

# Growing green bond markets: The development of taxonomies to identify green assets

*Green bond guidelines are being implemented across the globe to support issuers and investors in selecting and reporting on suitable projects. However, a gap of adoption of green definitions remains, suggesting the need to develop consistent approaches that can increase the capability of issuers and investors to identify eligible green and sustainable assets.*

## A taxonomy for green bonds

The green bond market has seen exponential growth over the past 5 years as an increasing number of investors have sought environmentally sustainable investments without having to sacrifice financial returns. However, one of the main hurdles for further growth has been a consistent and robust approach to identifying what is considered ‘green’.

The systematic classification and definition of qualifying items is termed a ‘taxonomy’, and in the case of classifying and defining green assets and projects, it can be termed ‘climate-aligned’ or ‘green’ or ‘sustainable finance’ taxonomy, whether it is identifying assets that address climate change only, broader environmental benefits or both social and environmental impacts.

**A taxonomy provides a list of eligible assets with thresholds and metrics** as necessary. Harmonising eligible assets and metrics across the market is the more important aspect of taxonomy development, as the taxonomy will provide guidance to both issuers and investors in the relevant jurisdiction.



A taxonomy that classifies and defines green assets and projects can be used in the context of direct investments, in assessing the greenness of companies, or to identify dedicated financial instruments, such as green bonds.

## How a taxonomy can support the development of green finance

One of the main barriers to increasing the supply of green debt instruments is the identification of green assets and projects, due to the lack of awareness around what these are and how to

identify them (e.g. green mortgages or low-carbon transport) and often the lack of enough green projects on the ground.

Definitions for green assets are key to safeguarding the market from the risk of ‘greenwashing’,<sup>1</sup> supporting governments in targeting their actions against climate change and enabling financial market players to know which investments to focus on if they are to get into the sustainable finance playing field.

**The challenge is to develop definitions that are scientifically robust but also practical**, i.e. usable by issuers and give confidence to investors. Data availability can be an issue for several reasons, either because it is not collected, or because it is collected but not disclosed to financial institutions.

For example, in the United Kingdom, the energy efficiency performance of residential properties only became publicly available in 2017, allowing willing financial institutions to match green buildings with mortgage in their portfolios, as well as set up green mortgages at a discount for purchases of energy-efficient properties.<sup>2</sup>

Different approaches may also be in place in different jurisdictions (such as building standards), which need to be assessed against an overarching benchmark to provide confidence to investors from other countries.

In general, taxonomies for low-carbon and climate-resilient assets are a support tool for financial market players to develop green finance instruments and enable them to identify sustainable investments for risk management and strategic purposes.

Depending on the complexity of sectors and their connections to other environmental impacts, a taxonomy can provide different levels of guidance, from light to dark green investments, leaving some degree of flexibility to its users and catering for different preferences from the investor community.

## Taxonomy in practice: green bond guidelines

The green bond market developed as a voluntary market, with issuers disclosing information to investors following international best practice or their own practices.

**Over the past few years regulators, stock exchanges and market associations have stepped in to provide some guidance to market participants for the green debt issuance process.**

The map below provides a snapshot of the availability of national and regional green bond guidance, in the form of regulation, guidelines and listing requirements.

Implementing comprehensive green bond guidance, targeted at steering capital towards investments in climate-aligned assets can help governments to:

1. Meet their climate and infrastructure goals.
2. Maintain market integrity, ensuring investors remain engaged and sustain the supply of green bonds.
3. Implement policies that target at investments in all eligible low-carbon sectors.
4. Achieve scale through a liquid market that can tap into large pools of capital from institutional investors to support the low-carbon economy.

