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**Session 2:
Structural advisory and external
reviews**

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Approaches to environmental integrity and lessons from a decade of providing second opinions on green bonds

Mumbai, India
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- About CICERO and our role in the Green Bond Market
- Green Bonds and External Reviews Principles
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CICERO Center for International Climate Research

CICERO is Norway's foremost institute for interdisciplinary climate Research. Our areas of expertise include: the effects of manmade emissions on the climate, society's response to climate change, and the formulation of international agreements. We have played an active role in the IPCC since 1995. In recent years we have also been one of the pioneers of climate finance research.

Director Kristin Halvorsen



Halvorsen was Norway's first female Minister of Finance. Her other posts include deputy Prime Minister and Minister of Education and Research.

CICERO Climate Finance Center

Estimating climate-related material risks
(scenarios, Shades of Risk, detailed analysis)

Climate scientists and financial decision-makers
working together

Clearing house of latest science

CICERO Climate Finance Advisory Board

BLACKROCK



CICERO and Green Bonds

CICERO is the leading provider of independent environmental assessments (Second Opinions) of green bond frameworks. Our goal with these assessments is to provide transparent information to investors.



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Shades of
Green

- ✓ the first green bond (World Bank)
- ✓ the first municipal green bond (Gothenburg)
- ✓ the first corporate green bond (Vasakronan)
- ✓ the first green sukuk (Tadau Energy)

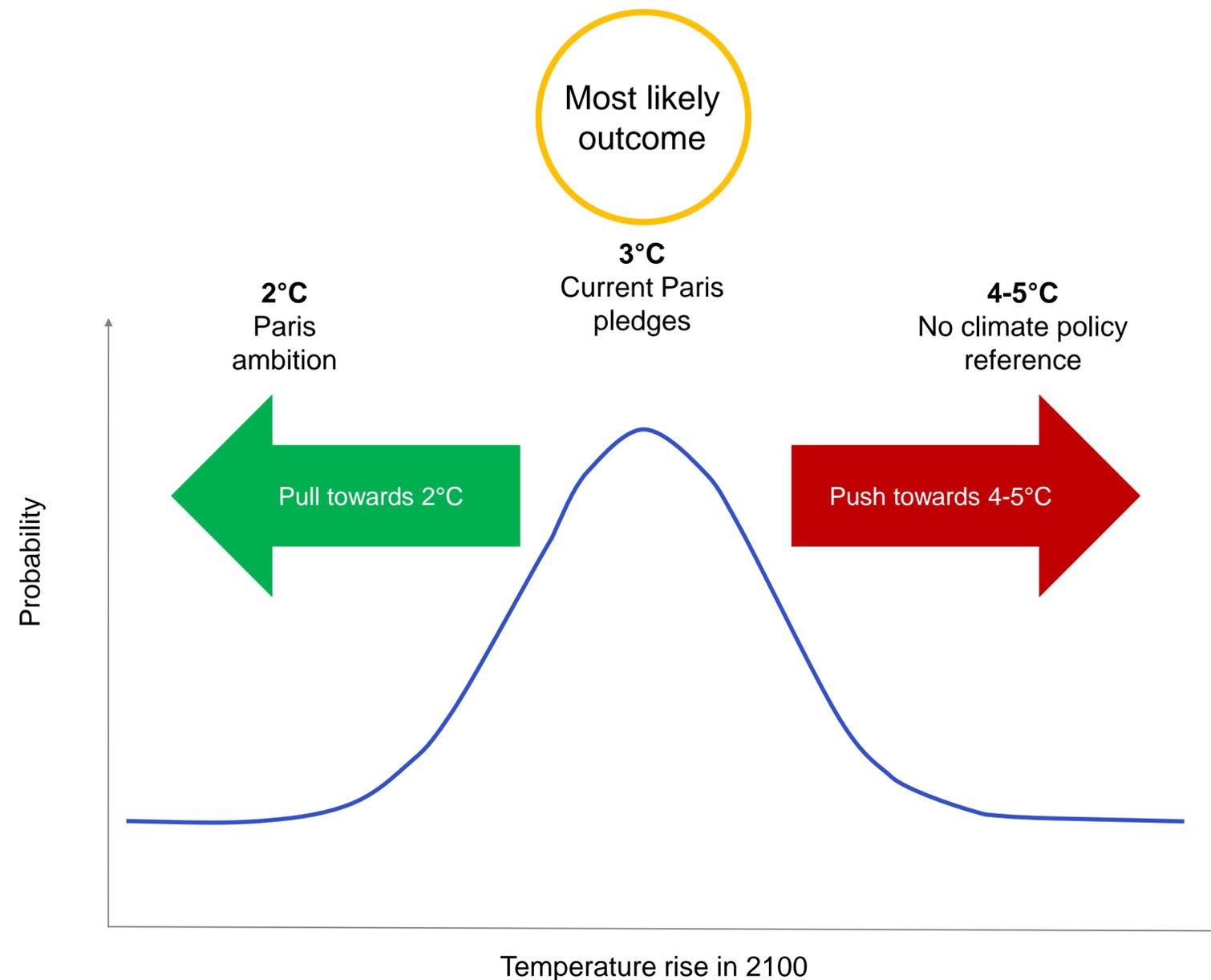
Climate risks have financial impact



Physical climate risks and the transition to a low carbon world are associated with **significant financial risks**

There is no agreed upon methodology for translating climate risk into financial risk

Which climate scenarios are most likely?



Source: Based on (Clapp 2017) etc.

Notes: 2°C is considered to be somewhat more likely than 4-5°C, given the possibility of tightening ambition under the Paris Agreement design, and the possibility of deploying CCS on a large scale. No climate policy reaching approximately 4-5°C would mean that current climate policies would be rescinded or relaxed.

Achieving approximately 3°C degrees in 2100 is more likely than 2°C, given current information.

Political and/or technological events can influence the temperature increase, pushing it up to 4-5°C or pulling it lower towards 2°C

