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Safeguarding integrity in the green bond market

Mumbai, India
16 November 2017

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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
The World Bank Treasury
Andra AP-fonden
Initiative for Responsible Investment
Oslo Børs
Finans Norge
SEB
Norwegian Ministry of Foreign Affairs
storebrand
DNB
SEI
Norges Bank Investment Management

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

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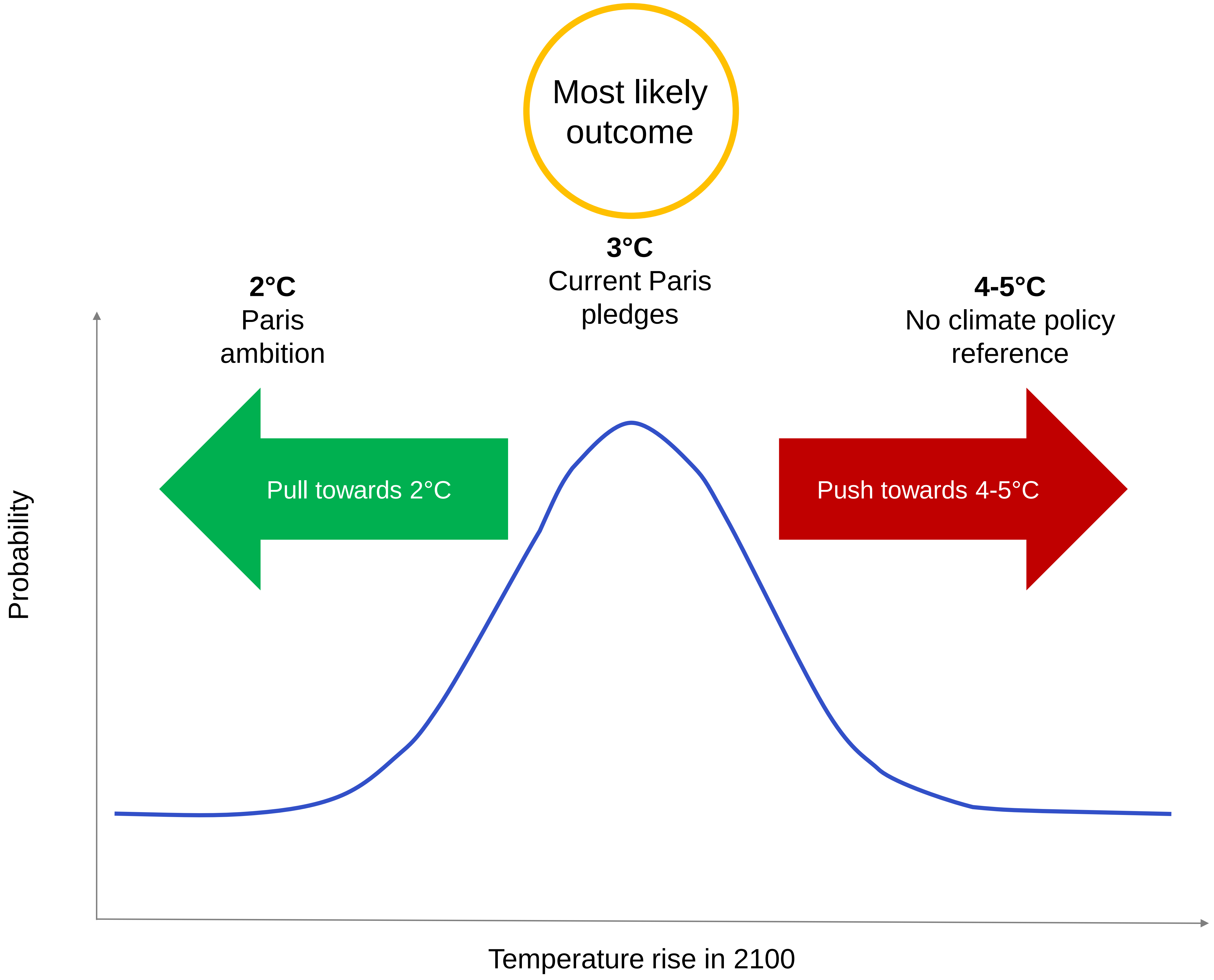
Source: Shades of Risk, CICERO, 2017

