

# Green Bond Bootcamp

Climate Bonds Initiative

September 27, 2018

Lagos, Nigeria

# Agenda

## Day 1

Welcome and Delegate Introductions (8.30- 9.00)

Green Bond 101 and Market overview (9.00- 10.30)

### **TEA BREAK (10.30- 11.00)**

Introduction to the CBI Taxonomy – Overview (11.00 – 12.00)

### **LUNCH 12.00 – 1.30**

Regulatory Environment – Rules & Policies (1.30- 2.30)

### **TEA BREAK (2.30 – 3.00)**

Green Bond certification scheme - Green definitions and criteria (3.00 – 5.00)

Questions & Answer Session (Interactive) (5.00 – 5.30)

## Day 2

Recap on Day1 (8.30 – 9.00)

CBI Criteria & Benefits of Certification – (Investors & Issuers) (9.00 – 10.30)

### **TEA BREAK (10.30 – 11.00)**

How to develop a green bond framework – Asset Identification (11.00 – 12.00)

### **LUNCH (12.00 – 1.30)**

NDCs, Climate Change – Risk & Opportunities (1.30- 2.30)

### **TEA BREAK (2.30 – 3.00)**

Practical Exercise – Green Labelling (3.00 – 4.00)

Summary and wrap-up (4.00 – 4.30)

# Climate Bonds Initiative

*A global investor-focused not-for-profit mobilising debt capital markets for climate solutions*

- **Markets Intelligence**
  - Data to index providers
  - Market Reports
- **Partners Programme**
  - Platform for market participants to get involved during these formative stages
- **Markets Development**
  - Policy models and government advice (Nigeria, Kenya, Argentina)
  - Build local markets and policy development
- **Climate Bonds Standard & Certification Scheme**
  - Definitions and guidelines for bond issuers
  - Easy to use tool to provide confidence for investors through assurance and certification
  - Guide issuers towards Certification



*More detail on each in ensuing sessions*

# Our Partners Programme

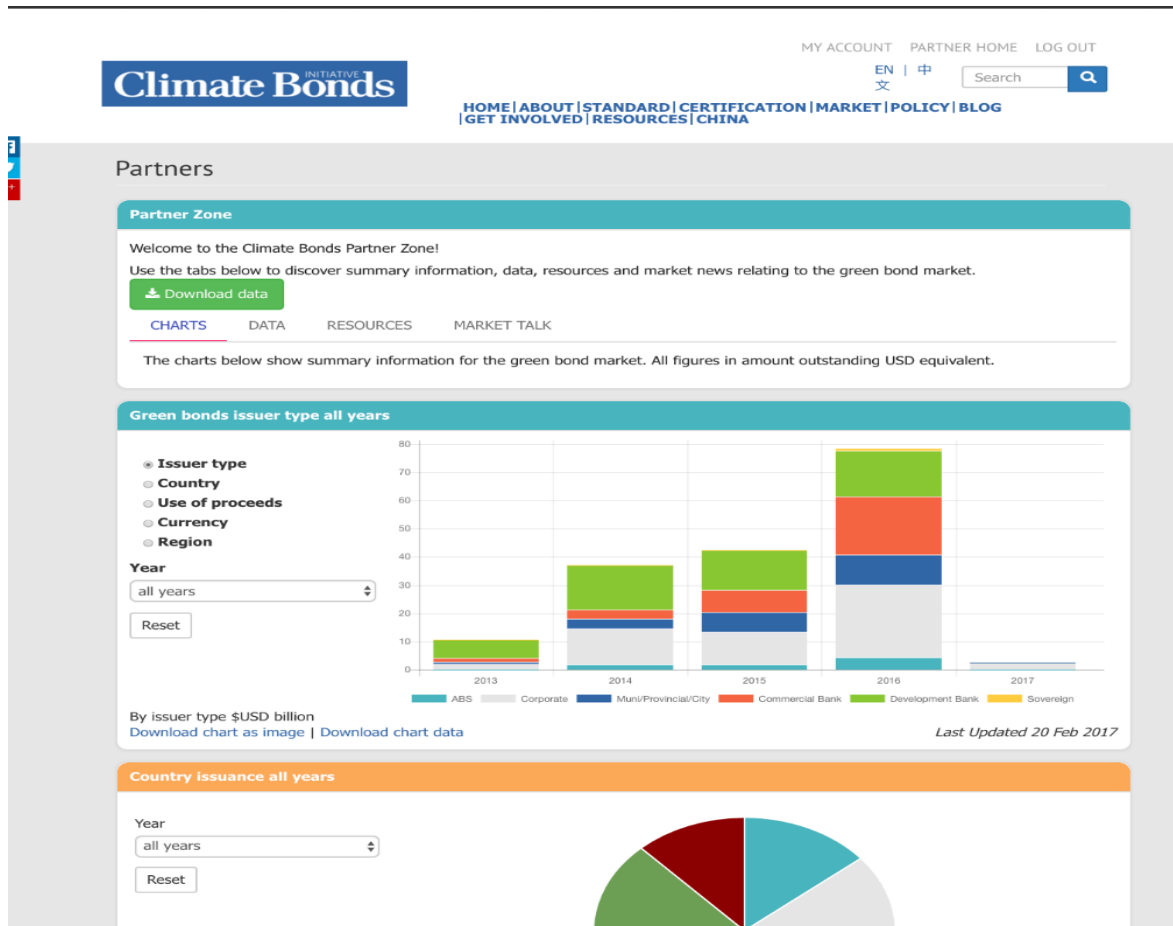
Engagement, cooperation and brand building  
for key players in the global  
investment and issuer  
community

- ✓ Participate in designing the market
- ✓ Exclusive data access
- ✓ Bespoke briefings and advice
- ✓ Co-branded projects, research and events
- ✓ Connections globally at senior level
- ✓ Visibility internationally

# Our Partners



# The Climate Bonds Partners Data Portal



[Download data](#)

CHARTS **DATA** RESOURCES MARKET TALK

Data from 2007 in a filterable and downloadable format.

Bonds

[Export](#)

Issuer Name	Amount Issued	USD Amount Issued	Currency	Issue Date	Country	Second Opinion Link
bank of						
Bank of China	\$500m	\$500m	USD	2016-07-11	CHINA	<a href="#">second opinion</a>
Bank of China	\$1,500m	\$224m	CNY	2016-07-11	CHINA	<a href="#">second opinion</a>
Bank of China	\$1,000m	\$1,000m	USD	2016-07-11	CHINA	<a href="#">second opinion</a>
Bank of China	\$500m	\$555m	EUR	2016-07-11	CHINA	<a href="#">second opinion</a>
Bank of China	\$750m	\$750m	USD	2016-07-11	CHINA	<a href="#">second opinion</a>
Agricultural Bank of China	\$600m	\$95m	CNY	2015-10-19	CHINA	<a href="#">second opinion</a>
Agricultural Bank of China	\$400m	\$400m	USD	2015-10-19	CHINA	<a href="#">second opinion</a>
Agricultural Bank of China	\$500m	\$500m	USD	2015-10-19	CHINA	<a href="#">second opinion</a>

- ✓ Charts
  - ✓ Data updated weekly
  - ✓ Images are downloadable
- ✓ Data
  - ✓ Easy to sort
  - ✓ Easy to download
- ✓ Resources
  - ✓ Easy access to all new Climate Bonds reports
- ✓ Market News
  - ✓ Information on news and event relating to green bonds

# Integrity & Analysis

The Climate Bonds Initiative is seen as a premier source of green bond market information

➤ Market Analysis & Intelligence

- provides base data for use by multiple green bond indices providers, such as MSCI, S&P and China's CCDC, as well as financial data providers such as Thomson Reuters

➤ Market Outreach & Training

- Reports, Webinars and Newsletters

➤ Public information

- League tables, data queries



The Climate Bonds team promotes integrity of analysis, rigour and transparency internally and in the market as a whole.

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# 1. Green Bonds Basics and Market Overview



# The challenge





# The opportunity



# Green Bonds Basics and Market Overview

1. What are Green Bonds?
2. Why use them? Who issues them? Who buys them?
3. Recent developments in global markets
4. Climate change and green bonds

# What are Green Bonds? Development of the Market

The world's first "Green Bond" issued by any entity was the European Investment Bank's EUR 600m "Climate Awareness" Bond in 2007, which was soon followed by the World Bank's first Green Bond (US\$ 300m).

In recent years, large corporates, banks, sovereigns have joined in and themselves issued many firsts and grown the market substantially.

In 2017, over US\$ 155 billion worth of green bonds were issued, compared to the overall bond market size of US\$ 100 trillion. This sector is relatively small, yet it has been catalytic in terms of the overall bond markets and making an impression beyond its size.

In 2016 (\$1.5bn) and 2017 (\$1bn), Apple issued green bonds, leading the way in US corporate issuers.

In 2017 (\$10.7bn) multiple issuance by the French government.

Generally, there is unmet demand for green bonds and at every issuance, there is large oversubscription by investors.

# What are Green Bonds?

- Green bonds are debt securities issued by financial, non-financial or public entities where the proceeds are used to finance 100% green projects and assets
- Just like regular vanilla bonds. “green” is a bonus feature to the bond.
- It’s about the projects and the assets, not the issuer.
- The *green* label is a tool for investors

Proceeds to climate projects	<ul style="list-style-type: none"><li>• Vanilla bonds – no complicated structure</li><li>• Comparable pricing</li><li>• Refinance as well as project</li><li>• 90% investment grade</li></ul>
Any entity	<ul style="list-style-type: none"><li>• Governments &amp; DFIs</li><li>• Corporates</li><li>• Asset owners: PPPs, banks, utilities, etc</li><li>• Municipalities</li></ul>
Any structure	<ul style="list-style-type: none"><li>• Senior unsecured</li><li>• Asset-backed</li><li>• Covered bonds</li><li>• Other: loans, Sukuk</li></ul>
Reporting	<ul style="list-style-type: none"><li>• Transparency to climate asset or project</li><li>• Independent review</li><li>• Reporting on use of proceeds</li></ul>

# What are Green Bonds?

Type	Proceeds raised by bond sale are	Debt recourse	Example
"Use of Proceeds" Bond	Earmarked for green projects	Recourse to the issuer: same credit rating applies as issuer's other bonds	EIB "Climate Awareness Bond" (backed by EIB); Barclays Green Bond
"Use of Proceeds" Revenue Bond or ABS	Earmarked for or refinances green projects	Revenue streams from the issuers though fees, taxes etc are collateral for the debt	Hawaii State (backed by fee on electricity bills of the state utilities)
Project Bond	Ring-fenced for the specific underlying green project(s)	Recourse is only to the project's assets and balance sheet	Invenergy Wind Farm (backed by Invenergy Campo Palomas wind farm)
Securitisation (ABS) Bond	Refinance portfolios of green projects or proceeds are earmarked for green projects	Recourse is to a group of projects that have been grouped together (e.g. solar leases or green mortgages)	Tesla Energy (backed by residential solar leases); Obvion (backed by green mortgages)
Covered Bond	Earmarked for eligible projects included in the covered pool	Recourse to the issuer and, if the issuer is unable to repay the bond, to the covered pool	Berlin Hyp green Pfandbrief; Sparebank 1 Bolligkredit green covered bond
Loan	Earmarked for eligible projects or secured on eligible assets	Full recourse to the borrower(s) in the case of unsecured loans. Recourse to the collateral in the case of secured loans, but may also feature limited recourse to the borrower(s).	MEP Werke, Ivanhoe Cambridge and Natixis Assurances (DUO), OVG
Other debt instruments	Earmarked for eligible projects		Convertible Bonds or Notes, Schuldschein, Commercial Paper, Sukuk, Debentures



# Why use Green Bonds in Climate Change?

1. **They marry environmental concerns with economic growth and global finance:** feature on mainstream investment manager agendas; the political debate has moved from the Minister of Environment to the Minister of Finance.
2. **Green bonds are about 'grey-to-green' business adaptation, i.e. about strategy.** This moves the discussion from CSR to CEO/CFO. Investor engagement is more meaningful.
3. **They are a conduit into national debates about countries' sustainable pathways,** and how companies support that. The link between GB and SDGs is clear.
4. **Green bonds involve an unprecedented global collaboration across interest groups:** buy-side, sell-side, politics, academics, civil society. A model for how to run our planet.
5. **Green bonds are a well-understood instrument, building a market fast, then to be extended** into more challenging areas: EM, decarbonizing banks' loan books etc.

