EUROPEAN CENTRAL BANK

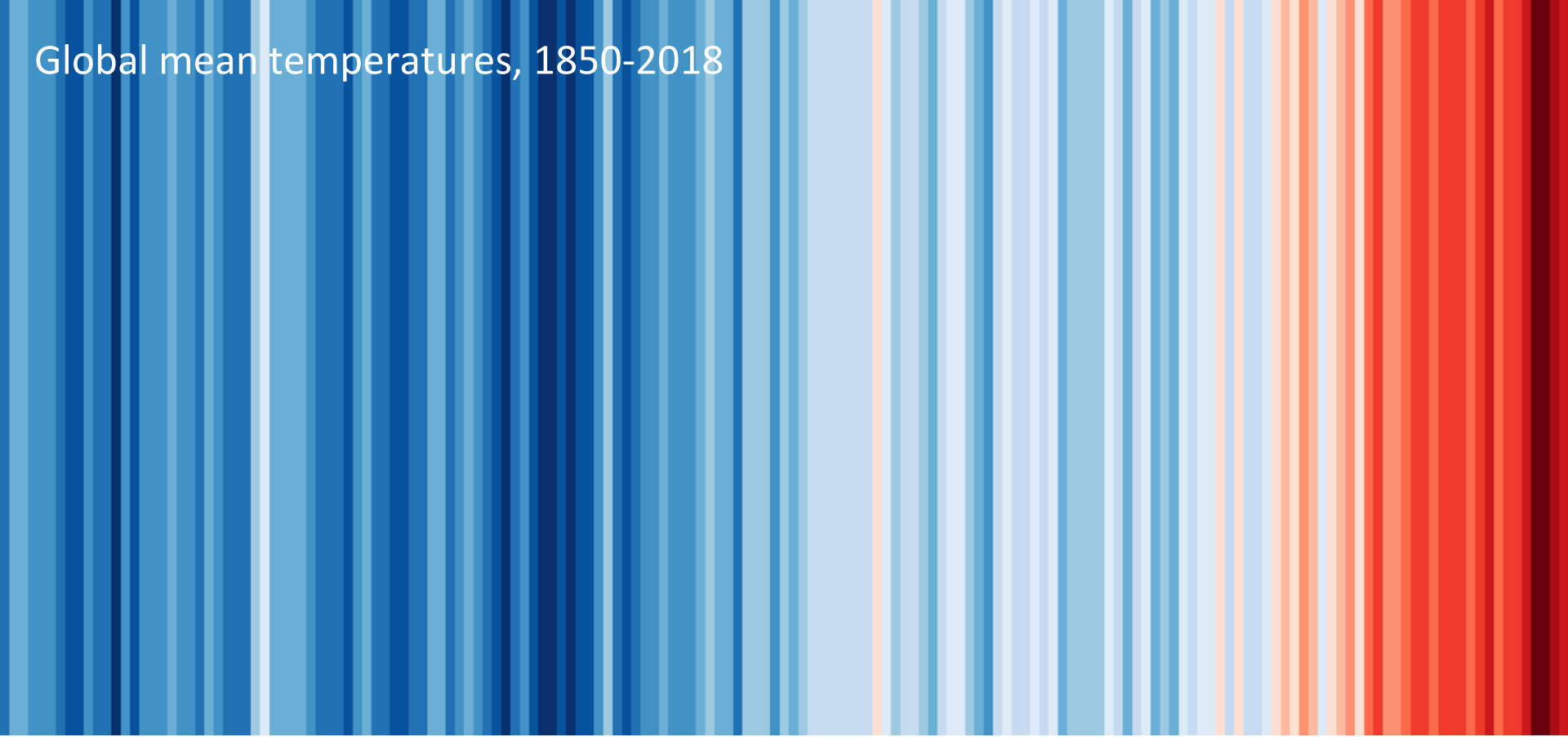
EUROSYSTEM

When markets fail – the need for collective action in tackling climate change

European Sustainable Finance Summit, 28 September 2020

Isabel Schnabel
Member of the ECB Executive Board

Global mean temperatures, 1850-2018

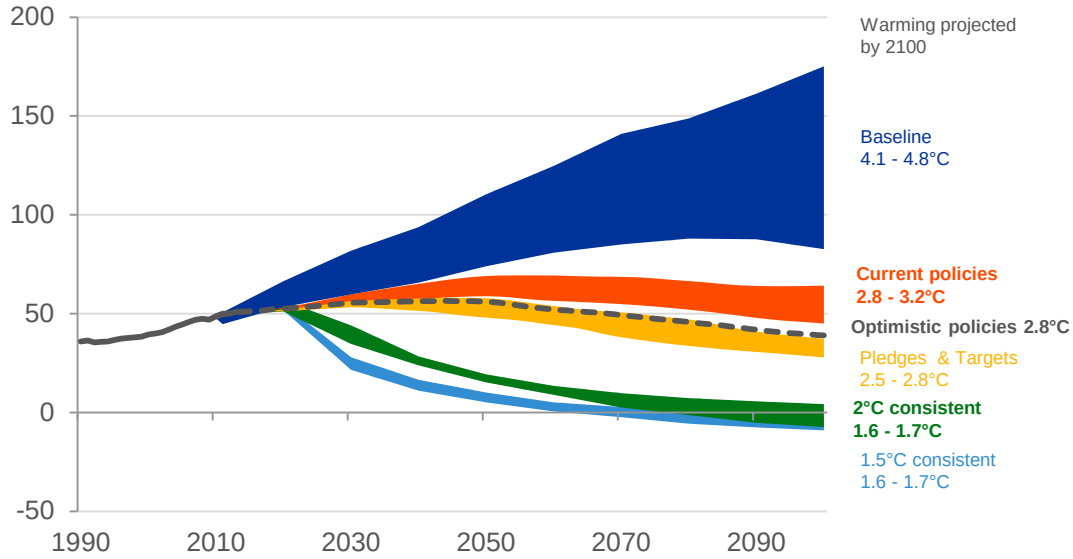


Source: Institute for environmental analytics, showyourstripes.info
Note: Annual global average temperatures from 1850-2018 using data from UK Met Office. Average temperature set as the boundary between blue and red colours, and the colour scale varies from +/- 2.6 standard deviations of the annual average temperatures between 1901-2000.

Climate change posing physical and transition risks, depending on policy action

Climate risk scenarios: projections of carbon emissions and global warming

(emissions of CO2 in gigatonnes per year)



Note:

Baseline: In the absence of policies, global warming is expected to reach 4.1°C – 4.8°C above pre-industrial levels by the end of the century. The emissions that drive this warming are often called baseline scenarios.

Current policies in place around the world are projected to reduce baseline emissions and result in about 3°C warming above pre-industrial levels.

The **"optimistic policies"** scenario factors in additional as well as planned, but not yet implemented, policies and a continuation of recent developments.

The **"2°C" consistent** benchmark pathways are drawn from the "lower-2°C" and "high-overshoot 1.5°C" pathways in the new set of IAM pathways assessed in IPCC in its latest report.

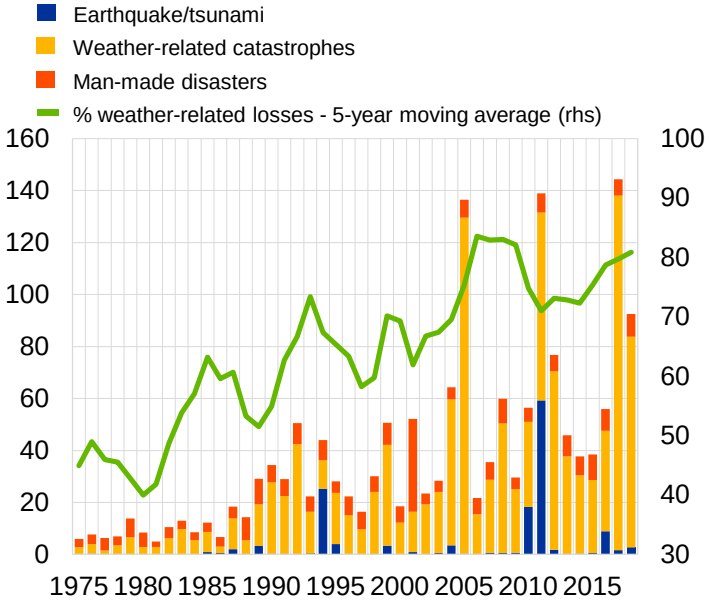
The central "**1.5°C compatible**" benchmark is defined as the median of pathways that limit global warming to 1.7°C, or below.

Source: Climate Action Tracker, Warming Projections Global Update. December 2019 projections.