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 No climate policy reaching approximately 4-5°C would mean that current climate policies would be rescinded or relaxed.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 4-5ºC or pulling it lower towards 2ºC

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

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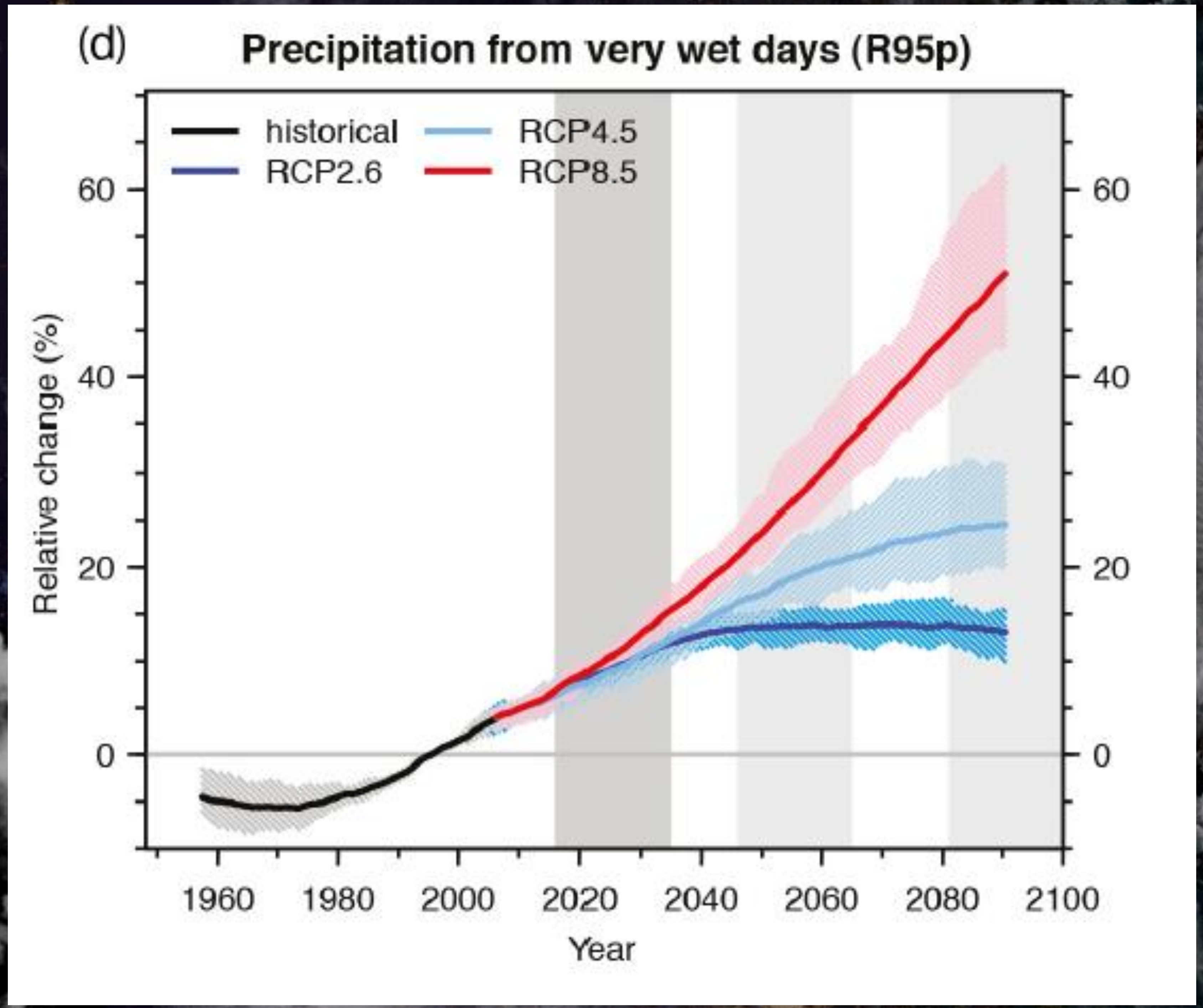
Investors should expect losses from extreme weather