# Why issue Green Bonds?

- For organisations which are not actively involved with low carbon work and assets, the process of issuing a green bond have helped the finance function and senior management think more actively about how sustainability relates to their business and operations
- Issuers have access to new investors and a wider range of investors
- Pricing benefit – Difficult to quantify; more later
- Most issuers cite many positive side benefits from their first green issuance and plan to issue again



# Green bonds & financial stability

- Climate change-related risks pose a threat to the financial stability of markets through immense financial losses caused by:
  - physical risks
  - liability risks
  - transition risks
- Central Bank policies which do not integrate forward-looking environmental risks (especially climate change-related) are in fact non-neutral, favouring the high-carbon incumbents

# Green bond as a tool to manage long-term risks

Green bonds can help mitigate climate change-related risks as they:

- finance climate friendly assets
- finance assets that are ‘future-proof’ in terms of decarbonisation policies
- finance assets that bear a lower credit risk, such as mortgages for energy efficient homes

# Green Bonds as a bridge to the Sustainable Development Goals (SDGs)

Sustainable Development Goals	Example	% of Issuance	Use of Green Proceeds
Clean water and sanitation (SDG6)	Cape Town's green bond	11	Low-carbon and climate resilient
Clean energy (SDG7)	Nigeria's sovereign green bond	40	Renewable energy expansion
	Latvian power utility (Latvenergo)		Flood protection, renewable energy and grid efficiency
Sustainable industry, innovation and infrastructure (SDG9)	Lithuania's sovereign green bond	24	Low-carbon buildings
	India Railways Finance Corporation	15	Low-carbon transport
Sustainable cities and communities (SDG11)	New Jersey Environmental Infrastructure Trust		Flood protection, improving drinking water supply, and ecosystem restoration
	San Diego Unified School District,		
Life on land - Agriculture & Forestry (SDG15)	Poland's sovereign green bond, Landshypotek bank issued the first green covered bond from Sweden in 2018	3	Sustainable agriculture, afforestation and conservation and restoration of natural habitat

# Why invest Green Bonds?

- Benefits for Investors
- Green investing mandate
- Mitigate climate risk in investment portfolio
- Raise awareness of ESG issues
- More transparency of issuer and bonds

# Green bond benefits – there's more than pricing alone!

*Issuer benefits  
become more  
and more  
apparent and  
diverse...*

*...given strong  
and persistent  
investor  
demand for  
green.*

## **Issuer benefits**

- Investor diversification (regions, types)
- Investor engagement and stickiness
- CSR / Funding alignment supporting reputation

## **Investor benefits**

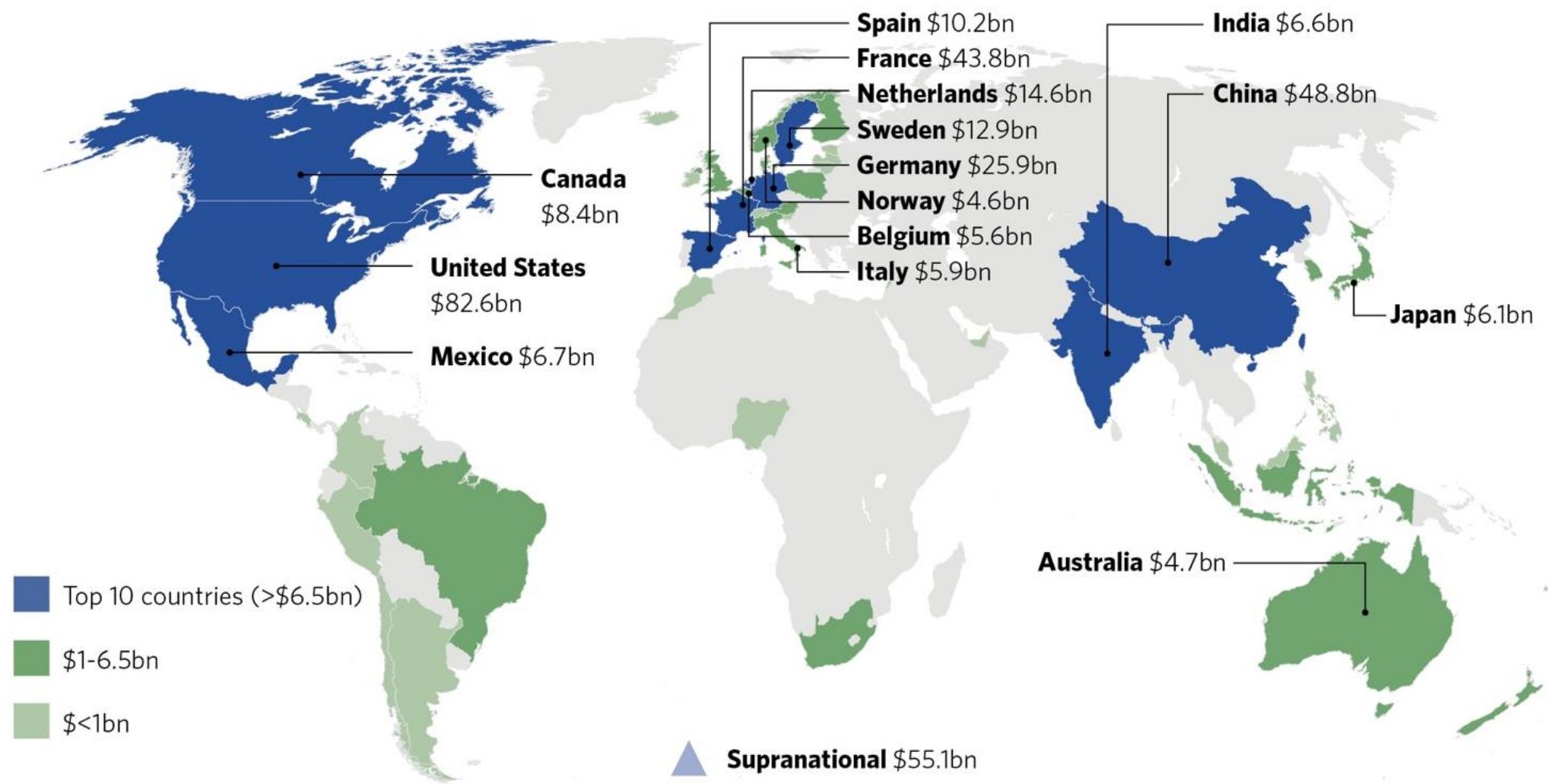
- Greening AuM through well-understood products
- 'Access' to green assets / projects without project risk
- Strong secondary market performance
- Engagement with company management on green

# Who buys Green Bonds?

## Profile of investors

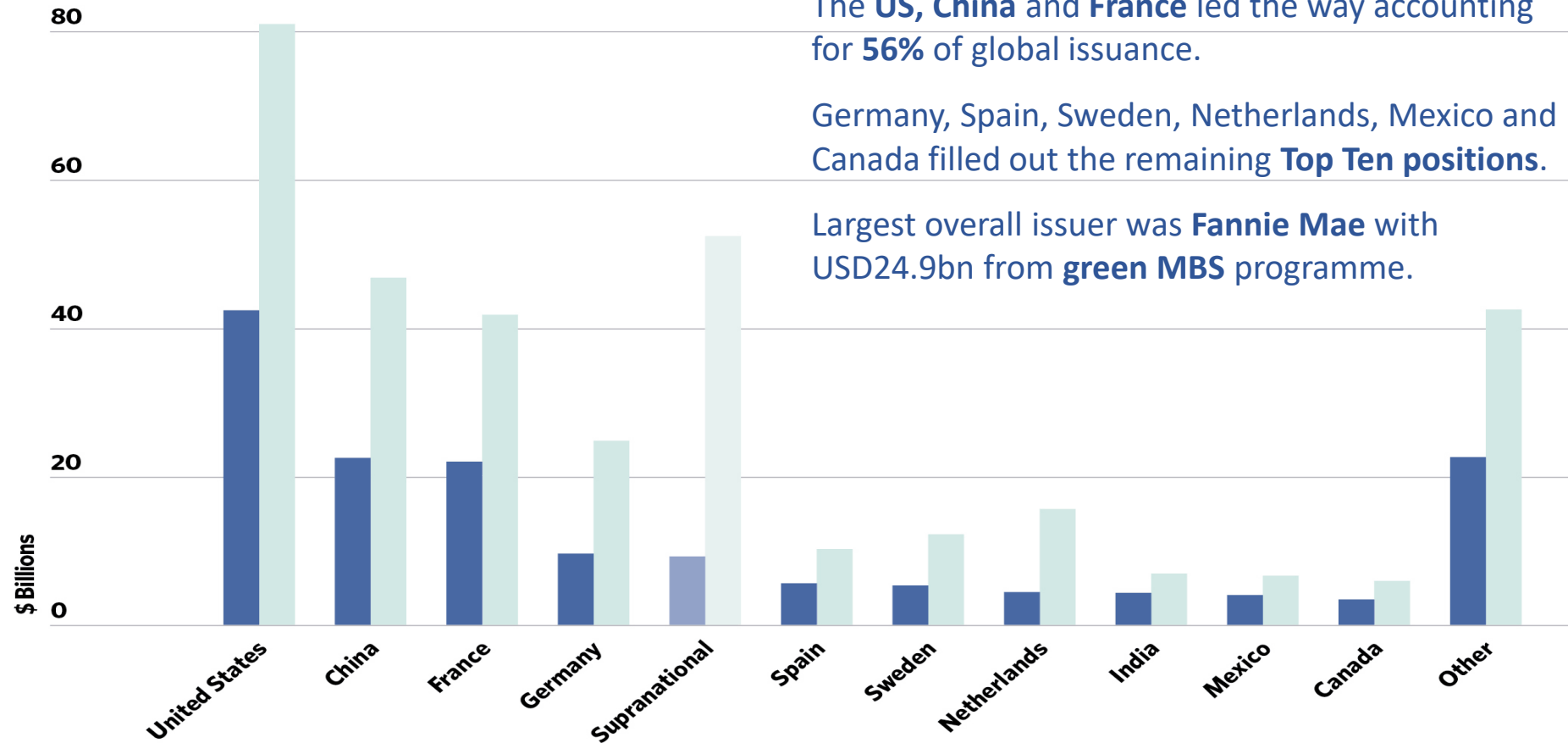
- As the Green Bond markets have grown and attracted increasing attention, there is more mainstreaming of investors which buy into these instruments.
- Whilst a certain group of investors are those with green mandates and ESG related investing activities, there is also increasing uptake by “vanilla investors”.
- Large pension funds, largest asset managers are increasingly looking for sustainability and low carbon related investments and often, these green bonds fit exactly what they are looking for
- There are substantial climate change risks to insurers and insurers are becoming increasingly aware of this. Increasing the amount of low carbon investments in their portfolio is part of that long term risk mitigation

# Global development



# US, China & France dominate 2017

■ 2017 Issuance ■ Cumulative Issuance



India is 8th largest market (down from 5<sup>th</sup>)

The **US, China** and **France** led the way accounting for **56%** of global issuance.