Rising importance of physical risks of climate change

Global insured catastrophe losses

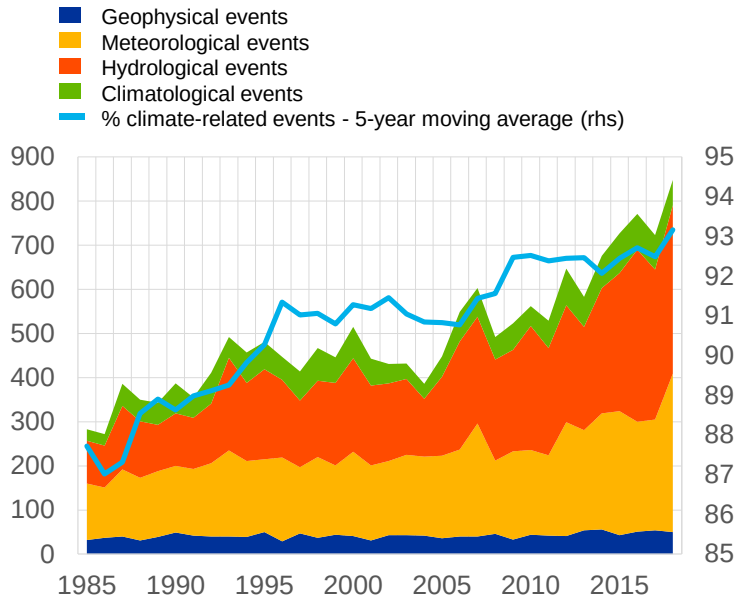
(left-hand scale: USD billions in 2018; right-hand scale: percentages)



Sources: Swiss Re institute, Munich Re NatCatService and ECB calculations.

Number of relevant natural loss events globally

(left-hand scale: number of events; right-hand scale: percentages)

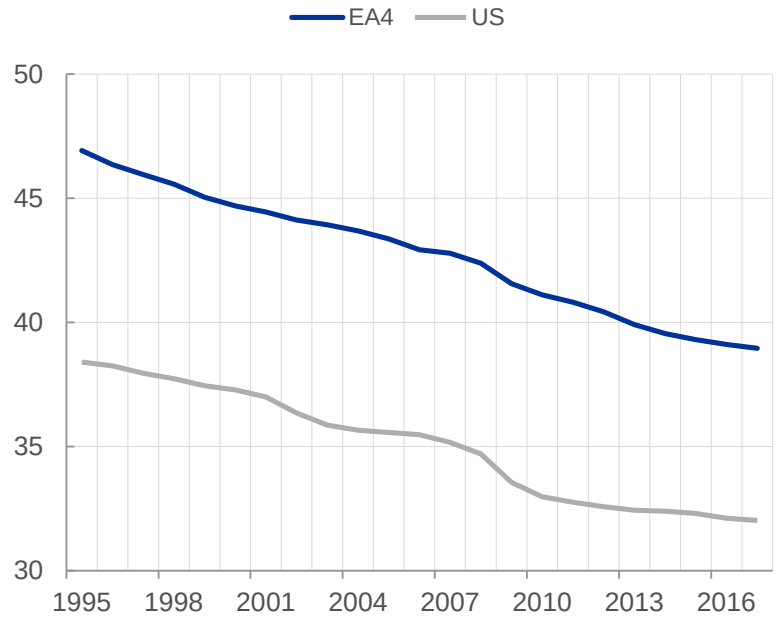


Sources: Swiss Re Institute, Munich Re NatCatService and ECB calculations.

Notes: Climatological events: drought and wildfire. Geophysical events: earthquake, tsunami, volcanic activity. Hydrological events: floods. Meteorological events: all types of storms.

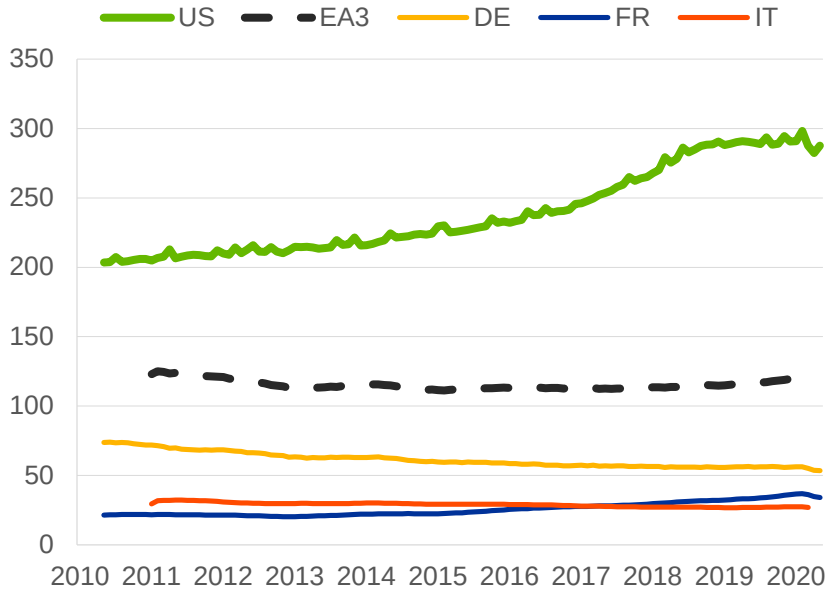
Europe lagging behind in transition to carbon-neutral economy

