

Green Bonds



Opportunity for attracting capital flows towards sustainable water infrastructure

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October 2016

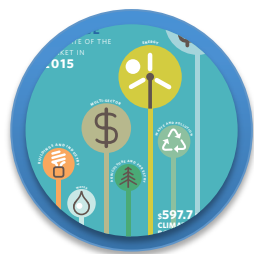
Mobilizing capital for climate solutions

Market development

- EU, China, India, Brazil, Mexico, etc
- Green aggregation
 - Green Infra Inv Coalition & INDCs
- Policy



Taxonomy Standards & Certification



Market analysis & reporting

The Challenge



What are Green Bonds?

Proceeds to green

- “Vanilla” structures and terms
- Comparable pricing
- Refinance as well as project
- 90% investment grade

Reporting

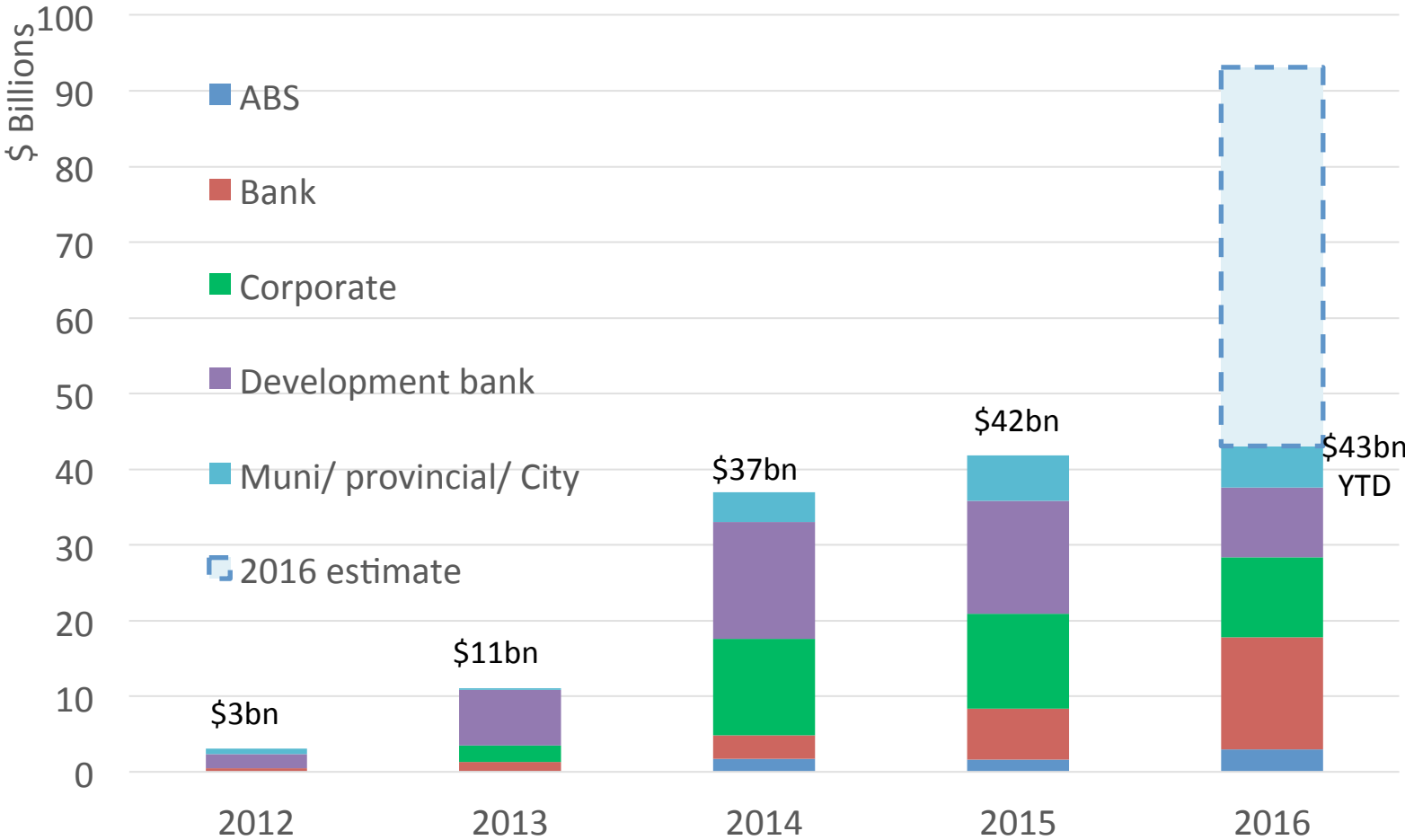
- Transparency to the green assets or projects
- Independent review / verification
- Reporting on use of proceeds

Any entity

- Governments & Development Finance Institutions
- Corporates
- Asset owners: PPPs, banks, utilities, etc
- Municipalities



Green bonds are making headlines

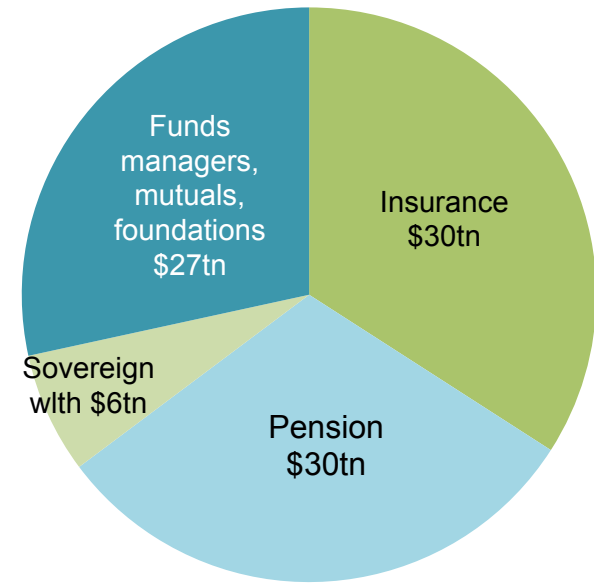


Investors want green!