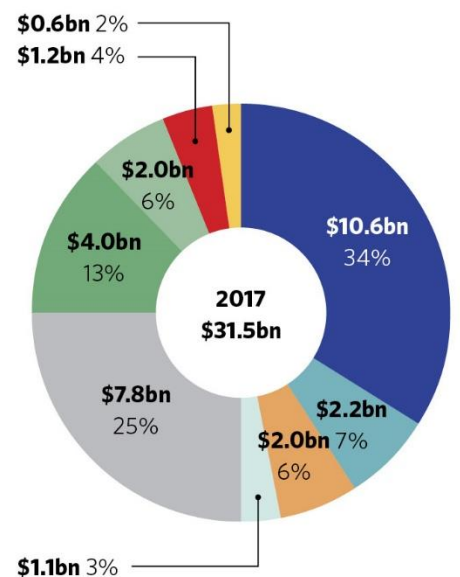
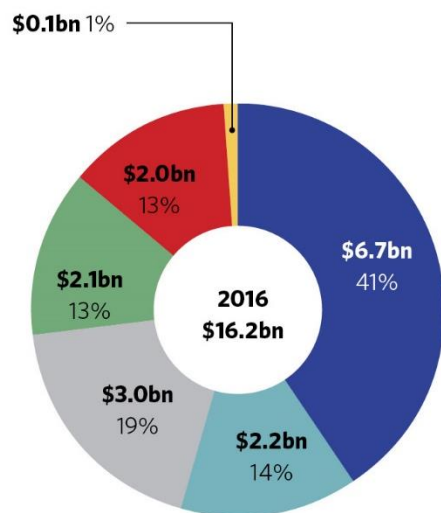
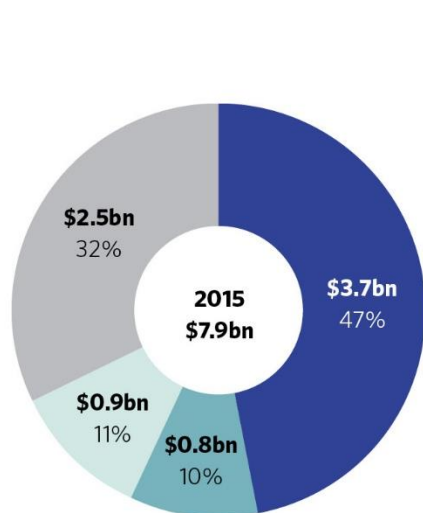
Germany, Spain, Sweden, Netherlands, Mexico and Canada filled out the remaining **Top Ten positions**.

Largest overall issuer was **Fannie Mae** with USD24.9bn from **green MBS** programme.

December 2017



# Geographic diversity keeps increasing

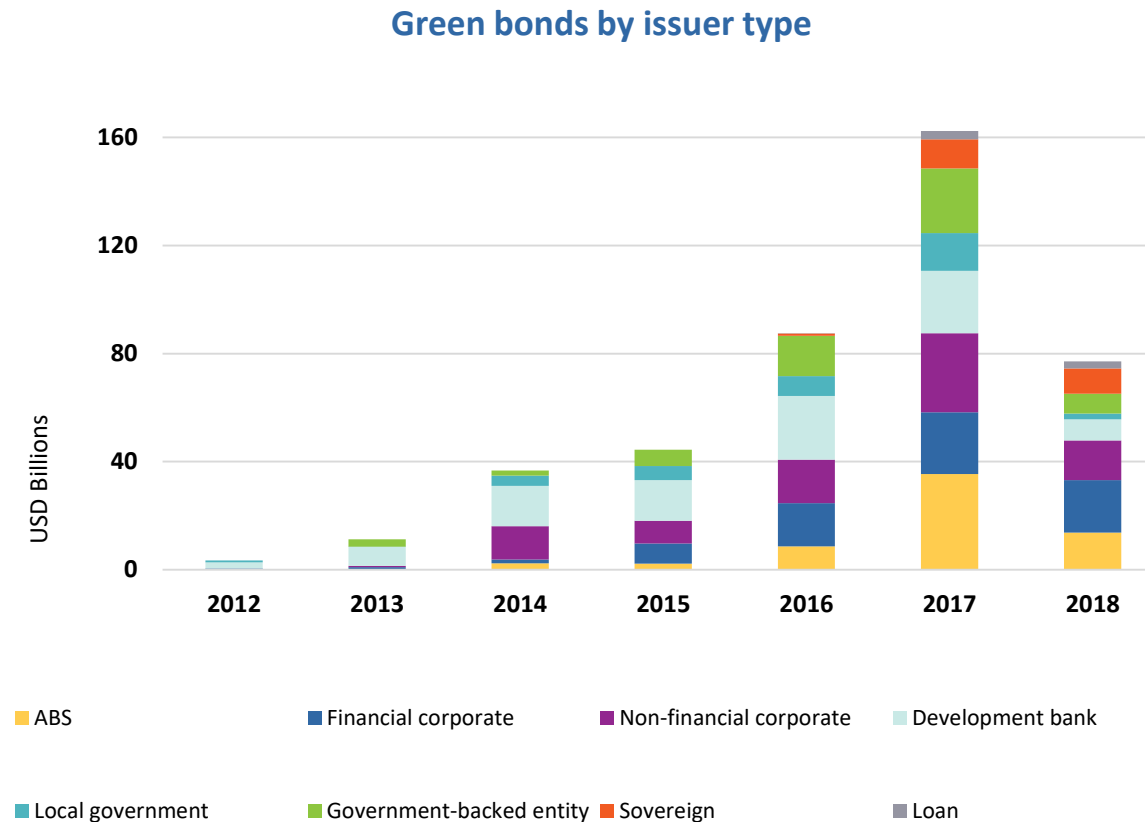


December 2017

- **Emerging markets are showing encouraging signs of growth.**
- **Indian** issuers more than doubled volumes to reach USD4.3bn and break into the Top 10.
- **China** had a slow start to the year but a very strong 4<sup>th</sup> Quarter, bringing annual volume to USD36.4bn, of which USD22.5bn aligned to international green bond standards.
- **Mexico** claimed the title of sixth largest issuer of the year with a single deal from Mexico City Airport: the USD4bn bond represents an 85% rise in issuance over 2016.

# Rapid growth continues – 85% up on 2017

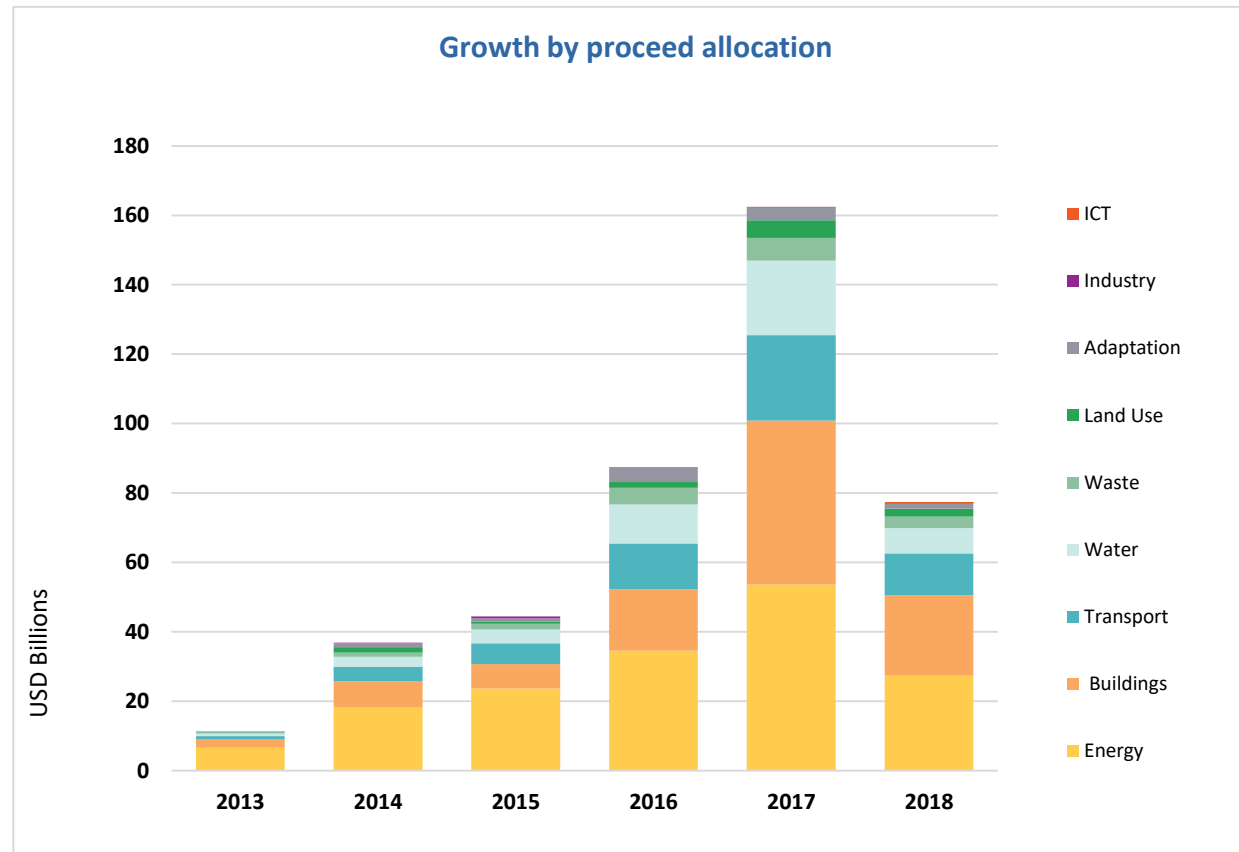
- *USD160.2bn total issuance*
- *Over 1,500 green bond issues*
- *40 countries, all continents*
- *249 issuers (156 new)*
- *USD10.7bn – largest bond*
- *4 sovereign GBs: France, Fiji, Nigeria, Poland*