Employment in carbon-intensive sectors relative to all activities (% of total employees)



Source: Haver and Eurostat. Note: Carbon-intensive sectors are defined on the basis of EU28 average greenhouse gas emissions during the period 2008-2018 (kg per euro of GVA). The top 50% of sectors, in terms of emissions per GVA (31 NACE 2 sectors in total), are defined as "more carbon- intensive". Latest observation: 2017.

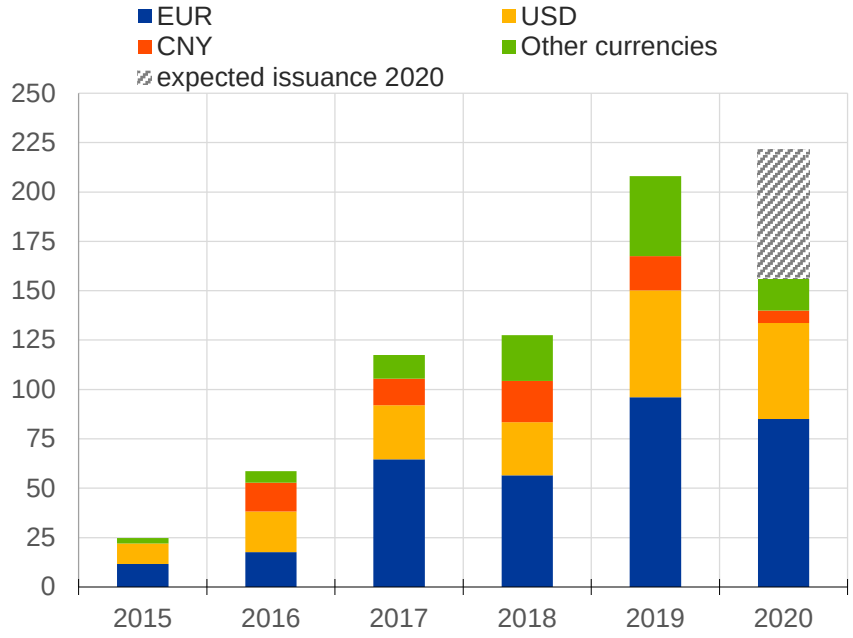
New business creations (thousands)



Sources: INSEE (FR), Destatis (DE), Banca d'Italia (IT), Census Bureau (US). Notes: Number of new businesses outside of agriculture (DE, FR, IT) and number of business applications outside of agriculture (US), 12-M rolling average. FR excludes sole proprietorships.

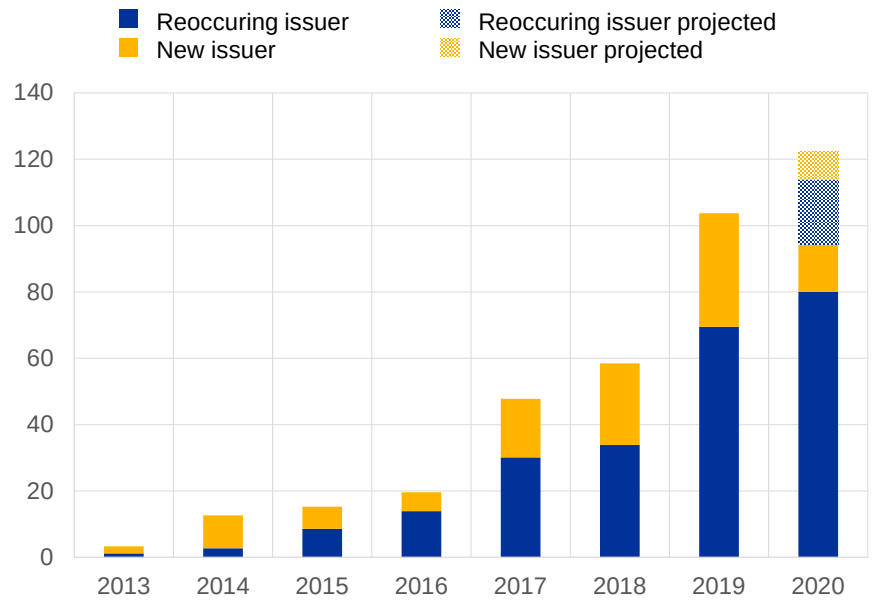
Green bond issuance growing dynamically, especially in euro

Green bond net issuance by currency of denomination (EUR billions)



Sources: Bloomberg, HSBC Research, ECB calculations.
Last observation: 24 September 2020. Note: Due to different sources, EUR issuance may diverge from issuance amount on right-hand chart.

