sector finance and blended finance products and facilities. Issuers interested in accessing blended finance should engage with MDBs, guarantee agencies, bilateral donors, and blended finance initiatives at an early stage of project development.
Step 7: Regularly Report	FAQ 17: What are the requirements in post-issuance reporting?	The Green Bond Principles state that issuers should publicly disclose up to date information on the allocation of use of proceeds annually until full allocation, and on a timely basis in case of material developments. The annual report should include a list of the projects to which green bond proceeds have been allocated, as well as a brief description of the projects and the amounts allocated, and their expected impact. For best practice, resilience-related bonds should demonstrate impact and how investments are contributing to resilience outcomes.

3. DETAILED GUIDANCE FOR ISSUERS

STEP 1: ADOPT GUIDANCE

FAQ 1: SHOULD I USE EXTERNALLY DEFINED PROJECT SELECTION CRITERIA?

At present, mandatory use of externally defined project selection criteria for green bond use of proceeds applies only for green bonds issued in China. In all other jurisdictions, issuers have full discretion to set their own criteria for eligible green investments and processes for reporting on those investments.

However, as climate action and risk become increasingly central to public policy-making and corporate strategy, institutional investors are also increasing their focus on environmental governance practices, management systems and investment criteria. This translates to strong demand for green debt instruments that they trust and view as credible. Because many investors do not have the technical expertise or time to carry out extensive due diligence, they rely on the use of international standards to assess credibility.

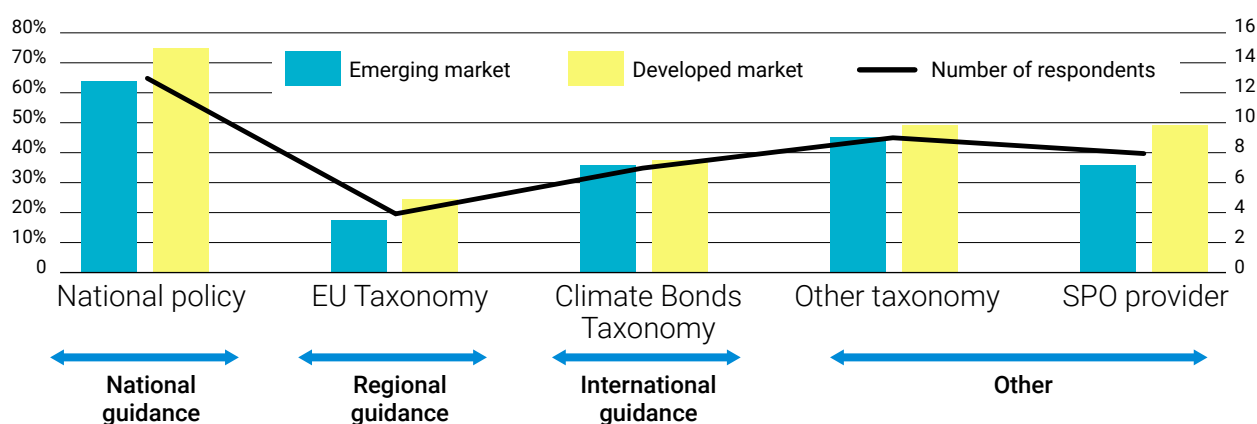
As a result, it is now rare to see green bonds that do not align with internationally recognised guidelines. The two leading schemes to date have been market-led: 25% of labelled green bonds issued in 2020 were certified under

the Climate Bonds Standard and Certification Scheme developed and operated by the Climate Bonds Initiative; and 80% were in compliance with the Green Bond Principles (GBP) developed by the International Capital Markets Association (ICMA)¹ - further information on these two schemes is given in FAQ 2 below. More recently, credit-rating agencies have started to develop “green bond rating services”. As more taxonomies (classification systems for green and sustainable finance and their associated eligibility criteria) are developed by national or regional governments and regulators, these are expected to have significant take-up by issuers to determine their eligible use of proceeds, particularly where those taxonomies are embedded in a local Green Bond Standard, as is planned for the EU Green Bond Standard currently under development by the European Commission.

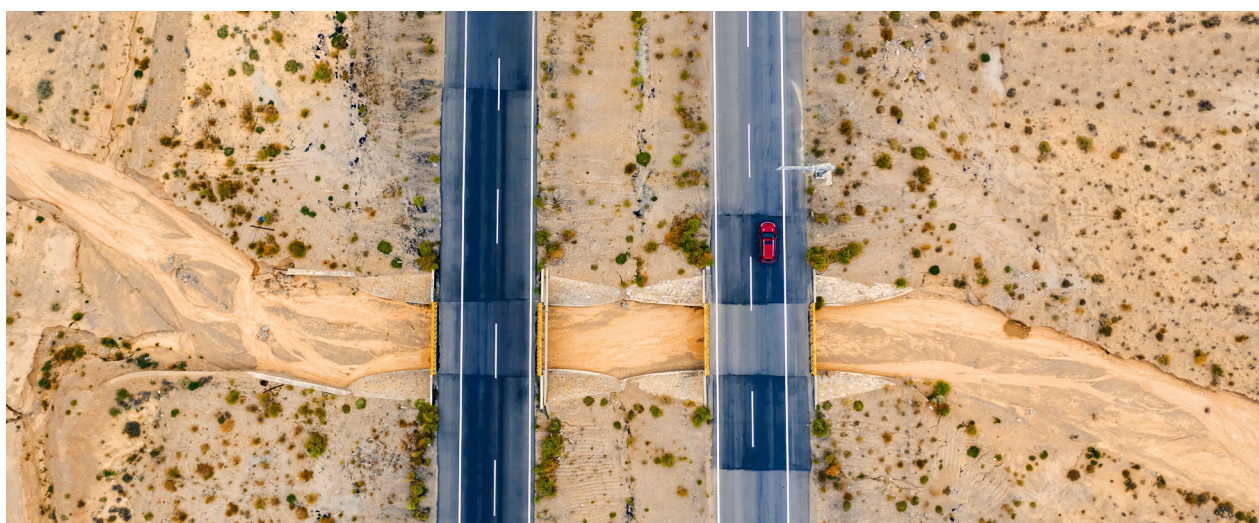
As an example of the value placed on external guidance, Figure 1 illustrates the extent of reliance on external guidance by sovereigns in the issuance of green, social or sustainable sovereign bonds to date.

¹ These total to more than 100% as the two schemes are compatible – all bonds certified under the Climate Bonds Standard comply with the Green Bond Principles. The Climate Bonds Standard provides more granular requirements and guidance than the GBP but is fully compatible with them.

Figure 1: Guidance used by sovereigns in green, social and sustainability bond issuances by November 2020.



Source: Harrison, C., and Muething, L., Sovereign Green, Social, and Sustainability Bond Survey, Climate Bonds Initiative, January 2021



FAQ 2: WHAT PROJECT SELECTION CRITERIA ARE AVAILABLE FOR SCREENING CLIMATE RESILIENCE INVESTMENTS SPECIFICALLY?

There are a number of well-established sources of guidance for green bonds that include guidance on appropriate project selection. Many of them use a similar process-based approach to assessing eligibility of climate resilience investments for a green portfolio, in recognition of the highly context specific nature of climate resilience needs and measures. However, some guidance are more detailed and prescriptive than others. The most commonly used are summarised in Table 22.

Certification under the Climate Bonds Standard and Certification Scheme requires compliance with its associated asset and project-specific use of proceeds eligibility criteria. Meeting the GBPs requires compliance with their broader eligible use of proceeds categories, which do not have prescriptive eligibility criteria but instead provide guidance on appropriate impact reporting metrics and methodologies. Both of these schemes address climate resilience.

The EU Sustainable Finance Taxonomy includes eligibility criteria for activities which make a substantial contribution to climate adaptation. In line with the Delegated Act due in Q1 2021, this Taxonomy will be the basis of mandatory disclosures from the financial sector and large companies of the proportion of investments and activities that are sustainable.

