

# SWG on Scenarios for Climate-related Financial Analysis

[www.globalchange.umd.edu/iamc/scientific-working-groups/financial-analysis/](http://www.globalchange.umd.edu/iamc/scientific-working-groups/financial-analysis/)

Overview and update on activities in 2019

Jae Edmonds, Elmar Kriegler

12th IAMC Meeting, Tsukuba, 2-4 December 2019

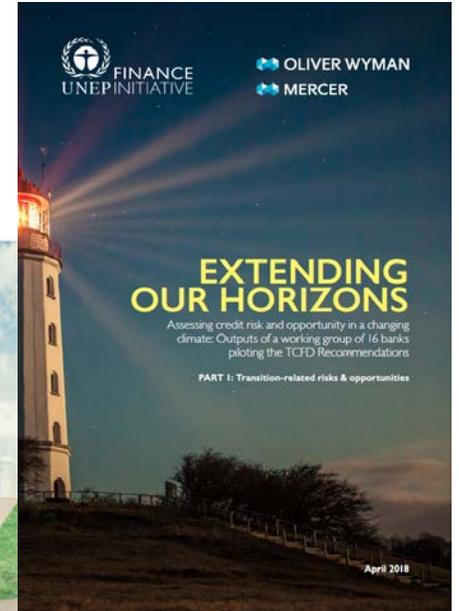
2016-17: Recommendations on use of climate change scenarios for financial disclosures



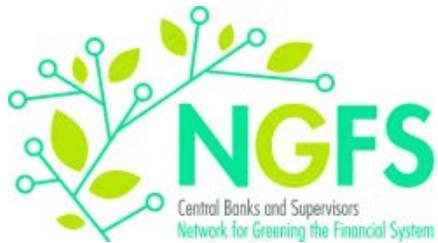
2017: Scenario meeting at the Bank of England



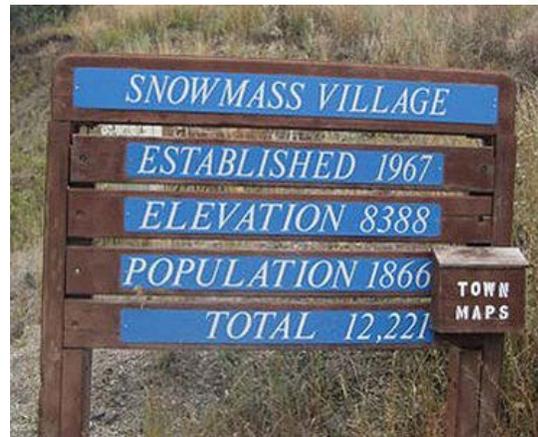
2018: UNEP-Finance Initiative Pilot on use of 2°C scenarios by banks (PIK, IIASA, Oliver Wyman)



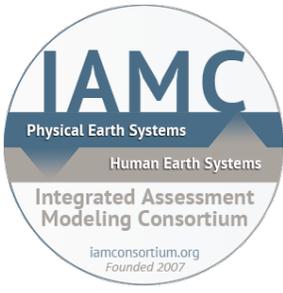
2018-19: MIT workshop and report on climate scenarios in corporate disclosures



2019: Meetings at Banco de México, Bank of England, Banco de España



2019: Workshop convened by Steve Rose & Jae Edmonds "Global scenario and other science issues and opportunities for climate-related finance, investment, and transition risk assessment"



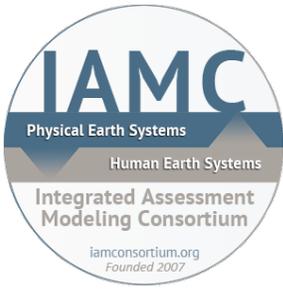
# SWG on Scenarios for Climate-related Financial Analysis

## Mission

Facilitate the discussion of the potential use and development of IAM scenarios for the finance sector, for the purpose of

- assessing financial risk due to climate change (physical risk) and climate policy (transition risk)
- informing about the potential role of finance in transition pathways to a low carbon future.