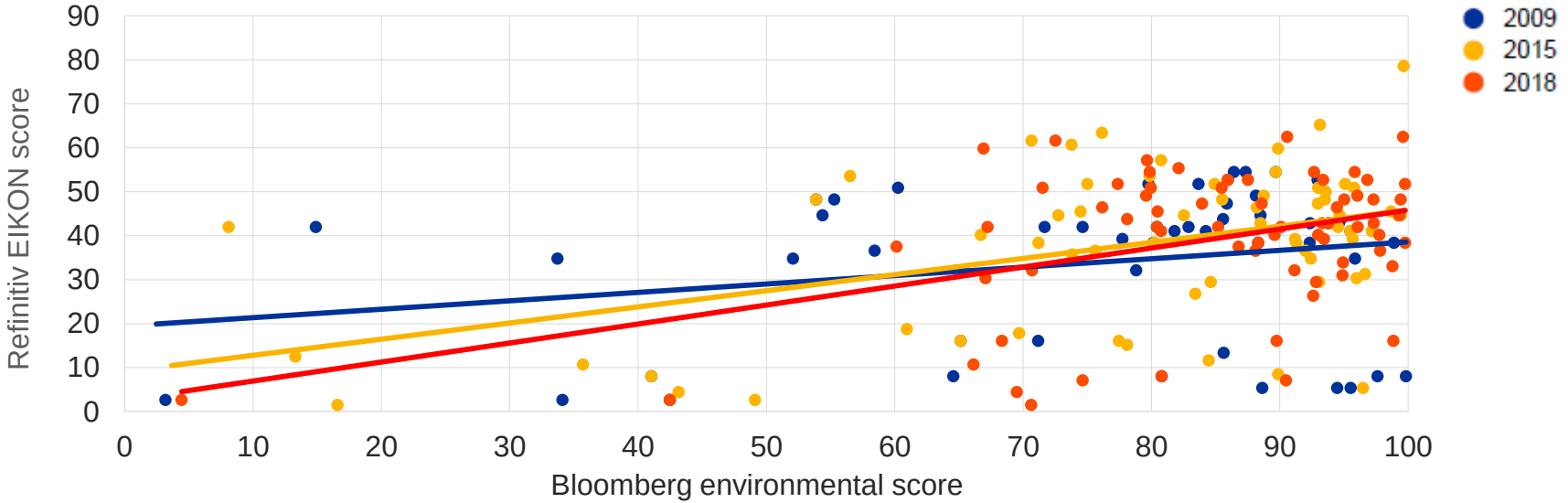
European issuance of green bonds (EUR billions)



Source: Dealogic.
Note: Last observation 24 September, projection for Q4 is based on September 2020 figures.

Low but rising correlation of environmental ratings due to lack of common standards