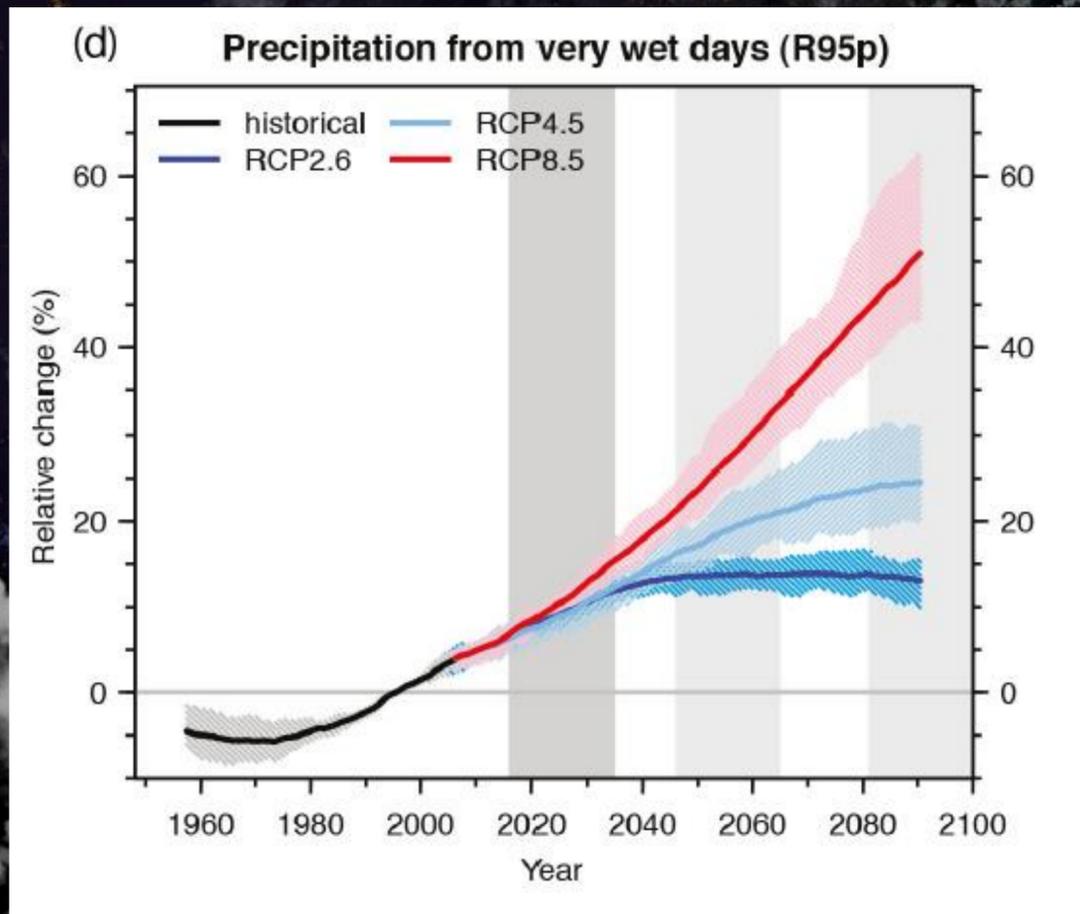
Push factors

- India and/or China fail to implement their NDCs
 - Half of global savings due to energy efficiency happen in these two countries
- Carbon Capture and Storage (CCS) deployment is delayed due to cost and public opposition

Pull factors

- CCS is deployed rapidly at large-scale
 - CCS plants are built at the historical pace of coal plants in China or nuclear plants in Europe
- The US recommits to Paris and ambitious ratcheting every 5 years

Investors should expect losses from extreme weather

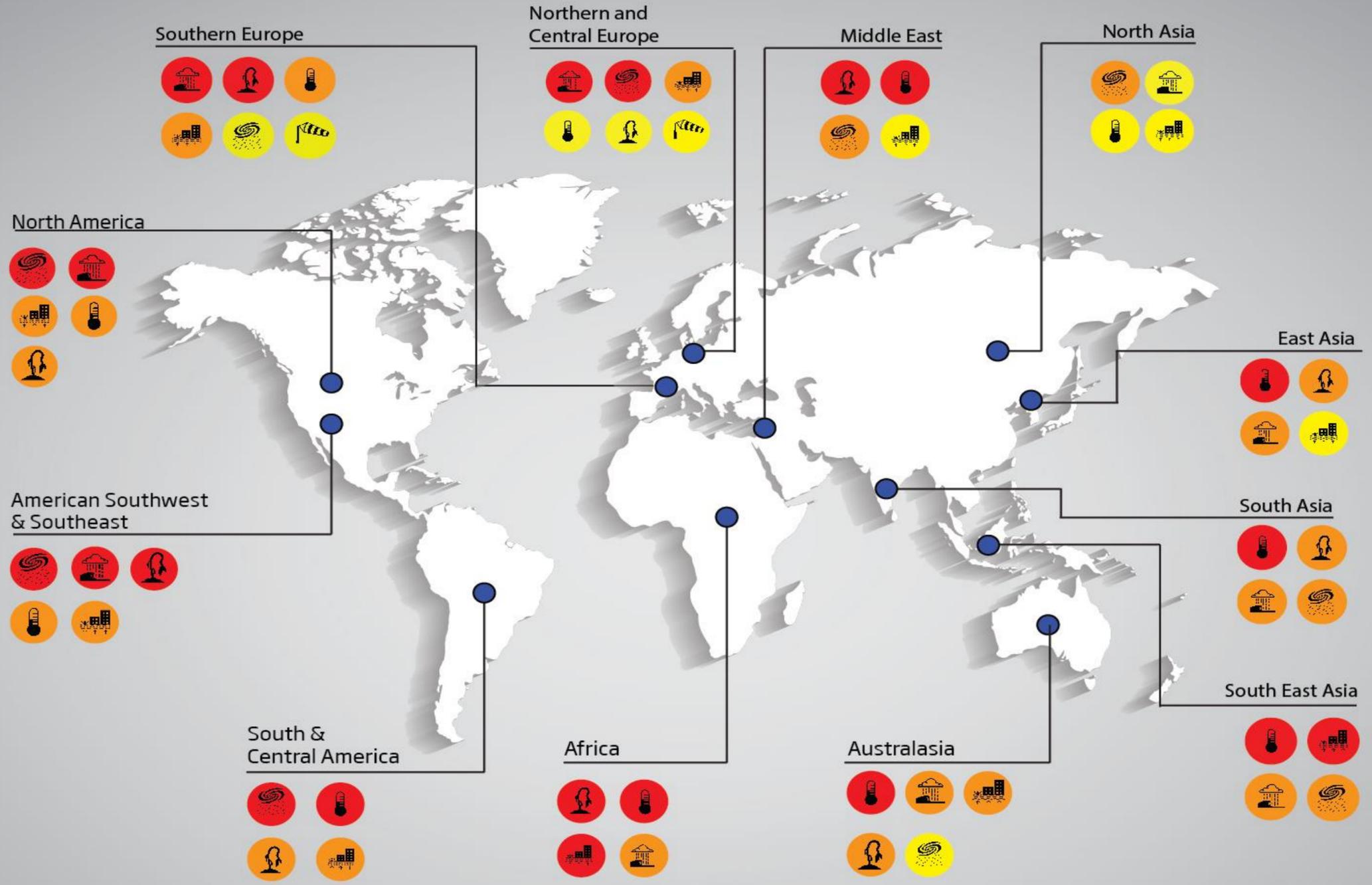


- Flooding and extreme events can have significant impacts in combination with extreme weather and sea level rise.
- According to an estimate by WRI costs related to flooding in South Asia may be as much as \$215 billion annually by 2030 and current GDP at risk in India is \$14,4 billion (World Resources Institute, 2017)
- All sectors can be impacted by flooding risk. Flooding in non-urban areas can have costly indirect impacts on supply chains

“Everybody should expect more extreme storms, no matter where they live.”