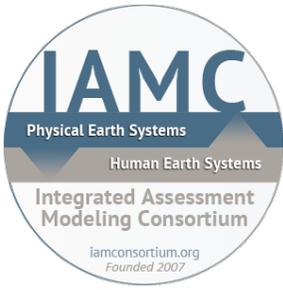
recognizing the wide range of potential users, including private banks, insurers, asset managers, rating agencies, 'real economy' companies, financial regulators, central banks, development banks and governments.



# SWG on Scenarios for Climate-related Financial Analysis

## Planned activities

- Exchange information between IAMC members on current scenario applications by the finance and business communities.
- Facilitate dialogue within the IAM community to advance science and the appropriate use of scenarios for climate-related financial analysis
- Facilitate and support dialogue between the IAMC community and these communities, including outreach and communication activities.
- If identified as useful, coordinate on the archival, documentation, and communication of scenario data for uptake by the finance and business communities.



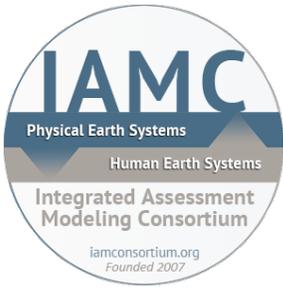
# SWG on Scenarios for Climate-related Financial Analysis

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Introduction of SWG session and discussion points

Jae Edmonds, Elmar Kriegler

12th IAMC Meeting, Tsukuba, 2-4 December 2019



# SWG on Scenarios for Climate-related Financial Analysis

**Newly founded in Spring 2019, currently 27 (16) members**

Nico Bauer (PIK), Christoph Bertram (PIK), Valentina Bosetti (CMCC), Jae Edmonds (PNNL), Panagiotis Fragkos (E3-Modelling), Shinichiro Fujimori (NIES), Rafael Garaffa (COPPE), David Gernaat (PBL), Celine Guivarch (CIRED), Alexandre Koberle (Imperial College London), Volker Krey (IIASA), Elmar Kriegler (PIK), David McCollum (EPRI), Brian O’Neill (U Denver), Sergey Paltsev (MIT), Stefan Pickl (UNIBW), Keywan Riahi (IIASA), Mark Roelfsema (PBL), Steve Rose (EPRI), Roberto Schaeffer (COPPE), Masahiro Sugiyama (U Tokyo), Massimo Tavoni (CMCC), Bas van Ruijven (IIASA), Detlef Van Vuuren (PBL), Stephanie Waldhoff (PNNL), Taoyuan Wei (CICERO), John Weyant (U Stanford)

Conducted several conference calls in 2019 to

- formulate mission and list of discussion points
- share information about members’ activities with the finance sector

## Discussion points

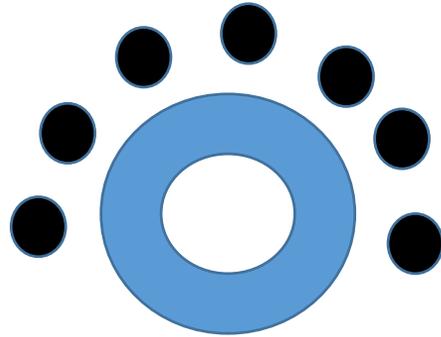
1. What is the appropriate use of global scenarios in applications to climate-related financial analysis? How can scientific integrity and user needs be reconciled in the use of scenarios for climate-related financial analysis?
  - Granularity vs. robustness of scenario results
  - Capturing sensitivity of scenarios to key assumptions
  - Capturing relevant uncertainties
  - Adequately reflecting scenario context in application
  - Limits to scenario approach
2. How can the link between mitigation and impact scenarios be improved to allow jointly assessing physical and transition risks?
3. How can scenario analysis provide scientific insights on the potential role of the financial sector in mitigation pathways?
  - ➔ Generating and redirecting investments, international financial support, de-risking, transfers etc.
4. How can we learn from the finance community in terms of modelling tools for analyzing financial sector dynamics, and to what extent can these approaches enrich integrated assessment.

