European Stability Mechanism



# CLIMATE CHANGE AND FINANCIAL STABILITY

Implications for financial stability from the ESM's perspective

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November 2024



## **OVERVIEW**

A financial stability perspective on climate change



Why it matters for financial stability and the ESM



### **Climate-related risks:**

- physical risks
- transition risks

### Impact on:

- economic growth
- fiscal dynamics
- financial sector



### **Policy implications**

Q&A



# CLIMATE CHANGE MATTERS FOR FINANCIAL STABILITY...

Climate change and the response to climate change will materialise under any scenario.

### **Different channels of climate-related risks:**

- Physical risk: warming, extreme weather events and natural disasters
- Transition risk: reallocations and distortions from decarbonisation

Climate change has large-scale macroeconomic and/or financial stability implications

The ESM's mandate is to safeguard financial stability of the euro area and its Members



# ASSESSING CLIMATE RISKS AT THE ESM: A STRUCTURED APPROACH TO ANALYSING CLIMATE PHYSICAL AND TRANSITION RISKS





### CLIMATE CHANGE IS A GLOBAL PHENOMENON



**Source:** Datasets from Copernicus Climate Change Service (C3S), degree Celsius **Note:** Global annual averages of near-surface temperature of land and ocean expressed as the anomaly relative to the pre-industrial period 1850-1900).



European temperature is rising faster...

**Source:** Datasets from Copernicus Climate Change Service (C3S), degree Celsius **Note:** European annual averages of near-surface temperature expressed as the anomaly relative to the pre-industrial period 1850-1900.



## ... REQUIRING COLLECTIVE ACTION

CO2 emissions come from all across the world



**Source:** Our World in Data **Notes:** share of CO2 emissions in 2021, as a % of global emission



# FINANCIAL EXPOSURE TO CLIMATE CHANGE: PHYSICAL AND TRANSITION RISKS

# Climate change poses two types of risk to financial institutions

### **Physical risks**

Damage and loss caused by extreme or chronic weather events (storms, wildfires, floods, heat waves).



### **Transition risks**

Loss due to declining value of investment in highcarbon activities (driven by climate policy, technology and markets).



# EUROPE: EXPOSURE TO PHYSICAL RISK





Source: Source: European Commission (data for 2023)

- European countries exposure to (acute) physical risks (droughts, floods, wildfires, and storms) varies significantly.
- Historical damages of heat-related hazards still limited but can become macro-critical if the number/severity of consecutive disasters increases rapidly.

## **EUROPE: EXPOSURE TO TRANSITION RISK**



**Figure: (Direct) Greenhouse Gas** 

### **Figure: Carbon emissions and intensity**



- Transition risk: Three sectors account for around two-thirds of direct GHG emissions in Europe.
- CO2 emissions and carbon intensity on a declining path.



## IMPACT ON ECONOMIC GROWTH





# CLIMATE CHANGE CARRIES IMPORTANT IMPLICATIONS FOR GROWTH AND STABILITY ...

related catastrophes have been on the rise... 1800 1600 1400 1200 **EUR billions** 1000 800 600 400 200 0 1980-1989 1990-1999 2000-2009 2010-2019 Source: SwissRe (2020)

Global economic losses from weather-

... while long-run GDP losses will depend on the ambition of transition policies.



**Source:** ECB, Climate-related risk and financial stability. **Notes:** The "too- little, too-late" scenario is based on the assumptions defined by the NGFS.



### MACROECONOMIC IMPACT: THE COST OF NO OR DELAYED ACTION...

Figure: GDP impact across scenarios (Europe) (Europe, % dev. from NGFS baseline)



Other estimates for Europe: Kahn et al. (2021): (phys. risk) → -2.3% (-6.4%) by 2050 (2100) if global emissions continue to rise Gourdel et al. (2024): (for EA) → -12% by 2050 if transition disorderly and high

physical risk

**Source:** NGFS (Phase 3), NiGEM with GCAM trajectories **Notes:** Dotted lines refer to the most affected European country under each scenario.