- Michael Wehner, a senior staff scientist at Lawrence Berkeley National Laboratory in California

CICERO Shades of Risk



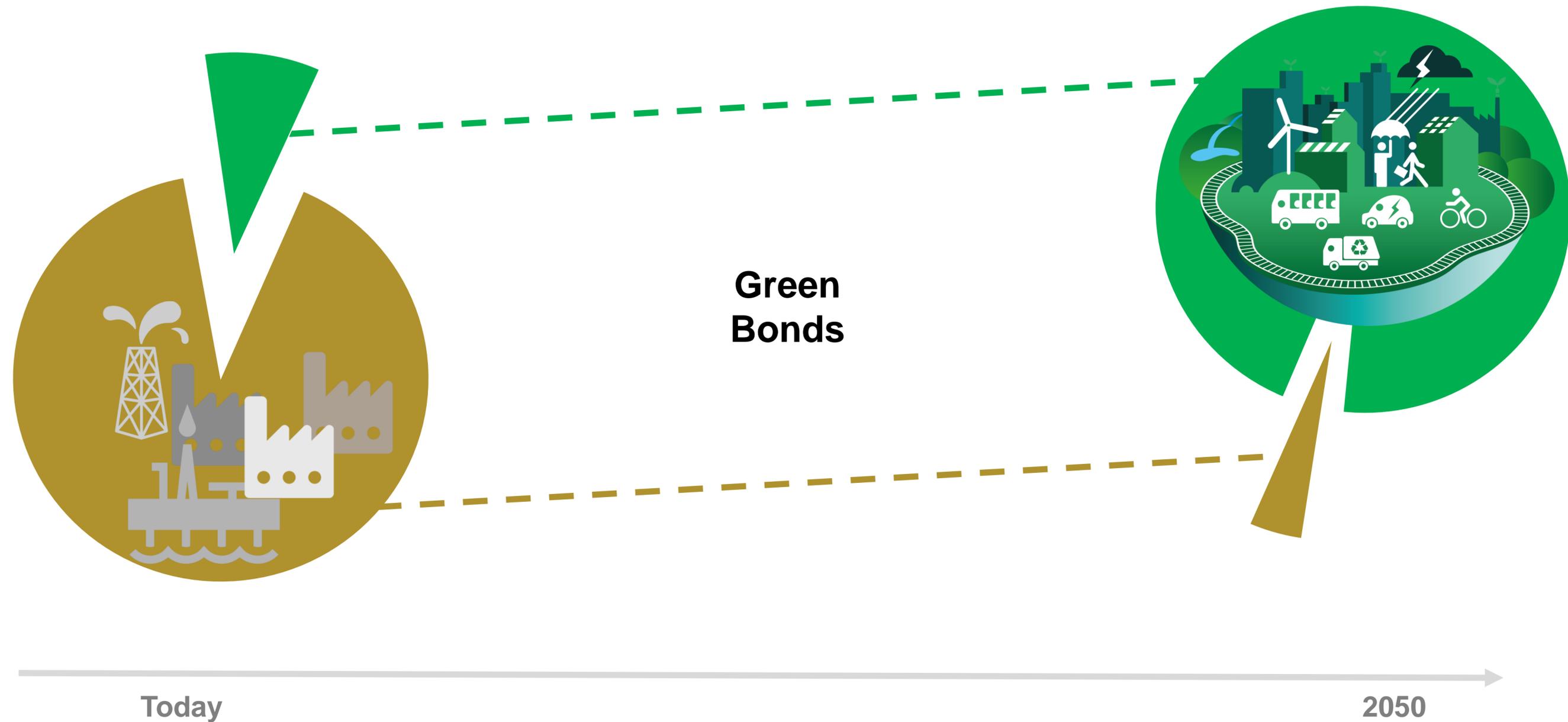
- WIND
- HEAT STRESS
- FLOODING
- EXTREME WEATHER EVENTS
- SEA LEVEL RISE
- DROUGHT

Immediate attention is required: Impacts are already observed with a significant probability to increase.

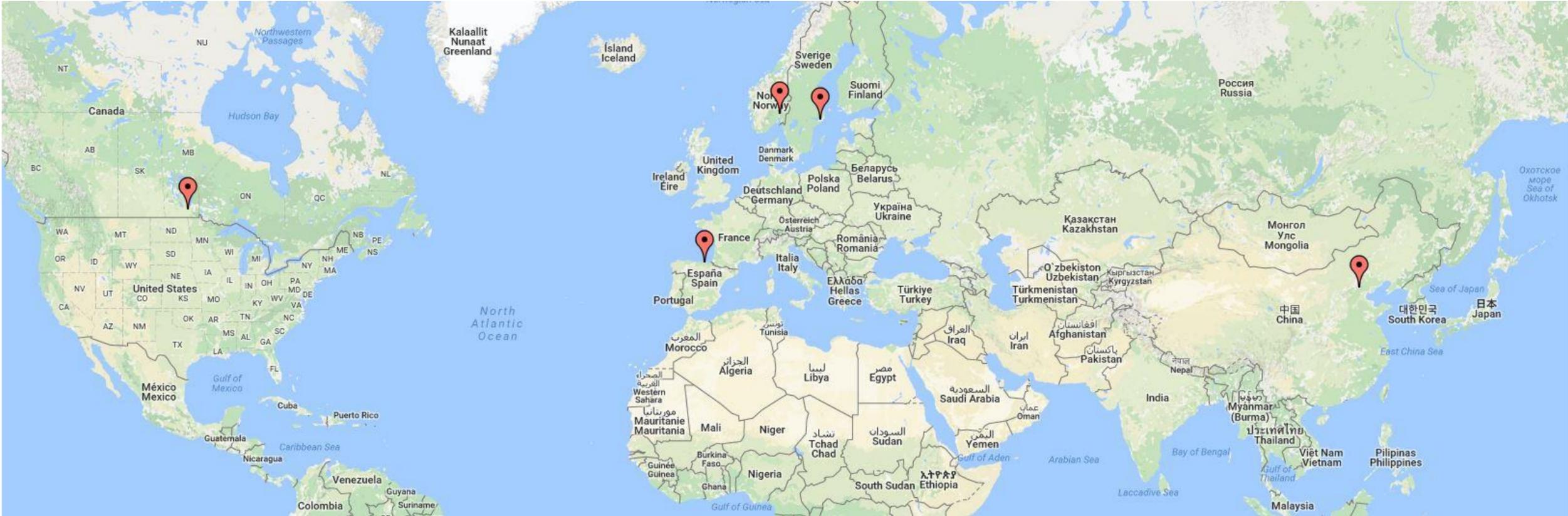
Some attention is required: Impacts are expected in the next few years.

Caution: Impacts could manifest towards mid-century

Transition to climate resilience provides investment opportunities



Expert Network on Second Opinions



iisd International Institute for Sustainable Development / Institut international du développement durable

bc³ BASQUE CENTRE FOR CLIMATE CHANGE / Klima Aldaketa Ikergai

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SEI

 清华大学 / Tsinghua University

Who defines green?



Voluntary principles for issuing a green bond that the vast majority of issuers align with ***across all markets***



Country level guidelines in ***some markets***



Stock exchanges with green bond lists set ***criteria for listing***



Green bond indices ***have criteria for inclusion***

External Review is market practice

CBI
(9 %)

Verification based on China Green Bond Catalogue
(28 %)

Second Opinions
(approx. 50 %)

Second Opinion Provider	Total Value of issuances for second opinions provided over 2016 (\$billions)	Number of issuances in 2016
Cicero	14.106	56
Sustainalytics	11.234	21
Vigeo-Eiris	7.430	14
Oekom	6.301	10
DNV	0.640	4

Source: Environmental Finance

TYPES OF EXTERNAL REVIEW 2016 (note: some overlap)

Green Bonds – timeline of assessment

Second Opinion

Second Opinion / Rating

Should report on use of proceeds annually until full allocation, thereafter in the event of material developments. Recommends impact reporting. Best-practice to have reporting reviewed.