## Discussion points

5. How can we improve our understanding of the needs of the finance community and to what extent would these needs require new perspectives and approaches for developing IAM scenarios?
6. How can the provision and communication of scenario data, storylines, context and insights to the finance community be improved? Improved accessibility of scenario data
  - Appropriate uncertainty characterizations and guidance on scenario use and misuse
  - Improved documentation of underlying methodologies (transparency of assumptions, etc.)
  - Guidance on selection of scenario sets for assessing financial risk and alignment
  - Identification of suitable output indicators as interface between IAMs and financial analysis
  - The scope for downscaling to provide higher granularity of sector and country information to users in the finance community
  - Regular updates and periodic launch events of updates
7. How can the IAM community most usefully contribute to the use of scenarios for climate-related financial risk analysis?

# A few examples of recent activities of the IAM community on climate-related financial analysis

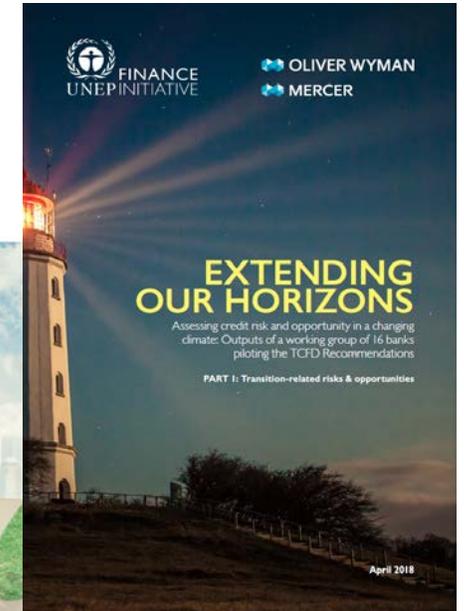
2018: UNEP-Finance Initiative Pilot on use of 2°C scenarios by banks (PIK, IIASA, Oliver Wyman)



And many meetings ...



2018-19: MIT workshop and report on climate scenarios in corporate disclosures



2019: Workshop convened by Steve Rose & Jae Edmonds  
“Global scenario and other science issues and opportunities for climate-related finance, investment, and transition risk assessment”

# A few examples of recent activities of the IAM community on climate-related financial analysis

## Miami Meeting of LAC Central Bankers June 18-19, 2019



### ASSOCIATION OF SUPERVISORS OF BANKS OF THE AMERICAS

“Symposium on Supervisory Approaches Dealing with Natural Disasters and the Implementation of Climate Risk Management”  
June 18 - 19, 2019  
Miami, Florida



## Federal Reserve Bank of San Francisco

Conference on the Economics of  
Climate Change  
November 8, 2019.