The People's Bank of China's Green Bond Catalogue does not include adaptation as a specific category, but it does contain some sectors and associated eligibility criteria for activities that are clearly linked with climate resilience. For example, the Catalogue has criteria for water efficiency, conservation and restoration of natural ecosystems, and urban drainage. Several countries are already developing or considering national taxonomies including Colombia, South Africa, Canada, Kazakhstan, Mongolia, Russia and Japan.

In addition, the Multilateral Development Banks (MDBs) Joint Methodology for Tracking Climate Change Adaptation Finance also provides a step-by-step approach to qualifying investments for the purposes of reporting them (or components of them) as adaptation finance.

"Second opinion" providers often have their own criteria and assessment methodologies for climate resilience investments, although there is less transparency around these methodologies, which are accessed via one-to-one contractual arrangements. Issuers, underwriters and investors have also developed their own bespoke frameworks to guide their investment choices, but it is unclear how climate resilience features in these.

² The guidelines outlined in this table are commonly used ones in the green bond market, but do not represent a comprehensive list. Other prominent but more general guidelines that can be looked at include: [Equator Principles](#), [EUFIWACC \(2016\)](#), [Integrating Climate Change Information and Adaptation in Project Development](#), and [EU \(2014\) Guidelines for Project Managers: Making vulnerable investments climate resilient](#).

Table 2: Sources of eligibility criteria for climate resilience investments

Guidelines	Status	Intended users (primary)	Context	Specific guidance on climate resilience
EU Sustainable Finance Taxonomy³	Draft released. Delegated Act due imminently.	EU investors, Large companies subject to the Non-Financial Disclosures Directive	<p>It establishes a list of environmentally sustainable economic activities, with associated eligibility criteria for each of those activities.</p> <p>It is an important enabler to scale up sustainable investment and to implement the European Green Deal and will create security for investors, protect private investors from greenwashing, help companies to plan the transition, mitigate market fragmentation and eventually help shift investments where they are most needed.</p>	<p>Determines that activities (and their associated investments) make a substantial contribution to climate adaptation if those activities are appropriately adapted to climate change and/ or enable other activities to adapt to climate change.</p> <p>Activities are deemed to be appropriately adapted to climate change if they have implemented physical and non-physical solutions ('adaptation solutions') that reduce the most important physical climate risks that are material to that activity. Those risks should be identified via a robust climate risk and vulnerability assessment proportionate to the scale of the activity and its expected lifespan.</p> <p>The adaptation solutions implemented must (a) not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) be consistent with local, sectoral, regional or national adaptation efforts; (d) be monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; (e) comply with the do no significant harm technical screening criteria for that activity.</p>
ICMA Green Bond Principles⁴	First released in 2014. Updated periodically.	Green bond issuers	Voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market. They provide issuers with guidance on the key components involved in launching a credible green bond; they aid investors by promoting availability of information necessary to evaluate the environmental impact of their green bond investments; and they assist underwriters by moving the market towards expected disclosures that will facilitate transactions.	<p>The GBP only provide a broad and non-exhaustive list of eligible Green Project categories. One of these categories is Climate Change Adaptation.</p> <p>No specific criteria are set on how to demonstrate the contribution/impact of the activities towards resilience. Issuers are encouraged to reference existing standards and taxonomies and/or develop their own framework, and provide the thought process by which the issuer evaluates the clear environmental benefits of selected projects. Some guidance on possible approaches and metrics for impact reporting is provided in the form of 'Suggested Impact Reporting Metrics for Climate Change Adaptation Projects'.⁵</p>

³ ANNEX to the Commission Delegated Regulation (EU) .../... supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by establishing the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation or climate change adaptation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives. November 2020. [Implementing and delegated acts | European Commission \(europa.eu\)](#)

⁴ International Capital Market Association; [The Green Bond Principles. Green Bond Principles Voluntary Process Guidelines for Issuing Green Bonds. June 2018.](#)

⁵ International Capital Market Association; [The Green Bond Principles. Suggested Impact Reporting Metrics for Climate Change Adaptation Projects. December 2020.](#)

Guidelines	Status	Intended users (primary)	Context	Specific guidance on climate resilience
The Climate Bonds Standard and CBI's Climate Resilience Principles⁶	First released in 2012. Regularly updated and expanded.	Green bond issuers	<p>The Climate Bonds Standard & Certification Scheme is the only certification scheme globally accepted for green bonds. Certification requires proceeds to meet a set of eligibility criteria, confirmed by an approved verifier, plus specified management and reporting requirements to be met.</p> <p>In 2019, the Climate Bonds Initiative also published the Climate Resilience Principles, an overarching set of principles for screening criteria for climate resilience to guide all future development of sector-specific climate resilience criteria, and thereby ensure consistency and harmonisation of all climate resilience criteria across all sectors.</p>	<p>Climate resilience criteria have been developed for key sectors and must be adhered to in order to achieve Climate Bonds Certification. These sectors include: agriculture, bioenergy, forestry, land conservation and restoration, marine renewables, shipping, water infrastructure and waste management. The sector criteria build on the Climate Resilience Principles provide a process-based approach to identifying resilience investments. The process includes the following steps:</p> <ol style="list-style-type: none"> 1. Undertake a climate risk assessment and subsequently design and implement adaptation actions and measures that appropriately address those risks so that the asset or project will be 'fit for purpose' over its full operating life, while ensuring that no harm is done to the resilience of others, taking into account the asset's or project's boundary and interdependencies with the systems of which it is a part. This includes understanding and addressing physical climate hazard, exposure and vulnerability, and potential trade-offs between climate resilience and climate mitigation impacts. For assets and activities focused on enhancing the resilience of the system, this also includes a resilience benefits assessment; 2. On-going monitoring and evaluation by the issuer to enable assets and activities to remain in step with evolving climate hazards, exposures and vulnerabilities, and changing opportunities and needs for resilience benefits.
MDB Joint Methodology for Tracking Climate Change Adaptation Finance⁷	First released in 2012 and updated periodically	MDBs	The joint MDB Working Group on Climate Finance Tracking applies a common climate finance tracking methodology to identify climate mitigation and climate resilience finance within the banks' activities.	<p>The methodology, which MDBs have applied on their projects since 2012, consists of a process-based methodology that can be applied in a variety of contexts and locations. The three steps of the process are:</p> <ol style="list-style-type: none"> 1. Setting out the climate change vulnerability context of the project; 2. Making an explicit statement of intent of the project to reduce climate change vulnerability; 3. Articulating a clear and direct link between specific project activities and the project's objective to reduce vulnerability to climate change.

⁶ Climate Bonds Initiative. Climate Resilience Principles. September 2019.

⁷ 2019 Joint Report on Multilateral Development Banks' Climate Finance.

Guidelines	Status	Intended users (primary)	Context	Specific guidance on climate resilience
People's Bank of China Green Bond Catalogue	First released in 2015. Updated periodically.	Green bond issuers	<p>China was the first emerging market to issue mandatory guidelines and a catalogue for green bond issuance, published by the People's Bank of China, China's central bank. The 2020 Edition, currently under consultation, like its previous versions, will serve as a reference basis for green bond approval and registration, third-party green bond evaluation, green bond rating and related information disclosure.</p> <p>The catalogue consists of a list of eligible sectors and assets and contains no metrics or thresholds. The catalogue is based on both industrial policies and environmental considerations.</p>	<p>The catalogue does not make a distinction between adaptation and mitigation, but rather uses a classification system of eligible activities, which covers both climate goals as well as broader environmental projects, such as those addressing air pollution. The catalogue provides sector-specific criteria for some limited activities, whereas others are simply a descriptive list of eligible assets, similar to the GBP approach, but with much more detail (i.e. 25 Level-II industry categories, 48 Level-III industry categories and 204 Level-IV industry categories). For resilience investments, a rigid classification system may not be totally fit-for-purpose given the context-specific nature of adaptation activities. On the other hand, such an approach simplifies the screening process and can be used widely by all types of issuers without detailed knowledge or capacity to undertake detailed vulnerability assessments. Some categories of the catalogue have a more direct link to adaptation, including: natural ecological protection, emergency prevention and control of disaster, and water saving and unconventional water use</p>



FAQ 3: WHICH PROJECT SELECTION CRITERIA SHOULD I USE?