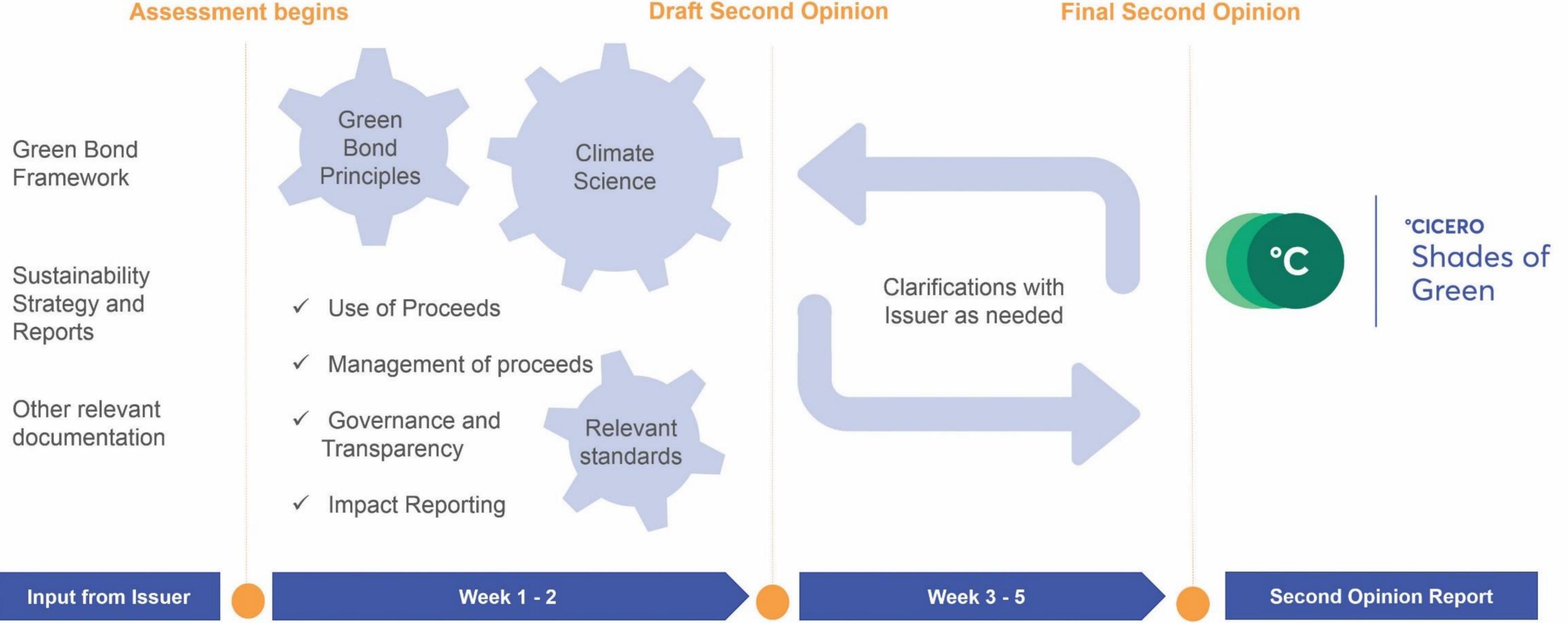
CBI Certification

Pre-Issuance Certification

Post-Issuance Certification

Annual reporting required, annual assurance is not mandatory

The Second Opinion Process



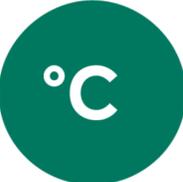
CICERO's approach

1. CICERO is an *independent* research institution, and our second opinions are issued independently of other stakeholders' influence. This integrity has been valued by the market.
2. CICERO takes a *dynamic* and *flexible* approach in dialogue with issuers to enhance a climate-friendly and sustainable future. Our approach is developing as science and the market evolves.

CICERO Green Bond Rating System

SHADES OF GREEN

EXAMPLES



Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future.



Wind energy projects with a governance structure that integrates environmental concerns



Medium green is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet.



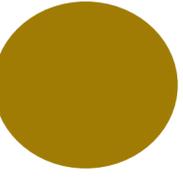
Plug-in hybrid busses



Light green is allocated to projects and solutions that are environmentally friendly but do not by themselves represent or contribute to the long-term vision.



Efficiency in fossil fuel infrastructure that decreases cumulative emissions



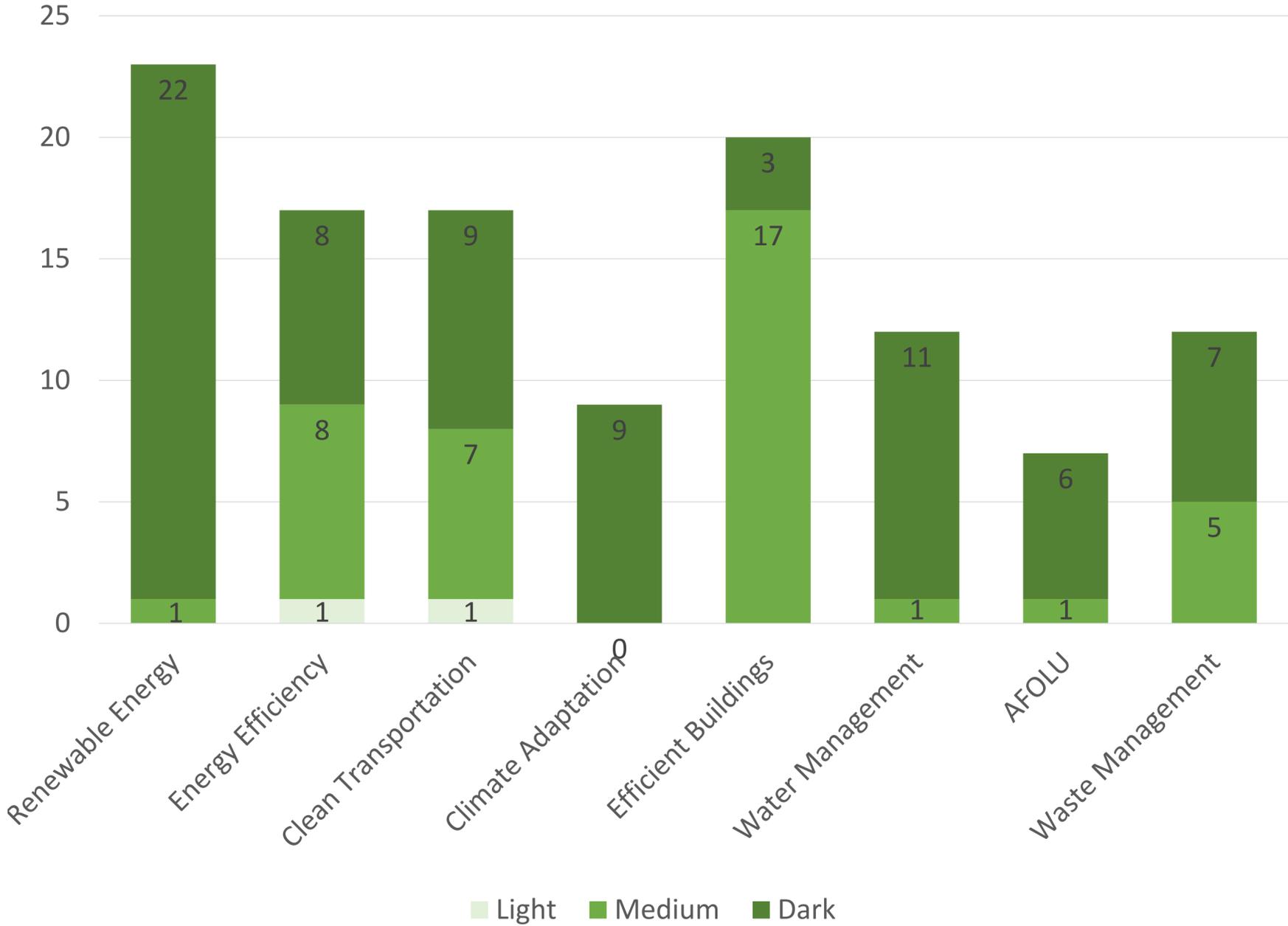
Brown for projects that are in opposition to the long-term vision of a low carbon and climate resilient future.



