Climate change and the financial sector: measurement challenges

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Climate change is increasingly relevant for the financial sector, and hence for central banks

- Growing source of risk for the financial sector
  - *Physical risks* - associated with abrupt or gradual changes in climate
  - *Transition risks* - risks and financial implications of the move to a low-carbon economy (government policy changes, taxation,..)
- Financial sector is increasingly encouraged to contribute to reducing climate change
  - Reducing the carbon footprint of their asset portfolios
  - Invest in green bonds or other instruments to make a positive impact

**Demand for data and indicators on trends and risk exposure is growing fast**

- at both the level of the individual institution as well as at more aggregated (sector, country) levels
- in order to support regular research, policy analysis and economic forecasting activities, for prudential stress testing, risk analysis and supervisory policy development

**But: lack of high-quality, internationally comparable statistics and indicators**

- challenges arise both in terms of availability, completeness, quality and accessibility of potential data sources, and in terms of methodology and indicator development

**International initiatives – both policy oriented and statistical - have recently emerged to start addressing this lacuna**

- NGFS ‘Data Gaps Initiative’; IMF Dashboard; ECB-Eurostat CMFB Task Force; OECD; BIS; **ECB Statistics Committee**
Focus on results of the **ECB Statistics Committee Expert Group on Climate Change and Statistics** (as the first finished stocktaking report on data and measurement challenges related to climate change and the financial sector, in October 2020)

Work involved
- stocktaking survey among NCBs to systematically describe
  - existing and ongoing studies on climate change by European central banks, including topics addressed (>80 studies and academic work assessed);
  - variables and data sources used; including advantages and disadvantages, access modalities, feasibility of linking with ESCB granular data on loans and securities (>50 data sources ranging from very granular to very macro)
- methodological challenges identified
- survey of users’ needs and priorities via the ECB Committee structure
- international outreach: IMF STA, NGFS ‘data gaps’ workstream (IMF/ECB), EIOPA, EBA, CMFB, OECD

Resulted in recommendations on an ECB STC workprogram on developing statistics and indicators related to climate change relevant for central bank activities (i.e., financial stability, monetary policy, supervision); the implementation of which will start shortly
Results (1): three sets of indicators as a central priority for users

**indicators**

<table>
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<th>Expose of financial institutions to climate-change related physical risks</th>
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<td>CO2 footprint of financial institutions</td>
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<td>Number and value of green financial instruments</td>
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**analytical use**

| Financial stability analysis (stress testing, risk assessment at individual and sector level) |
| Analysis on the transmission of monetary policy, CB portfolio allocation and financing conditions |
| Assessment of transition risks |
| Analysis of alignment of financial sector asset portfolios with international climate targets |
| Role of sustainable finance for ECB monetary policy and macroeconomic analysis |
| Role of green loans in emissions reductions |

*These three enjoyed wide support by all users’ groups among a very wide array of possible indicators (and are hence of a ‘no regret’ nature). They are also in line with mandate & expertise of ESCB statistical function.*
Example: CO2 footprint indicators

- CO2 footprint of financial institution = $F(\text{portfolio}; \text{companies in portfolio}; \text{CO2 emissions of companies})$
- **Data challenges**: information on CO2 emissions (scope 1, 2, 3) is incomplete, only from commercial sources and may not be accurate
- **Methodological challenges**:
  - Weighting schemes (shares in portfolio; weighting of emissions (by value added, sales, output...));
  - Price vs volume changes
  - Exchange rates, inflation
  - Decomposition into ‘portfolio composition’ (exclusion) effects and ‘underlying’ CO2 reduction
Illustration:

WACI of the listed securities portfolio of Dutch Pensionfunds and Insurance companies – with and without correction for inflation and exchange rates

WACI is Weighted Average Carbon Intensity, (tons of CO2-equivalent emissions per mln € sales)
Example: physical risk indicators

Physical risk of financial institution = $F(\text{portfolio; companies; affiliates; physical risk of affiliate locations})$

- **Data challenges**: location of affiliates (and ideally the activities in that location)
- **Methodological challenges**:
  - Weighting schemes (shares in portfolio; share of affiliates in company);
  - Price vs volume changes
  - Exchange rates, inflation
## Results (1): three sets of indicators as a central priority for users

<table>
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<th>Indicators</th>
<th>Data sources</th>
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| Exposure of financial institutions to climate-change related physical risks | - Granular information on portfolios of financial institutions (AnaCredit, SHS/CSDB)  
- Physical location of the assets from a (partial) global business register (Riad, OECD Adima, LEI, commercial sources, possibly EGR going forward)  
- Physical risk associated with locations (e.g. EC JRC Risk Data Hub, World Resources Institute, commercial sources)  
- SEEA as source for estimates where granular information is not available |
| CO2 footprint of financial institutions        | - Granular information on portfolios of financial institutions (AnaCredit, SHS/CSDB)  
- CO2 emissions scope 1-2-3 (mainly commercial sources, but also data from European ETS, and going forward, NFRD). Emissions from buildings.  
- SEEA as source for estimates where granular information is not available |
| Number and value of green financial instruments | - Granular information on portfolios of financial institutions (AnaCredit, SHS/CSDB)  
- A ‘green’ classification of instruments (Commercial sources; EU Taxonomy on green activities could result in first reports by end 2022). |
Implications for SEEA

Aspects of SEEA that are of particular use for developing (estimates for) these indicators

- Indicators on the energy use, efficiency, and emissions of the non-financial corporations sector at a detailed ISIC/NACE level
- Indicators on the energy use and efficiency of residential and commercial real estate (real estate energy labels, e.g. to support analysis or mortgage portfolio’s)
- Overall: enhanced timeliness (and ideally also frequency)

Additional information – beyond these three top indicators – was also requested by ECB users on

- Information on Emission Trading System (ETS) auctions, and their effect on emissions
- Statistics on government finance that separately identify climate-related investment and expenditures, and green budgeting

Jointly follow and incorporate the enhanced non-financial reporting by NFCs

- Enhanced scope of application of the revised EU Non-Financial Reporting Directive, the creation of a public register
- IFRS Foundation – the accounting standards setting body – global standards for sustainability reporting
Thank you

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Background: way forward for ECB EG on CCS

A phased approach to indicator development, considering the urgency and the practical barriers

**Phase 1. development of first experimental indicators**
- using easily accessible (open source) data of (perhaps) not always the desired quality
- Complement missing data with transparent estimates (SEEA based where possible)
- Start with SHS/CSDB, including loan-books (AnaCredit) at a later stage.
- coordinating activities nationally (e.g. agreeing on joint activities and sharing code and results), before considering a shared IT infrastructure

**Phase 2. enhanced indicators and robustness checks**
- using complementary and (potentially) superior data sources that are more difficult to access
- experimenting with different methodological specifications of the indicators

**Phase 3. development of dissemination strategy for experimental indicators**
- Externally at the aggregate level and via enriched granular datasets for ESCB users

**Phase 4. plan for further consolidation into the regular work of the STC**, building on
- building on the lessons learned, including on IT requirements
- progress made in related areas such as the planned intensification of the collaboration between RIAD and the EGR, the NFRD and EU Taxonomy.