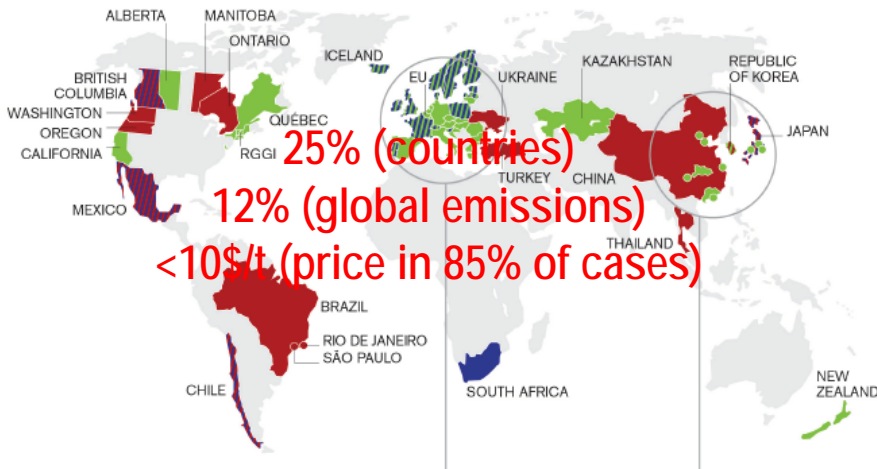


Climate systemic risk

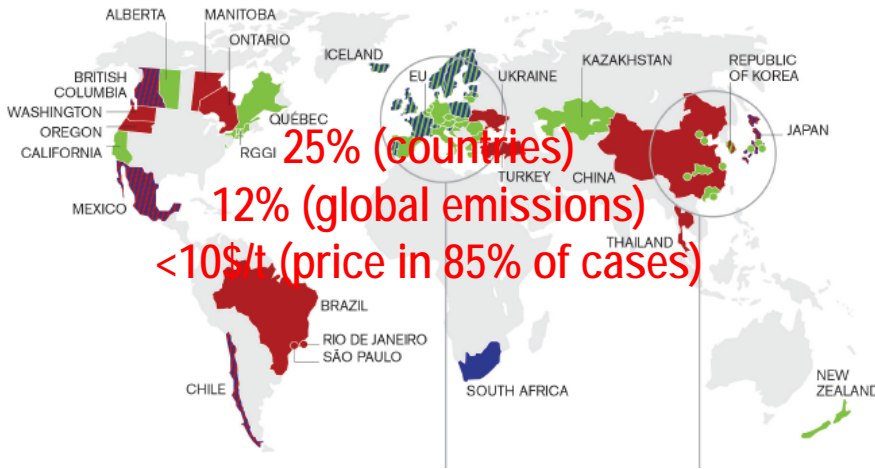
And how climate finance can help avoid it

Etienne Espagne (CEPII)



« *considerably lower* than the price that economic models have estimated is needed to meet the 2°C climate stabilization goal recommended by scientists» (WB, 2015)

#136 (Decision), Carbon Pricing Leadership Coalition ...



« considerably lower than the price that economic models have estimated is needed to meet the 2°C climate stabilization goal recommended by scientists » (WB, 2015)

#136 (Decision), Carbon Pricing Leadership Coalition ...

article 2 (Agreement), Task force on climate-related financial disclosure, Green Finance Study Group, ...

100 billions floor (Agreement), Green Climate Fund, ...

« once climate change becomes a defining issue for financial stability, it may already be too late » (Carney, 2015)