New infrastructure for coal

Some categories are *typically* greener than others

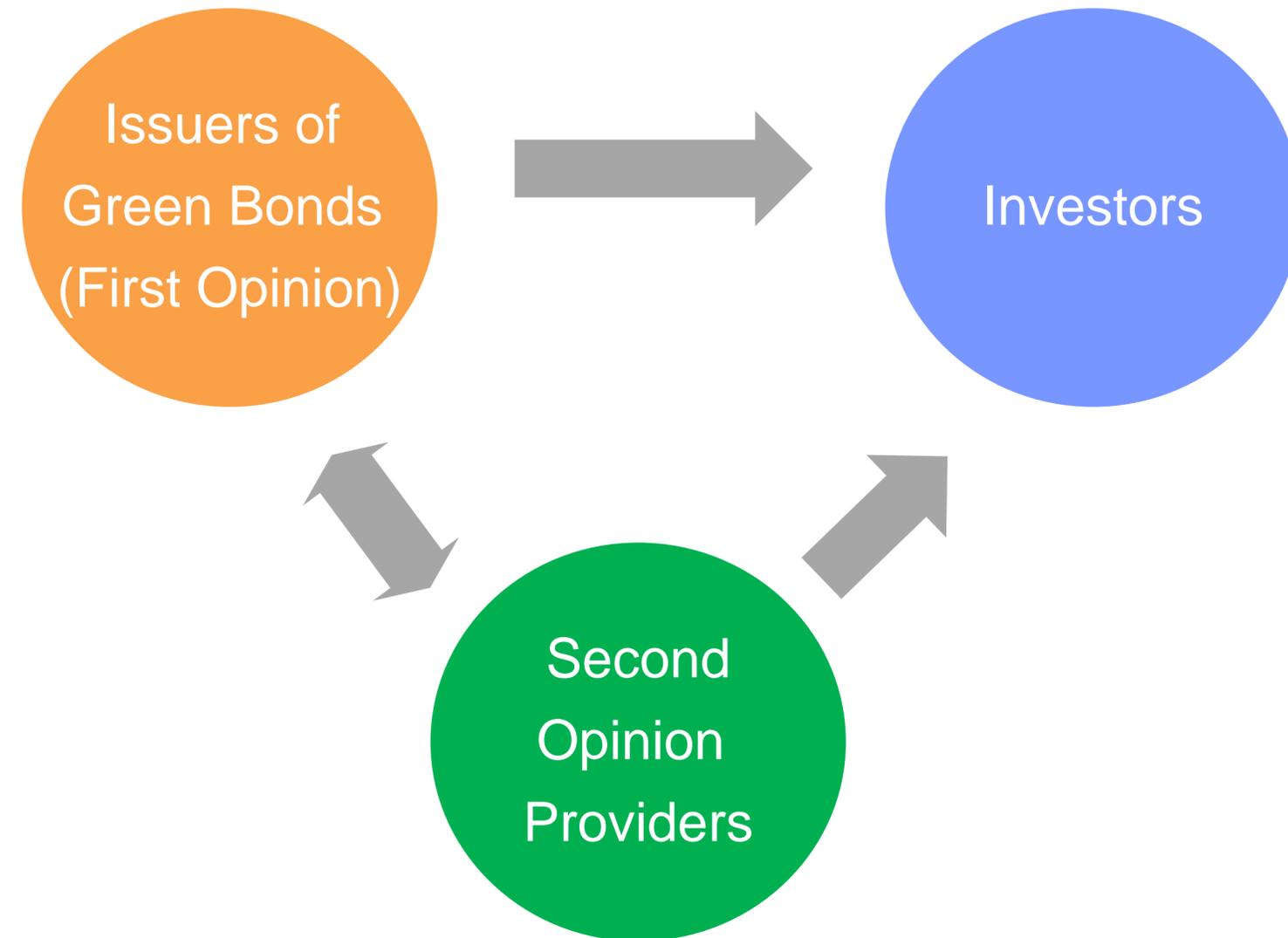
Shades of Green by Project Category



SHADES OF GREEN

- Dark green** is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future.
- Medium green** is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet.
- Light green** is allocated to projects and solutions that are environmentally friendly but do not by themselves represent or contribute to the long-term vision.
- Brown** for projects that are in opposition to the long-term vision of a low carbon and climate resilient future.

External reviews provide transparency to investors



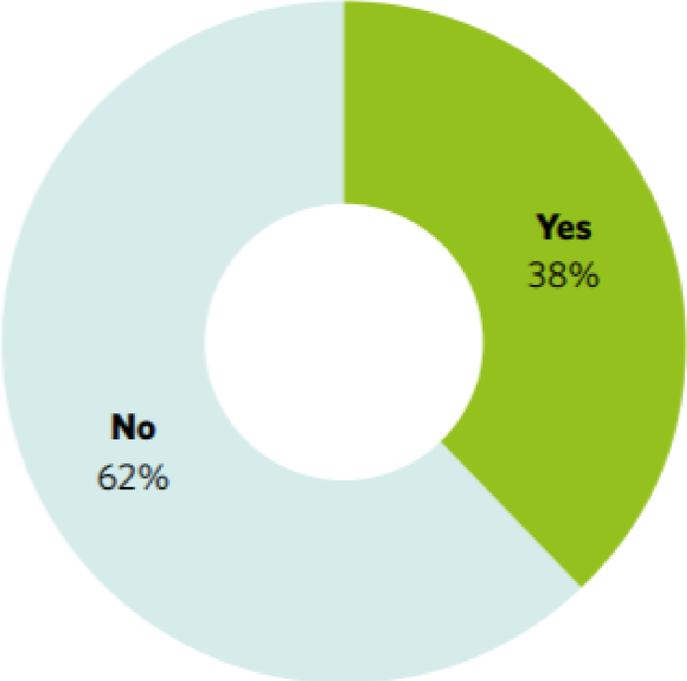
- ❑ **Assessment of a green bond issuer's framework** for selecting projects and investments to be eligible for green bond funding
- ❑ Investors value an **independent environmental quality review highlighting strengths, weaknesses and pitfalls**
- ❑ Should be produced by an **independent entity with environmental expertise and no economic interests** in the outcome of investment

Discussion

What do you think is the key information investors want from external reviews on green bonds?

