



EUROPEAN CENTRAL BANK
EUROSYSTEM

Panel: scenario analysis and stress testing

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Banking Regulation and Sustainability
Joint JRC-EBA Workshop
Ispra

Why do macroprudential authorities care about climate risks?

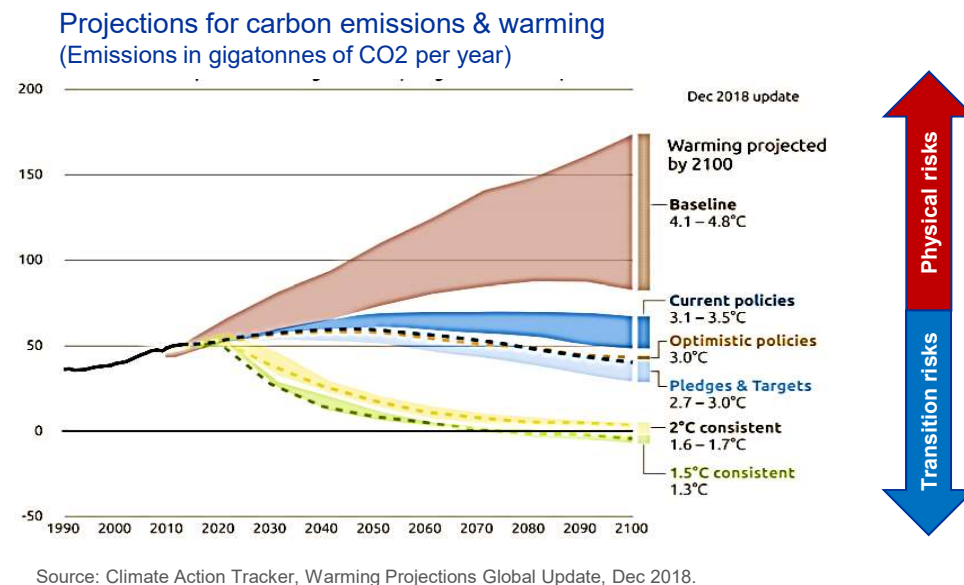
The highly uncertain but potentially disruptive impact from both physical and transition risks

- **Estimated costs of no action:** -10% GDP in 2100 (OECD); USD 20 trillion of stranded assets by 2050 (IRENA)
- **Investment needed to reach the Paris target** (global warming < 1.5°C) : USD 830 billion yearly until 2050 (IPCC, 2018)

Two possible objectives

- **Shelter the stability of the financial system:** ensure that it can absorb realised physical risks
- **Ensure smooth transition:** so that the financial system supports the transition to a greener economy

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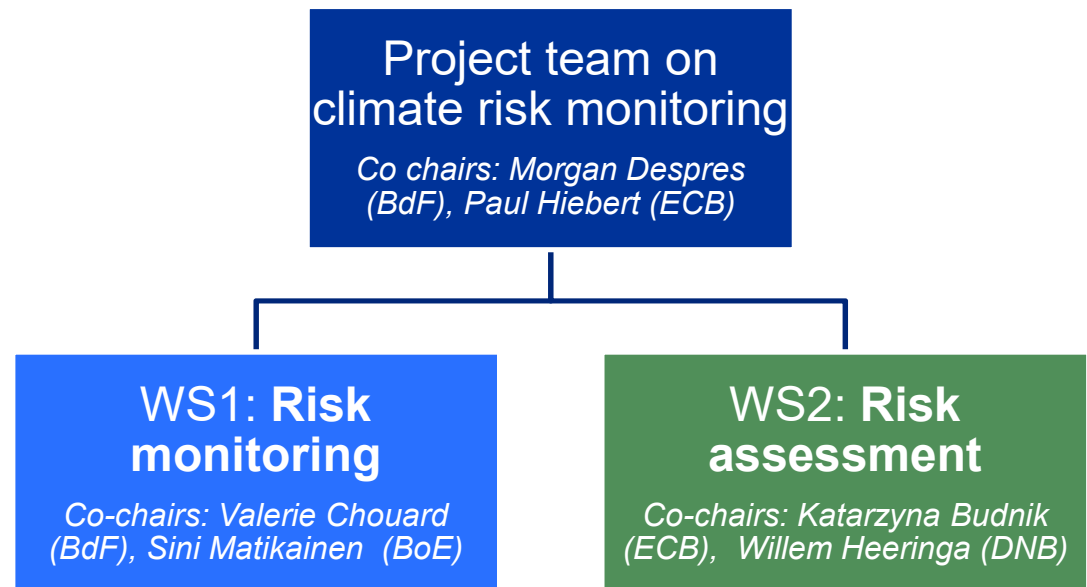
What can macroprudential authorities do about climate risks?