\$93^{tn} institutional investors AuM

- SRI = \$21^{tn} global
- \$43^{tn} at UN Climate Summit
- \$20^{tn} insurers x10 climate investments by 2020

- Central banks: PBOC, BoE, various others



9 DECEMBER 2015

FROM INVESTORS REPRESENTING US\$11.2 TRILLION

The Paris Green Bonds Statement

We, the undersigned signatories to this statement, represent asset owners, investment managers and individual funds **managing a combined US\$11.2 trillion of assets**. We are substantial investors in the US\$100 trillion global capital markets and climate

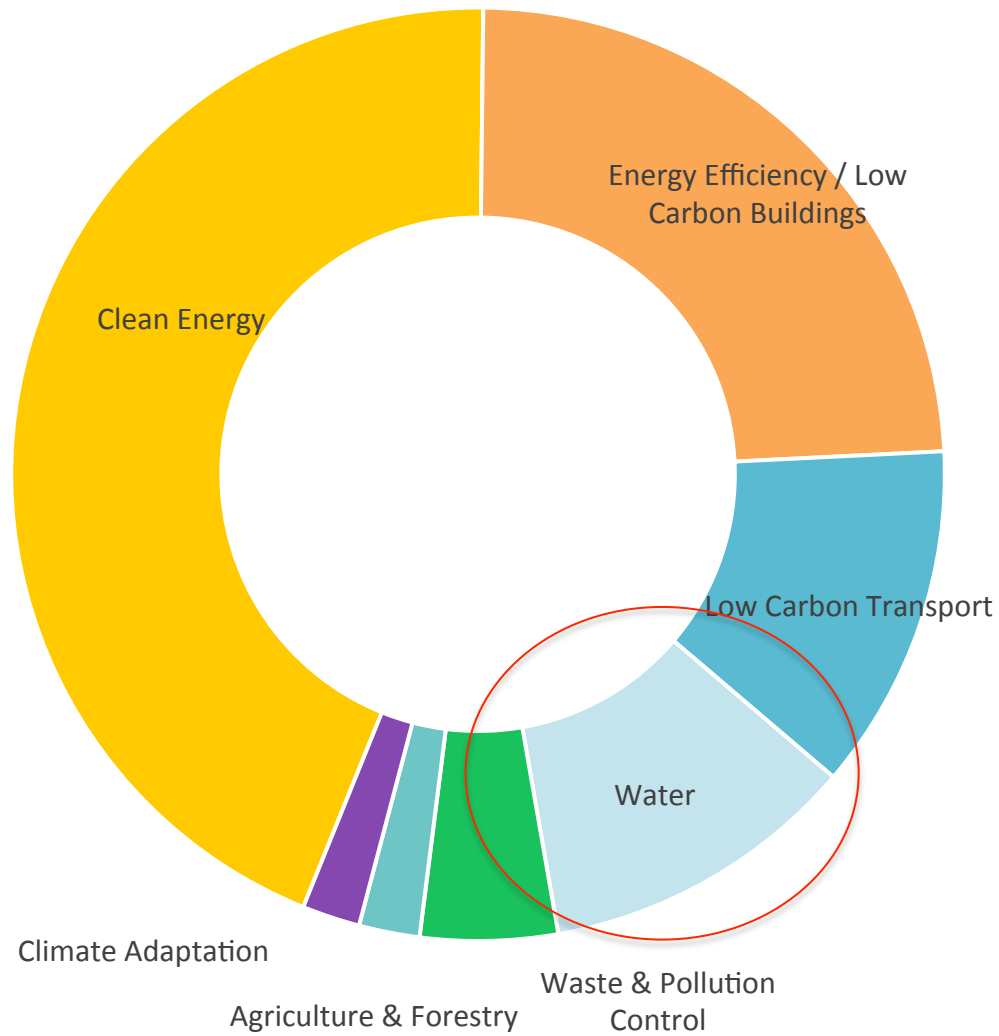
We encourage, in order to scale up investment in green bonds, climate bonds and other bonds financing mitigation of and adaptation to climate change that meet our risk and return requirements as institutional investors:

- Governments to act** through policy, regulation, risk mitigation, guarantees, tax credits and other mechanisms to support the issuance of bonds that both address climate change and allow us to meet our obligations to our beneficiaries.