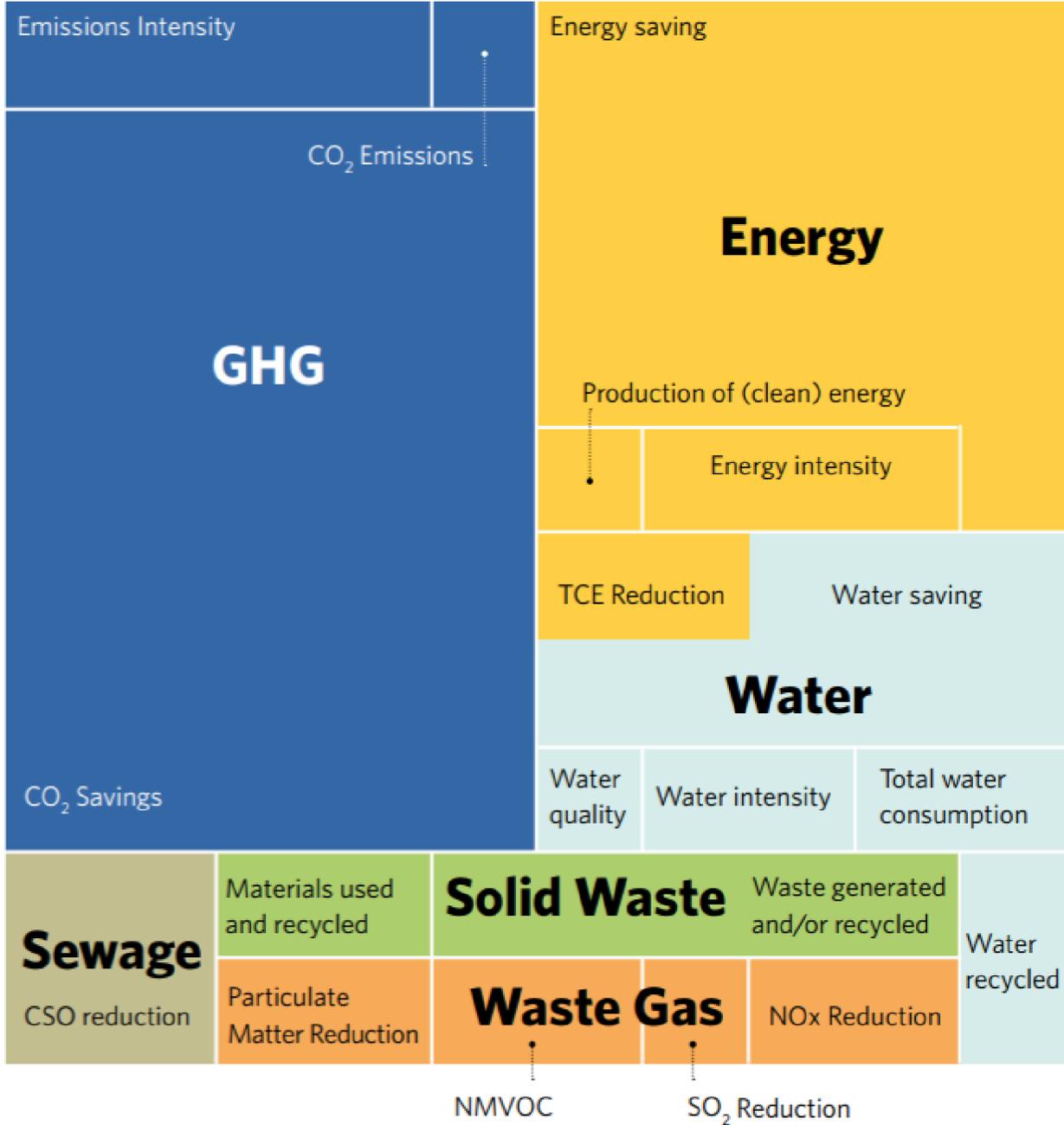
Impact reporting builds investor trust

Impact reporting is in place for 38% of bonds



Source: CBI (2017)

A wide range of metrics is being used



Source: CBI (2017)



Green Bonds

Working Towards a Harmonized Framework for Impact Reporting

December 2015

- To facilitate comparison of project results, it is suggested that issuers aim to report on at least a limited number of **core indicators** for projects included in their green bond programs.
- For **energy efficiency (EE)** and **renewable energy (RE)**
 1. Annual energy savings (EE)
 2. Annual Greenhouse Gas (GHG) emissions reduced or avoided (EE and RE),
 3. Annual renewable energy produced (RE)
 4. Capacity of renewable energy plant(s) constructed or rehabilitated (RE)

Nordic Public Sector Issuers:

Position Paper on Green Bonds Impact Reporting

October

2017

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“

Recommendations for reporting environmental impact

- Issuers shall report on direct environmental impacts such as renewable energy production, energy savings, reduced emissions (prioritizing a reduction of CO2-equivalents), increased resilience, environmental operations and infrastructure etc.
- Issuers may choose to add social and/or economic impacts when deemed feasible and relevant.
- Reporting should also include indirect effects, such as avoided emissions, distinguishing them from reduced emissions.
- Issuers shall commit to report on expected impact (ex ante), and strive to report on actual impact (ex post).
- Reporting should target net benefits.
- Issuers shall highlight methodologies used and the potential uncertainty of environmental data to readers.

”

Impact Indicators

- GHG emissions is an important indicator, however, other indicators might be relevant as well depending on project type.
- In the absence of one single commonly-used standard for the calculation of GHG emissions reduced/avoided, issuers may **follow their own methodologies while disclosing assumptions, data sources and applied methodologies**
- Issuers are encouraged **to report GHG emissions data only when they can provide full transparency** on the applicable GHG accounting methodology and assumptions, which can be referenced.

Example of a Second Opinion *Tadau Energy Green Sukuk*

Category	Eligible project types	Green Shading and some concerns
Renewable energy	<p>Solar power</p> <ul style="list-style-type: none"> The financing, design, engineering, procurement, construction, installation, testing, commissioning, ownership, operation, and maintenance of solar photovoltaic plants Associated interconnection facilities 	<p>Dark Green</p> <ul style="list-style-type: none"> ✓ Solar power is key to a low-carbon transition. Supportive activities for solar power generation include e.g. financing, design, and interconnection. ✓ Potential concerns regarding supply-chain emissions partially addressed through the use of life cycle criteria in supplier selection ✓ Potential concerns regarding site selection partially addressed through selection process and re-zoning reports. An Environmental Impact Assessment (“EIA”) could have provided assurance to investors of the environmental soundness of the site selection and construction phase ✓ All construction projects can have adverse local environmental impacts

Table 2. Eligible project categories

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Summary

Tadau Energy’s Green Sukuk Framework provides a sound framework for climate-friendly investments. The proceeds will support solar power development in Malaysia, which is a key technology supporting the transition to a low-carbon and climate-resilient society.

Tadau Energy is a private limited company established with the special purpose of constructing and operating solar projects. Tadau Energy has two shareholders, Kagayaki Energy and Edra Solar. The proceeds from the Green Sukuk will be used to finance one project comprised of two solar photovoltaic power plants in the district of Kudat. The issuer has no plans for additional projects under this framework.

Renewable projects, while key to a low carbon future, raise potential concerns regarding site selection, supply-chain emissions and local environmental impact during the construction phase and operations. Tadau Energy has informed us that they take life-cycle criteria into account when selecting suppliers, that they have a process for site selection that includes environmental consideration and that they have taken some steps to manage the local environmental impacts of the project construction. However, no Environmental Impact Assessment or independent review of Tadau Energy’s environmental management has been undertaken.

The issuer has presented CICERO with relevant pieces of documentation, but no overarching policies or strategies that the special purpose company will follow. This lack of documentation presents some challenge when assessing the project. The issuer will report on use of proceeds through annual certificates, which are only available through the trustees of the sukuk or rating agencies. Transparency is key to build trust in the Green Sukuk market; CICERO encourages the issuer to adopt open and transparent communication practices to preserve investor confidence. CICERO notes that the issuer has not committed to impact reporting.

Based on the overall assessment of project type and the policies guiding the implementation Tadau Energy’s Green Sukuk Framework is rated CICERO Dark Green.