## ...ALSO COMES VIA DIFFERENT TRANSMISSION CHANNELS

### Figure: GDP impact for scenario "Current Policies" (Europe, % dev. from NGFS baseline)



Lower productivity and increased level/volatility of food and energy prices → lower real wages and consumption

Uncertainty regarding extreme weather events → weaker investment

Source: NGFS (Phase 3), NiGEM with GCAM trajectories



## **IMPACT ON BUDGETS**





### FISCAL COSTS FROM PHYSICAL RISKS/ADAPTATION TO ACUTE RISKS

### Worst-case scenario of one-off fiscal costs from extreme weather shocks (% of GDP)





**Notes:** Effect on the expenditure-to-GDP ratio of a country-specific 3-standard-deviation shock based on Akyapi et al (2024)



# CASE STUDY - SLOVENIAN FLOODS AUGUST 2023

### The most severe weather event in the EU in the last 20 years (damage in % of GDP)

- 80% of the country's municipalities
- 5000+ reported landslides
- 16% of GDP in total costs (including upgrading climate resilience costs)
- Limited impact on GDP growth following higher flood-related investment



# CASE STUDY SLOVENIA - FISCAL FINANCING RESPONSE TO FLOOD-RELATED SPENDING

### **Fiscal support**

- Reconstruction of public infrastructure
- Reimbursement for lost income
- Financial assistance for reconstruction
- Support to the state development bank

### **Revenue measures**

- Increase in corporate income tax
- Temporary tax on bank assets

### **Outside financing**

• Support from EU solidarity fund

	2023	2024	2025
Total fiscal support*	0.8	1.8	1.1
Revenue measures	0.2	1.0	0.4
Of which, EU funds	0.2	0.4	
Net impact on financing needs	0.6	0.8	0.7

**Source**: International Monetary Fund, Republic of Slovenia: 2024 Article IV Consultation. **\*Note**: Total fiscal support includes expenditure and below the line measures, values expressed as share of GDP.



## BUDGETARY PRESSURE TO MITIGATE THE TRANSITION RISKS

Self-assessed mitigation public and private investment needs in the EA by sector (% of GDP/y, 2021-30)



**Source:** European Investment Bank and the 2019 euro area National Energy and Climate Plans (NECPs)

EU Public extra-investments by country for decarbonising the economy by sector (% of GDP/y, 2024-50)



#### Source: Rousseau Institute 2024



### **IMPACT ON THE FINANCIAL SECTOR**





# FINANCIAL SECTOR PHYSICAL RISKS

The loan book and the securities portfolio of European banks could be **significantly affected by acute physical risks.** 

**I** 

Varying approaches for insurance coverage exist in Member States. Private insurers typically cover only a relatively small share of total economic losses.

°.

Linkage between banks and insurers: without insurance, a disaster affects the value of collateral and the credit risk of the borrower.

### Figure: Potential exposure at risk by hazard type (in % of portfolio)



#### Source: ECB



# FINANCIAL SECTOR TRANSITION RISKS



### Carbon footprint of bank loans (tons CO2/mn EUR)

### Banks

- High emitting industry constitutes a substantial share in some loan portfolios
- Considerable variation across countries for carbon footprint of loan exposure.
- In aggregate, little improvement over the years

#### **Insurers:**

- EA Insurer exposure to high emitting industries is manageable. On average, the exposure is 9% of their equity and bond investments
- National economic structures affect insurers' exposure

### Insurers' bond and equity investment in climate-exposed industries

(% of total bond/equity investments)







### THE WAY FORWARD: POLICY IMPLICATIONS





# AN ORDERLY TRANSITION IS CRUCIAL TO CONTAIN CLIMATE-RELATED ECONOMIC LOSSES IN MOST EURO AREA MEMBER STATES...



Source: NGFS and National Institute Global Econometric Model

**Notes:** The chart shows the deviation of GDP in 2050 from the NGFS baseline level (in percent) under both an orderly transition scenario ("Net Zero 2050", y-axis) and scenario with no policy action, resulting in high physical risks ("Current Policies", x-axis). The Global Econometric Model with GCAM trajectories. Data are not available for Cyprus, Luxembourg, and Malta.