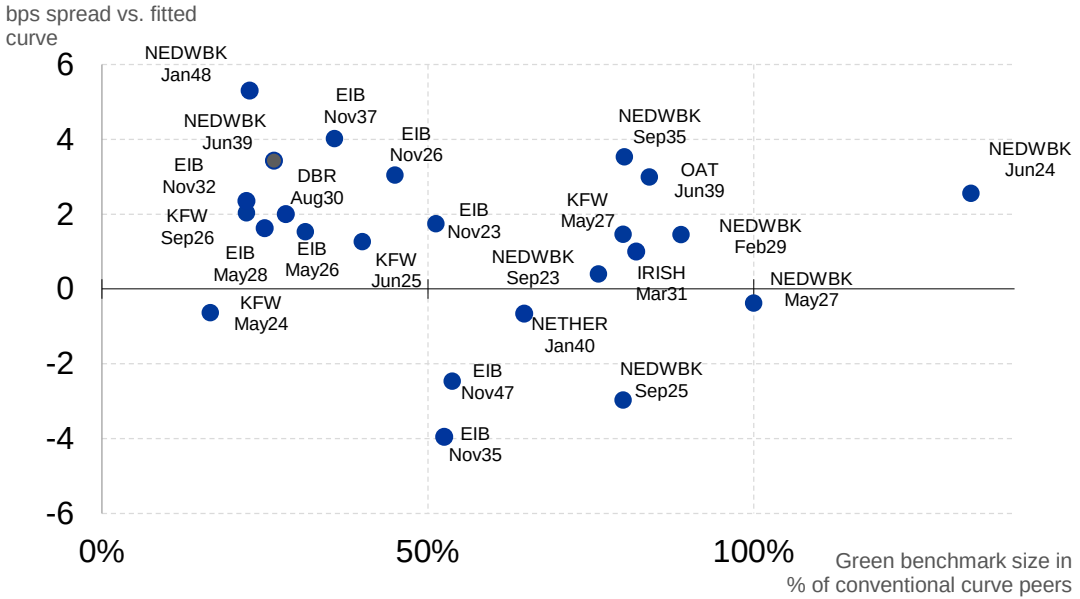
Financial market pricing of climate risk: correlations of bank environmental scores by Bloomberg and Refinitiv



Source: ECB Financial Stability Review, November 2019 based on Bloomberg, Refinitiv EIKON, S&P Global Market Intelligence and Dealogic.
Notes: The Bloomberg and Refinitiv environmental scores give values between 0 and 100, whereby a higher value indicates a better performance in terms of environmental variables. The full unbalanced sample consists of 49 banks and 23 insurers in the EU and the United States.

Green bonds not leading to consistently lower yields

Green benchmark outstanding volume in % of size of two direct curve peers (x-axis) vs. yield premium/discount in bps (y-axis)



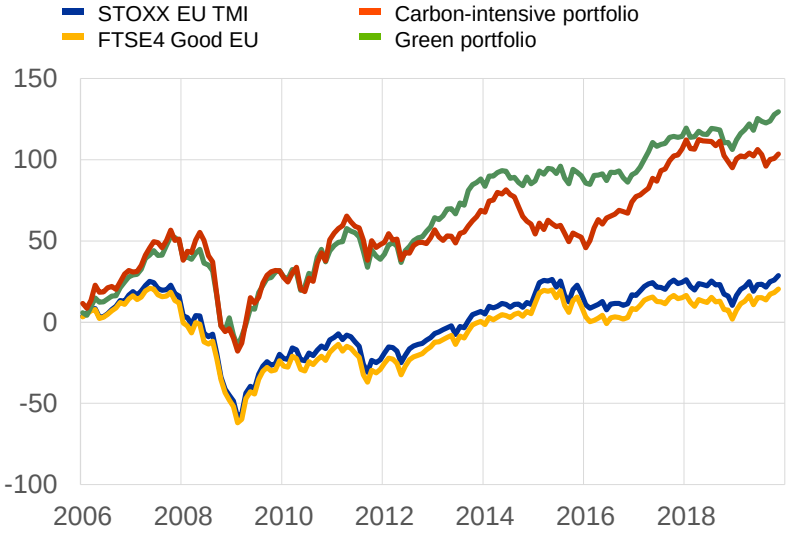
Source: Commerzbank Research

Carbon prices not yet serving as proper correcting device

EU ETS price
(in US dollar per ton CO2 emissions)

Source: Bloomberg
Last observation: 28 September 2020.

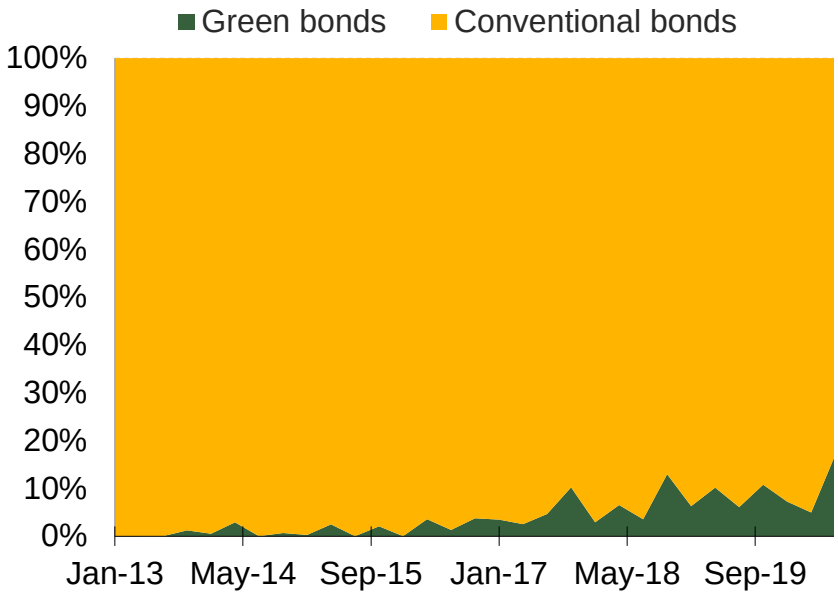
Monthly cumulative returns of selected stock indices and portfolios (percent)