20 April 2018

# Renewable Energy and Energy Efficiency dominate

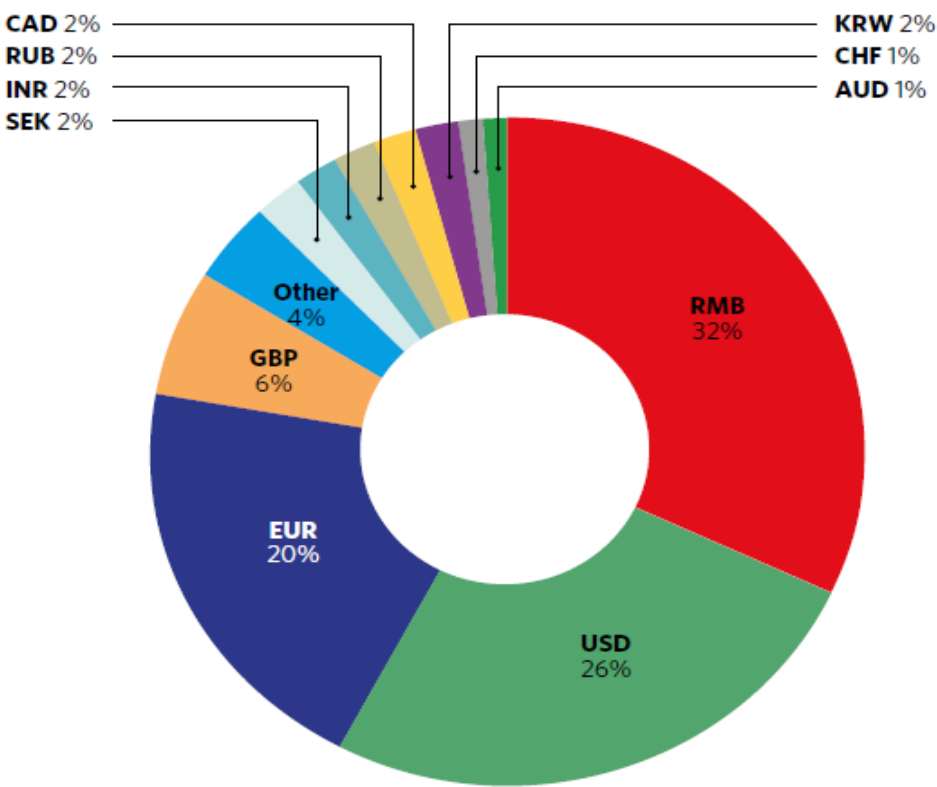
- Bonds related to **renewable energy** continue to be the most common use of proceeds.
- Bonds related to **low carbon buildings and energy efficiency** are catching up, rising 2.4 times in 2017
- **Waste, Land Use, and Adaptation** themes continue to be the smallest, in part due to a lack of clear definitions in these areas



20 April 2018

# Green Bond issuance markets

RMB, USD and EUR account for the majority of issuance



# Climate Change quick recap

UNFCCC Paris Agreement 2015 –

*“limit to 2 degrees rise and [...] to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels”*

*“Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.”*



- Need for redirection of finance flows to low carbon infrastructure
- Debt capital markets have a crucial role to play

"All infrastructure has to now be green.  
And rivers of capital need to flow  
to assets and projects that are  
the *right* ones for the 2050 world  
we have to build."

Christiana Figueres, UNFCCC

"The emergence of green bonds  
represents one of the most  
significant developments in the  
financing of low-carbon, climate-  
resilient investment opportunities."

Ban Ki Moon, UN Secretary-General



green bond  
pledge



# The Demand for Green Bonds

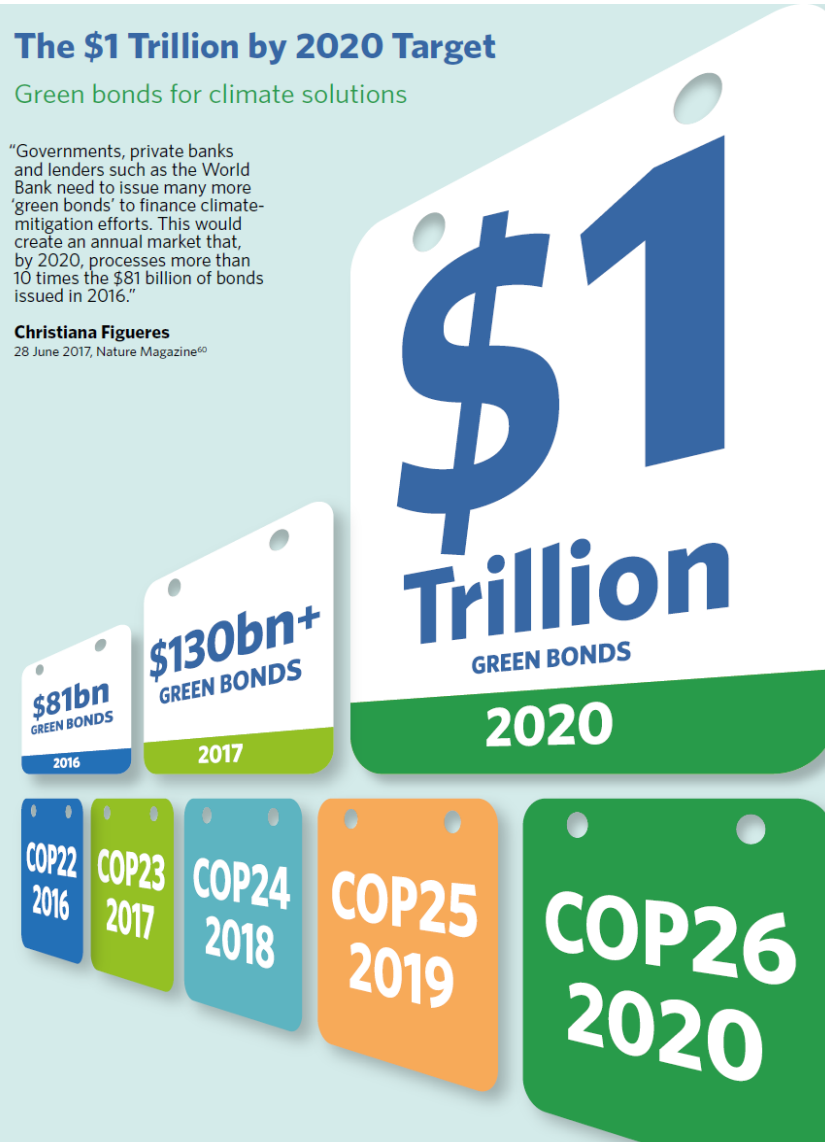
## The \$1 Trillion by 2020 Target

Green bonds for climate solutions

"Governments, private banks and lenders such as the World Bank need to issue many more 'green bonds' to finance climate-mitigation efforts. This would create an annual market that, by 2020, processes more than 10 times the \$81 billion of bonds issued in 2016."

Christiana Figueres

28 June 2017, Nature Magazine<sup>60</sup>



**"We are looking for investment-grade returns that also address climate change. The Climate Bond Standard will allow us to know that investment opportunities put before us will be the right ones to build a Low Carbon Economy."**

— Jack Ehnes, *CEO of California Teachers Retirement System*

How will the US come up with the \$8 trillion necessary to replace fossil fuel powered infrastructure with low carbon alternatives?

How will California come up with the hundreds of billions needed to replace and modernize its crumbling roads, bridges and water plants?

I believe the green bonds are an essential to finance our transition to a more environmentally friendly economy.

John Chiang  
California State Treasurer

Climate Bonds INITIATIVE

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# **3. Regulatory Environment**

## **Rules, Policies & Supportive Actions**



# Challenges for Green Bonds

Challenges to green bond market development include:

- Lack of bankable projects and robust project pipelines
- Lack of well functioning bond markets
- Lack of preparedness for bond financing
- Lack of commonly acceptable green standards
- Risk-averse investors with limited capacity to analyse green investments
- Relatively small investments that would not appeal to large institutional investors
- Involvement of many stakeholders that lack coordination

# Different regional Green Bond policy tools

Region/Country	Policy	Year	Issuing Body
ASEAN	Green Bond Standards	2017	ASEAN Capital Markets Forum
China	Green Bond Catalog	2015	People's Bank of China, NDRC
	Guidelines	2017	China Securities Regulatory Commission
	Green Bond Assessment, Verification Guidelines <i>(more later in China section)</i>	2018	Green Bonds Standard Committee
European Union	HLEG recommendations <i>(more later)</i>	2018	EU Commission
India	Green Bond listing rules		Securities and Exchange Board
Hong Kong	Green Bond Standards	2018	HK Quality Assurance Agency
Singapore	Subsidising cost of external reviews	2017	Monetary Authority of Singapore
Nigeria	Green Bond Guidelines	2017	Nigerian Securities Exchange Commission
Taiwan	Green Bond listing rules	2017	Taipei Stock Exchange
South Africa	Green Bond listing rules	2017	Johannesburg Stock Exchange
Kenya	Green Bond Programme	2017	

# Policy Tools For A Domestic Green Bond Market

## 1. Establish an Advisory Council

- Several structures are possible; private and public players need to be engaged
- MoE, MoF, regulators are key for engagement

## 2. Develop green bond guidelines

- To meet NDC & infrastructure goals
- In line with international guidelines

## 3. Demonstration issuance

- High quality/Repeat issuer
- Internal collaboration to identify an eligible portfolio of projects

## 4. Address capital markets issues

- Enabling issuers
- Framework for diaspora and foreign investors
- Role of intermediaries for de-risking

# Tools For Local Market Development

- Strategic public green bond investment
- Credit enhancement
- Provide tax incentives – Singapore, Malaysia
- Develop instruments to aggregate assets and structure risks
- Cornerstone funds set up by Government to provide credit enhancements, aggregation, warehousing and market making services.
- Create standard documentation (e.g. for loan, lease and power purchase agreements) that can be easily aggregated and securitized.
- Public sector backed issuances

# Sovereign Green Bonds

Country	Year	Size (USD)	
Poland	2016, 2017	2 billion	First Sovereign issuer
France	2017	7.5 billion	Largest Sovereign issuer to date; tied with France's ambitious climate goals
Fiji	2017	50 million	First emerging market issuer. Linked to hosting UN Climate Summit in 2017 First "Small Island State" issuer Bond size is equivalent to 2% of its national debt
Nigeria	2017	30 million	First Climate Bonds Certified Sovereign Bond; Oil exporting country
Indonesia	2018	1.25 billion	First Green Sovereign Sukuk, First Sovereign in Asia
Belgium		5.4 billion	Third Sovereign issuer from Europe
Lithuania	2018	80 million	
<i>Hong Kong, Kenya, Argentina, Mexico</i>	In pipeline		Hong Kong recently announced it will issue USD 12.7Bn this year

# Sub-Sovereign Green Bonds

To date, there have been over 300 green bonds issued by sub sovereign bodies, which include subnational governments, state agencies and state owned investment vehicles and companies.