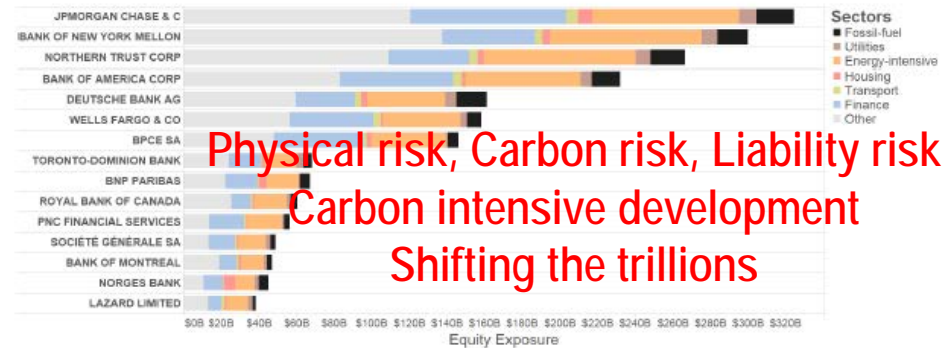
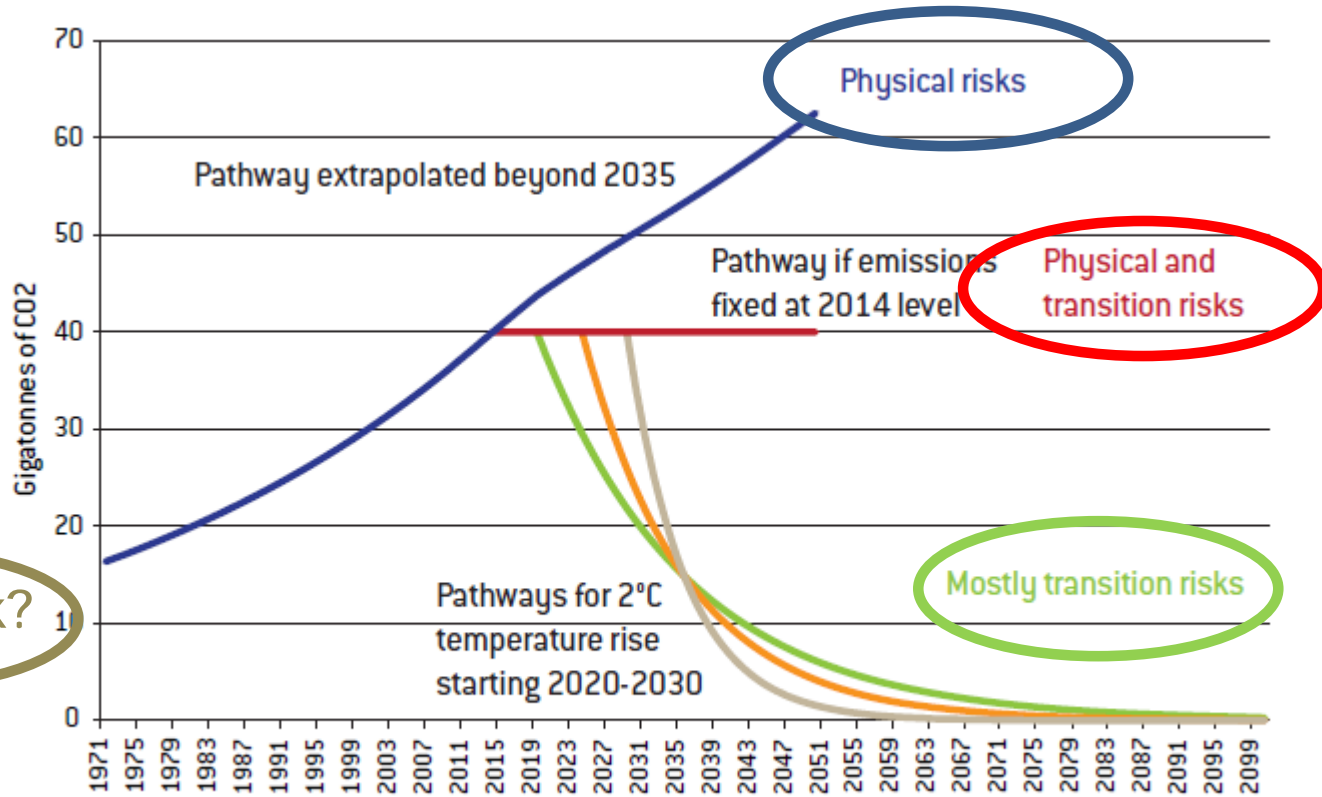


Figure 3: Portfolio composition of top world-wide banks.