- Flooding and extreme events can have significant impacts in combination with extreme weather and sea level rise.
- Single events can have a significant impact, economic losses from Hurricane Harvey are estimated at 80 - 100 billion USD
- All sectors can be impacted by flooding risk. Flooding in non-urban areas can have costly indirect impacts on supply chains

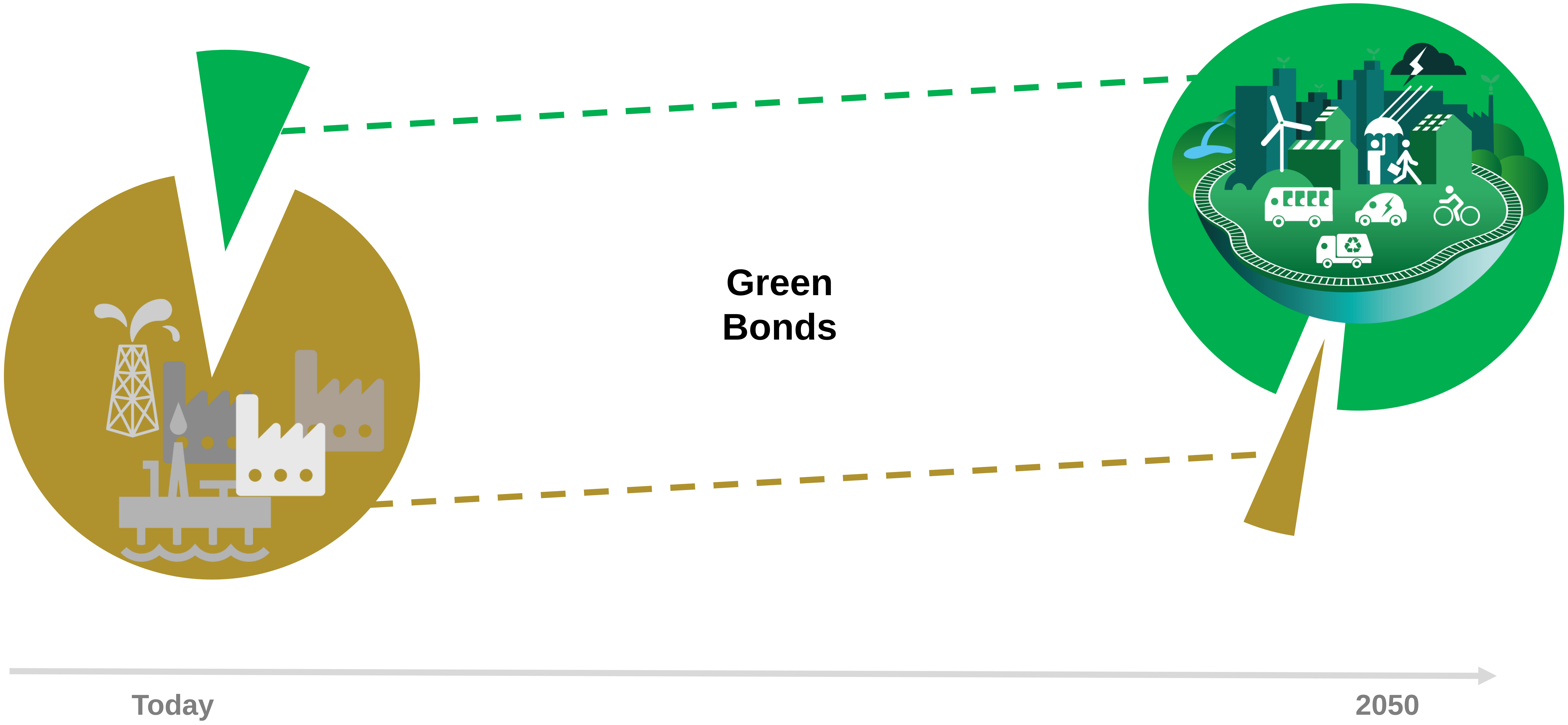
"*Everybody should expect more extreme storms, no matter where they live*."