Several of note and recent ones originating in North America are highlighted below

Issuer	Year	Totals (USD)	
Fannie Mae	2017, 2018	27.6 billion	The biggest green bond issuer, with their MBS
Quebec	2017	388 million	
Ontario	2015, 2016, 2017	1.6 billion	
China Development Bank	2017	1.6 billion	First China public issuer with a Climate Certified Bond

# Sovereign Green Bonds – why issue?

## Benefits:

- Raising capital to finance infrastructure in line with its NDCs
- Attracting new investors
- Providing policy certainty
- Improving collaboration between ministries
- Draw international attention to its environmental policies

## Impact of Sovereign green bonds:

- Kick-starting a domestic market
- Providing scale and liquidity to the green bond market
- Using signalling power to other market stakeholders
- Diversifying the green bond market/tapping into new investor segments

# Central Banks and Regulators

## 1. Market Infrastructure

- Set up green bond guidelines and harmonise definitions
- Simplify approval processes for green bond issuance
- Utilise financial technology (FinTech) to increase green bonds liquidity

## 2. Prudential Regulatory Policy

- Differentiate capital requirements based on climate risk of assets
- Bank stress testing to embrace environmental risk analysis

## 3. Monetary Policy

- Include green bonds into central bank's collateral framework
- Provide preferential liquidity-providing operations to green
- Lower haircut at discount window facility against green bonds collateral
- Quantitative Easing (QE) operations targeted at green bond assets



# Stock Exchanges

- Developing green bond guidelines
- Promoting transparency and common practices
- Establishing green bond lists or segments for investors
- Supporting green bond indices or ETFs for investors to track performance
- Fostering market education and assisting investors in understanding wider climate risks and opportunities.

Luxembourg Green Exchange (LGX), London Stock Exchange (LSE), Borsa Italiana (BI), The Nigerian Stock Exchange (NSE), Financial Markets Dealers' Association (FMDQ OTC) and Johannesburg Stock Exchange (JSE)

# Green Bond Funds

- As Green Bond market grows and matures, different players are launching funds
- World Bank IFC / Amundi Green Bond Fund (USD 1.4 billion ) – largest focusing on emerging markets
- Various others
- Growing demand for green bond instruments

# How the public sector can support green bond markets



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### 3. Introduction – CBI Taxonomy

**WHICH GLASS IS FILLED FIRST?**



# Green Definitions and Criteria

1. Climate Bonds Standard and Certification Scheme Sector Taxonomy and Criteria
2. Climate Bonds Taxonomy
3. Climate Bonds Sector Criteria

## Green Definitions and Criteria

- Investors are interested to see the details of the projects and assets linked the green bond
- Need for consistent and widespread use of definitions and criteria



# Climate Bonds Standard & Certification Scheme – most robust globally

The Climate Bonds Standard and Certification Scheme is a FairTrade - like labelling scheme for green bonds. Rigorous scientific criteria ensure that it is consistent with the 2 degrees Celsius warming limit in the Paris Agreement.

The Scheme is used globally by bond issuers, governments and investors to prioritise investments which genuinely contribute to addressing climate change.

The Climate Bonds Standard is fully aligned with the ICMA Green Bond Principles.

It is made up of two parts:



1. Climate Bonds Standard V2.1 details the management and reporting processes
2. Sector specific Criteria detail the technical metrics which the assets must meet in order to receive the Certification

# Climate Bonds Taxonomy & Sector Criteria

The Climate Bonds Initiative has produced two levels of green definitions:

1. The Climate Bonds Taxonomy
2. The Sector Criteria








































The Climate Bonds Taxonomy identifies the assets and projects needed to deliver a low carbon and climate resilient economy.

Sections on:

- Energy
- Transport
- Water
- Land Use
- Seafood
- Industry
- Waste & Pollution Control
- ICT
- Buildings

# Climate Bonds Taxonomy

Climate Bonds INITIATIVE

ENERGY	TRANSPORT	WATER	LOW CARBON BUILDINGS	INFORMATION TECHNOLOGY & COMMUNICATIONS	WASTE & POLLUTION CONTROL	NATURE BASED ASSETS	INDUSTRY & ENERGY-INTENSIVE COMMERCIAL
Solar 	Rail 	Built (grey) infrastructure 	Residential 	Power management 	Recycling facilities 	Agricultural land 	Manufacturing 
Wind 	Vehicles 	Green and hybrid infrastructure 	Commercial 	Broadband 	Recycled products & circular economy 	Forests (managed and unmanaged) 	Energy efficiency processes 
Geothermal 	Mass transit 		Retrofit 	Resource efficiency 	Waste to energy 	Wetlands 	Energy efficiency products 
Hydropower 	Bus rapid transport 		Products for building carbon efficiency 	Teleconferencing 	Methane management 	Degraded Lands 	Retail and wholesale 
Bioenergy 	Water-bourne transport 				Geosequestration 	Other land uses (managed and unmanaged) 	Data centres 
Marine Renewable Energy 	Alternative fuel Infrastructure 					Fisheries and aquaculture 	Process & fugitive emissions 

Climate Bonds INITIATIVE

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## 4. Labelling and Certification

# Labelling and Certification

1. Need for rules as this nascent market grows
2. Some bonds are labelled green; some are not
3. Climate Bonds Initiative Green Bond Database – what is included?
4. Green Bond Indices – what is included?
5. Green Bond Rating and Evaluation tools by Moody's and S&P
6. Climate Bonds Initiative Standard and Certification Scheme

# Rules for green bond markets

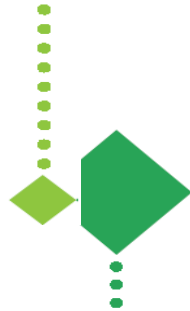


Green Bond Principles have four core components:

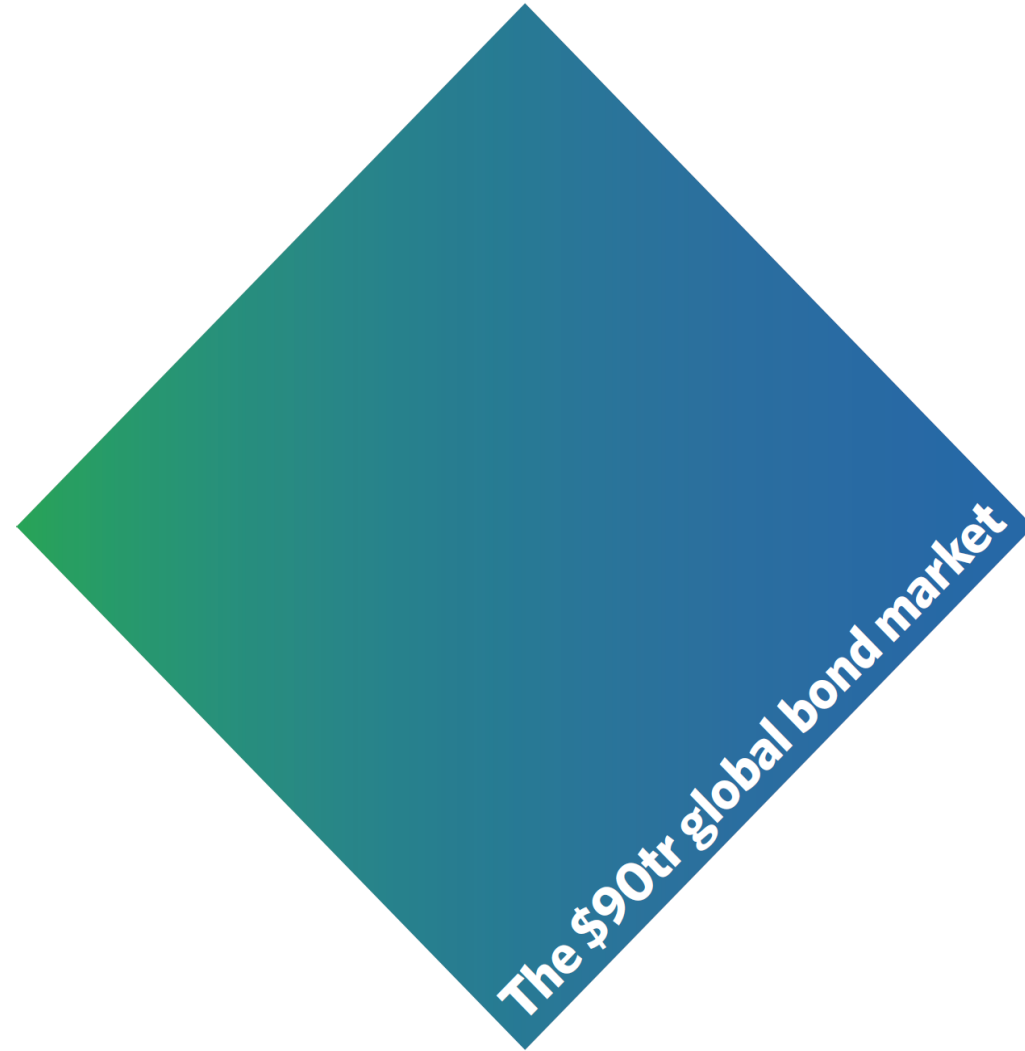
1. Use of proceeds
2. Process for Project Selection
3. Management of Proceeds
4. Reporting