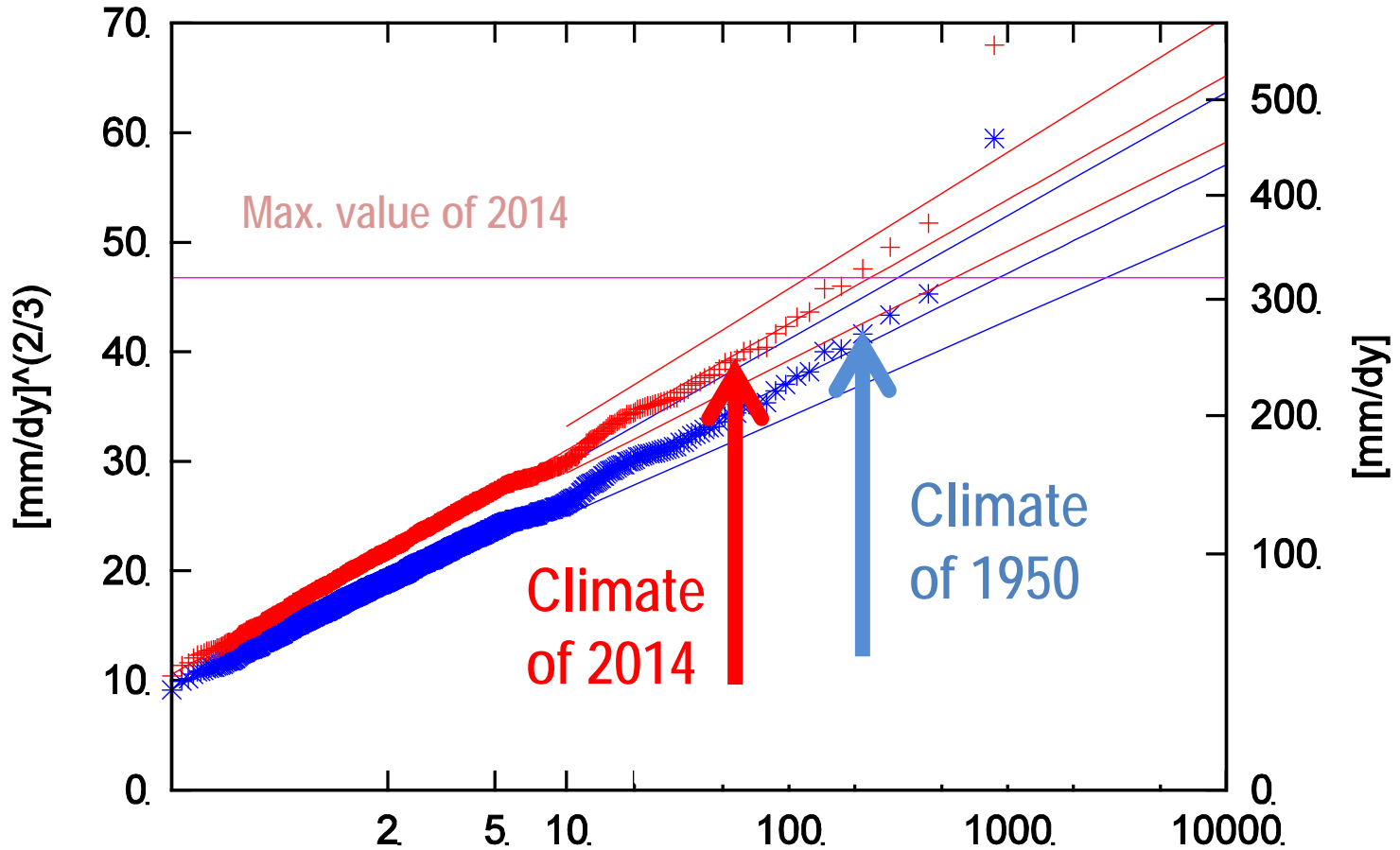
- *Physical risks*: direct impact from climate and weather-related events
- *Liability risks*: compensation for parties who have suffered loss or damage from the effects of climate change
- *Transition risks*: changes in policy, technology and physical risks prompting a reassessment of a large range of asset values

Source : Carney (2015)