In analysing the guidance in place some common trends emerge:

- **All guidance developed so far recognises the international good practice** provided by the Green Bond Principles (GBP), coordinated by the International Capital Market Association (ICMA), and the Climate Bonds Standard (CBS), coordinated by the Climate Bonds Initiative (CBI) and build from this international guidance.
- Eligibility of assets and projects is typically indicated through broad categories, signalling a lack of taxonomies, or robust and consistent definitions for 'green' assets.
- **External reviews are increasingly becoming mandatory** across jurisdictions and certainly for most green bond and sustainability segments on exchanges. Requirements are being put in place for local verifiers and other external reviewers (*see back cover for types of external review*).
- Reporting is compulsory, at least annually until proceeds are fully allocated, with both quantitative and qualitative impacts where possible.

Regulators and policymakers across the globe in the Association of Southeast Asian Nations (ASEAN), Malaysia, India, China, Morocco

and Japan have included in their guidance with lists of eligible assets and projects of varying level detail: for example, the ASEAN Capital Markets Forum's guidelines include broad categories of projects and specify the exclusion of fossil fuels, the People Bank of China's guidelines refer to a Green Bond Endorsed Project Catalogue, providing a list of eligible projects. and the MOEJ guidelines list specify eligible sectors.<sup>3</sup> (see Annex I)

More recently, the European Commission has embarked on the process of developing a classification for sustainable finance to include clear definitions, metrics and thresholds where needed, for investments with environmental and social benefits. It is the first attempt by a policymaker to develop such a comprehensive classification.

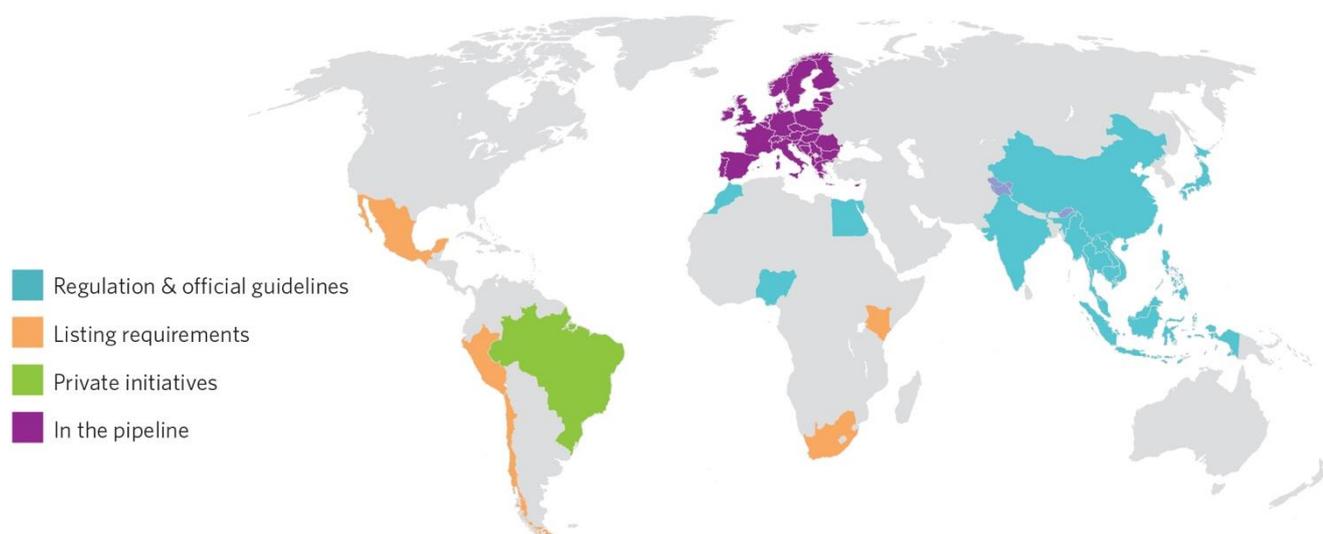
The International Standards Organisation has also convened a working group to develop the ISO 14030, *Green bonds – Environmental performance of nominated projects and assets*.

## ISO 14030, Green bonds – Environmental performance of nominated projects and assets

The International Organisation for Standardisation (ISO) is working on developing an international standard for green bonds to deliver consistent eligibility rules and definitions of green to the market. Building on its experience on the ISO 14001 for environmental management systems, the ISO is developing the next generation of environmental management standards, focusing on merging economic and environmental management, including the ISO 14030 for green bonds.