## Labelled Size of Market

**The \$400 bn  
labelled green  
bond market**



**The \$1.45 tr.  
climate aligned  
bond universe**

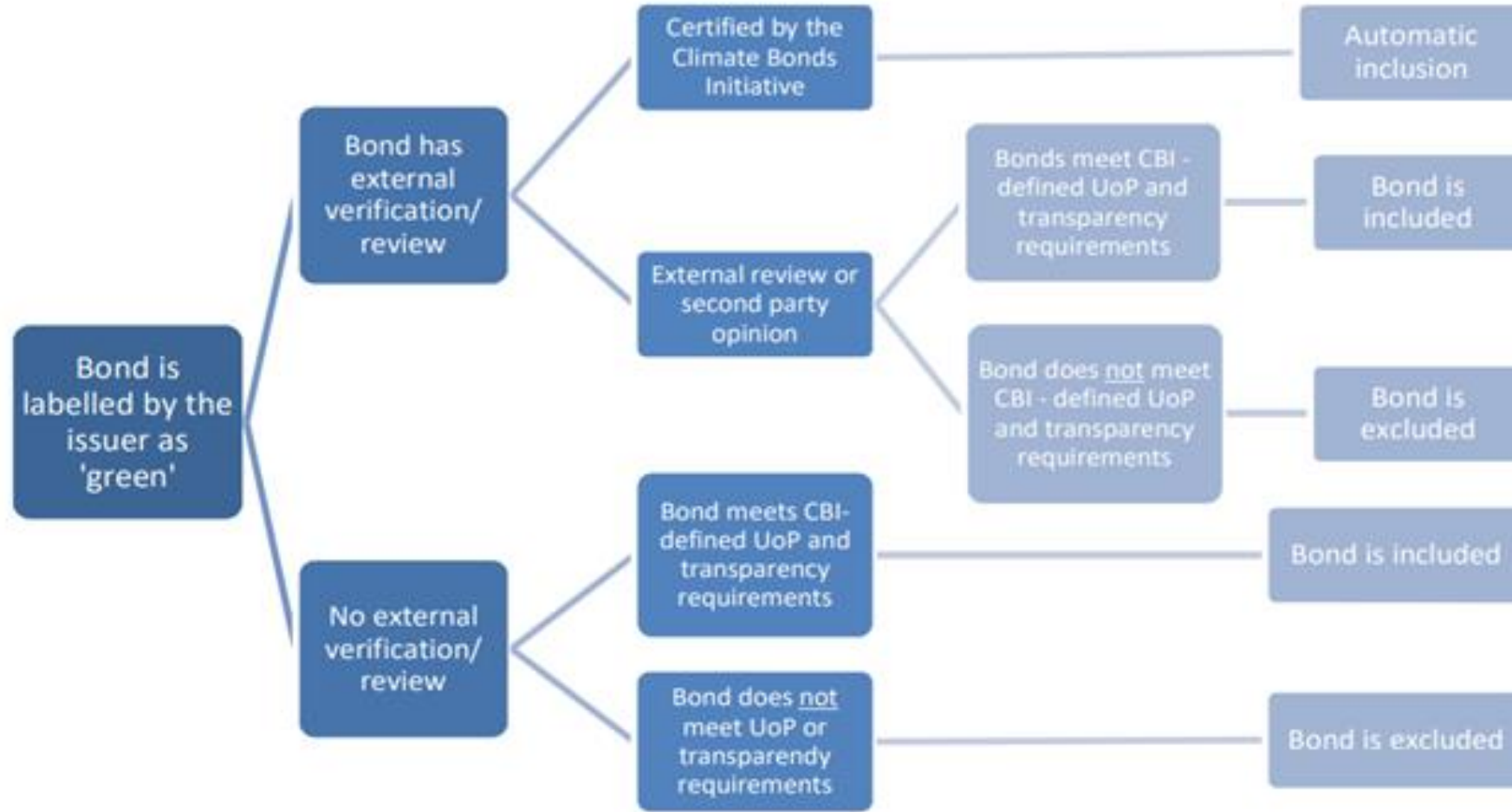




# Climate Bonds Standard and Certification Scheme

- **Only Global Standard:** Climate Bonds Standard Secretariat are the gatekeepers
- **Independent:** Eligibility Criteria have been developed by independent Technical Working Groups (TWGs) made up of sector-specialist experts from across the world. Everyone works pro-bono
- **Easy-To-Use Tool:** designed to go hand-in-hand with general issuance process
- **Robust Framework:** independent assurance, monitoring and reporting

# Climate Bonds Initiative Green Bond Database – what is included?



# Benefits of Certification to Issuer

- **Investor diversification** – low-carbon integrity of the bond attracts a much broader base of investors
- **Lower cost of capital** – green bonds enable issuers to raise large amounts of capital to support environmental investments that may not otherwise be available or may have been funded using expensive capital
- **High oversubscription** – strong demand for green bonds generally outstrip supply
- **Stickier Pool of Investors** – Green Bond Investors invest to the long term, matching maturity with project life
- **Tighter yields** – there is a view that stronger pricing will be achieved for future green bond issuance
- **Green flavour** – enhances issuer reputation

# Benefits of Certification to Investors

- **Asset allocation thresholds** – green bonds enable institutional investors exceed allocation thresholds especially when investing in emerging markets
- **Deal flow** – give investors the opportunity to balance financial returns with environmental benefits by directing capital to climate change solutions where there is a lack of deal flow
- **Risk management** – enable hedging against climate policy risk
- **Strengthened reputation and assurance** –provide assurance to portfolio investors that their funds would not be misallocated to assets with false green credentials
- **Alignment of CSR policies** – satisfy environmental, social and governance (ESG) requirements for green mandates – for “purpose based investing” only

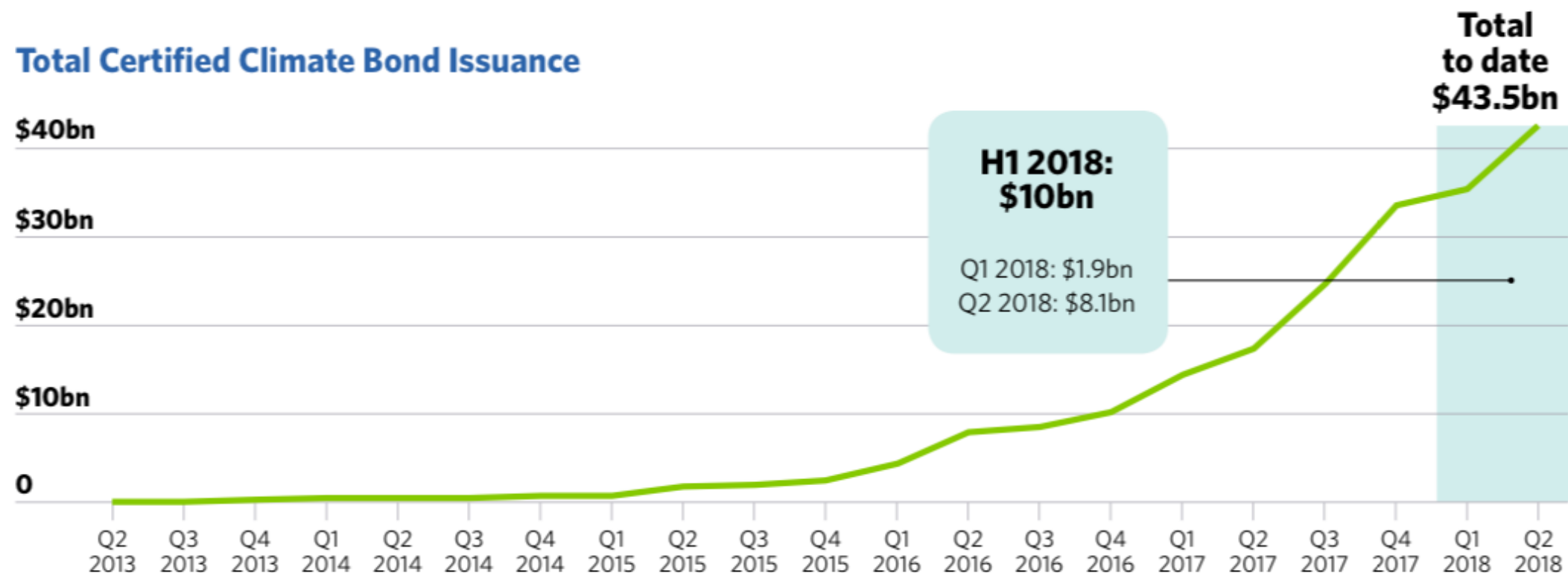
# Some of our Certified Climate Bond issuers so far

Approximately 65 issuers, as of April 2018



# Certified Climate Bonds growing

## H1 2018 Climate Bonds Certification up 40% from H1 2017

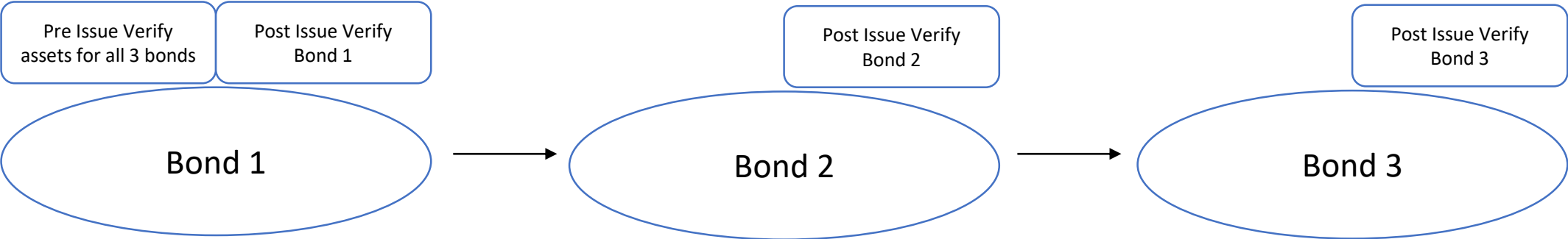


# Programmatic Certification

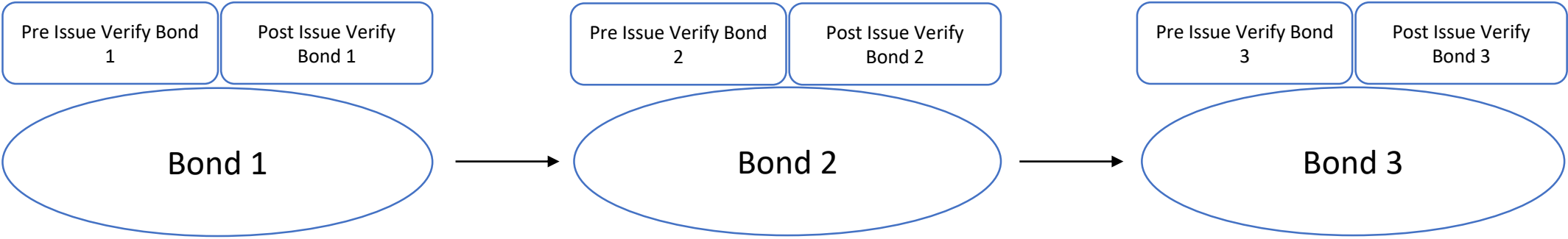
- What is Programmatic Certification?
- Programmatic Certification is a simplified process for Issuers who plan to issue multiple bonds over several years, against a large portfolio of green assets and projects
- It is just as rigorous as the normal Certification process and provides the same assurance, however it frontloads some of the procedures so that they are done only once in the beginning of the overall bond issuance program
- After the first bond is Certified, the Issuer is free to issue again as and when they like, with a much simpler procedure
- Issuers have enthusiastically taken up this route and one issuer has issued up to 7 Certified Bonds in 2 years