Policy toolbox

- **Monitor and assess** materiality
- **Communicate**
- **Enact policies**, e.g. capital buffers

The project team on climate risk monitoring

- A joint initiative of the **European Systemic Risk Board** and Financial Stability Committee of **SSM**
- Groups experts from **European** central banks, supervisory authorities, EIOPA, EBA
- Set up early 2019, with the first report to be published in 1H2020



Monitoring: filling data gaps

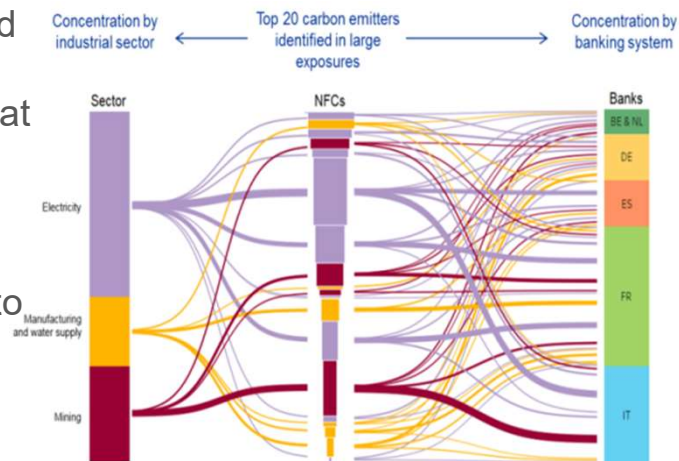
Large exposure data

banks report exposures to clients (or groups of connected clients) of at least 10% of the eligible capital of the bank; or at least €300 million

Challenges

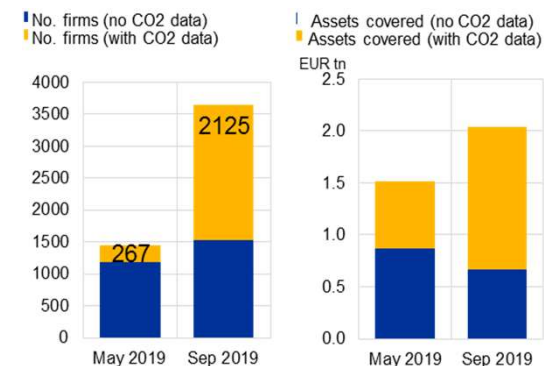
- **Matching** financial exposures to climate risk
- **Expanding** coverage to other databases
- **Clarifying** reporting gaps by banks and firms

May 2019 FSR: an illustrative example



Source: ECB supervisory statistics on large exposures.

Since then: an increase in reporting universe



Source: ECB supervisory statistics on large exposures and securities holdings statistics.

Stress texting with the focus on climate risks: mixed expectations

Stress testing ~ *crisis management*

The analysis of the ability of a financial institution or the system to withstand realization of adverse but plausible events, e.g. economic crisis

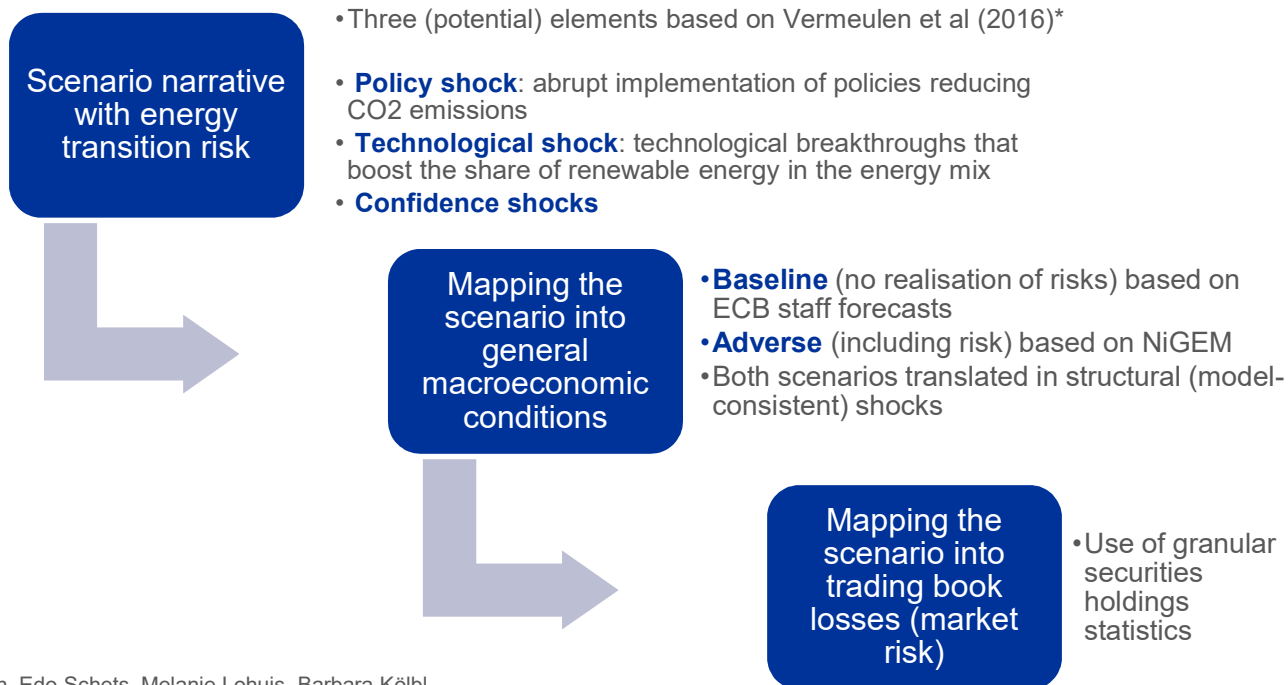
Scenario analysis ~ *strategic planning*