When determining which guidance to follow, issuers should consider:

- The jurisdiction(s) in which they operate and are issuing (which may or may not be the same);
- The jurisdiction of their targeted investors;
- The degree of detail sought in the guidance.

Issuers may be subject to certain regulatory requirements based on the jurisdiction of their operations and/or issuance, or base on the jurisdiction of their target investors. Issuers should follow the guidance of the appropriate jurisdiction.

For example, in China, green bonds must comply with the project eligibility Criteria laid out in the People's Bank of China Green Bond Catalogue. For bond issuers operating or issuing in the EU, or those whose investors are in the EU, compliance with the eligibility criteria in the EU Sustainable Finance Taxonomy will be important as those investments will be subject to the mandatory disclosure requirements in the forthcoming EU Delegated Act. This does not mean that the investments themselves need to comply with those criteria, but that it will need to be disclosed whether they do comply or not, and green investors subject to this regulation will likely have a strong preference for investments that do comply.

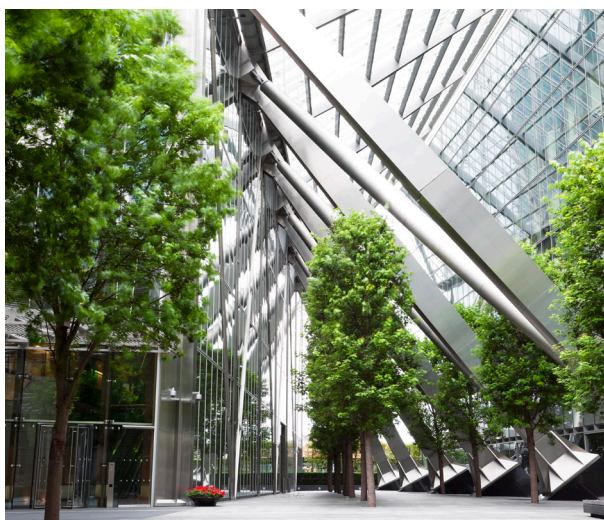
As European savings account for 25% of the world's wealth, investment decisions in Europe will have an outsized impact on global capital flows. Even outside the EU, the eligibility criteria in the EU Sustainable Finance Taxonomy are gaining attention and likely take-up due to the inherent global nature of bond investors, who can

scale up investment much more easily if project selection criteria are consistent globally. The EU Sustainable Finance Taxonomy is expected to serve as a blueprint for taxonomies globally and it is likely that other nations will follow similar requirements around sustainable finance.

However, even in these markets, there will continue to be a key role for market-led initiatives such as the Climate Bonds Standard and the GBP as these encompass tested and trusted mechanisms for the 4 key pillars of robust and credible green bonds: use of proceeds, process for project evaluation and selection, management of proceeds and reporting. Many issuers and investors value the additional guidance and assurance processes that these schemes provide.

Beyond jurisdictional and investor implications, issuers may wish to consider the degree of granularity and detail in the criteria and associated guidance, and what best suits their needs.

The Green Bond Principles and China Green Bond Catalogue, for example, differ in that they provide high-level categories for eligibility instead of a process-based approach to determining eligibility of resilience projects. This puts the onus on the issuer to demonstrate credibility in terms of resilience benefits, using their own methodologies, local standards, or second party opinion providers. This has the advantage in that there is more flexibility in how you demonstrate the contribution of projects to adaptation and resilience goals. For example, you may reference local climate action plans and demonstrate how you are aligned with them. The disadvantage of this approach is that investors may require a more robust demonstration of impact. Another disadvantage of a category-based approach is that it limits the type of eligible activities to those mentioned in the catalogue or list of eligible categories. However, adaptation and resilience needs may span across a broad range of activities that might not fit neatly into rigid and limited categories. Table 2 provides further insights into commonly used guidance.



FAQ 4: SHOULD I ADDRESS OTHER ENVIRONMENTAL AND SOCIAL OBJECTIVES AS WELL AS CLIMATE RESILIENCE?

A number of factors indicate the need for issuers to think holistically across a range of environmental and social objectives, even where their primary focus is investment for climate resilience.

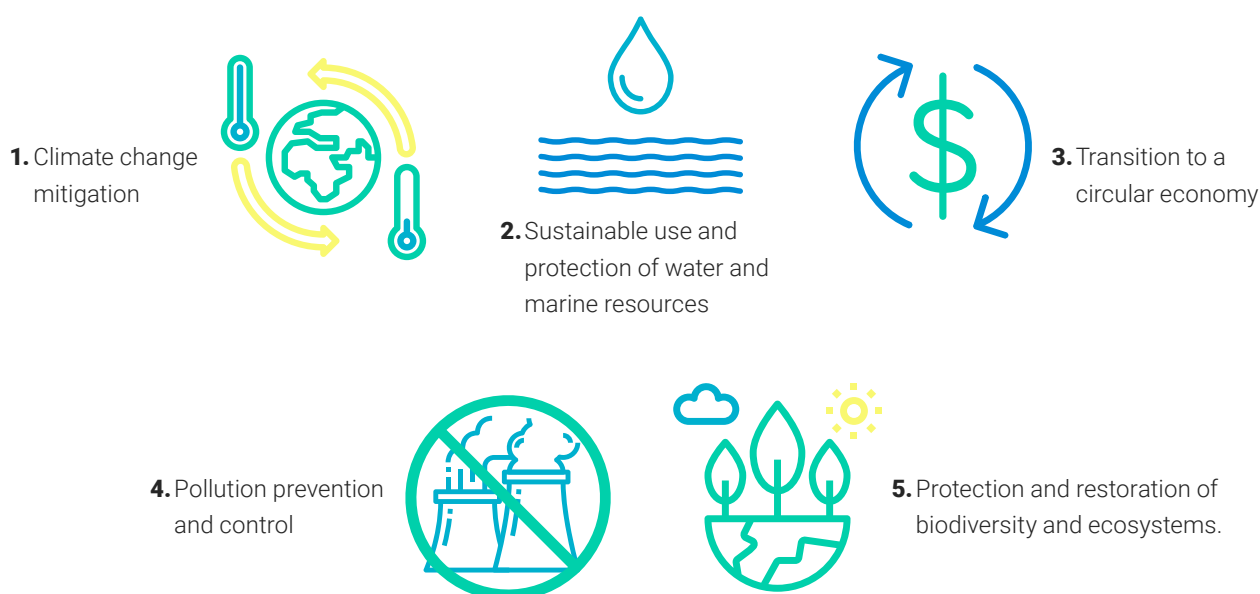
Firstly, investors are increasingly looking for products that contribute to not just one environmental or social goal, but a number of these goals simultaneously – including climate change mitigation and adaptation, pollution prevention and control, healthy ecosystems, education, poverty, health and human rights. This is evidenced by the growing number of public investor commitments such as through the Equator Principles, adopted by 116 financial institutions, for determining, assessing and managing environmental and social risk in project finance. Certainly, there has been a substantial rise in the issuance and investment in explicitly labelled sustainability bonds and loans (a combination of green and social projects), social bonds and even pandemic bonds in response to COVID-19 pandemic (see Figure 2).

In addition, some authorities are developing and implementing more comprehensive frameworks for sustainable finance that require a more holistic

consideration of a range of Environmental, Social, and Governance (ESG) concerns. This is both a signal of the importance for issuers to take account of impacts beyond resilience, and also a source of guidance on how to do so.

For example, the most developed guidance at present on how to deal with multiple objectives is the EU Sustainable Finance Taxonomy. Alongside criteria for a 'substantial contribution' to climate change adaptation, it presents complementary 'do no significant harm' (DNSH) criteria. These act as a check that the activities and associated investments that are making a substantial contribution to climate adaptation do not significantly harm other prioritised environmental and social goals. Conversely, activities and investments that make a substantial contribution to other green objective(s), such as climate change mitigation, do not significantly harm climate adaptation. The Taxonomy also incorporates minimum social safeguard requirements for all activities relating to labour and human rights.