# Programmatic Certification – simplified Certification



Ordinary Certification process



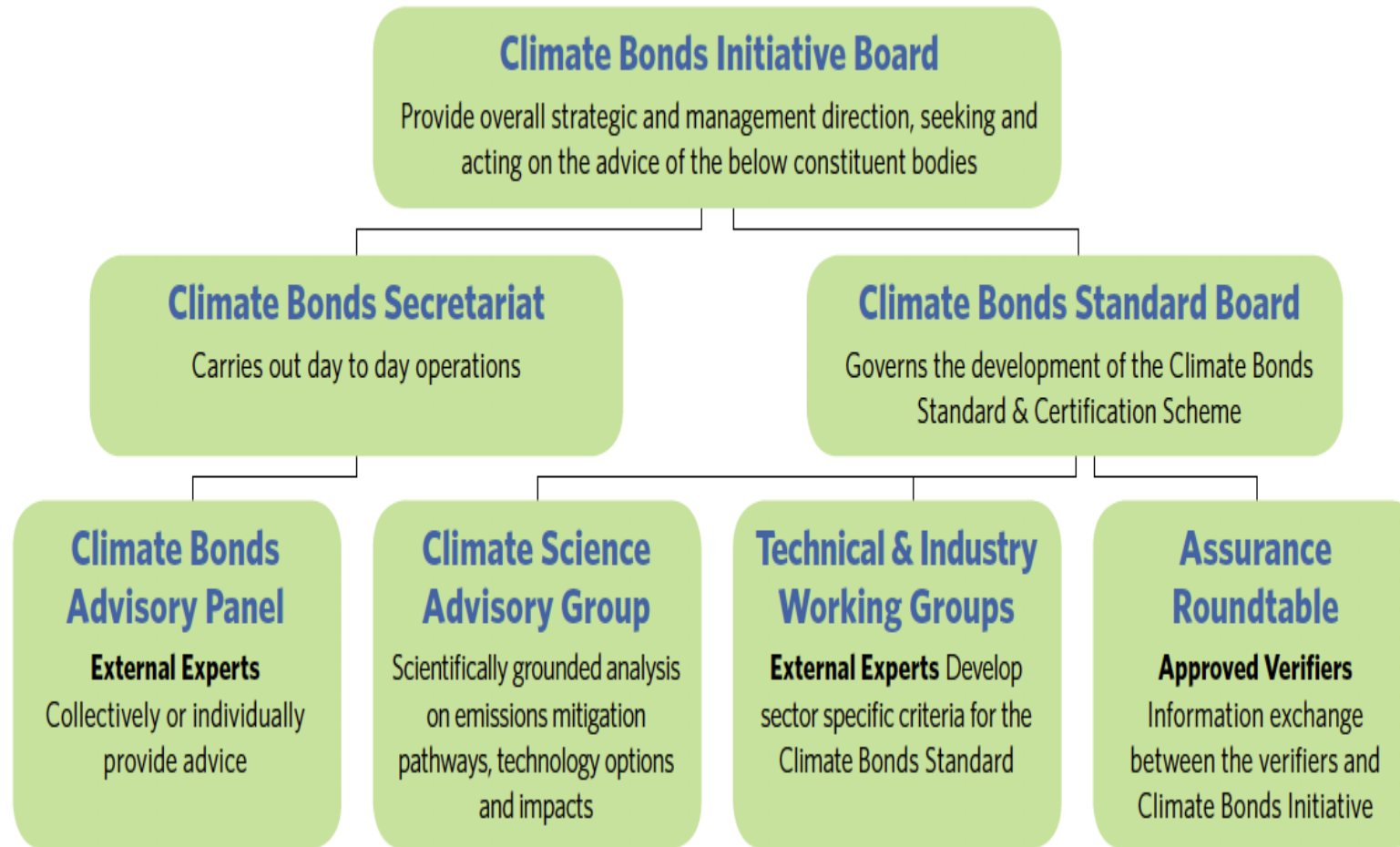
# Climate Bonds Certified Bonds: Global Phenomenon

Global Issuance Per Amount



- Nearly 100% Green Bonds certified in Australia
- 80% Green Bonds certified in India
- Total of \$32.9 billion globally (Feb '18)

# Our Approach To Developing the Standard



# Climate Bonds Standard Board

California State Teachers Retirement Service

California State Treasurer

Institutional Investors Group on Climate Change (IIGCC)

International Cooperative and Mutual Insurance Federation (ICMIF)

Investor Group on Climate Change

Investor Network on Climate Risk

Natural Resources Defense Council

CALSTRS



# Focus of the requirements in the Standard

- Requirements in the Standard are focused on **three main areas**:
  1. Internal procedures and financial controls inside the bond issuer
  2. Reporting arrangements which have been set up by the issuer
  3. Eligibility of projects & assets
- **Pre-issuance checks** are focused on the readiness of the issuer to meet the requirements and the likely eligibility of projects & assets
- **Post-issuance assurance** is a more thorough assessment of whether the issuer and the bond meet all of the requirements of the Standard

# Climate Bonds System of Verifiers

- The Climate Bonds Standard & Certification Scheme includes a list of **Approved Verifiers** which must be engaged by the issuers of Certified Climate Bonds
- Currently there are **29 Approved Verifiers**
- *Verifier Assurance Framework* of the Climate Bonds Standard & Certification Scheme
  - *The Framework* provides a description of the elements of the **oversight regime**
  - This includes: “Annual review of verifier competence and performance based on information gathered across the year, compiled by the Secretariat and provided to the Climate Bonds Standard Board”

# Climate Bonds Standard and Certification Scheme

## Climate Bond Certification process

### Issuer prepares

- Identify assets that meet the relevant sector criteria and compile supporting information.
- Create Green Bond Framework setting out how proceeds of the bond will be used.

### Engage a Licenced Verifier

- Engage a Licenced Verifier for pre- and post-issuance Certification.
- Provide them with relevant information.
- Receive a Verifier's Report giving assurance that Climate Bonds Standard requirements are met.

### Get Certified & issue a Certified Climate Bond

- Submit the Verifier's Report and Information Form to the Climate Bonds Initiative.
- Receive a decision on pre-issuance Certification.
- Issue your bond, using the Certified Climate Bond mark.



### Confirm the Certification post-issuance.

- Submit the Verifiers post-issuance report within 12 months of issuance.
- Receive notification of post-issuance certification.

### Report annually

- Prepare a simple report each year for term of the bond.
- Provide it to bond holders and Climate Bonds Initiative.
- Issue a public statement for the market about the assets being funded.

# Verifier's role in the Certification process (1/2)

1. **Pre-Issuance Certification:** Assessment and certification of the bond issuer's Internal Green Bond Framework and processes, including its
  - selection process for projects & assets,
  - internal tracking of proceeds,
  - the allocation system for funds.
- Verifier undertakes **procedures to assess the readiness** of the issuer and the proposed bond to conform with the Standard
  - Can either do Assurance Procedures using ISAE3000, or follow the **Readiness Assessment Protocol** (or checklist) to assess the conformance with the Pre – Issuance Requirements of the Standard
  - Verifier provides a **Verifier's Report** to the issuer, who then provides it to the Climate Bonds Standards Secretariat
  - A “publishable” version of the verifier's report must be provided as well as the detailed version



# Verifier's role in the Certification process (2/2)

2. **Post-Issuance Certification:** Assessment and certification of the bond, which must be undertaken after the allocation of bond proceeds is underway
- Verifier undertakes **procedures so that it can provide assurance** that the issuer and the bond conform with all of the Post-Issuance Requirements of the Standard
    - **Verifier must use ISAE3000 for undertaking the assurance work** which provides a clear and repeatable structure and process for this work
    - Limited assurance is the minimum requirement, but many issuers prefer to see reasonable assurance
    - The Verifier's Report must contain an assurance statement
  - Verifier's Report is provided to the issuer, who then provides it to the Climate Bonds Standards Secretariat with its application to confirm the Certification
    - A “publishable” version of the verifier's report must be provided

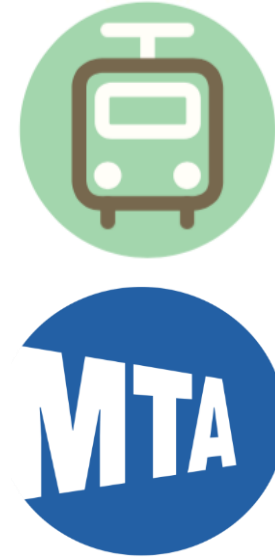
# Some of Our Approved Verifiers



# New York's MTA – largest Certified Climate Bonds issuer

MTA have issued 7 Certified Climate Bonds so far

1. February 2016, USD 782m
2. May 2016, USD 558m
3. February 2017, USD 312m
4. March 2017, USD 326m
5. May 2017, USD 608m
6. September 2017, USD 662m
7. December 2017, USD 2.17bn



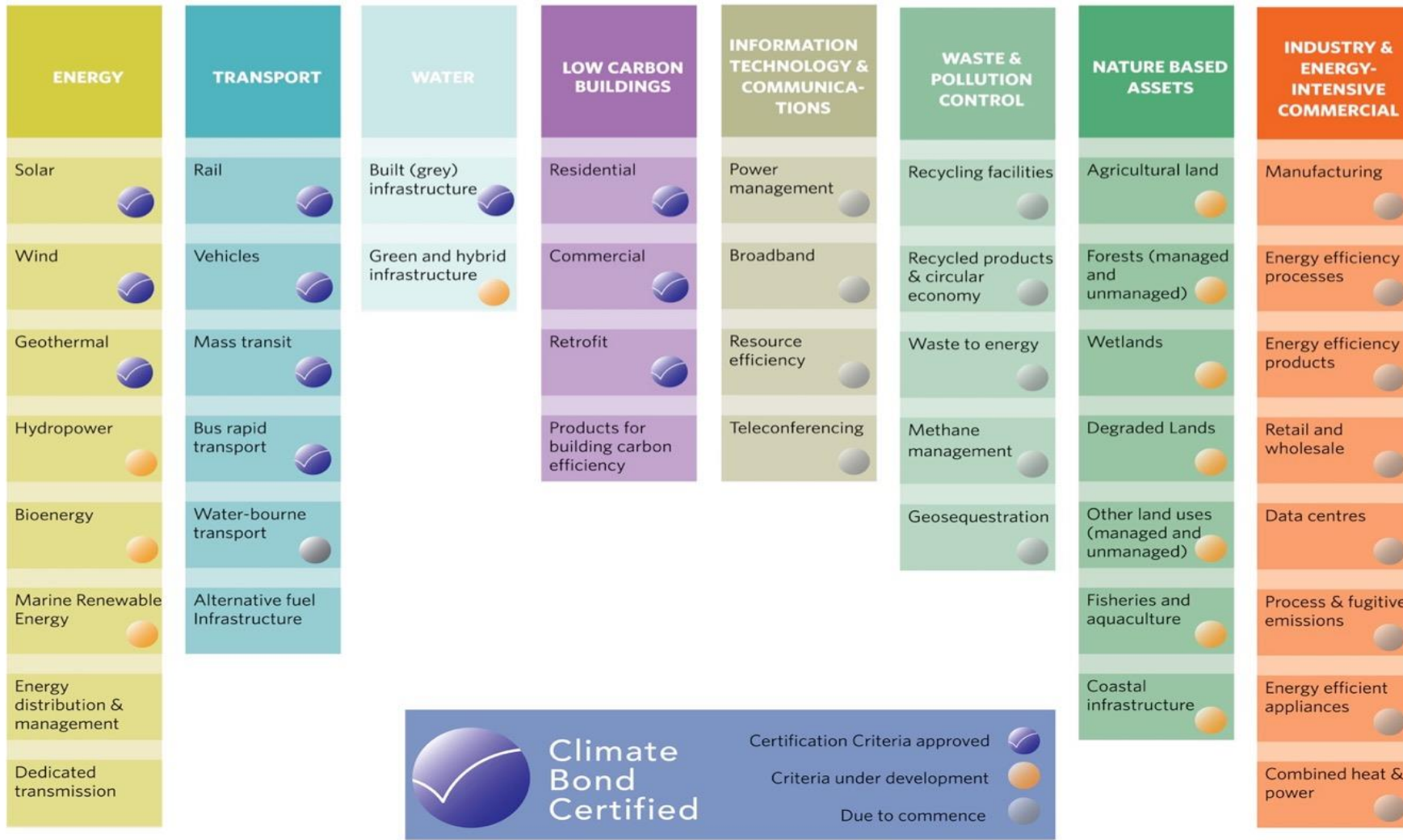
Eligible green projects in MTA's green bond framework include:

- Commuter rail routes
- Subway routes
- Rapid transit
- Bus routes
- Supporting infrastructure

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## 5. Green Definitions and Criteria

# Climate Bonds Taxonomy



# Climate Bonds Sector Criteria

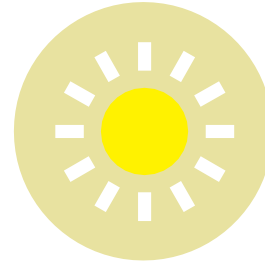
## Sector Criteria development

	Can be certified now	Criteria in development	TWGs launching soon
Energy	 WIND  SOLAR  GEOTHERMAL	 HYDROPOWER  BIOENERGY  MARINE	 DISTRIBUTION & MANAGEMENT
Transport	 RAIL  VEHICLES  BUS/RAPID TRANSIT		 WATER TRANSPORT
Utilities	 WATER	 RECYCLING & REUSE  DISPOSAL	 IT  COMMUNICATIONS
Buildings	 RESIDENTIAL  COMMERCIAL		
Natural Resources		 FORESTRY  AGRICULTURE  FISHERIES	
Industry			 CEMENT  STEEL  MANUFACTURING & PROCESSING

# Climate Bonds Sector Criteria

The Sector Criteria contain the requirements that assets or projects must meet to be eligible for Climate Bonds Certification.