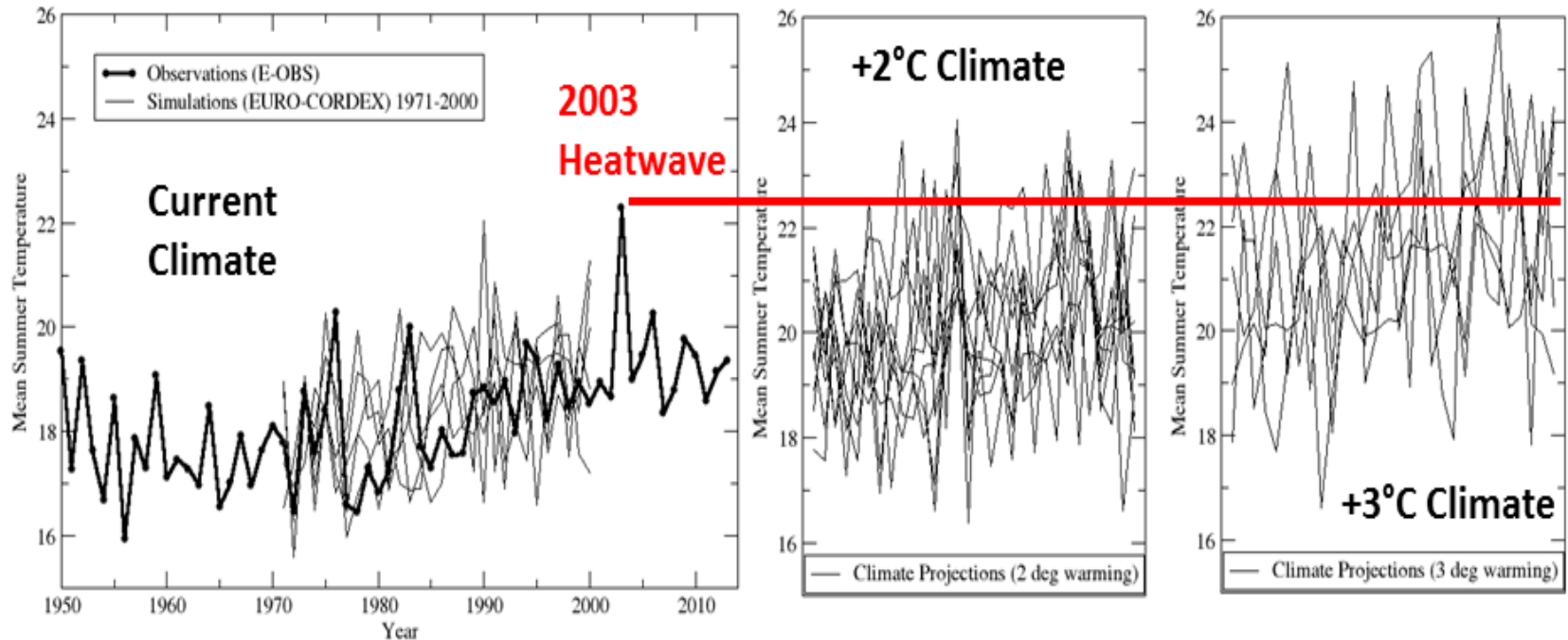
Source: UK Prudential Regulation Authority (2015).

SON stations precipitation 1950:2013 (99.970% CI).



Source: Vautard et al., 2015

Tails get fatter



Source: Impact2C

Insurance costs in case of extreme events' increase could become ... uninsurable



Table 1 | The present value at risk of global financial assets from climate change between 2015 and 2100—the climate VaR.

Emissions scenario	1st pctl.	5th	Mean	95th	99th
BAU (expected warming of 2.5 °C in 2100)	0.46%	0.54%	1.77%	4.76%	16.86%
Mitigation to limit warming to 2 °C with 2/3 probability	0.35%	0.41%	1.18%	2.92%	9.17%

Source : Dietz et al (2016)