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

Photo credit: NOAA/NASA GOES Project / Flickr

Source: Cost estimates from Artemis as of October 2017; National Geographic, "After Harvey…", 1 Sept. 2017; "Atlantic Hurricanes Wipe Out Reinsurers Profits", NYTimes, 26 Oct. 2017; Photo: Coast Guard on Flickr

Transition to climate resilience provides investment opportunities



Who defines green?

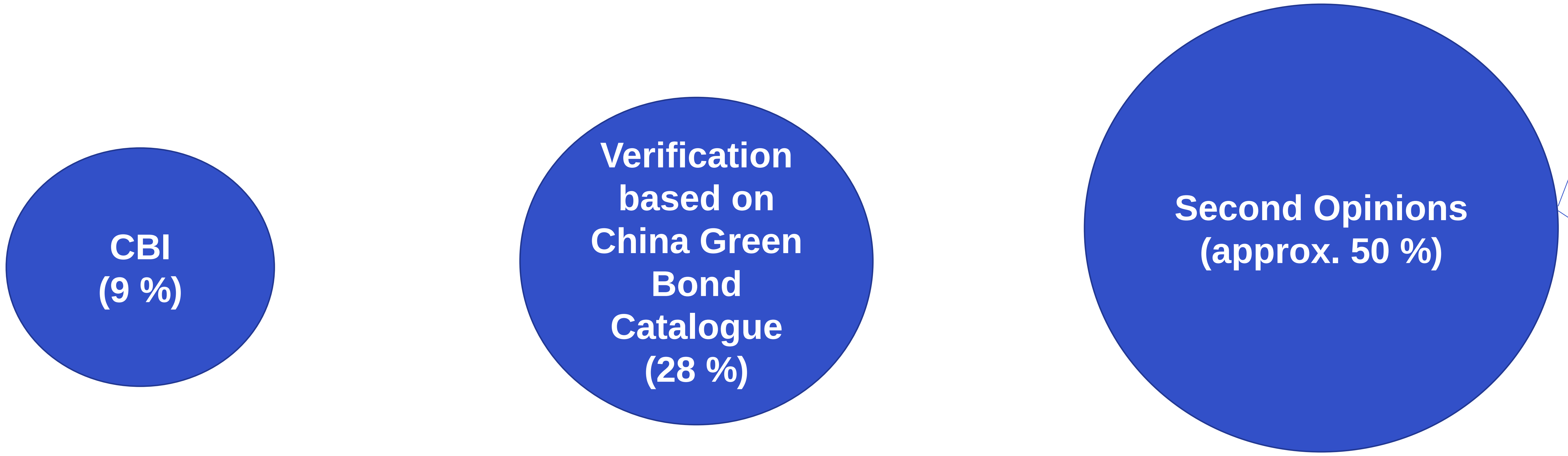
Voluntary principles for issuing a green bond that the vast majority of issuers align with ***across all markets***