At the stage of development, the prioritised goals for which DNSH criteria exist, alongside the climate change adaptation goal, are:



For illustration, Box 3 gives an example of a set of DNSH criteria developed for perennial crop production. Across the EU Sustainable Finance Taxonomy, DNSH criteria have so far been developed for 98 economic activities assessed as making a substantial contribution to either or both climate change mitigation or adaptation.

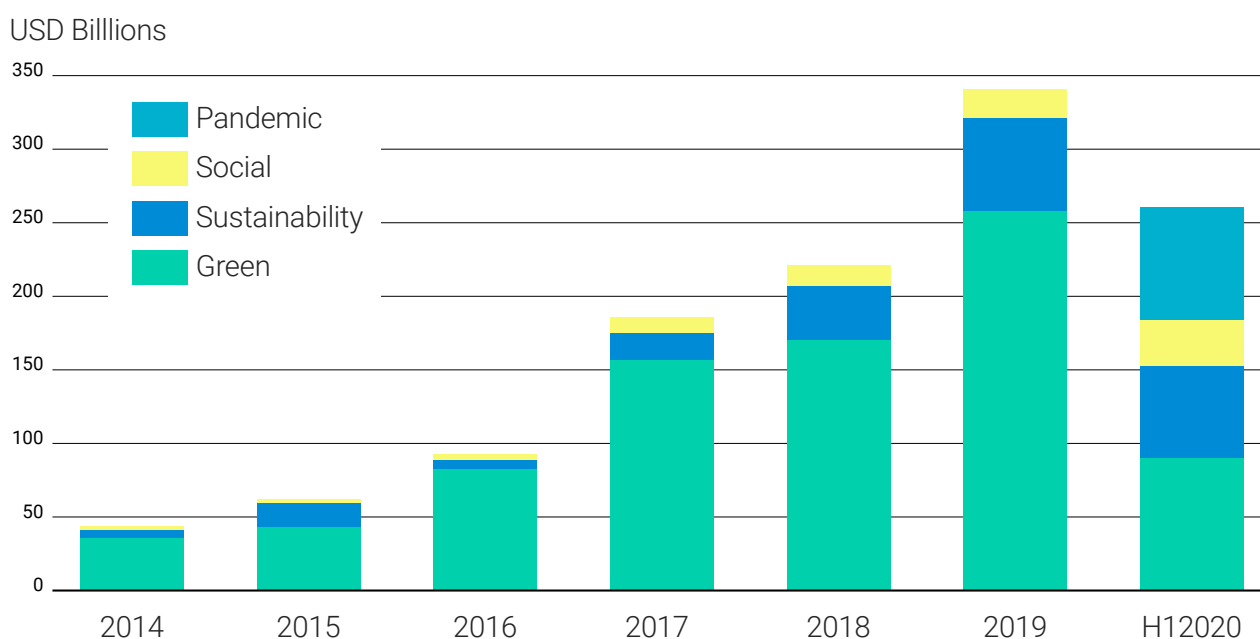
There is also a valid discussion on whether issuers should aim to deliver a substantial contribution not just to one goal, but to multiple goals where all are key factors for the activities or projects that are the focus of those investments. However, guidance has not (yet) evolved in this direction.

With an approach of ‘do no significant harm’, at this time, even the EU Sustainable Finance Taxonomy (the most advanced in this area) does not have full coverage of all environmental and social goals nor all economic activities and associated investments. It currently covers only 80 economic activities. Likewise, the Climate Bonds Standard which is in the process of integrating climate resilience criteria alongside climate mitigation criteria has only done this for a limited number of sectors (agriculture, forestry, water infrastructure, bioenergy and the forthcoming hydropower sector criteria). The GBPs, in contrast, do not require the consideration of multiple environmental goals in a holistic manner. All eight general use of proceeds categories, one of which is climate adaptation, stand alone and there is no requirement to address multiple environmental or social factors for compliance.

Many issuers will need to undertake their own assessments on potential trade-offs and opportunities for co-benefits across multiple objectives in the context of the specific investments financed via the bond. These assessments can use existing social and environmental risk management practices and systems that are in place. In practice, the services of second opinion providers are commonly utilised to provide investment-specific advice and assurance in this respect. These services will always be needed where issuer’s also have their own internal criteria that need to be incorporated into the investment screening process, or vice versa, where climate risk considerations need to be mainstreamed into existing processes. For example, alignment with national priorities, or corporate strategies, or specific considerations related to gender or social inclusion, which can also be integrated into the eligibility criteria.

Work is ongoing to develop more detailed guidance on how to balance or trade-off between multiple green and/ or social objectives and specifically resilience can be managed when it conflicts with other goals. At this stage, it is recommended that issuers take a conservative approach and demonstrate to investors that investments are both low-carbon and climate resilient.

Figure 2: Sustainable debt market – growth in issuance beyond green.



Source: Almeida, M., Mok, L., Tukiainen, K., Sustainable Debt Global State of the Market H1 2020, Climate Bonds Initiative, October 2020.

BOX 3: EU TAXONOMY'S DNSH CRITERIA FOR GROWING OF PERENNIAL CROPS

For illustrative purposes, below is a section of the DNSH Criteria for growing of perennial crops which remain under development, released for public consultation in November 2020.

DNSH to climate change mitigation:

- a. Permanent grassland is maintained;
- b. Wetland and peatland are appropriately protected;
- c. Arable stubble is not burnt, except where an exemption has been granted for plant health reasons;
- d. Minimum land management under tillage, including on slopes;
- e. No bare soil in most sensitive period;
- f. continuously forested areas, namely land spanning, more than one hectare with trees higher than five meter and a canopy cover of between 10% and 30%, or able to reach those thresholds in situ, are not converted.

DNSH to sustainable use and protection of water and marine resources

- a. Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed in accordance with a water use and protection management plan, developed in consultation with relevant stakeholders;
- b. Where the activity involves water abstraction, a permit for water abstraction has been granted by the relevant authority for the activity, specifying conditions to avoid significant impact on water bodies.

Source: Draft Delegated Act, November 2020



STEP 2: IDENTIFY QUALIFYING GREEN PROJECTS AND ASSETS

FAQ 5: WHAT COUNTS AS A CLIMATE RESILIENCE INVESTMENT?

Resilience investments improve the ability of assets and systems to persist, adapt and/or transform in a timely, efficient and fair manner that reduces risk, avoids maladaptation, unlocks development and creates benefits, including for the public good, against the increasing prevalence and severity of climate-related stresses and shocks.

Although the language used is different in different guidance, two types of climate resilience-related investment are consistently recognised:



“Asset-level adaptation”: Investments aimed at maintaining or enhancing the resilience of an asset or activity to climate change, specifically to ensure that the asset or activity’s performance is fit-for-purpose over its design lifespan, i.e. to adapt the asset or activity to climate change. Examples include:

- upgrading, replacing, or relocating infrastructure to reduce vulnerability to floods etc.;
- use of drought resistant crops or training on and implementation of sustainable farming practices at individual farm level to maintain and enhance productive capability.

An example in practice is the recent bond issuance of the government-owned company, Central Nippon Expressway Co. Ltd., to upgrade and strengthen the highway network, including bridges, embankments and cut-outs that are vulnerable to climate risks.



“System-level adaptation”: Investments in assets or activities whose primary purpose is to deliver climate resilience benefits to the broader system, i.e. investments in activities that enable adaptation by another economic activity or element of society. Examples include:

- the construction and operation of desalination plants;
- research into drought resistant crops;
- wild-brush clearing at landscape level;
- climate monitoring and data management technologies and services;
- provision of healthcare services for the treatment of diseases that might increase due to climate change;

An example in practice is the green bond issuance from KBN, a Norwegian local government funding agency, to finance the construction of a number of landslide and flood protection and diversion measures across the country.

In many cases, these two categories actually overlap. For example, a private utility investing in the resilience of its grid assets automatically enhances the resilience of the population dependent on that grid. Although this benefit to the surrounding system may neither be explicitly documented by the utility, nor be its explicit intent, the utility's actions to ensure that its assets are resilient have beneficial spill-over effects.