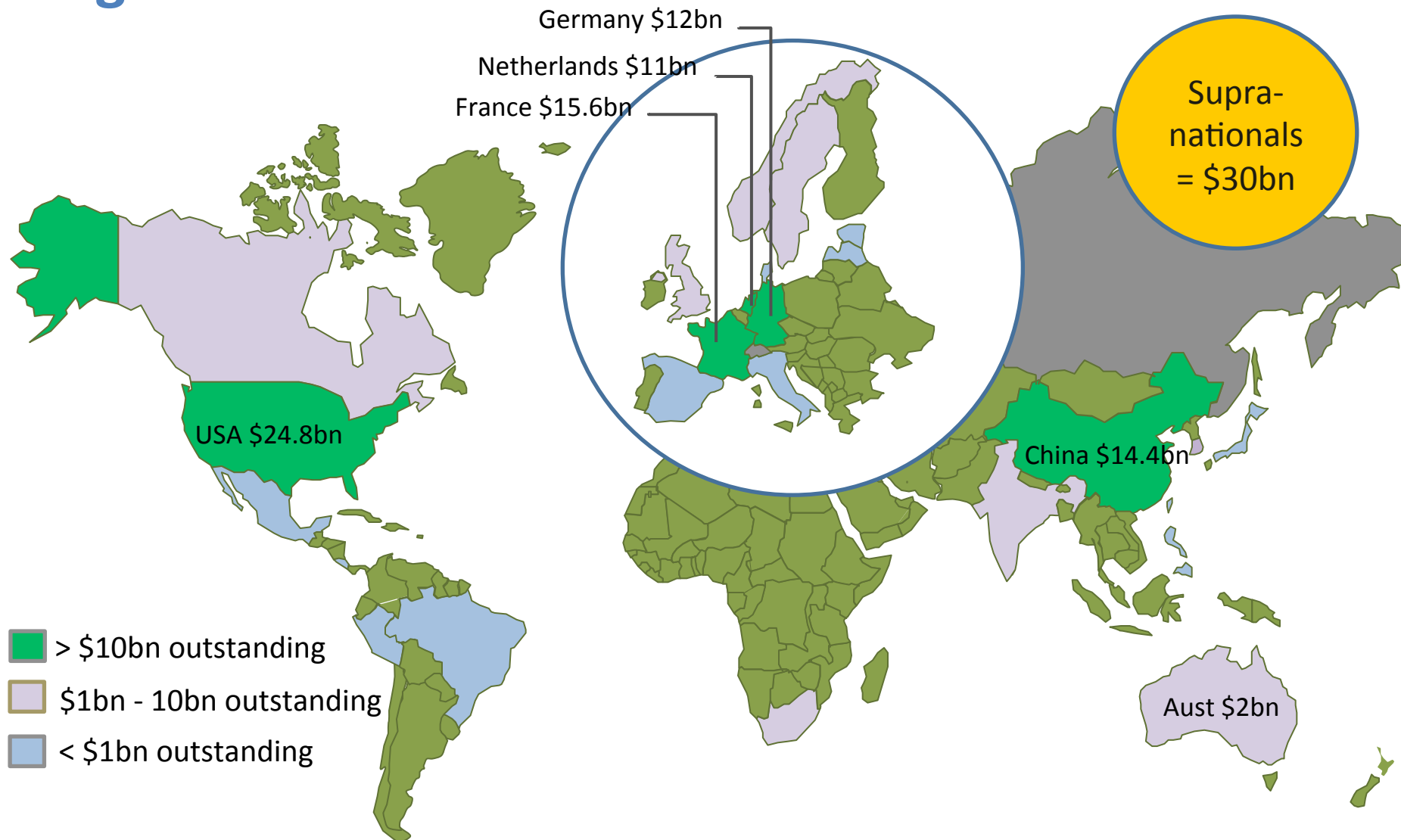
SIGNATORIES

- ACTIAM** — Jacob de Wit, CEO
- Addenda Capital** — Brian Minns, Sustainable Investing Specialist
- Affirmative Investment Management** — Stuart Kinnersley, CEO & Co-Founder
- AllianceBernstein** — Peter S. Kraus, Chairman and CEO
- Allianz Global Investors** — Franck Dixmier, Global CIO Fixed Income
- Amundi Asset Management** — Bernard Carayon, Deputy CEO
- APG Asset Management** — Herman Slooijer, Managing Director Global Credits
- AP1/Första AP-Fonden** — Mikael Angberg, CIO of Communications
- AP2/Andra AP-fonden** — Ulrika Danielson, Head of Communications
- AP3/Tredje AP-fonden** — Peter Lundkvist, AP3 Corporate Governance
- AP4/Fjärde AP-fonden** — Arne Löb, Head of Corporate Governance
- AP5/Femte AP-fonden** — Arne Löb, Head of Corporate Governance
- AP6/Sjätte AP-fonden** — Arne Löb, Head of Corporate Governance
- AP7/Sjunde AP-fonden** — Arne Löb, Head of Corporate Governance
- AP8/Aktie AP-fonden** — Arne Löb, Head of Corporate Governance
- AP9/Bond AP-fonden** — Arne Löb, Head of Corporate Governance
- AP10/Global AP-fonden** — Arne Löb, Head of Corporate Governance

Key sectors of issuance



A global market



Benefits to Issuing

BENEFITS

- **Diversification of Investor base**
- **Deeper Engagement internally/externally**
- **Reputational Advantage/branding**
- **Pricing**

Success Cases



- \$250M
- EE projects for Sustainability Living Plan



- \$1,75Bn
- Low Emission Vehicles



- 2.5Bn (EUR)
- Hydropower projects



- 750M (EUR)
- Renewable Energy and Smart Grids

Examples of US Water Green Bonds

Issuer	Amount	Assets
Massachusetts Water Resources Authority	680M (USD)	Waste water and water works
Upper Mohawk Valley Regional Water Authority	8M (USD)	Upgrades to the water system for climate resiliency and water security
San Diego Water Authority	98M (USD)	San Diego bay and clean water projects
San Francisco Public Utilities	240M (USD)	Waste water revenue bonds for stormwater management and waste water
DC Water	350M (USD)	Clean Rivers Project: water quality and Climate Resilience