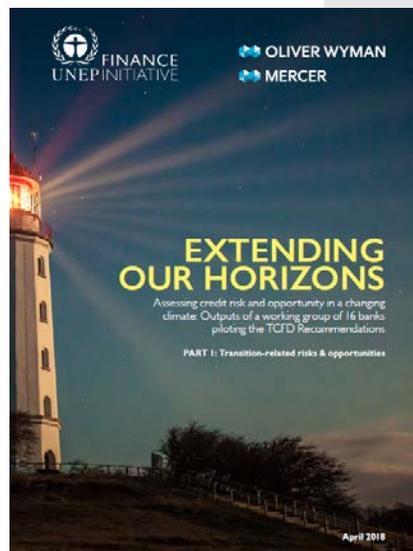
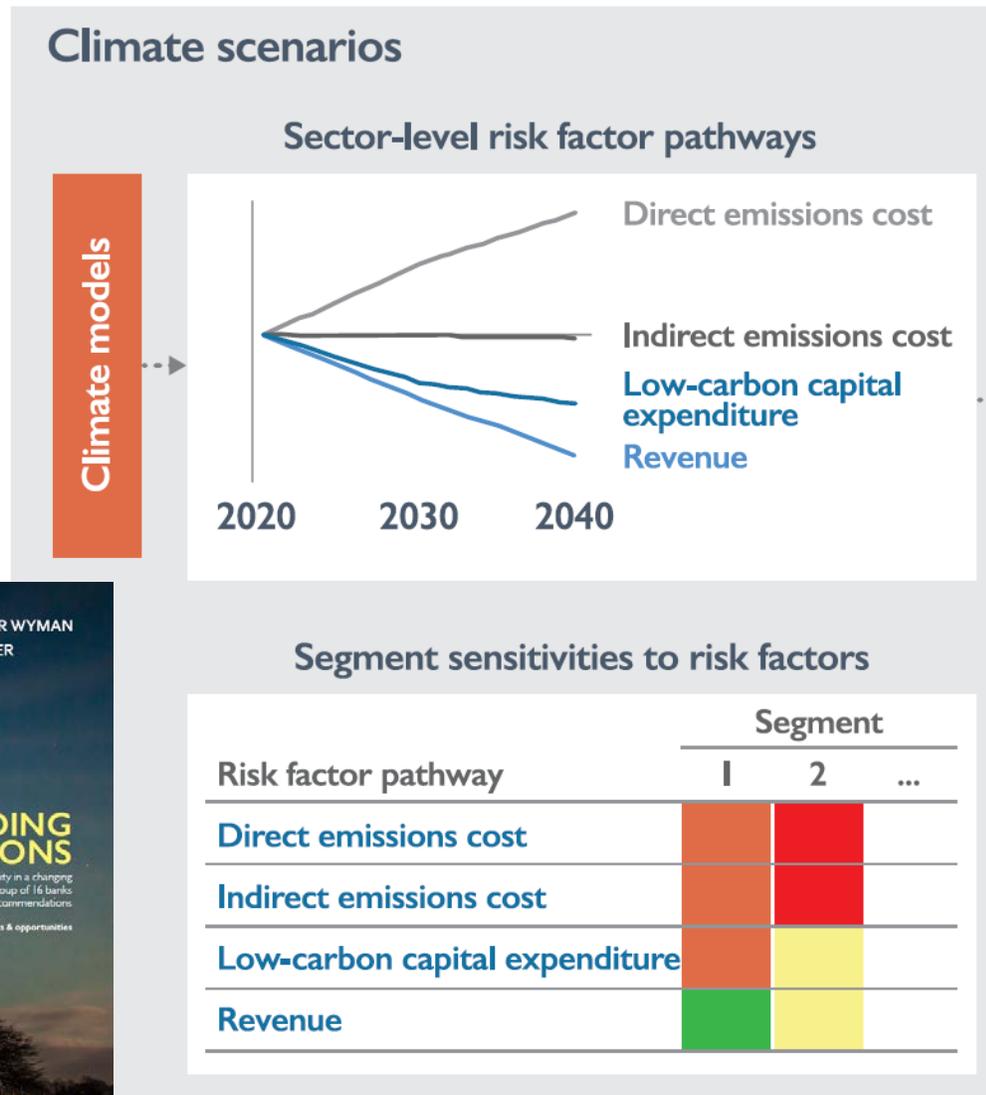
# UNEP-FI banking pilot approach

Calculate change in **probability-of-default** as function of balance sheet impacts of scenarios on loans (6 energy supply and 3 enduse sectors)

Total sector balance sheet impact is the sum of **4 risk factor pathways (RFP)**

- Direct emissions costs
- Indirect emission costs
- Low-carbon capital expenditure
- Revenue effects

Expert judgement: **segmentation and calibration** of impact of RFP on PD



# Risk-factor pathways (RFP) per sectors

Sector differentiation motivated by IAM disaggregation

CATEGORY	SECTOR	DIRECT EMISSIONS COST	INDIRECT EMISSIONS COST	LOW-CARBON CAPITAL EXPENDITURE	REVENUE
Energy	Oil and gas	Product of emissions and carbon pricing, by energy source	Not applicable	Not captured	Product of price and demand, by energy source
	Oil				
	Gas				
	Coal	Product of emissions and carbon pricing, by energy source	Product of fuel demand and price, by fuel type	All renewables investment	
	Renewables				
	Electricity			All non-thermal technology investment and CCS	
	Energy			All energy supply side investment	
End-use	Industrial processes	Product of sector energy demand and price	Energy efficiency and other low carbon investment	Sector-specific revenue (derived from incremental costs and price elasticity assumption)	
	Transportation				
	Residential and commercial buildings				

	Directly calculated from the climate variables (no or minor assumptions required)
	Requires additional assumptions based on external sources
	Not applicable or not captured



# Agenda of this session

What scope to interact with the current activities of the NGFS on the use of climate change scenarios for climate-related financial risk analysis?

Kicked-off with remote presentation on the NGFS and its activities by Ryan Barrett from the Bank of England

Followed by discussion