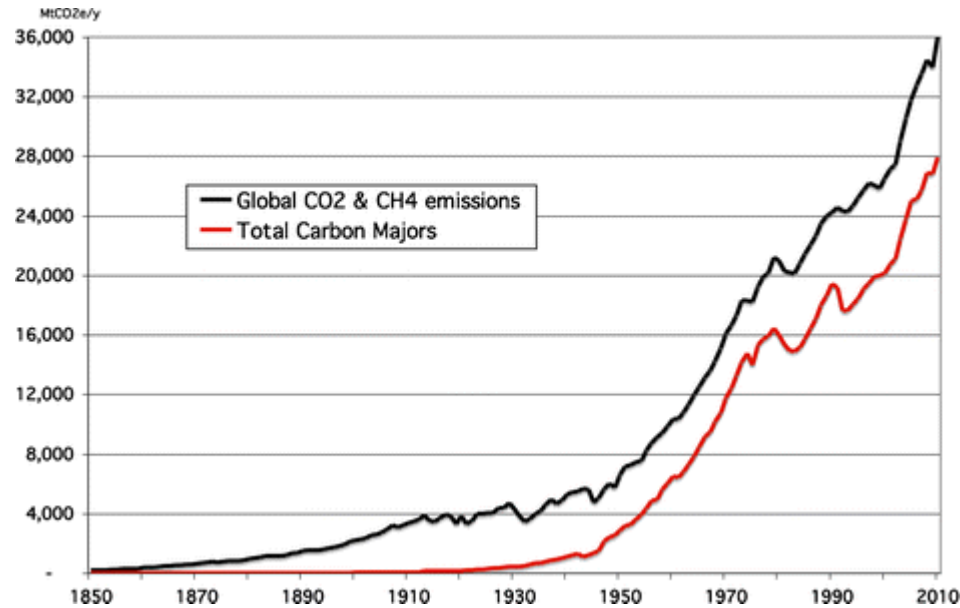
Present value of financial assets
Transition risks < stabilization risks

regulations and punitive damages. But claims related indirectly to climate change against energy and/or construction companies involving professional indemnity and directors' and officers' - D&O - liability will emerge. In addition, many US environmental statutes contain

to develop adequate risk management measures. Proof of causality thus remains a virtually insurmountable challenge for claimants seeking compensation for damage allegedly caused by GHG emissions.

Source: Munich Re (2010)

Conflicting views on liability procedures



Source: Heede (2014)

No aggregate study of these three risks combined, with their possible correlations

- FSB : Climate Change Disclosure Task Force
 - Recommendation of voluntary public disclosure linked to climate change (report due at the end of 2016)
- G20 : Green Finance Sub Group (GFSG)
 - Greening the banking system,
 - Greening the Bond market,
 - Greening institutional investment
 - Risk analysis
 - Measuring progress

Transparency of information, and financial innovation are key ...
Implicit efficient market hypothesis (Fama)

If stress tests ultimately find that systemic risks are material research and consultation would be necessary in order to assess which policies are best suited in light of the pre-existing prudential stance. The role of prudential policy is to mitigate excessive financial

Source: ESRB (2016)

assets. The PRA also notes the possibility of more near-term impacts through potential changes in investor sentiment or market expectations around climate risk, and the extent to which the systemic risks that arise from climate change may, at least in part, be challenging to diversify. Insurance firms could be expected to be affected by these factors in the same way as other major investors.

Source: UK Prudential regulation authority (2015)

Difficulty to diversify climate risks, structural blindness to uncertain long-term horizons ... Intrinsic fragilities of the financial system (Minsky)

- *Ex ante* policies:
 - Information sharing
 - Specific investment vehicles
 - Macro-prudential policy instruments
 - Extension of monetary policy objectives: use of social values of carbon
- *Ex post* policies:
 - Restore confidence levels in the financial system (collective insurance mechanisms, central bank intervention)
- But at the end, there is no « lender of last resort » in a climate crisis!

Source : Espagne and Aglietta (2016)