Cal Infra and Economic Development - \$411M

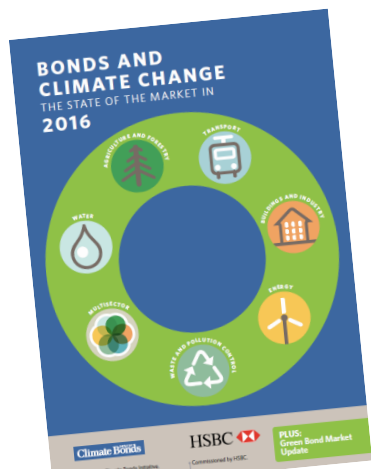
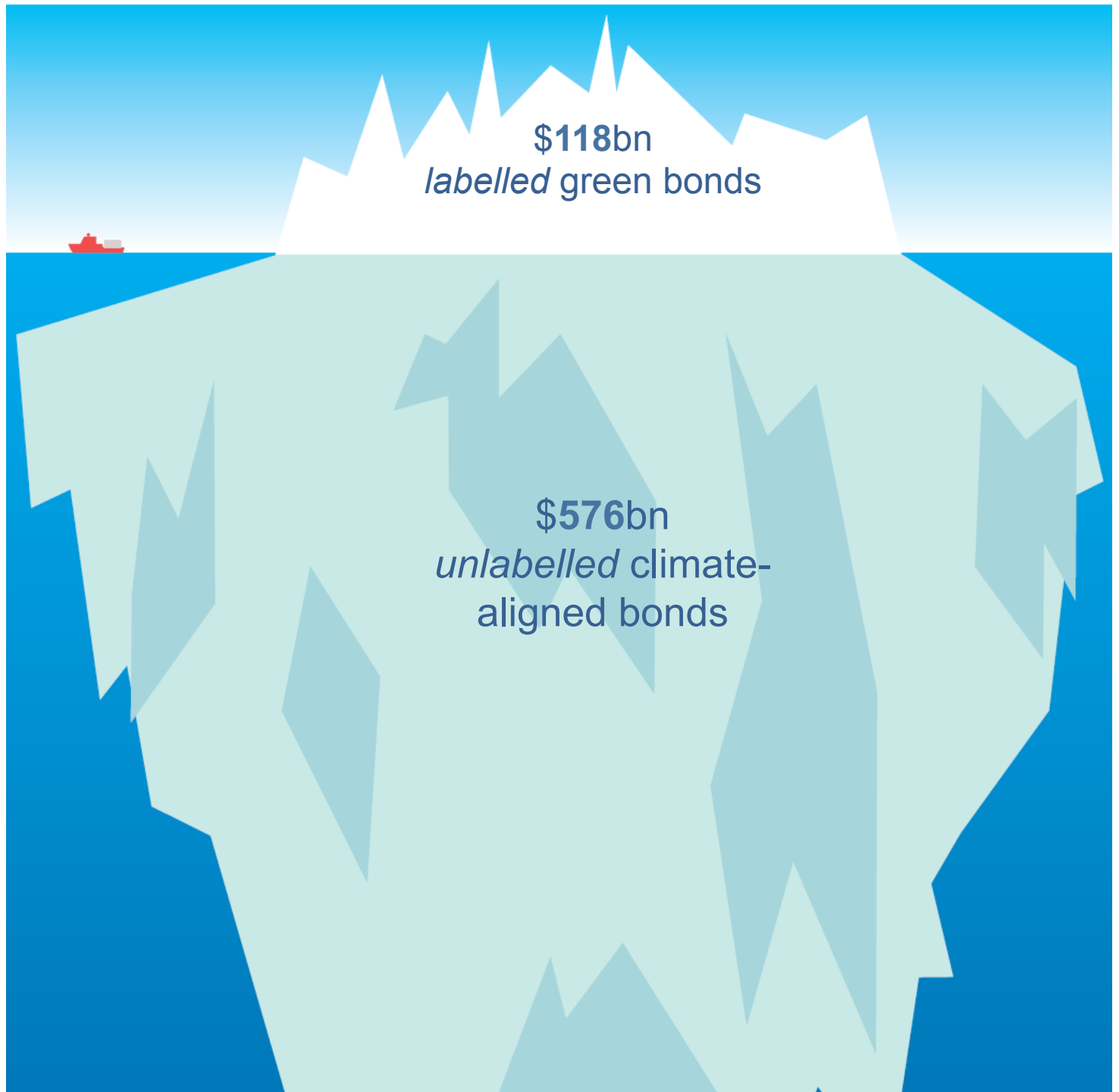
Indiana Finance Authority - \$115.8M