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

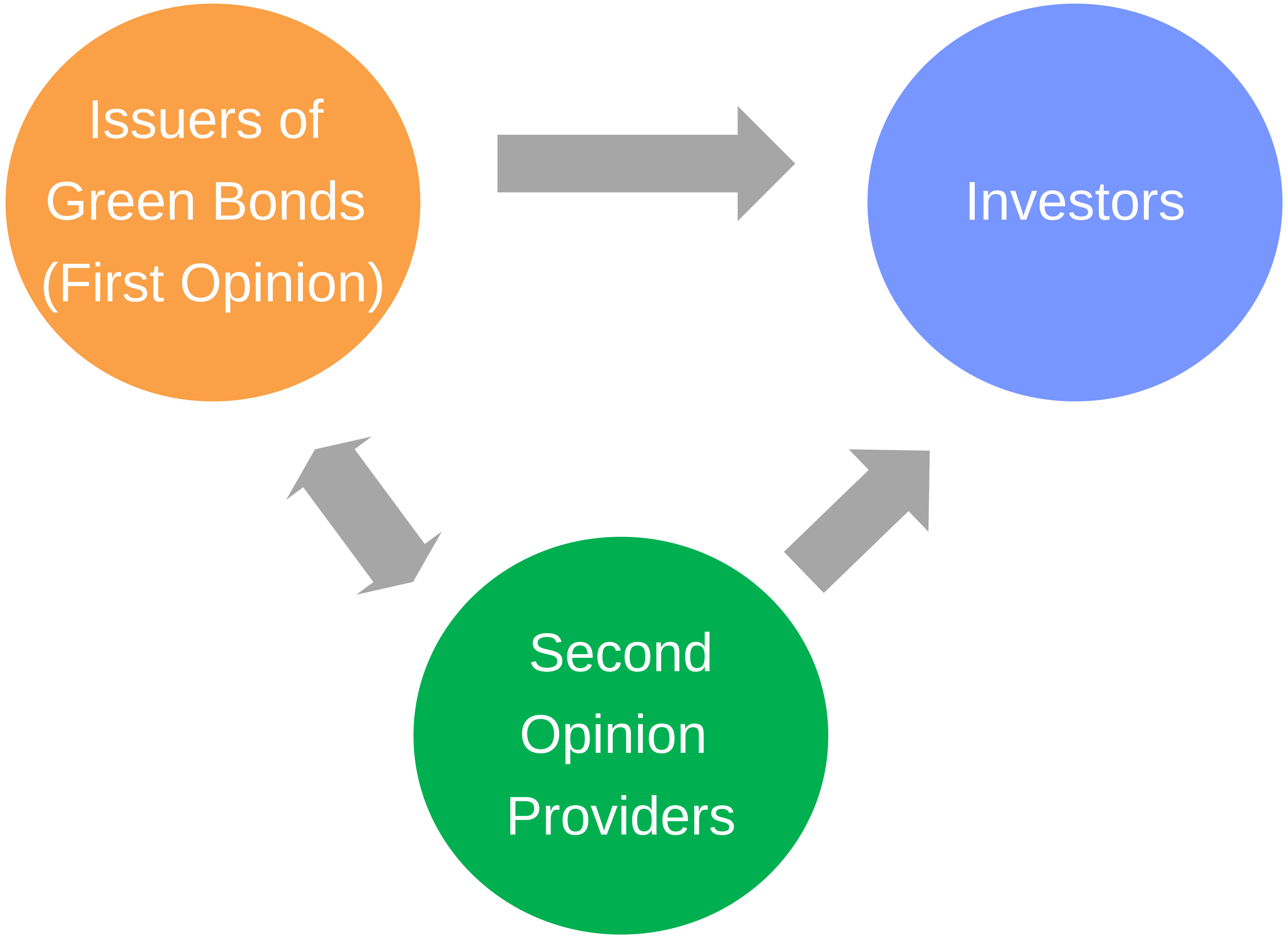


Second Opinion Provider	Total Value of issuances for second opinions provided over 2016 ($billions)	Number of issuances in 2016
Cicero	14.106	56
Sustainalytics	11.234	21
Vigeo-Eiris	7.430	14
Oekom	6.301	10
DNV	0.640	4

Source: Environmental Finance

TYPES OF EXTERNAL REVIEW 2016 ***(note: some overlap)***

External reviews open communication channel 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