The Climate Resilience Principles provide a wider set of examples – see Box 1 in that document⁸.

The key point here is that the range of potential investments in climate resilience is huge – we need to make global economies and societies resilient to climate

change by adapting infrastructure and activities whose primary purpose is not climate resilience and by developing the necessary infrastructure, products and services dedicated to enabling that adaptation. Given bonds are often used as refinancing instruments, this includes both the refinancing of prior investments in resilience as well as new investment in existing or new infrastructure or activities.

Consistent with the Green Bond Principles and Sustainability Guidelines, the proceeds of Green Bonds for Climate Resilience may be applied to finance and refinance projects with clear climate resilience benefits. Issuers should clarify which projects are to be refinanced and disclose, to the extent relevant, the expected look-back period (i.e. the number of previous years that the issuer will look back to) for these refinanced projects. Additional qualitative disclosures will allow climate resilience-related bond investors to understand the project's context-specific climate vulnerabilities to which the refinanced project is providing a solution.

FAQ 6: HOW DO I DEMONSTRATE THE INVESTMENT TARGETS A CRITICAL CLIMATE RESILIENCE NEED?

Per the FAQs above, appropriate climate resilience investments are those that 1) maintain or enhance the resilience of an asset or activity to climate change; and/or 2) enable the adaptation of other activities or a system as a whole. For both of these, it is necessary to take into account climate risks – the risks that the infrastructure or activity will be exposed to over its operating life, or the risks faced by the system respectively. Only once the risks that infrastructure, activity or system respectively will be exposed to over its operating life are understood, can appropriate risk reduction measures, and the associated investment need, be identified.

Investments therefore need to tie back to a robust climate risk assessment, and specifically measures that effectively and appropriately address the risks identified in that assessment.

The EU Sustainable Finance Taxonomy, the MDB Climate Finance Tracking Methodology and the Climate Resilience Principles from the Climate Bonds Initiative all describe the general process of such a risk assessment. All highlight the need for robust climate projections and modelling.

There is a vast number of tools available in the market for carrying out climate risk assessment (see the Technical Annex to the CRPs for a summary of prominent tools⁹). Guidance developed by the European Financing Institutions Working Group on Adaptation to Climate Change (EUFIWACC) also provides practical, project-level guidance¹⁰. Another valuable resource, specifically for infrastructure, is provided through the Resilience Toolbox by Resilience Shift¹¹. The European Commission recommends using open-source data like the Copernicus services¹² and the use of the best available scientific

⁸ Climate Bonds Initiative. *Climate Resilience Principles*. September 2019.

⁹ Climate Bonds Initiative. *Climate Resilience Principles Technical Annex*. September 2019.

¹⁰ European Financing Institutions Working Group on Adaptation to Climate Change. *Integrating Climate Change Information and Adaptation in Project Development: Emerging Experience from Practitioners*. 2016.

¹¹ Resilience Shift. *Resilience Toolbox*.

¹² www.copernicus.eu/en

methodologies in accordance with latest IPCC reports and scientific peer-reviewed publications. While these many tools for conducting climate risk assessments exist, specific enough guidance on this – particularly for those with limited access to or capability for in depth climate risk assessment – is lacking. Moreover, there is a lack of standardised metrics to judge the quality of a risk assessment or to provide steer to issuers on the boundaries of the assessment, how to deal with uncertainty in climate models, selecting appropriate time horizons and climate scenarios – to name a few.

It is beyond the scope of this guide to provide detailed guidance on risk assessments. Most issuers will likely need external support to carry out the assessment given the technical expertise required. However, whichever tools and methodologies are employed, the following considerations are critical:

- Develop clear boundaries of the assessment and which interdependencies with surrounding infrastructure systems that will be looked at. Boundaries should be set so as to include what may be directly affected by the establishment and/or operation of the asset or activity, going beyond what the asset or activity owner has sole control over (e.g. by contract or obligation).
- Develop a strong understanding of key terms in the risk assessment including hazard, exposure, vulnerability. By understanding these different components of risk, issuer's will be able to determine a variety of resilience actions. For example, in the case of a flood risk, these actions might include:
 - reducing exposure by moving out of a flood zone;
 - reducing vulnerability by using more resilient materials and designs;
 - changing the probability of impact occurrence through better drainage;
 - minimising the consequences of asset failure through better emergency management protocols and mitigation of infrastructure failure chains.
- Assess both acute and chronic risks. Acute risks are those that are event-driven, arising from extreme weather events such as cyclones, hurricanes, or floods. Chronic risks are those arising

from longer-term shifts in climate patterns (e.g. sustained higher temperatures). The EU Sustainable Finance Taxonomy and the Climate Resilience Principles both provide (the same) set of climate risks that should be considered as part of the risk assessment.

- Employ a variety of climate models and data sets that address projected climate risks and impacts for local contexts and capture the degree of temporal granularity required to capture climate change impacts.
- A timeframe that is long enough to address growing physical climate risks that may impact the asset or activity and the wider system over the operational life of the asset or activity – and which will likely be more significant over time – should be assessed.
- Aligned with local and regional climate resilience strategies and targets as these are designed to reflect local/national climate risks and development priorities.

An important point to note is that long-term data and high resolution climate projections may be sparse or lacking in some regions of the world, particularly in developing countries and post-conflict environments. A key strategy for these instances is to combine climate projections with bottom-up vulnerability and risk assessments. Bottom-up approaches focus on the recent past and present vulnerability. This information can be obtained through both previous records maintained by government agencies and through qualitative research with surrounding communities and stakeholders on changing trends in climatic patterns and previous disasters and damages. A first port of call is to look at regional, national and local climate projections and work with national meteorological agencies, who are often the focal point for disseminating climate data.

It is also noted that these risk assessments do not necessarily have to be carried out by the issuer themselves. For example, if an issuer has a portfolio of buildings that have been built to design codes, and those are based on a collective risk assessment of climate hazards – they could qualify. Or if an issuer wants to refinance assets that are aligned with robust national climate adaptation plans and can demonstrate this, they may also be eligible.



FAQ 7: HOW DO I IDENTIFY CLIMATE RESILIENCE INVESTMENTS IN MY EXISTING PORTFOLIO, BALANCE SHEET OR INVESTMENT PLAN?

It is challenging to prima facie screen an existing portfolio for investments suitable for inclusion in a climate resilience-related bond. Rather than having a ‘white-list’ of investments that are automatically eligible based simply on their characteristics or a simple key performance indicator, the eligibility of climate resilience-related investments must be linked to an appropriate risk assessment

The technical expert group that developed the draft EU Sustainable Finance Taxonomy provided a number of examples of the key climate resilience risks and potential adaptation measures for a selected number of economic activities. However, this level of detail is not directly incorporated in the EU Sustainable Finance Taxonomy. The Climate Bonds Standard is likewise applying these generic processes on a sector by sector basis to develop much more specific criteria for investments in a number of sectors including water, agriculture, forestry, solid waste management and others. See the Agriculture Criteria of the Climate Bonds Standard for one example¹³. This more detailed work provides further guidance to issuers in terms of what they need to be looking for when screening their pipelines and portfolios.

Issuers can also be guided by the countries’ NAPs, NDCs, climate and environmental plans and policies, and national and local development budgets. All of these will provide insights into the nature of needed “system-level investments” for public and private issuers alike and can provide a steer to potential eligible investments in any existing pipeline or portfolio. For corporates, company-level assessments of climate risks to their ongoing operation and asset base will be a key information source for identifying eligible investments in respect to their “asset-level investments”.

Identifying potentially eligible assets or investments from existing portfolio or pipelines requires a tagging exercise to determine exactly which expenditures in a budget, or stimulus plan, or investment plan, or capex plan (for a public or private entity implementing resilience), or

¹³ [Climate Bonds Initiative. Agriculture Background Paper Climate Bonds Standard & Certification Scheme. 2021.](#)

loans in a portfolio (for a bank) are suitable for inclusion. In most cases, this involves scrutinising each budget, investment or portfolio line and identifying whether it could be classified as a resilience investment or not. Box 4 provides two examples in practice.