City of Cleveland - \$32.4M

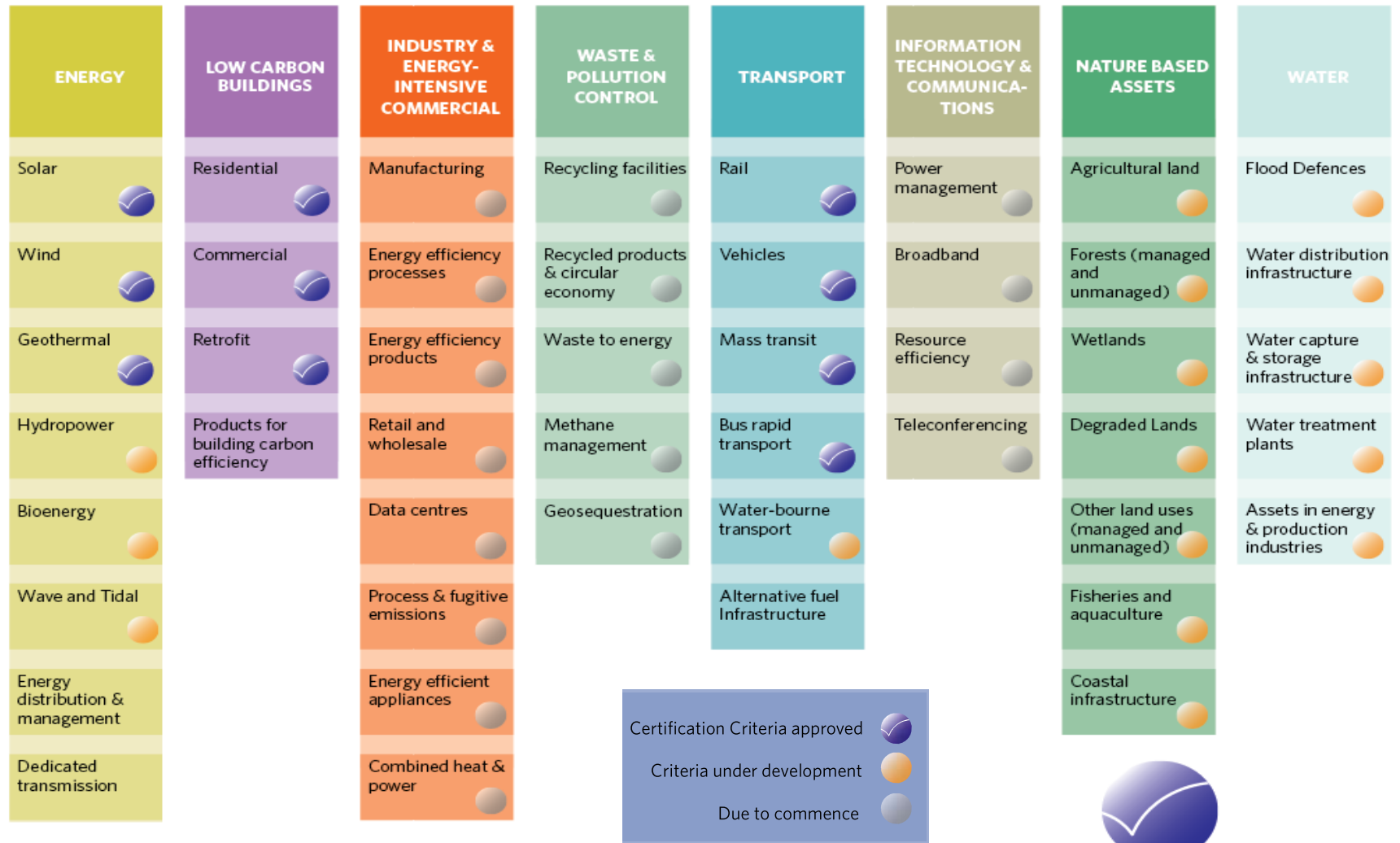
City of Saint Paul's - \$7.7M



A \$694bn
climate-
aligned
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Defining the green investment landscape





Labelling “Green” Bonds

How to issue a Green Bond

PROJECT IDENTIFICATION AND PREPARATION

Public sector decision-makers identify potential capital projects.

STATES

UTILITIES

CITY DEPARTMENTS

TRANSIT AGENCIES

CAPITAL PROGRAM

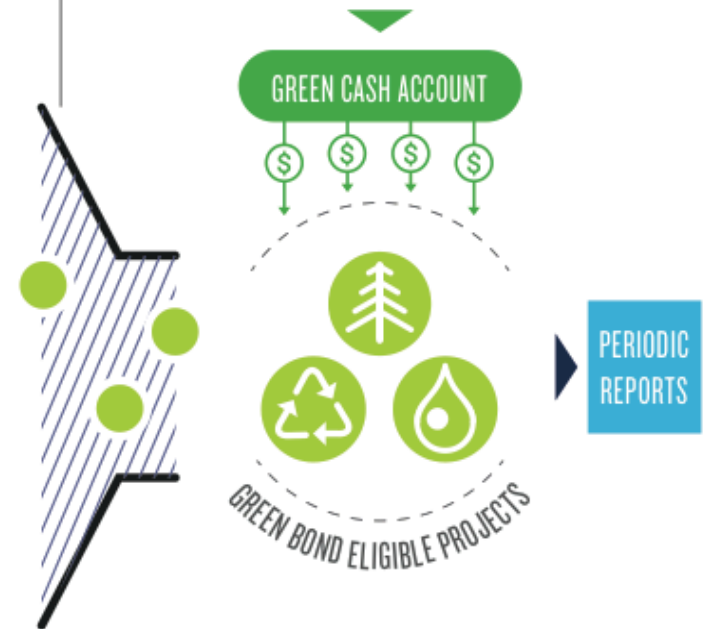
Identify and prioritize projects using green criteria.