The analysis of the future by considering possible alternative outcomes ("alternative worlds"). One of the main forms of projection that presents several alternative future developments.

(Ultimately) different needs e.g.

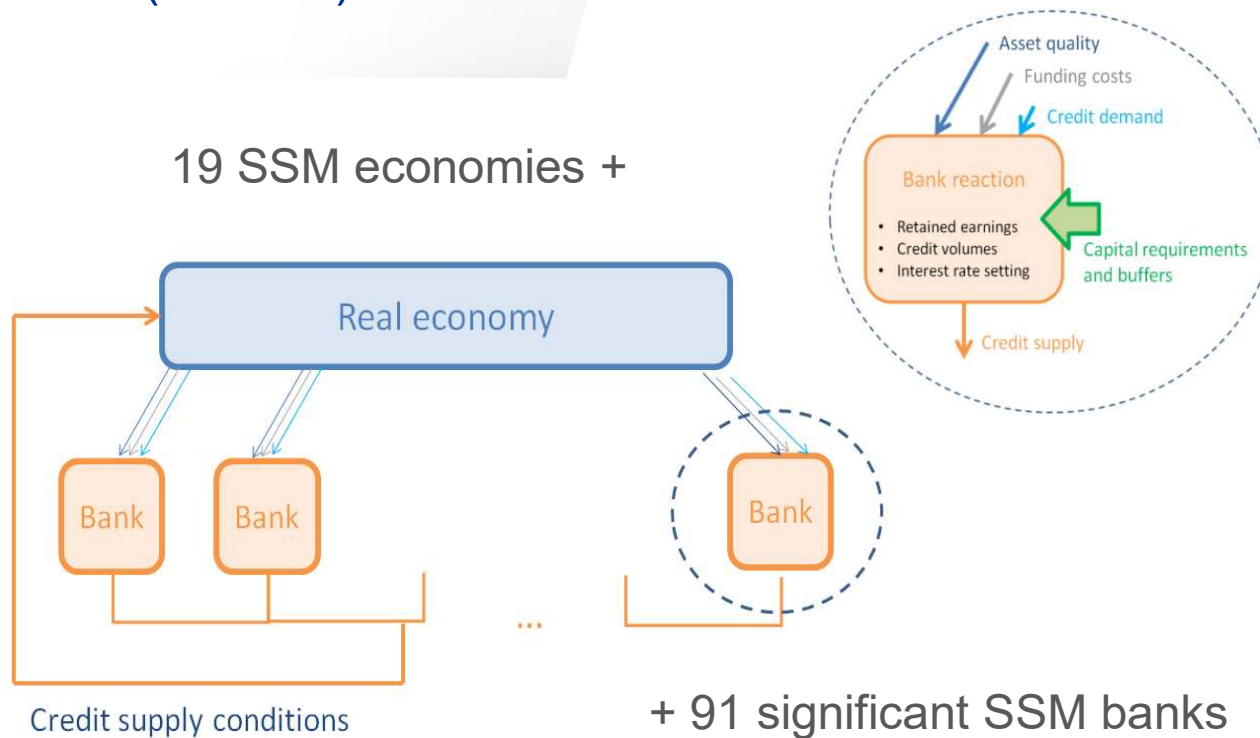
- Horizon
- Acknowledging the role of technological progress and/or changing business models of financial institutions