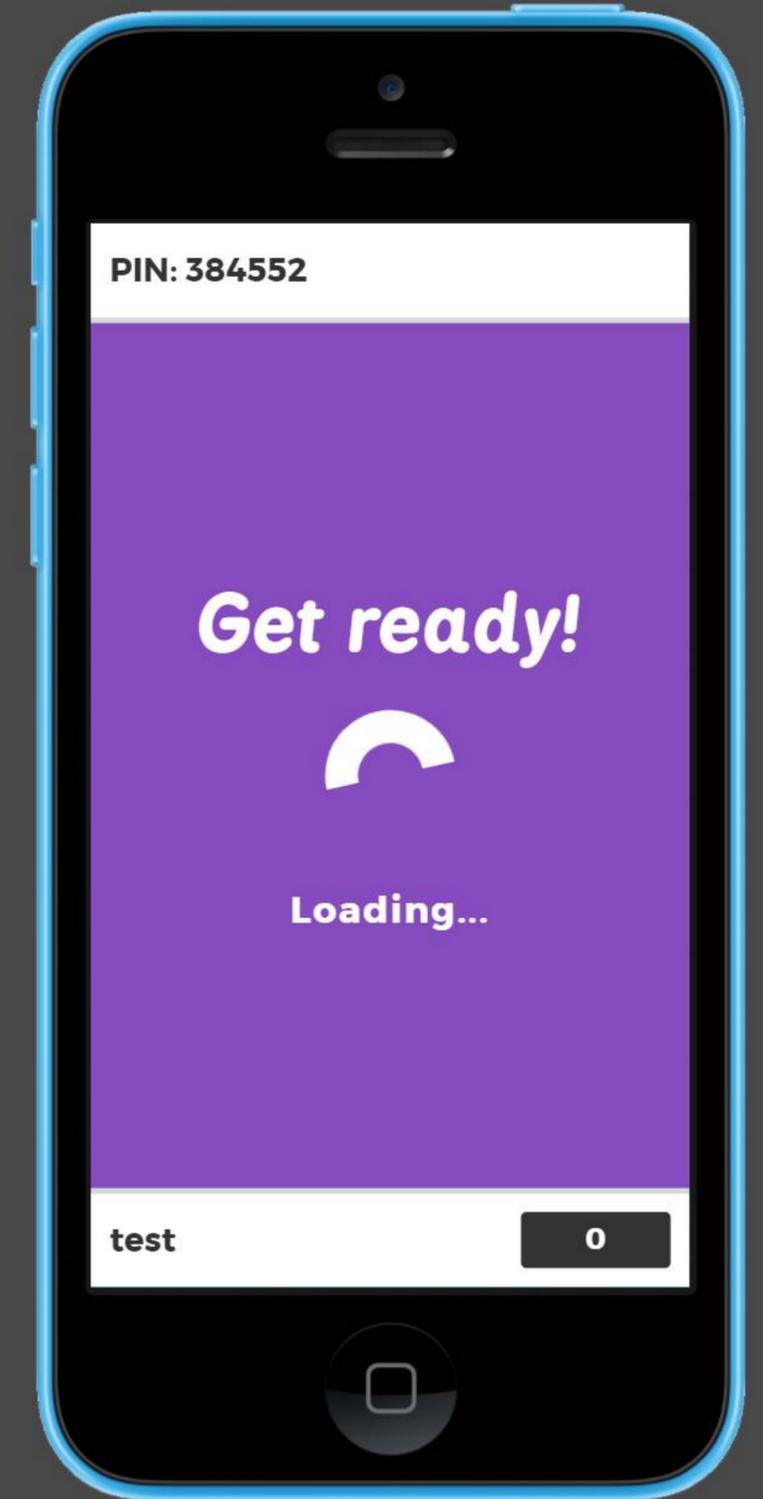
CICERO
Dark Green

Green Bonds & External Reviews



Cat Burton

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Resources

- The Green Bond Principles <https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/green-bond-principles-gbp/>
- ICMA Green Bond Resource Center <https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/resource-centre/>
- Luxemburg Stock Exchange Green Exchange <https://www.bourse.lu/green-bonds>
- Climate Bond Initiative list of labelled green bonds: <https://www.climatebonds.net/cbi/pub/data/bonds#>
- List of Second Opinions from CICERO: <http://www.cicero.uio.no/en/posts/single/cicero-second-opinions-list>

Discussion

Questions from the audience and conversation on the different approaches to external reviews

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www.cicero.oslo.no

-
-  [cicero_klima](#)
 -  cicero.oslo.no
 -  [cicerosenterforklimaforskning](#)
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Example: Municipality



**CITY OF
LUND**



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Dark Green

Category	Eligible project types	Green Shading and some concerns
Renewable energy	<ul style="list-style-type: none"> wind power, solar power and bioenergy from agricultural residues, forestry residues and other biological residues 	<p>Dark green</p> <ul style="list-style-type: none"> ✓ Consider negative impacts on wildlife, nature and lifecycle pollution. Avoid negative impacts on biodiversity. ✓ Only bioenergy from local sources ✓ Fractions of peat is included. Last year 12 percent of the energy input in the new biomass CHP came from peat, expected to be reduced this year to 8 percent. From 2019 the intend is to not use peat at all.
Energy efficiency	<ul style="list-style-type: none"> district heating/cooling energy recovery energy storage and smart grids. 	<p>Dark green</p> <ul style="list-style-type: none"> ✓ Be aware of possible rebound effects.
Sustainable transportation	<ul style="list-style-type: none"> public transportation, pedestrian and bicycle paths, hydrogen, biogas and electrical vehicles 	<p>Dark green</p> <ul style="list-style-type: none"> Potential for emission reduction depends on area planning and degree of urbanization, introduction

	<ul style="list-style-type: none"> logistics solutions leading to reduced climate footprints from transportation of people and goods. 	of new vehicle technologies for passenger and goods transportation, and fuel types. No projects that include fossil fuel are eligible.
Replacement of fossil raw materials	<ul style="list-style-type: none"> e.g. from fossil based plastics to bioplastics. 	Dark green
Energy efficient commercial and residential buildings	<ul style="list-style-type: none"> commercial and residential buildings that meet the energy requirements for FEBY, Svanen or Miljöbyggnad Silver. major renovations leading to a reduced energy use of at least a 35% per m² Atemp and year. 	<p>Medium green</p> <ul style="list-style-type: none"> ✓ Building criteria are considered adequate but may not reflect best available technology nor the highest level of standards possible in Sweden. ✓ Be aware of possible rebound effects.
Waste Management		<p>Dark green</p> <ul style="list-style-type: none"> ✓ Good practice waste management should recycle resources. ✓ No investments in waste to energy, i.e. combustion of fossil fuels plastic.
Water and waste water management		<p>Dark green</p> <ul style="list-style-type: none"> ✓ No risk of investments in existing fossil fuel or nuclear infrastructure (e.g. pipe upgrades)
Climate adaptation measures	<ul style="list-style-type: none"> in buildings, infrastructure sensitive habitats 	<p>Dark green</p> <ul style="list-style-type: none"> ✓ Important given climate change scenarios and higher frequency of extreme weather conditions. ✓ Potential for good synergies with mitigation actions and opportunities
Environmental measures	<ul style="list-style-type: none"> nature conservation biodiversity development of non-toxic environments sustainable agriculture improved eco-system services 	<p>Medium Green</p> <ul style="list-style-type: none"> ✓ Max 20 percent. Good for environment as a whole. Very broad category. No climate mitigation objective.