In this phase, the green projects (i.e., those eligible for green bonds) are isolated for additional analysis.

GREEN BOND-FUNDED PROJECTS

PROCEEDS FROM GREEN BOND ISSUANCE



Approved projects screened using asset class green standards.

Guidelines and reviews

- **Green Bond Principles – ICMA**

Proceeds must go to green / Explain process for project selection; use 2nd party review / Track proceeds; use auditor to verify / Report each year on details



- **Climate Bonds Standard & Certification:** green definitions + Standard Framework



- **China:** PBoC, NAFMII, NDRC

- **Moody's green rating:** quality of review & reporting

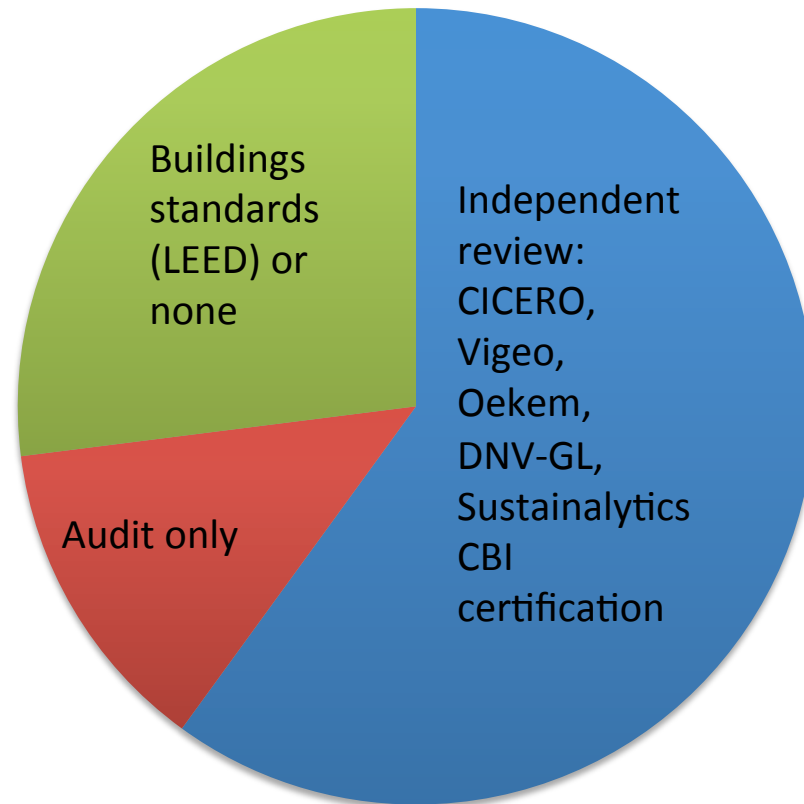
Green credentials: independent review

60% of green bonds use some sort of independent review

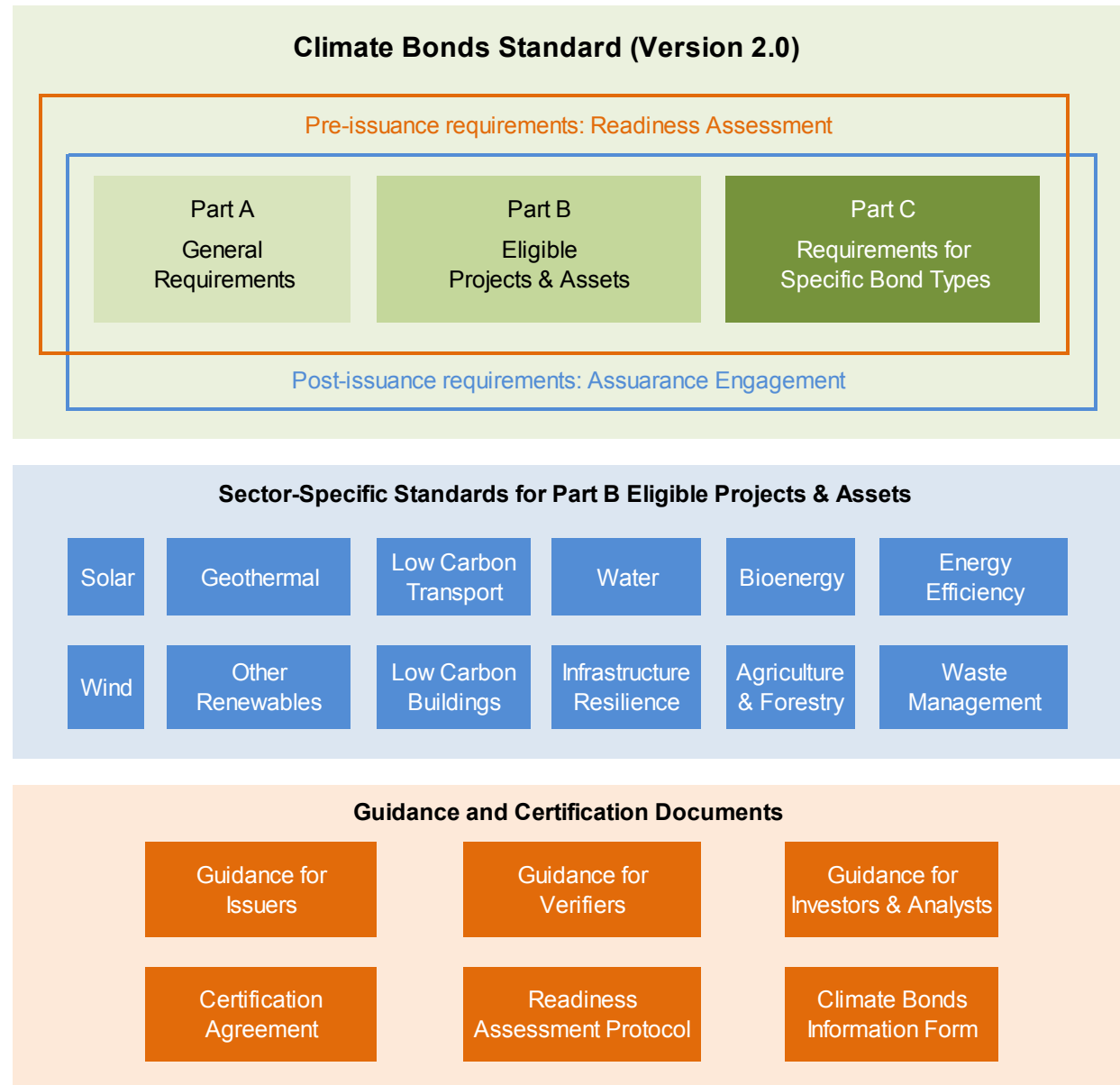
Most of remaining 40% have a proxy for review:

- EIB has assurance from KPMG on financial reports
- Other benchmark measures (e.g. LEED)

Climate Bonds Certification supports scalability with a Standards-based approach



Package of documents



Certification: affordable, easy



Identify qualifying green projects & assets based on the climate bonds taxonomy.



Get independent verification from an approved verifier

See the full list at <http://www.climatebonds.net/verifiers>.



Track and report

The value of the assets or projects must stay equal to, or greater than, the amount of the bond.

Report each year. For advice on specifics consult the Climate Bonds Initiative.



20 Verifiers



Governance

\$36tri Standards Board



Climate Bond Standards Advisory Board

Reports to Climate Bonds Initiative Governors

- Oversee implementation of standards development work
- Supervision of working groups
- Development of prospective standards criteria & clauses

Climate Science Reference Group

- Advise on scope of low carbon economy and eligible project types
- Recommend technical working groups

Technical Working Groups

- Develop eligibility criteria for each investment area: e.g. low-carbon transport, low-carbon property, water, agriculture

Industry Working Group

- Review of the practicality of proposed eligibility criteria, and of various aspects of operation of certification

Climate Bonds Secretariat: Research, Coordination and Administration

Funding

Logistics

ISEAL
Compliance

Public
Consultation

Contracting

Certified Product



Emissores



Standards Board



Verificadores ao redor do mundo





Water Climate Bonds Standard



WHAT IS THE **WATER CLIMATE BOND STANDARD?**

The **Water Climate Bond Standard**, developed by the Climate Bonds Initiative, provides investors with verifiable, sector-specific **eligibility criteria** for evaluating water-related bonds for low-carbon, climate resilient projects.

These criteria, the "**Water Climate Bonds Criteria**," are a subset of, and fall under the broader umbrella of the Climate Bond Standard. Bond originators may submit water-related issuances for certification by third party auditors of adherence to the standard.



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THIRST FOR POWER: **THE WATER-CLIMATE-ENERGY NEXUS**

Large amounts of electricity are required to acquire and process water and vice versa. However, water is considered to be a **top global risk** and climate change will only exacerbate water issues such as scarcity, drought and flooding.

As the global climate changes, extreme weather conditions will put pressure on water utilities. **Climate resilient investments in water are urgently needed** if sustainable infrastructure is to be achieved.





WHY WE NEED **A WATER CLIMATE STANDARD**



The incorporation of science-based criteria in the Water Climate Bonds Standard will provide investors with a clear signal of climate-compatible investments in the water sector that have been independently verified, **increasing confidence and reducing transaction costs for investors.**

Being able to invest in Certified Water Climate Bonds will therefore:

- * Help **expand the pool** of available investors
- * **Increase understanding** of the nature of climate-compatible investment in the water sector
- * **Scale investments** to sustainable water infrastructure projects

Technical WG

Alliance for Global Water Adaptation
OECD
Stockholm International Water Institute
World Resource Institute
CDP
Ceres
Colorado State University
University of Massachusetts
IUCN
Asian Development Bank
Water Environment Federation
Chinese Academy of Sciences
Duke University
Deloitte

Industry WG

Water Fund LLC
San Francisco Water
PGGM
DC Water, U.S.
Seattle Public Utilities
Abengoa Water S.A.
Anglian water UK
Mercer
International Hydropower Association



Sector-specific guidance for Water

CORE OBJECTIVE: to create a sector-specific guidance for investors, industry and governments that will help drive transparency and better reporting for water related assets linked to green and climate bonds.