For each potential investment identified, an evaluation is required of whether the physical climate risk and benefit assessment done would meet the resilience criteria for inclusion in a green bond today per current guidance. Potentially, a retrospective physical climate risk assessment and climate resilience benefits assessment may be

carried out if none was done at the time but it is believed the investment would qualify as a climate resilience investment. Naturally, this may limit what can be defined as eligible as this kind of retrospective assessment may not be feasible or meaningful for all assets/investments.

In parallel, issuers should also put in place a screening approach for new investments in which they start identifying investments that require physical climate risk assessment and climate resilience design adjustments, which will help to build up stronger pipelines of potentially eligible assets/investments over time.

BOX 4: SCREENING A PORTFOLIO – REAL WORLD EXAMPLES

Fiji's Head of Climate Change worked with their Head of Treasury to extract from the government's budget a 'long list' of projects that may qualify as 'green.' They then gained support from the World Bank's Climate and Environment team to undertake a high-level screening of the project descriptions to sort which projects are eligible, partly eligible (requiring some changes to their focus), or likely to be ineligible. This allowed Fiji to establish its pipeline of expenditures that met their eligibility criteria.

In the case of EBRD's 2019 Climate Resilience Bond issuance, this benefited from the fact that EBRD had for almost a decade been screening its pipelines for projects that are exposed to physical climate risks and which have the potential to be developed in a way that builds climate resilience. Together with EBRD's work (and with the work of other MDBs) to systematically track adaptation finance in its financing operations, this meant that EBRD had access to granular, project-level information including physical climate risk assessments and climate resilience benefit assessments. This experience highlights the value of collecting such information systematically from project pipelines and portfolios.



FAQ 8: WHAT COSTS CAN I COUNT?

Per FAQ 5 above, two broad types of climate resilience investments are widely recognised: i) investments to adapt economic activities to climate change (“asset-level adaptation”); and ii) wider investments in activities that enable other activities or parts of society to adapt to climate change (“system-level adaptation”).

The technical expert group recommendations to the European Commission regarding the EU Sustainable Finance Taxonomy provide some guidance on what costs might be counted for each of these types. Specifically, the group recommends that all capital expenditures relating to system-level adaptation should be counted in. For example, the entire cost of a flood defence structure to protect a city or facility would be eligible. Nevertheless, in the case of “asset-level adaptation”, only the incremental costs of adaptation should be counted in, not the expenditures associated with the whole activity. For example, the cost of retrofitting a building to withstand more intense hurricanes or flood risk would count, but the full construction cost of the building would not. This would also be true for the construction of a new building – whereby only the incremental costs for adapting the design of the building to climate-related hazards and risks would be eligible.

This approach is appropriately aligned to investors who are likely to have greater confidence in investing in “system-level adaptation” in a Green Bond for Climate Resilience. For “asset-level adaptation”, investors may need to be approached with more caution as they may not accept the eligibility of the entire asset costs. As guidance in this area grows, this scenario may change whereby the entire cost of an adapted asset could be included. This is because when such activities are adapted to cope with physical climate risk, they contribute to the climate resilience of the entire, highly integrated and interconnected economic system and, as a result, deliver a global benefit through aggregated adaptation in all sectors of an economy. For example, adaptation of an electricity transmission line to increased risk of flood will increase the resilience of all those who rely on that electricity supply. Methodologies, tools and metrics to measure these climate resilience benefits remain under development and technical limitations as such mean that counting only the costs of adaptation of the asset or activity is the most viable, conservative option today.

FAQ 9: WHAT IF I DON'T HAVE ENOUGH RESILIENCE PIPELINE TO GET TO THE SCALE NEEDED FOR A BOND?

The minimum bond issuance size typically required by the majority of institutional investors can be a hurdle for issuers. In developed bond markets, investors typically look for issuance sizes of USD200mn and above, preferably USD1bn deals, while in emerging markets smaller sizes of USD100mn are acceptable¹⁴.

This should not prevent the issuance of the bond as long as other eligible assets are available to include. A green bond, or a Green Bond for Climate Resilience, can include ‘mixed use of proceeds’. That is, a portion of the proceeds relates to investments for climate resilience and another to investments in climate mitigation. This is a widely adopted approach. Examples include France’s green sovereign bond funds to fight climate change, adapt to climate change, protect biodiversity

and fight pollution; Corporación Andina de Fomento, a MDB in Latin America, which funds renewable energy, clean transportation, sustainable management of living natural resources and land use, waste management and water management, and energy efficiency; City of Gothenburg, in Sweden, which funds renewable energy, green buildings, energy efficiency, clean transport, waste management, water and wastewater management, sustainable land use and environmental management, and climate adaptation.

If adaptation needs are fulfilled through small-scale resilience projects, aggregation mechanisms may present a promising path to reaching these issuance volumes. Individual small- and medium-sized projects can be complex to underwrite and originate, and the

¹⁴ Climate Bonds Initiative: UNEP - Inquiry: Design of a Sustainable Financial System. Scaling up Green Bond Markets for Sustainable Development: A strategic guide for the public sector to stimulate private sector market development for green bonds. 2015.

cost of those activities can be high compared with the small size of the deals¹⁵. Aggregation is a strategy used by green banks, cooperatives and specialised aggregating companies to bundle small and medium-sized individual projects to a sufficient size so that the task of evaluating the transaction and documenting the arrangements can be cost-effective. Aggregation and securitization in the green bond market are still very nascent, but work is progressing and could significantly scale-up access to investors. For example, in late 2015, the Green Climate Fund provided USD217mn to energy efficiency green asset-backed securities issued to the Mexican bond market by the Inter-American Development Bank¹⁶. For more information on this topic, please refer to our companion paper: Green Bonds for Climate Resilience: State of Play and Roadmap to Scale.



¹⁵ [Coalition for Green Capital. Aggregation and Securitization. 2019.](#)

¹⁶ [I4CE - Institute for CLimate Economics. Beyond transparency: unlocking the full potential of green bonds. 2016.](#)

STEP 3: DEVELOP GREEN BOND FRAMEWORK

FAQ 10: WHAT EVIDENCE DO INVESTORS LOOK FOR TO REASSURE THEMSELVES OF THE RESILIENCE CREDENTIALS OF A BOND? HOW DO I CAPTURE AND QUANTIFY RESILIENCE BENEFITS?

Investors will likely look to the green bond framework to ascertain the credentials of the bond. The green bond framework should clearly articulate:

1. Adherence to credible guidance and project selection criteria (per the FAQs above);
2. Independent review (per FAQ 11);
3. Reporting a viable plan to undertake ongoing monitoring of climate risks and benefits linked to the assets and activities. This allows investors to determine whether they continue to be fit-for-purpose and maintain any climate resilience benefits as climate hazards, exposures and vulnerabilities evolve. Balancing robustness of the resilience credentials and costs of reporting is a clear challenge and should be carefully considered when developing post-issuance reporting commitments.

For sovereign and municipal issuers, an issuer profile report is a best practice.

Issuers should also plan for additional outreach and discussion during the marketing phase of the issuance, including during the roadshow, to explain to existing and new investors the specifics of a green bond versus vanilla bond, and the details of the bond's climate resilience components.

Capturing and quantifying the benefits of climate resilience investments is typically done at an outcome level and on an ex-ante basis, being measured against the expected situation in a "no action" scenario. This may be most easily categorised relative to the climate-related hazard(s) that the climate resilience project(s) seek(s) to address, withstand and/or ameliorate. For example,

an investment to boost the flood resistance of a coastal infrastructure asset could characterise expected damages from storms and high tides over a 10 year time period with and without the proposed intervention. Issuers seeking examples of this system of classification, as well as of suggested quantitative impact indicators, may refer to the Green Bond Principles' impact reporting for climate change adaptation projects¹⁷.

Though guidance is available, practically quantifying the expected benefits is usually difficult. This requires models to capture the variety of benefits across weather events of different magnitude and over a long projection period, for which detailed historical damage and exposure data are needed. In addition, such models need to take into account long-term climate scenarios, incorporating projections of how climate might develop and how exposure to the resulting risks might change because of growth in assets and population.