Green Bond Principles (GBP)

Voluntary principles for issuing a green bond. The vast majority of issuers align with the GBP. High level principles with four core components:



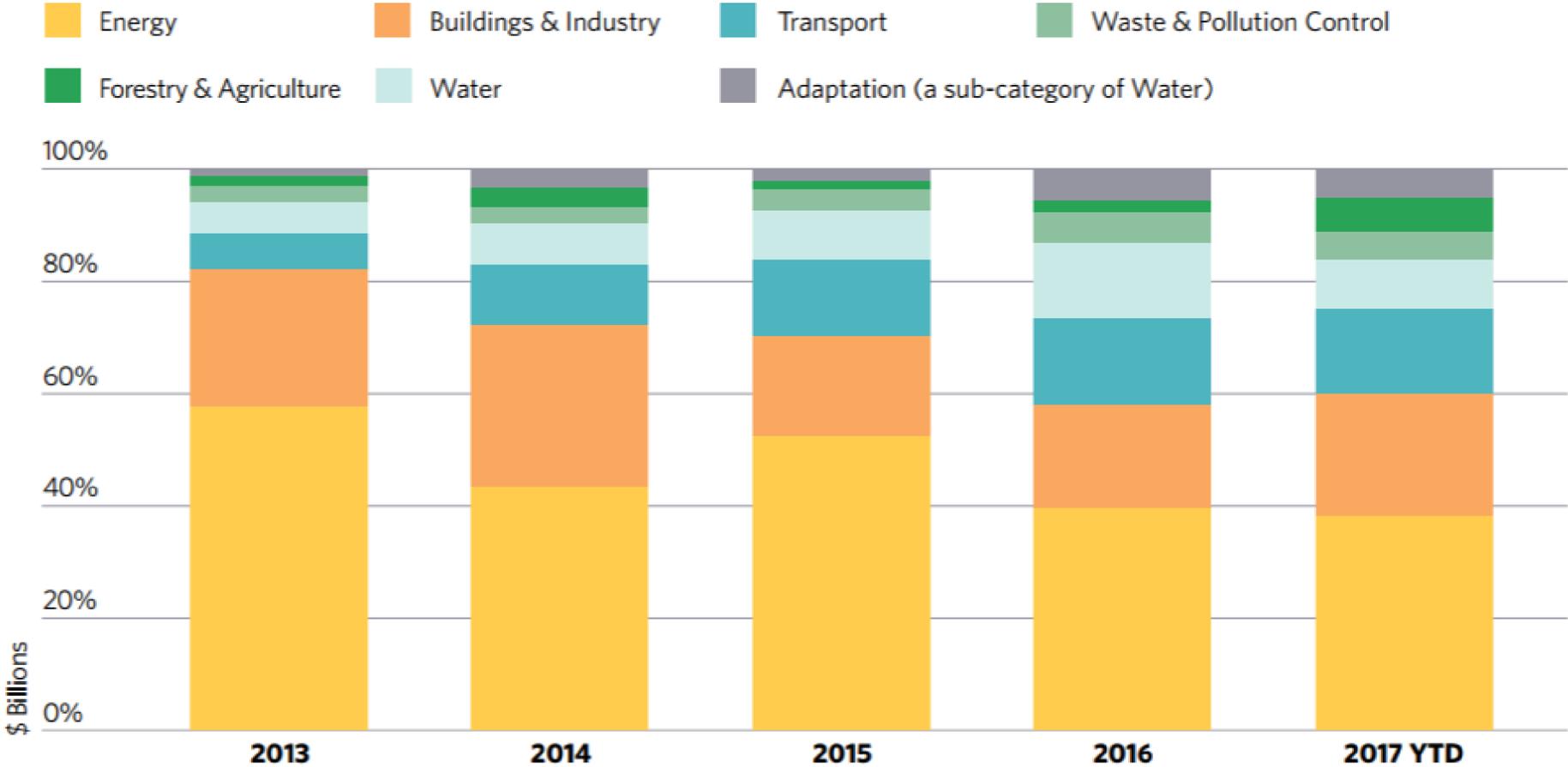
1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

ICMA is the GBP secretariat, the principles can be downloaded from their resource center:

<https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

Use of Proceeds

Use of Proceeds as share of Issued Green Bonds



Source: CBI, Bonds and Climate Change The state of the Market 2017

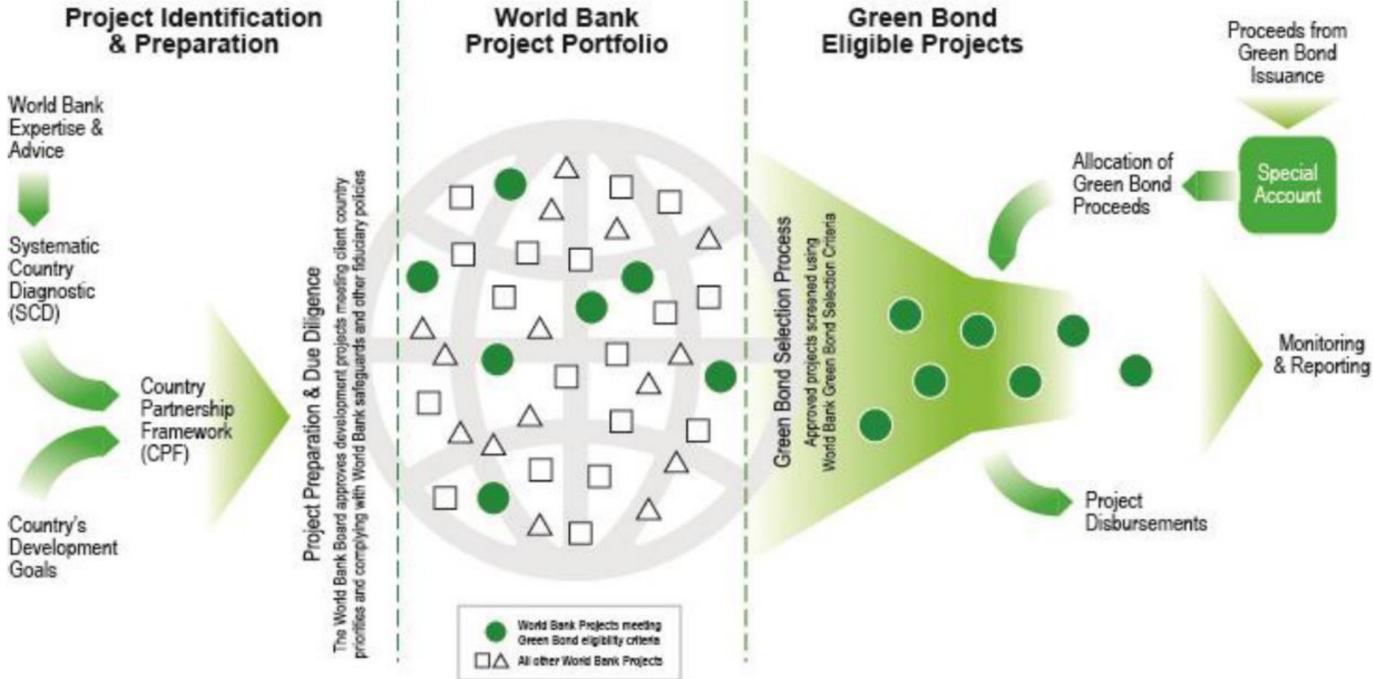
The Green Bond Principles lists examples of green project categories which include, **but are not limited to:**

- Renewable energy
- Energy efficiency
- Pollution prevention and control
- Environmentally sustainable management of living natural resources and land
- Terrestrial and aquatic biodiversity conservation
- Clean transportation
- Sustainable water and wastewater management
- Climate change adaptation
- Eco-efficient and/or circular economy adapted products, production technologies and processes
- Green buildings



Process for Project Evaluation and Selection

Example: World Bank Group



Example: SEB