Source: Bloomberg, Datastream and European Commission – Joint Research Centre calculations based on Alessi, Ossola and Panzica (2020), "The Greenium matters: greenhouse gas emissions, environmental disclosures, and stock prices".

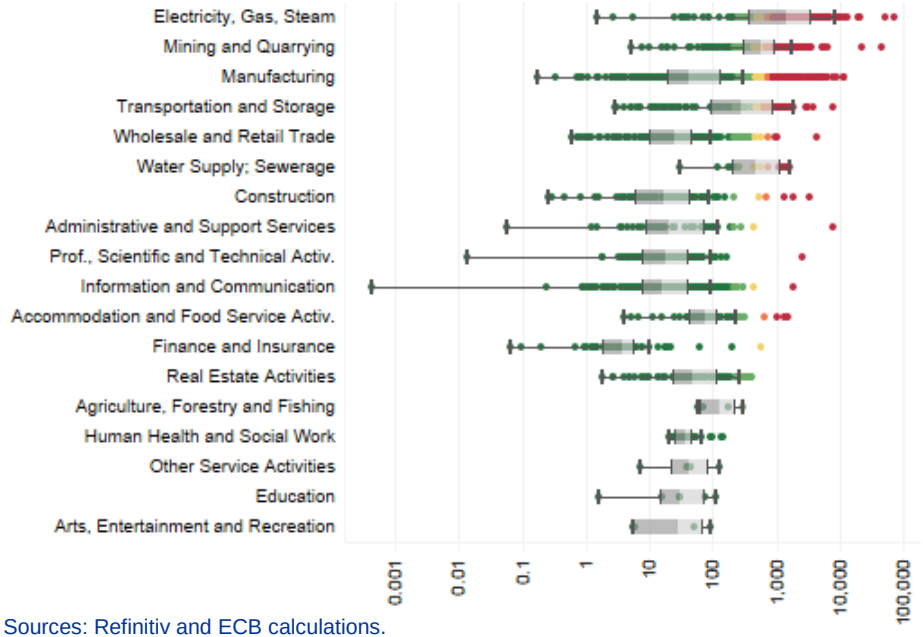
Green bond universe still small, transition risks affecting broad parts of the economy

Share of IG green bonds in global gross issuance
(in %, based on EUR data)



Source: Dealogic. Note: Quarterly data.
Last observation: 24 September 2020.

Firm-level emission intensities within economic sectors
(2017; emission intensity in tonnes of C02/EUR millions of sales)

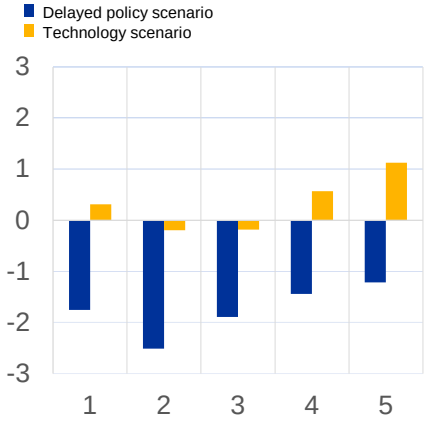


Sources: Refinitiv and ECB calculations.

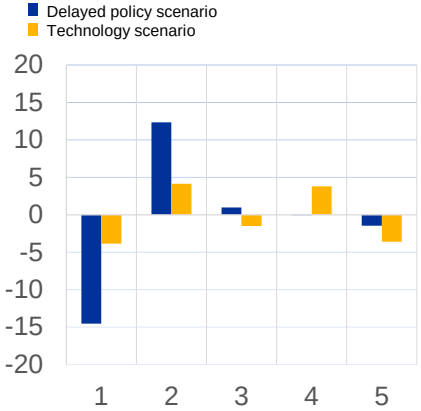
Delayed policy action exacerbating transition costs

Effects of an abrupt policy response and green technology breakthrough scenarios (x-axis: years)