Practically speaking, the guidance on benefit quantification is still nascent – and issuers will likely need to adopt sector-specific methodologies for quantification. More specific guidance for this may emerge over time, as the market gains understanding of metrics and methodologies for calculating resilience benefits appropriate to each sector. Simpler approaches can be employed that capture at least some of the benefits of an investment, if not all. A government issuing a Green Bond for Climate Resilience may consider that the benefits are a public good and do not need to be captured, but in order to reap the reputational benefits and investor diversification, demonstrating expected benefits is very useful. Similarly, corporate issuers should be able to demonstrate to their bond investors how they will recoup such investment and/or whether such investment may improve their credit rating.

¹⁷ [The Green Bond Principles; International Capital Market Association. Suggested Impact Reporting Metrics for Climate Change Adaptation Projects. 2020.](#)



STEP 4: ARRANGE INDEPENDENT VERIFICATION

FAQ 11: WHERE DO I FIND EXPERTISE FOR REVIEWING RESILIENCE CREDENTIALS OF MY GREEN BOND FRAMEWORK?

The process for this step involves the same considerations as for conventional green bonds and does not have any resilience specific considerations. For a green bond to attain a level of investor legitimacy, there is market consensus that issuers must obtain a pre-issuance external review of the green bond's compliance with the Green Bond Principles, or an equivalent framework. For resilience-related bonds, verification is arguably even more important as they are more complex and investors are generally less able to conduct full due diligence themselves. An important consideration when selecting a verification method is to select a verifier or Second Party Opinion (SPO) provider that has expertise in resilience, and particularly in the sectors that an issuer's assets/activities are targeting. Not all verifiers will be well-versed in adaptation and resilience methodologies and tools.

Certifying against the Climate Bonds Initiative's Standard and Certification Scheme is considered best practice,

and 25% of labelled green bonds issued in 2020 were Climate Bonds Certified. SPOs are also a popular option whereby independent verification is conducted by qualified parties such as auditors to verify the green bond framework, underlying asset sustainability or issuers' claims. There is currently no clear consensus indicating which type of external review is perceived by investors as the most transparent and reliable, however this is an area which is expected to be constantly evolving as the market moves towards standardizing expectations around external reviews.

The Climate Bonds Initiative maintains a list of approved verifiers that are well-versed in the Standard, who are also often Second Party Opinion Providers¹⁸. Another useful and comprehensive resource to identify an appropriate external reviewer is ICMA's External Review Service Mapping, which provides information on the range of services offered as well as the context and content of the final external review report¹⁹.

¹⁸ Climate Bonds Initiative. [Approved Verifiers under the Climate Bonds Standard](#).

¹⁹ International Capital Market Association. [External Review Service Mapping](#).

STEP 5: SET UP TRACKING AND REPORTING

FAQ 13: WHAT ARE THE TRACKING AND REPORTING REQUIREMENTS FOR CLIMATE RESILIENCE-RELATED BONDS?

For any green bond (climate-resilience focused or otherwise), the issuer will need to set up robust management and controls for the tracking and allocation of proceeds in order to provide investors with the required level of transparency. These controls should cover tracking and reporting on both proceeds allocated in line with the adopted project selection criteria and any unallocated proceeds. It should cover both the internal and external assurance mechanisms that will be used to verify the appropriate use of proceeds and management.

Useful resources to understand tracking and reporting requirements are included in the footnotes.^{20,21}

²⁰ World Bank. *Green Bond Proceeds Management & Reporting*. 2018.

²¹ Climate Bonds Initiative. *Post-Issuance Reporting in The Green Bond Market*. 2019.



STEP 6: ISSUE BOND

FAQ 13: HOW SHOULD I LABEL MY BOND?

Resilience is being financed today under a variety of labels. What is most important for any bond is the robustness of its green or social credentials. How a bond is labelled does not give insight into this. What it does do though is indicate the focus of the use of proceeds. An issuer may decide to label a bond as a 'Climate Resilience Bond' or a 'Green Bond' or the hybrid 'Green Bond for Climate Resilience', depending on the marketing message it wishes to send.

Labelling a bond as a 'Climate Resilience Bond' has the following advantages:

- Highlights the specific efforts that have been or will be made to combat the growing and increasingly costly impacts of climate change through the bonds proceeds;
- Useful for identifying and tracking resilience finance;
- Marketing to investors (though investor demand specifically for resilience is currently unknown);
- Highlighting commitment to climate resilience to consumers, citizens and other stakeholders;
- Bringing attention to resilience more generally, making it visible in the green bond space and attracting other issuers.

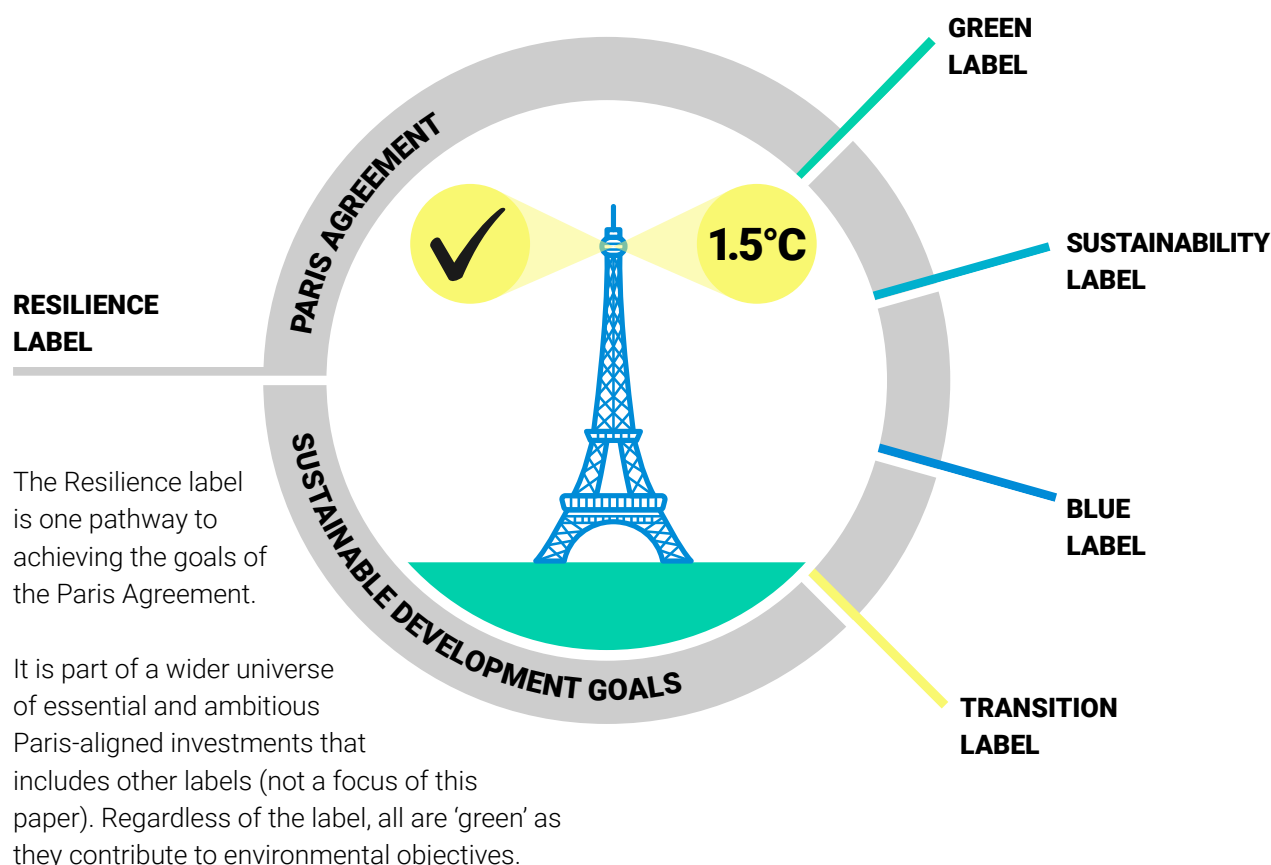
Using a broader 'Green Bond' label brings the following significant advantages:

- Becomes part of the large, liquid green bond market;
- Investors are familiar with the green bond label and trust the market mechanisms for ensuring their alignment to climate goals;
- Facilitates a mixed use of proceeds enabling a greater issuance size.