'Pilot' macroprudential stress test



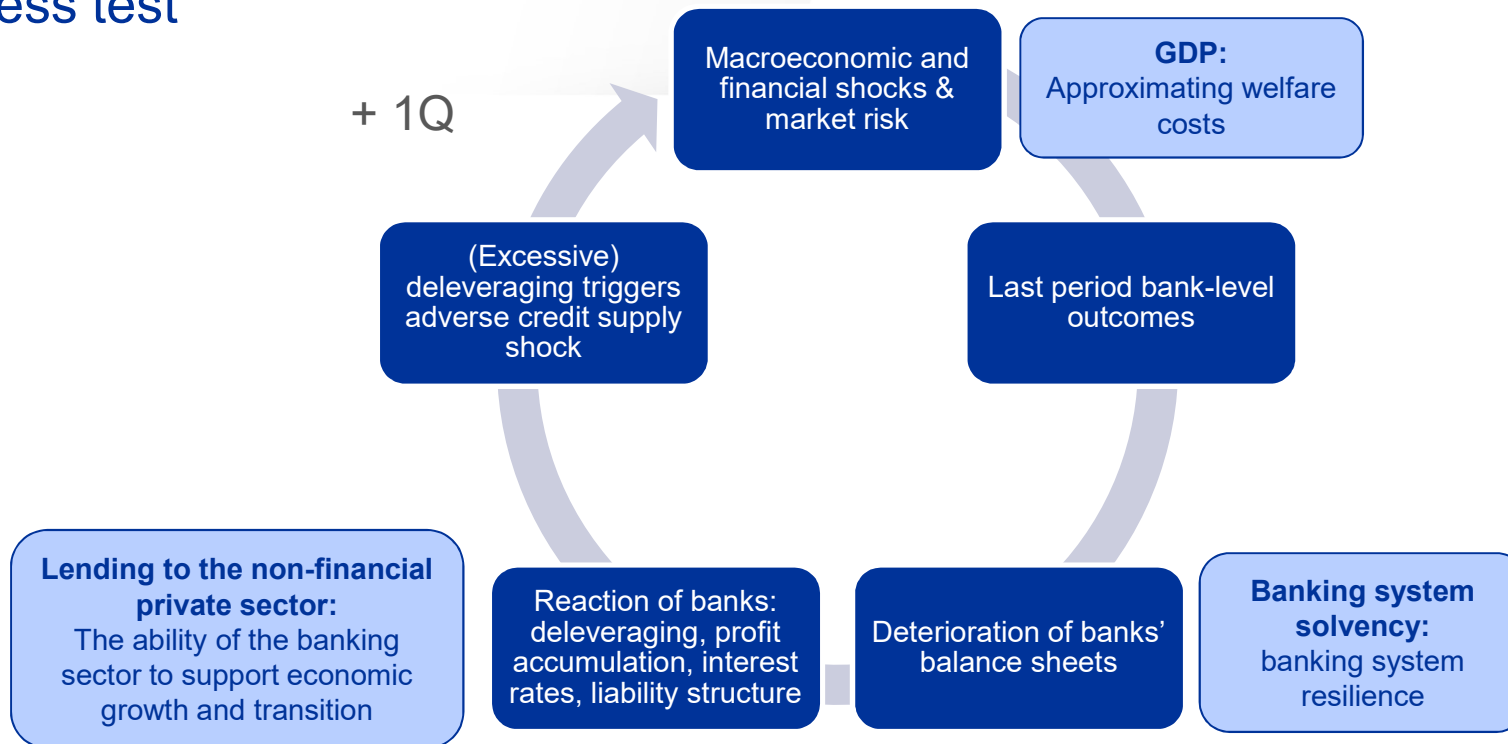
* Robert Vermeulen, Edo Schets, Melanie Lohuis, Barbara Kölbl, David-Jan Jansen and Willem Heeringa (2016), *An energy transition risk stress test for the financial system of the Netherlands*, DNB Occasional Studies Volume 16 - 7

Macroprudential stress test model of the ECB (BEAST)*



Katarzyna Budnik, Mirco Balatti Mozzanica, Ivan Dimitrov, Johannes Groß, Ib Hansen, Giovanni di Iasio, Michael Kleemann, Francesco Sanna, Andrei Sarychev, Nadežda Siņenko, Matjaz Volk (2019), Macroprudential stress test of the euro area banking system, ECB Occasional Paper Series No 226 / July 2019

Feedback loop and two tier stress test



Just the beginning of long journey

- The **pilot stress test** employs the state-of-the-art macroprudential model and rests on DNB experience with scenario design, but:
 - Misses the differences in the share of individual banks' banking book exposures to carbon-intensive industries
 - Abstracts from operational risk
 - Focuses on carbon emission policies
- The development of climate-risk stress testing hangs on **disclosure policies**
 - The core challenge for stress testing is the ability to establish the mapping bank exposures - companies – emission intensity
 - Other challenges involve:
 - lack of historical data on, e.g. probability of default of carbon-intensive industries in times of the tightening of emission policies
 - designing plausible scenarios with physical risks