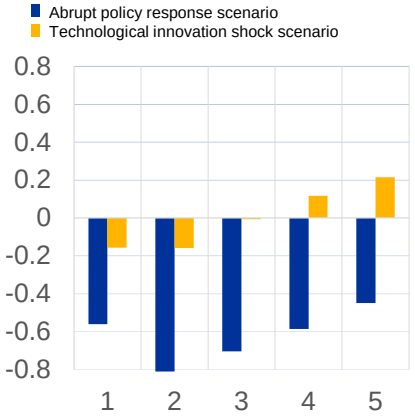
Euro area GDP
(percentages)



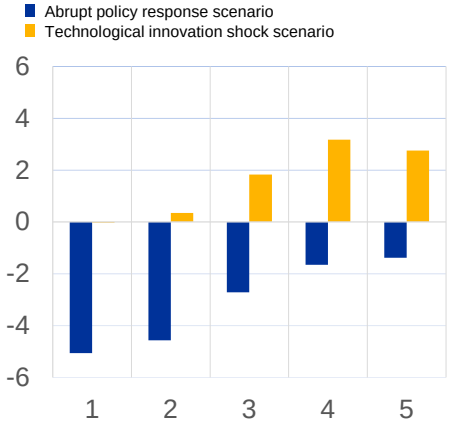
Euro area stock market index
(percentages)



CET1 ratio
(percentage points)



Loans to NFCs in real terms
(percentages)

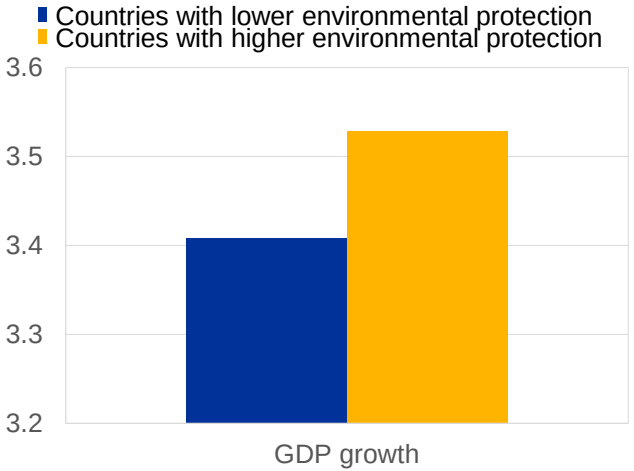


Source: DNB and ECB calculations based on NiGEM outputs, SHS-G data and 2017 stress test templates.
Note: The delayed policy scenario assumes that an abrupt policy change aimed at mitigating climate change translates into a sudden and sharp increase in the carbon price by USD 100 per tonne at the global level. The second scenario, which considers an asymmetric technology shock, looks at what could happen in the event of a positive breakthrough in energy storage technology which would allow the share of renewable energy to double over a five-year period.

Faster recovery of “greener” economies

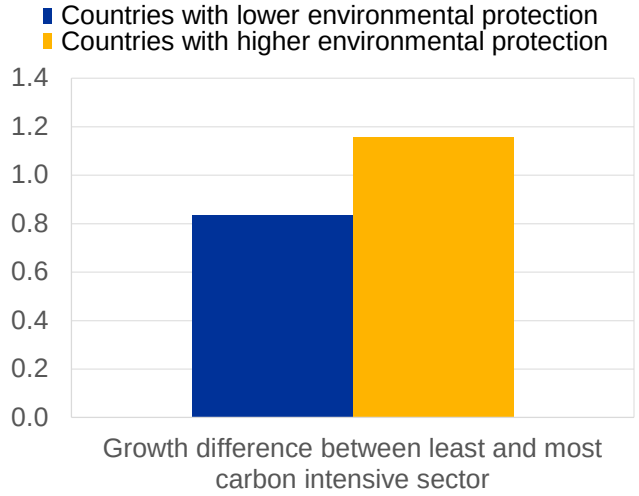
Environmental protection and GDP growth during recoveries

(percentage points, relative to recession episodes)



Environmental protection and sectoral growth during recoveries

(percentage points, relative to recession episodes)



Sources: ECB calculations, World Bank, OECD.

Notes: Growth is measured in percentage points relative to a recession episode. ”Sectoral growth” is the growth difference between least and most carbon-intensive sector during recovery. “Recovery” is defined as the two year period after a recession. Environmental protection is measured by an index of environmental protection stringency (EPS), for the countries with below-median and the countries with above-median EPS. “Low” = 1.54 EPS, “High” = 2.14 EPS.

Thank you!