Sector Criteria are currently in development for Forestry, Bioenergy, Hydropower, Waste, Pollution Control, Agriculture



SOLAR



WIND



GEOTHERMAL



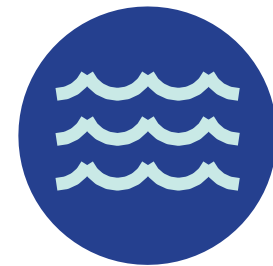
BUILDINGS



WATER



TRANSPORT

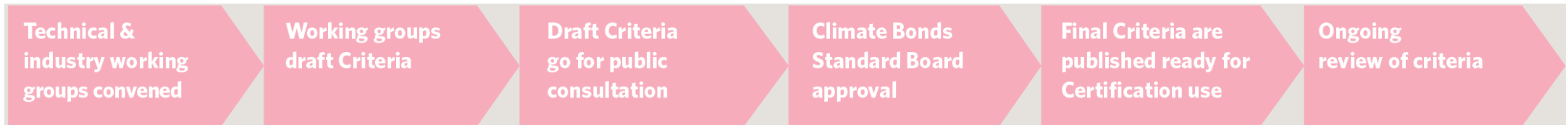


MARINE

# Sector Criteria Development

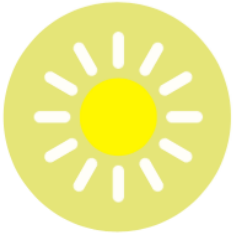
The process starts with climate science and has several stages of stakeholder engagement.

Resulting criteria is aligned with Paris Agreement goals, as well as being practical and widely accepted by industry and market stakeholders





# Solar Criteria



## Eligible projects and assets

1. Solar electricity generation facilities
2. Wholly dedicated transmission infrastructure and other supporting infrastructure for solar electricity generation facilities including inverters, transformers, energy storage systems and control systems
3. Solar thermal facilities such as solar hot water systems

Eligible Project & Assets shall have no more than 15% of fossil fuel back up generation

# Wind Criteria



## Eligible project & assets

1. The development, construction and operation of wind farms
2. Operational production or manufacturing facilities wholly dedicated to wind energy development
3. Wholly dedicated transmission infrastructure for wind farms

# Geothermal Criteria



GEOTHERMAL

## Eligible project & assets

1. New and existing geothermal projects with direct emissions of less than 100gCO<sub>2</sub>/kWh
2. Geothermal projects with mitigation technologies that will render the non-condensable gas releases to the atmosphere negligible
3. Geothermal projects that have been reviewed and registered under the Clean Development Mechanism

# Transport Criteria



Eligibility	Criteria
Private light-duty and heavy goods vehicles	<ul style="list-style-type: none"><li>• Per p-km or per t-km emissions of the vehicles lower than appropriate threshold</li><li>• Full electric and hybrid vehicles automatically qualify</li></ul>
Public passenger transport	<ul style="list-style-type: none"><li>• All infrastructure, infrastructure upgrades, rolling stock and vehicles for <b>electrified</b> public transport automatically qualify, including electrified rail, and trams</li><li>• For fossil fuel or hybrid vehicles or rolling stock, the project qualify if per p-km emissions are below appropriate threshold (depends on load factor)</li></ul>
Dedicated freight railway lines	<ul style="list-style-type: none"><li>• All infrastructure, infrastructure upgrades and rolling stock for electrified freight rail lines automatically qualify</li><li>• Non-electrified projects, products or supporting infrastructure qualify if per t-km emissions are below appropriate threshold</li><li>• Dedicated freight lines for fossil fuel transport excluded</li></ul>
Supporting Infrastructure	<ul style="list-style-type: none"><li>• All supporting infrastructure qualifies if it contributes to achieving the emissions threshold</li></ul>

# Buildings Criteria



## Eligible project & assets

1. Commercial buildings: Buildings must be in the top 15% of their city in terms of emissions performance. This threshold in emissions reduces to zero by 2050.
2. Residential buildings: Existing building codes, energy rating schemes (e.g. US Energy Star) and energy labeling schemes (e.g. Energy Performance Certificates in the UK) are used as proxies for determining the 15% threshold.
3. Upgrade projects: Building improvements that achieve emission reductions of 30% to 50% from a baseline will qualify for certification.

# The Water Criteria



Eligible project & assets

Built water infrastructure projects and assets

Key features

1. Climate mitigation: eligible if either:
  - a. No emissions impact is expected
  - b. Emissions impact is expected, and the issuer has estimated the GHG mitigation impacts that will be delivered over the operational lifetime of the project or asset. This impact should be defined in terms of the decreased emissions or increased sequestration relative to a business as usual baseline.
2. Climate resilience: Issuers must have carried out a sufficient vulnerability assessment, and if necessary, prepared an appropriate management response plan to any climate risks identified therein. The Water Criteria contain a scorecard to check this.

# The Water Criteria



Will your project meet the Water Criteria? It's an easy two-step

**STEP  
1**

## **Comply with Mitigation Component**

GHG emissions from water projects do not increase and comply with business-as-usual baseline or aim at emission reduction will be delivered over the operational lifetime of the water asset or project.

**STEP  
2**

## **Comply with Adaptation & Resilience Component**

Water infrastructure and its surrounding ecosystem are resilient to climate change, and have sufficient adaptation to address climate change risks.

To demonstrate that, issuers should complete a **scorecard** made up of five sections:

**Section 1. Allocation:** Addressing how water is shared by users within a given basin or aquifer.

**Section 2. Governance:** Addressing how/whether water will be formally shared, negotiated, and governed.

**Section 3. Technical Diagnostics:** How/whether changes to the hydrologic system are addressed over time.

**Section 4. Nature-based Solutions:**  
(for nature-based and hybrid infrastructure only) addressing whether issuers have sufficient understanding of ecological impacts at/beyond project site with ongoing monitoring and management capacity.

**Section 5. Assessment of the Adaptation Plan:**  
Checking the completeness of the coping mechanisms to address identified climate vulnerabilities.

# The Water Criteria



## STEP 1

### **Comply with Mitigation Component**

Greenhouse gas emissions from water projects do not increase and comply with business-as-usual baseline or aim at emission reduction will be delivered over the operational lifetime of the water asset or project.

## Mitigation

- Water is strongly linked to carbon emissions
- Water moved long distances or from deep underground, which is energy intensive
- Water treatment is especially ‘thirsty’ for energy.



# The Water Criteria



## STEP 2

### Comply with Adaptation & Resilience Component

Water infrastructure and its surrounding ecosystem are resilient to climate change, and have sufficient adaptation to address climate change risks.

To demonstrate that, issuers should complete a **scorecard** made up of five sections:

### Adaptation & resilience

- Climate change presents significant challenges for water management,
- Water quality, quantity, and availability will be changing for decades to come and there is much uncertainty about these changes

# The Marine Renewable Energy Criteria



Establishment, acquisition, expansion and management of renewable energy facilities, and their dedicated infrastructure and component manufacture.

These might include:

- Offshore Wind energy
- Offshore Solar energy
- Tidal facilities; including in-stream, lagoon and barrage
- Wave facilities
- Ocean current
- Ocean thermal energy conversion
- Salinity driven energy facilities

# The Marine Renewable Energy Criteria



Will your project meet the Marine Renewable Energy Criteria? It's as easy as **1 2 3**

**STEP  
1**

## Comply with Disclosure Component

Information required: project location and size, lifespan, key stakeholders, description of activities (e.g. installation, operation, decommissioning, facility capacity and generation), details of where the energy generated is going and avoided GHG emissions

For most issuers this information is readily available and already public. To show compliance it should just be a matter of collating the information.

**STEP  
2**

## Comply with Mitigation Component

Marine Renewable Energy projects automatically pass the mitigation component, provided fossil fuel back up is only used for restart capability and monitoring / operating / resilience measures in the event of no renewable power in the system.

For most issuers, proving compliance with this checklist will often be a matter of pointing to the Adaptation Plan and/or Environmental Impact Assessment.

**STEP  
3**

## Comply with Adaptation & Resilience Component

Complete checklist to show:

- 1.** Climate related risks to the asset are understood
- 2.** The impacts the asset has on the resilience of stakeholders and the environment are understood
- 3.** Strategies exist to mitigate and adapt to climate risks
- 4.** Strategies exist to promote resilience of the wider system
- 5.** Assets or projects have no negative environmental impacts

# Some our Technical and Industrial Working Group members



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# **Team Activities: Worked Examples**

# Internal Procedures For Bond Issuance

- The issuer of a Climate Bond needs to have an internal “**Green Bond Framework**” which lays out the following information:
  - Environmental objectives of the Climate Bond (or Bonds)
  - Selection process for eligible projects & assets to be funded by the bond proceeds
  - Internal procedures to meet the requirements in the Standard, such as management of proceeds, use of unallocated proceeds, and regular reporting which the issuer will provide
  - Sign off processes so that there is appropriate internal endorsement of the information contained in the reports.
- Bond issuers are usually very large organisations, so this “framework” will describe how **existing procedures** inside the issuer are used to meet the requirements of the Standard as well as any new procedures to provide eligibility information

# Climate Bonds Initiative

The organisation is leading the development of climate finance solutions with global stakeholders: governments, investors, banks and large companies.

Our main work streams are green bond standards and certification, green bond data and market analysis, policy analysis, green capital markets development, communications and advocacy. Policy analysis - and advocacy - is central to our market development work.

## About our policy work

The Climate Bonds Initiative develops global and country-level policy analysis and recommendations to support a rapid increase in capital investment, especially fixed income investment, in climate solutions. Achieving that requires a range of policy measures, with the rise of green bonds being more an indicator of success rather than a driver.

Our policy work aims to guide the public sector on how to work with the finance sector and industry to rapidly scale green bond markets. Country-specific policy work includes China, EU, US, India, Brazil, Africa and other locations. In 2018 priority work includes the development of “capital raising plans” for national and sub-national governments.