A Climate Resilience Bond label is certainly helpful for some situations, and can help to build momentum around the vision for all green bonds to be resilient by raising investor awareness. However, it is highly valuable to do that within the frameworks, mechanisms and labels of the green bond market. The recent EBRD's issuance of a labelled Climate Resilience Bond, which was clearly a green bond, has turned the spotlight on the fact that green bonds can be used to raise finance for resilience needs. Equally, as illustrated in Figure 3, other labels like 'blue bonds', 'transition bonds' and 'sustainability bonds' are all 'flavours of green' but differentiate and signal to investors their focus on specific objectives while still taking advantage of the liquidity and credibility that the green label has built.

Figure 3: Flavours of green – a variety of labels used within the green bond universe

THERE ARE MANY PATHWAYS TO PARIS



FAQ 14: SHOULD I ISSUE MY BOND DOMESTICALLY OR INTERNATIONALLY?²²

Domestic and international green bond issuances have different target investor and resourcing requirements.

A domestic green issuance will appeal to the usual class of institutional investors, subject to additional efforts to educate those investors about the specifics of a green bond versus a vanilla bond. Issuing a green bond domestically also presents an opportunity for sovereigns to reach new investor classes, including new institutional market segments attracted by the green label, or retail investors. Providing the opportunity for its citizens and corporates to invest in the green future of the country can be attractive to sovereign issuers and investors alike.

An international issuance provides the opportunity to appeal to a much wider set of investors, who will be attracted by a green bond label. An arranger can assist in marketing to buyers of green bonds—ESG-focused funds and funds with an ESG portion, as well as new green bond specific funds such as the IFC-Amundi Green Bond Cornerstone Fund.

Currency considerations will be a factor in selecting whether to opt for domestic or international issuance. Whether domestic or international, roadshows will need to take care to explain the nature of the green bond. International prospectuses will require a similar level of effort as a vanilla bond issuance to meet regulatory requirements.

²² [International Finance Corporation. Guidance for Sovereign Green Bond Issuers. 2018.](#)

FAQ 15: HOW DO I ATTRACT THE INTEREST OF INVESTORS WITH NO EXPERTISE OR INTEREST IN CLIMATE RESILIENCE?

If a climate resilience related bond is aligned with international guidelines, and an independent review has been conducted, it is very likely to attract mainstream investors that have both climate mitigation and climate resilience objectives within their green mandates and are not likely to differentiate between climate resilience and climate mitigation, as long as the bond is credibly contributing to stated goals. Demand for green bonds is outstripping supply, as institutional investors come under increased pressure from clients looking for investment projects that help rather than hinder the environment. Investors have also demonstrated acceptance

of other ‘flavour of green’ labels, such as sustainability, transition, or blue, with strong demand for such labels in recent issuances.

The key to attracting investors is demonstrating the alignment of your projects to prevailing guidelines and demonstrating transparency and credibility. While they might not have the in-house capacity to have a deep understanding of climate resilience or perform a detailed review of a climate resilience-related bond, they will obtain confidence through external reviews, adherence to prevailing guidelines and, where possible, certification.

FAQ 16: CAN I ACCESS CONCESSIONARY CAPITAL FOR FINANCING RESILIENCE BONDS?

There is significant potential for blended finance approaches to specifically target green bonds, especially if they include resilience components. Governments and Development Finance Institutions (DFIs) can use the green bond market to provide targeted support to selected sectors in line with their national or development priorities, especially those for which private finance may be lacking – such as climate resilience.

Finance facilities, such as Indonesia’s Tropical Landscapes Finance Facility and the Credit Guarantee Investment Facility, employ the blended finance approach to generate bankable project pipelines by providing technical support to the issuer, facilitating access to funding and reducing the investment risk profile for investors. Specialised investment funds that focus on green bonds are also being developed. For example, the Green Cornerstone Bond Fund was launched in March 2018 by the IFC and Amundi and is the world’s largest targeted green bond fund focused on investing in emerging markets. More institutions and funds are expected to develop as countries increasingly look to address their funding needs for resilience.

Blended finance and concessionary capital are expected to be increasingly utilised to attract private capital to resilience projects. By carrying out a robust process for selection of resilience projects, issuer’s will be well-placed to demonstrate their impacts on resilience goals and be well-positioned to access public sector finance and take advantage of blended finance products and facilities.

This is particularly relevant for issuers in emerging markets that want to tap into capital markets but face market barriers to getting to market (e.g. credit ratings that do not meet investors requirements, or national or municipal regulatory hurdles, etc.). The work done for the issuance of a resilience bond can in fact be used to access and shape climate resilience lending, blended finance and technical assistance. This, in turn, can contribute to developing the expertise/portfolio that could be used at a later stage for the climate resilience-related bond issuance. Technical assistance can be used to structure Green Bonds for Climate Resilience from sovereigns and other issuers.

Further discussion of this topic can be found in the companion paper *Green Bonds for Climate Resilience: State of Play and Roadmap to Scale*.

STEP 7: POST ISSUANCE REPORTING

FAQ 17: WHAT ARE THE REQUIREMENTS IN POST-ISSUANCE REPORTING?

Post-issuance disclosure provides transparency, ensures accountability and underpins the credibility of the bonds. The minimum requirements for post-issuance reporting are on the use of proceeds. The Green Bond Principles state that issuers should make and keep readily available up-to-date information on the use of proceeds, which should be renewed annually until full allocation and on a timely basis in case of material developments. The annual report should include a list of the projects to which green bond proceeds have been allocated, a brief description of the projects and the amounts allocated and their expected impact.

For example, EBRD's 2019 Sustainability Report presented detailed information about the projects in its Climate Resilience Projects Portfolio (from which its Climate Resilience Bond issuance was drawn) in order to meet investor expectations around transparent and meaningful reporting of the bond issuance and its expected impacts²³.

For best practice, climate resilience-related bonds should demonstrate impact and how investments are contributing to climate resilience outcomes.

As the market has grown, so has investor interest in impact reporting to inform their decision-making process and analysis. Climate resilience-related bonds' issuers need to be able to demonstrate impact and how investments are contributing to climate resilience outcomes. Moreover, impact reporting for climate resilience projects is critical given the uncertainty in climate projections and the evolving nature of climate hazards, exposures and vulnerabilities; and the changing opportunities and needs for resilience benefits. Work by the MDBs to set out a basis framework for climate resilience metrics in financing operations may provide useful guidance on this matter²⁴.

The Climate Resilience Principles require that issuers undertake ongoing monitoring of climate risks and benefits to determine whether the subject assets and activities continue to be fit for purpose and maintain any climate resilience benefits as climate risks evolve. In its reporting to the Climate Bonds Initiative, the issuer must annually verify this ongoing monitoring and evaluation of the climate resilience performance.

ICMA has recently published *Suggested Impact Reporting Metrics for Climate Change Adaptation Projects, which includes example indicators for reporting on the impact of adaptation-related bonds*²⁵. Below are some illustrative examples taken from the report:

- Increase in grid resilience, energy generation, transmission/distribution and storage in MWh;
- Reduction in the number of wildfires and/or in the area damaged by wildfires in km²;
- Reduction in emergency and unplanned rail and tarmac replacement in km;
- Reduction in the number of power lines incapacitated due to storms.

For further information on best practices on post-issuance reporting, see the report 'Post Issuance Reporting in the Green Bond Market'.²⁶

²³ European Bank for Reconstruction and Development. 2019 Sustainability Report | Investor information: Green and Social Bonds.

²⁴ Inter-American Development Bank. A Framework and Principles for Climate Resilience Metrics in Financing Operations. 2019.

²⁵ The Green Bond Principles; International Capital Market Association. Suggested Impact Reporting Metrics for Climate Change Adaptation Projects. 2020.

²⁶ Climate Bonds Initiative. Post Issuance Reporting in the Green Bond Market. 2021.



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