The standard will build from the foundations provided by the Green Bond Principles, the Climate Bond Standard and other existing taxonomies for green bonds. The standard is expected to be published in 2020. As several working group members are also involved in the European Commission's TEG, the outcomes of the ISO and EU TEG process are expected to be mostly aligned.

## Availability of national and regional green bond guidance



## The EU Taxonomy for Sustainable Finance

The European Commission, the European Union (EU) legislative body, announced a comprehensive *Action Plan: Financing Sustainable Growth* in March 2018, following a year-long consultation with a select high-level expert group of sustainable

finance experts and the public. The plan was driven by the momentum provided by the growth of the global green bond market, the progress on climate-related financial disclosure and the political appetite for sustainable and inclusive growth.



Source: European Commission (2019): *EU Strategy on Sustainable Finance and the Role of the Expert Group*

### Action 1 in the Action Plan clearly states the Commission’s intention to establish an EU classification system for sustainable activities.

The European Commission recognised that to encourage sustainable growth, industry, investors and governments need a clear understanding of which economic activities are environmentally sustainable.

This is currently not comprehensively offered in the market. Some organisations do it in-house, which is costly and fragmented. The Commission intends to build on these existing market-led and member-state-based initiatives to develop a consistent and broadly accepted EU Taxonomy.<sup>4</sup> The Taxonomy will be developed for the EU, with the objective of being internationally relevant.

To support this action, the Commission presented a legislative proposal aimed at establishing the progressive development of an EU Taxonomy for Sustainable Finance, which is currently being discussed by the European Parliament and Member States. The proposed regulation sets out:

1. **six environmental objectives** for environmentally sustainable economic activities:
  - a. climate change mitigation,
  - b. climate change adaptation,
  - c. sustainable use and protection of water and marine resources,
  - d. transition to a circular economy, waste prevention and recycling,
  - e. pollution prevention and control,
  - f. protection of healthy ecosystems.

Environmentally sustainable activities are defined as those that have a significant impact towards achieving one of the six objectives, without significantly harming the other five.

2. **minimum safeguards compliance**, and
3. **technical screening criteria**, which will be introduced subsequently, as they are developed.

The Regulation proposal also establishes the creation of a Platform on Sustainable Finance to advise on the Taxonomy and review the technical screening criteria over time.

Once the framework is adopted by the EU Parliament and Member States, the Commission will introduce delegated acts containing the Taxonomy of the environmentally friendly activities and relevant technical screening criteria. A Technical Expert Group (TEG) on Sustainable Finance, composed of 35 experts from industry and civil society, has been tasked with developing proposals for the EU taxonomy for sustainable economic activities.

The TEG is also working on other aspects of the Action Plan delivery, including an EU green bond label, low-carbon indices and climate-related disclosure. The [final report of the TEG on climate-related disclosure](#) was published in January 2019.

With the regards to the Taxonomy, the TEG is tasked with delivering climate change mitigation and adaptation activities by June 2019, with other environmental targets and social considerations to be integrated in a second phase.

In the first few months of work, the TEG Taxonomy group prioritised sectors and activities to focus on over the group’s 12-month mandate. Sectors were prioritised based on their emissions impact in the EU economy, based on data from the European Environmental Agency, which resulted in the following sectors being identified:

- Electricity generation
- Manufacturing
- Agriculture, forestry and fishing
- Transportation and storage

- Water supply, waste management
- Mining and quarrying
- Wholesale and retail trade
- Construction

And enabling sectors:

- Professional, scientific and technical activities
- Information and communication

The next step included gathering existing information and definitions to compile a first round of activities, in particular where guidance and criteria was already available and used by markets. These include mitigation activities for:

- **Forestry:** afforestation, reforestation, existing forest management;
- **Buildings:** construction of new buildings, renovation of existing buildings;
- **Manufacturing:** energy and resource efficiency in manufacturing, manufacture of renewable energy equipment, low carbon transport vehicles, energy efficiency equipment and other low carbon technologies
- **Renewable energy production:** solar photovoltaic, wind, concentrated solar power, ocean geothermal and hydropower electricity generation
- **Transportation:** passenger and freight interurban transport, urban passenger land transport, passenger and freight transport by road.