Article 2

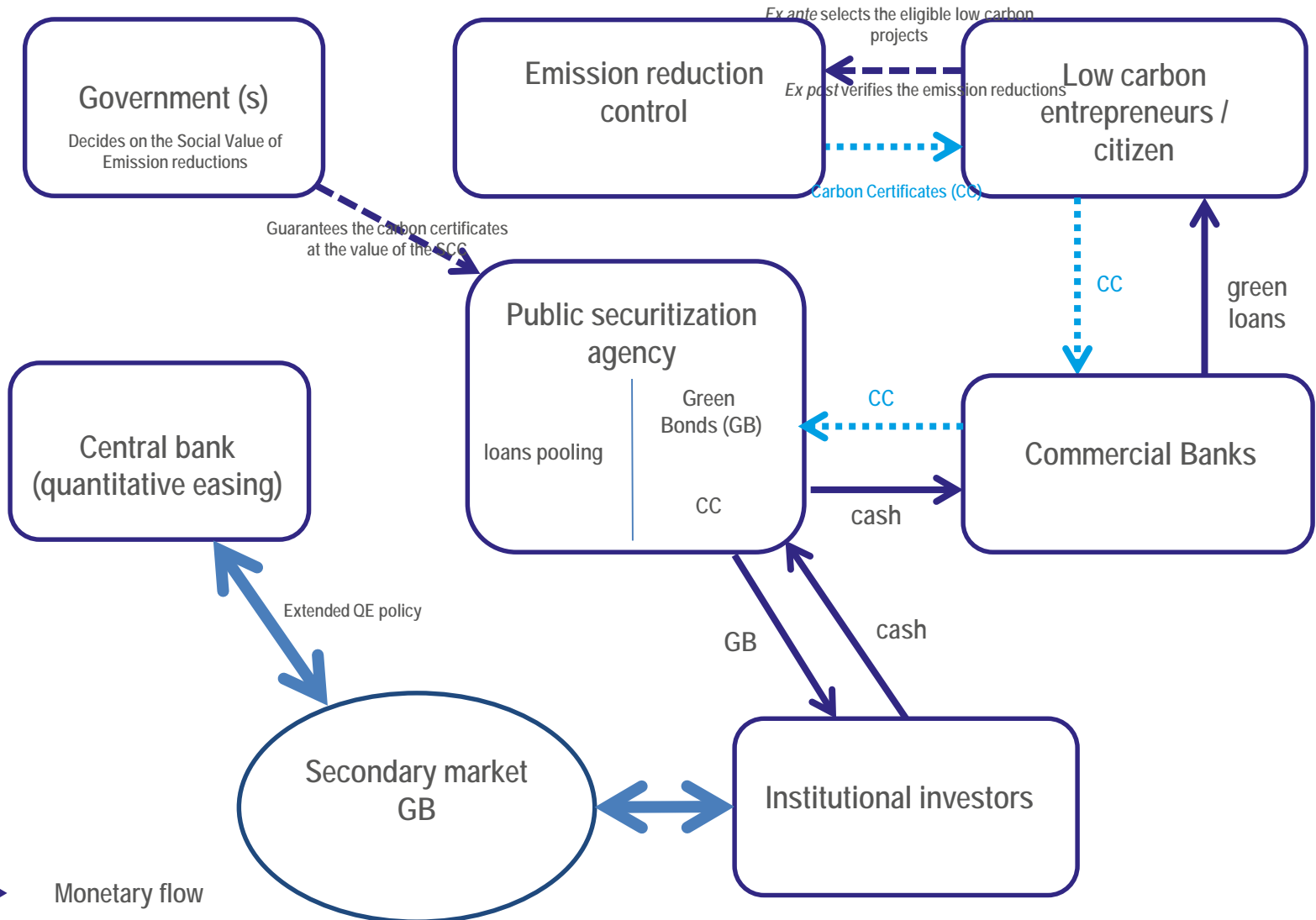
(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

108. Recognizes the social, economic and environmental value of voluntary mitigation actions and their co-benefits for adaptation, health and sustainable development;

By estimating the monetary value of potential damages avoided in the future, the social and economic value of carbon can serve as a reference level for stakeholders, such as Parties and the private sector, by which to evaluate the development, implementation and effectiveness of their mitigation actions. Also, it can play a key role in informing their decision-making processes, particularly in setting the stringency of climate policies at levels that will promote the highest possible mitigation efforts called for by Parties. Participants highlighted several successful applications for using a reference value of carbon, such as conducting project appraisals and regulatory impact assessments, setting of economic instruments, and evaluating long-term objectives or targets relating to climate policy.

Proposition 9 : Installer une commission de haut niveau (désignée par l'ONU) pour définir la trajectoire indicative d'un corridor de valeurs sociales du carbone, alignées avec l'objectif des 2°C et les objectifs de transferts Nord - Sud.

A proposition (Hourcade et al., 2015)



- Legend*
- Monetary flow
 - - - → Immaterial flow
 - ⋯ → Flow of Carbon Certificates (CC)



Thank you