# THE MEMBER STATES' AND THE EU CONTRIBUTIONS

	EU	Member States
Climate change		
	Single market (create incentive for	Investment (mitigation & adaptation)
	transition: carbon pricing, financing)	Dealing with stranded assets
	Technological progress	• Tax incentives for innovation (directed
	• Insurance and risk-sharing (CMU, NGEU)	technological change)
	• Economies of scale: energy market,	
	CBAM	
	Policy coordination ('Climate Club')	



# LARGE INVESTMENT NEEDS....MATCHING INVESTMENT SOURCES TO MEET CLIMATE TARGETS BY 2030?

Additional annual investment needs to meet climate targets by 2030						
	€bn, annual	Share of EU GDP (%)	Share of EU investment (%)			
	Investment needs					
Total (annually until 2030)	350 - 620	2.6 - 4.6	12.2 - 21.6			
	Investment sources					
Green Deal (annually until end 2027) incl. budget guarantee for EIB Invest EU	131.6	1	4.6			
NGEU (annually until end 2026, 37% total envelope for green transition)	44.6	0.3	1.6			
Gap	174 - 444	1.3 - 3.3	6.1 - 15.5			
Member States*	35 - 89	0.3 - 0.7	1.2 - 3.1			
Private Sector*	139 - 355	1 - 2.6	4.9 - 12.4			

Source: European Commission, Impact assessment accompanying the document Stepping up Europe's 2030 climate

ambition. Investing in a climate-neutral future for the benefit of our people, 2020; Strategy for Financing the Transition to a Sustainable Economy, 2021; Stragic foresight report, 2023; The European Green Deal; The European Green Deal Investment Plan; For investEU 30% of total envelope allocated to climate objectives; ESM calculations.

\* Note: Assuming a public private ratio of 1:4 (80% private sector, 20% public sector).

# EUROPE AND THE WORLD: MAP OF CARBON TAXES AND EMISSIONS TRADING SYSTEMS (ETS)



Source: Worldbank, State and Trends of Carbon Pricing, 2024



# FINANCING OF THE GREEN TRANSITION WILL MAINLY HAVE TO COME FROM PRIVATE FUNDING

Achieving the sustainability transition will depend on securing sufficient, cost effective and swift funding by the private sector.

The EU to continue to issue green bonds to give investors a signal of commitment towards green domestic projects and 'Green Deal'.

This will support a liquid green and safe bond market and their funding strategy.



### GREEN BOND ISSUANCE....WITH CORPORATE BONDS CATCHING UP

# Green bond issuance as a % of total bond issuance by issuers and each type of bond issuer in the EU, 2014-2023



**Source:** European Environmental Agency, November 2024



## EU SUSTAINABLE FINANCE IS HAVING A LARGE IMPACT...





# ...THROUGH GREEN MARKET CREATION

### **Market creation**

- EU Taxonomy (2020) the most sophisticated cornerstone
- Enabler of the Green Deal
  - A common language on what is sustainable.
  - Categorises eco-friendly economic activities based on science.
  - Brings market transparency (data collection, standard setting).
  - Helps direct investments to activities for the green transition.



# ...THROUGH GREEN FINANCE REGULATION



### **Green finance regulation**

- Mandatory disclosure on green financing...mitigating green washing through evaluation of sustainable performance.
- Official labels for financial products clarity and certainty
  - Sustainable Finance Regulation (SFDR, 2021)
  - Corporate Sustainability Reporting Directive (CSDR, 2023)
  - Green Bond standard (EuGB, 2023) a gold standard for green bonds



# ... THROUGH SUSTAINABLE FINANCE SUPERVISION

### Sustainable finance supervision

- The European System of Financial Supervision verify the financial stability impact of climate change on financial institutions.
- They ensure financial institutions **detect**, **manage**, and **disclose risks** including those stemming from climate change
- Macro level: European Systemic Risk Board (system)
- Micro level: European Supervisory authorities (banks, markets, insurers and funds)



# POLICY IMPLICATIONS AND RECOMMENDATIONS



Climate change related risks impact financial stability in the euro area and its Members. These risks also have implications for the ESM's mandate.



From a financial stability perspective, an orderly transition is crucial to contain climate-related costs.



Significant physical and transitions risks underline ambitious mitigation objectives.



While improving, sustainable finance and bank-level info on climate risks could benefit from accelerated development.



European Stability Mechanism



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