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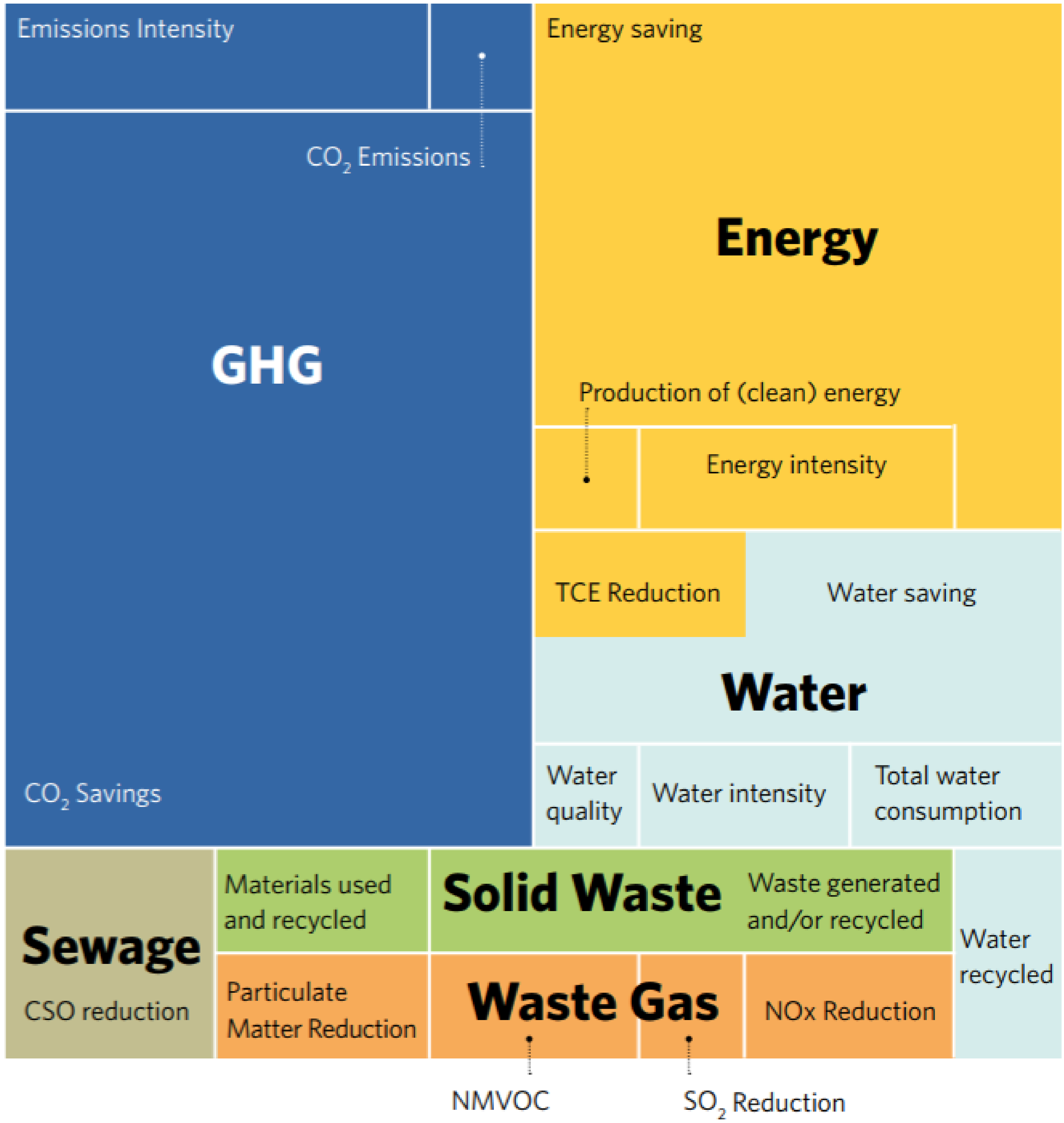
Green Bond Rating on Climate Risk

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

Impact reporting builds investor trust



Source: CBI (2017)

- Investors are beginning to expect impact reporting for green bonds
- GHG emissions is an important indicator, however, other indicators might be relevant as well
- Transparency on methodologies and assumptions is important

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