The TEG has published a public call for feedback on this first round of mitigation activities. In its second phase of work, the TEG has identified additional sectors to work from the initial priority list and the need for additional expertise. Further work will be carried out with sector-specific experts outside the TEG in 2019. The second phase of mitigation activities will explore:

- Agricultural activities
- Mining and quarrying
- Manufacturing of ferrous and non-ferrous metals, cement and chemicals
- Transmission and distribution of electricity
- Water, sewerage and waste management
- Water and air transport
- Digital/Information Communication Technologies
- Adaptation

A methodology has been developed to build the list of adaptation activities. Adaptation activities will need to:

- Address material physical climate risks
- Avoid maladaptation
- Have a monitoring system in place aimed at measuring progress towards adaptation results
- Be part of a wider strategy

A list of activities for these additional sectors can be expected to be developed by June 2019.

## Core principles for an EU Taxonomy



**Endnotes:** 1. The term 'greenwashing' refers to making misleading claims about the environmental profile of the assets backing the green bond. 2. See Barclay's Green Home Mortgages: <https://www.barclays.co.uk/mortgages/green-home-mortgage/> 3. For a comparison of green bond guidance in emerging markets see the IFC-CBI Creating Green Bond markets report <https://www.climatebonds.net/resources/reports/creating-green-bond-markets-insights-innovations-and-tools-emerging-markets>. 4. [https://ec.europa.eu/info/sites/info/files/180730-teg-statement\\_en.pdf](https://ec.europa.eu/info/sites/info/files/180730-teg-statement_en.pdf)

# Annex I: Current definitions of ‘green’

## International Definitions

### Green Bond Principles

Developed in 2010 and annually reviewed by the Green Bonds Working Group through the coordination of the International Capital Markets Association, the GBP explicitly recognise broad categories of eligibility for green projects which contribute to several environmental objectives, including:

1. climate change mitigation and adaptation,
2. natural resource conservation,
3. biodiversity conservation, and
4. pollution prevention and control.

### MDB-IDFC Common Principles for Climate Mitigation Finance Tacking

The Multilateral Development Banks (MDBs) and the International Development Finance Club (IDFC) have developed a common approach to track finance towards climate change mitigation and adaptation which can offer some guidance, especially to lending institutions, around which loans can be considered green. Activities eligible for climate mitigation finance include:

1. Renewable energy
2. Lower-carbon and efficient energy generation
3. Energy efficiency
4. Agriculture, forestry and land-use
5. Non-energy GHG reductions
6. Waste and wastewater
7. Transport
8. Low-carbon technologies
9. Cross-cutting issues such as policy support and financing instruments

### International Climate Bonds Taxonomy and the Climate Bonds Standard

The Climate Bonds Taxonomy has been developed based on the latest climate science including research from the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), and has benefited from the input of hundreds of technical experts from around the world. The Taxonomy identifies the assets and projects needed to deliver a low carbon economy and gives GHG emissions screening criteria consistent with the 2-degree global warming target set by the Paris Agreement. First released in 2013, it is regularly updated based on the latest climate science, the emergence of new technologies and sector criteria under the Climate Bonds Standard.

The Taxonomy is the basis of the Climate Bonds Standard and Certification Scheme. The sector criteria used for certification of green bonds are developed through extensive consultations with technical expert, industry practitioners and investor groups, finally vetted through a public consultation process. The chart below summarises the criteria available for certification, criteria in development and planned.