Key Features:

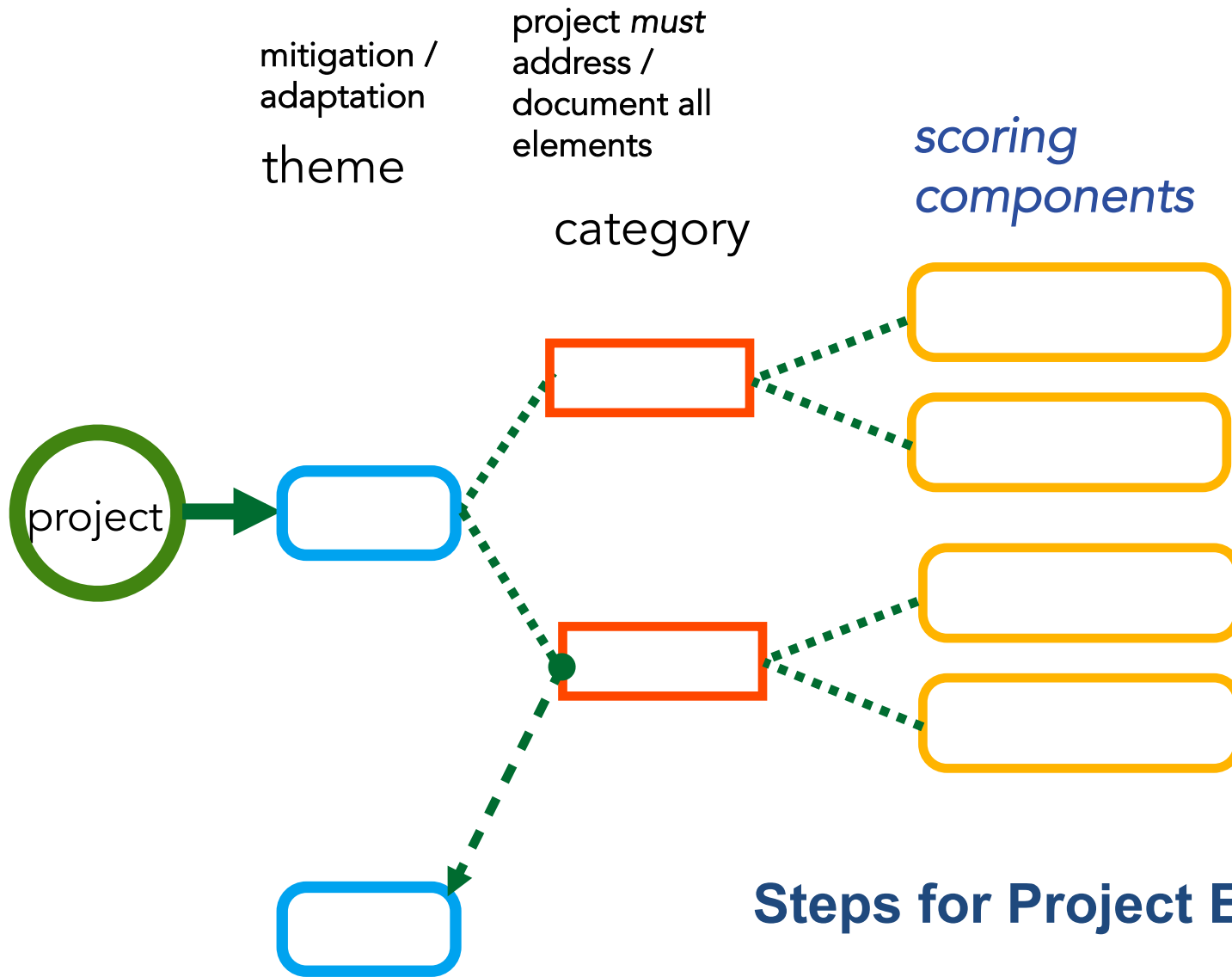
- A behaviour- based focus on “demonstrating thoughtfulness” rather than being prescriptive which might restrict innovation or reflect local concerns
- A checklist approach for scoring with a guiding decision tree for: long term management, improving the scoring and communicating what robust management should achieve.
- The GHG baseline and mitigation target must be calculated using credible methods such as CDM, references are provided in the Background Paper.
- Adaptation and resilience-related targets must be transparent, use credible and best available scientific guidance and be independently monitored.
- It is critical that the latest evidence from science, engineering and other tech perspectives be included in the evaluation of water investments intended to be green over decades; hence some aspects may seem unfamiliar



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Assets	Example projects*	Mitigation	Adaptation & Resilience
Including but not limited to: Rainwater harvesting systems Storm water management systems Water distribution systems (excluding irrigation) Infiltration ponds Aquifer storage Groundwater recharge systems Sewer systems Pumps	Improving energy efficiency or shifting to low carbon fuel sources	●	●
	Improving water management and efficiency, e.g. by reducing leaks, reducing urban run-off	●	●
	Installation or upgrade of water capture and storage infrastructure (excluding the examples listed above)	●	●
Including but not limited to: Desalination plants Water recycling systems Wastewater treatment facilities Manure/ slurry treatment facilities	Shift from anaerobic to aerobic wastewater treatment or separate solids from wastewater management systems	●	●
	Generating electricity from sewage methane or biogas production from thermal hydrolysis	●	●
	Waste energy recovery	●	●
	Improving energy efficiency or shifting to low carbon fuel sources	●	●
	Installation or upgrade of water treatment infrastructure (excluding the examples listed above)	●	●
Including but not limited to: Rainwater harvesting systems Gravity fed canal systems Pumped canal or water distribution system Terracing systems Drip or subsurface irrigation	Installation or upgrade of water irrigation systems	●	●
Including but not limited to: Surge barriers Pumping stations Levees Gates	Construction or upgrade of flood defense infrastructure	●	●
	Installation or upgrade of flood monitoring and warning systems	●	●



Steps for Project Evaluation

<http://www.climatebonds.net/standard/water>

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