	Criteria Available for Certification	Criteria in development	TWGs launching soon
Energy	WIND, SOLAR, GEOTHERMAL, MARINE	HYDROPOWER, BIOENERGY	DISTRIBUTION & STORAGE
Transport	RAIL, VEHICLES, RAIL/RAIL TRAM		WATER TRANSPORT
Utilities	WATER	RECYCLING & REUSE, DISPOSAL	IT, COMMUNICATIONS
Buildings	RESIDENTIAL, COMMERCIAL		
Natural Resources	FORESTRY	AGRICULTURE, FISHERIES	
Industry			CEMENT, STEEL, MANUFACTURING & MINING

Source: Climate Bonds Initiative, 2018 (<https://www.climatebonds.net/standard/sector-criteria>)

### Sustainable Development Investments

Developed by Dutch asset manager PGGM and APG, the SDI taxonomy identifies investments aligned with the Sustainable Development Goals (SDGs). The SDI consist of a broad list of activities consistent with the SDG goals and sub-goals and a decision tree to assess in a simple way whether an investment is aligned or not.

## Examples of national and regional definitions

### ASEAN Green Bond Standards

The ASEAN Capital Markets Forum – a forum comprising capital market regulators from ASEAN countries to promote greater integration and connectivity of regional capital markets – has developed ASEAN Green Bond Standards based on the international Green Bond Principles. The eligible projects are defined by the GBP’s broad categories with the addition of specifically excluding fossil fuel power generation projects. This is in line with the Climate Bonds Taxonomy.

### China Green Bond Project Endorsed Catalogue

Released in 2015 together with the People’s Bank of First official *Guidelines for green bonds*, the Catalogue offers detailed guidance on eligible projects to be financed through green bonds. Eligible categories include:

1. Clean energy
2. Energy saving
3. Resource conservation and recycling
4. Clean transport
5. Ecological protection and climate change adaptation
6. Pollution prevention and control
7. General corporate purposes (up to 50% of proceeds)

## Climate Bonds Taxonomy

The Climate Bonds Taxonomy identifies the assets and projects needed to deliver a low carbon economy and gives GHG emissions screening criteria consistent with the 2-degree global warming target set by the COP 21 Paris Agreement. More information is available at <https://standard.climatebonds.net/taxonomy>.



ENERGY	TRANSPORT	WATER	BUILDINGS	LAND USE & MARINE RESOURCES	INDUSTRY	WASTE	ICT
Solar	Private transport	Water monitoring	Residential	Agriculture	Cement production	Preparation	Broadband networks
Wind	Public passenger transport	Water storage	Commercial	Commercial Forestry	Steel, iron & aluminium production	Reuse	Telecommuting software and service
Geothermal	Freight rail	Water treatment	Products & systems for efficiency	Ecosystem conservation & restoration	Glass production	Recycling	Data hubs
Bioenergy	Aviation	Water distribution	Urban development	Fisheries & aquaculture	Chemical production	Biological treatment	Power management
Hydropower	Water-borne	Flood defence		Supply chain management	Fuel production	Waste to energy	
Marine Renewables		Nature-based solutions				Landfill	
Transmission & distribution						Radioactive waste management	
Storage							

Certification Criteria approved  
 Criteria under development  
 Due to commence

## Types of external review

Pre-issuance review	Scope	Providers
<b>Assurance</b>	Positive or negative assurance on compliance with the Green Bond Principles (GBP) or the Green Loan Principles (GLP)	EY, Deloitte, KPMG, etc
<b>Second Party Opinion</b>	Confirm compliance with GBP / GLP. Provide assessment of issuer's green bond framework, analysing the "greenness" of eligible assets	CICERO, Sustainalytics, DNV GL, Vigeo Eiris, ISS-Oekom, etc
<b>Green bond rating</b>	Rating agencies assess the bond's alignment with the Green Bond Principles and the integrity of its green credentials	Moody's, S&P, RAM (Malaysia), R&I (Japan)
<b>Pre-issuance verification</b>	Third party verification confirms that the use of proceeds adheres to the Climate Bonds Standard and sector specific criteria	Approved verifiers under the Climate Bonds Standard

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