Tools for decarbonising macroeconomic policy

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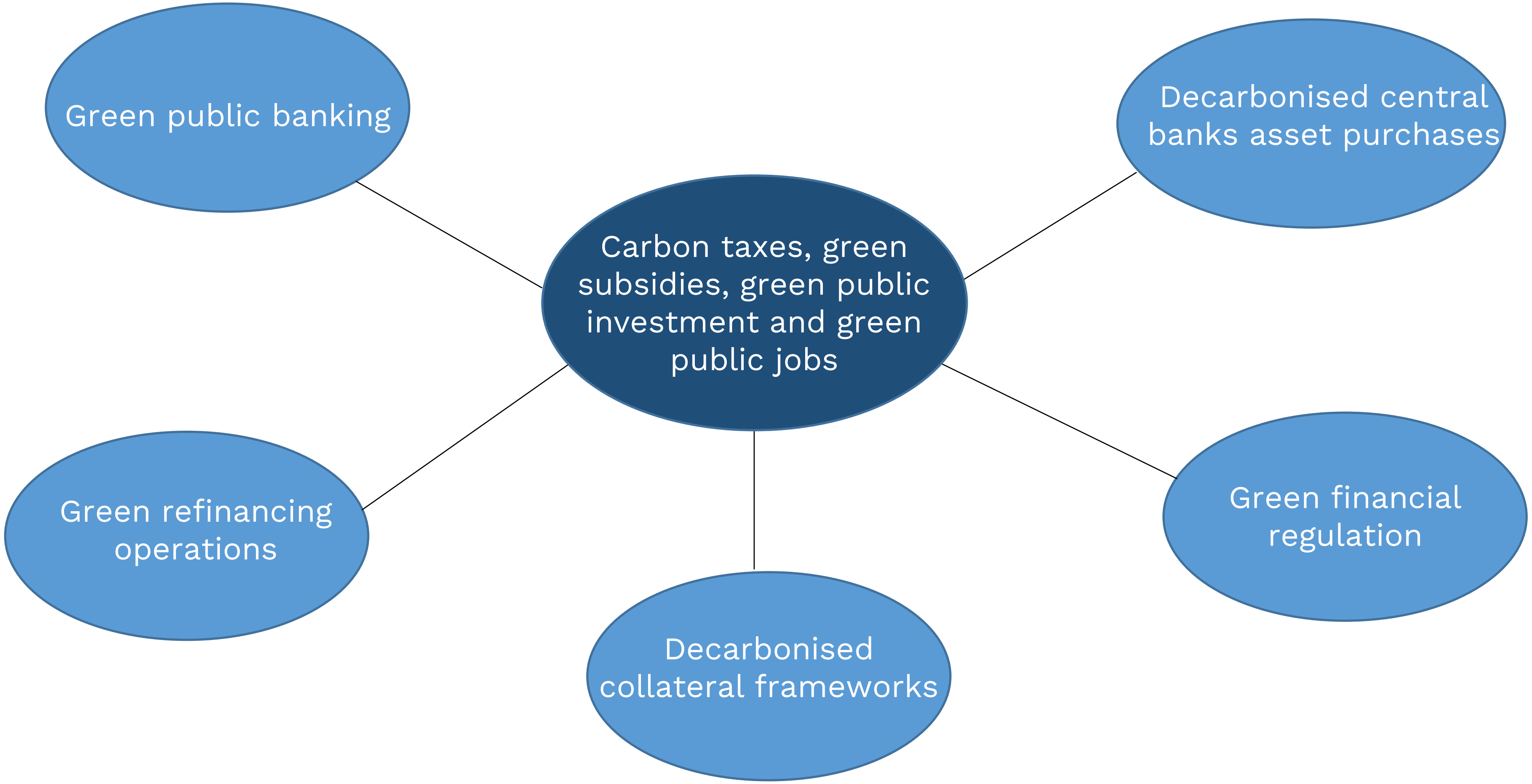
Tools for decarbonising macroeconomic policy: an overview



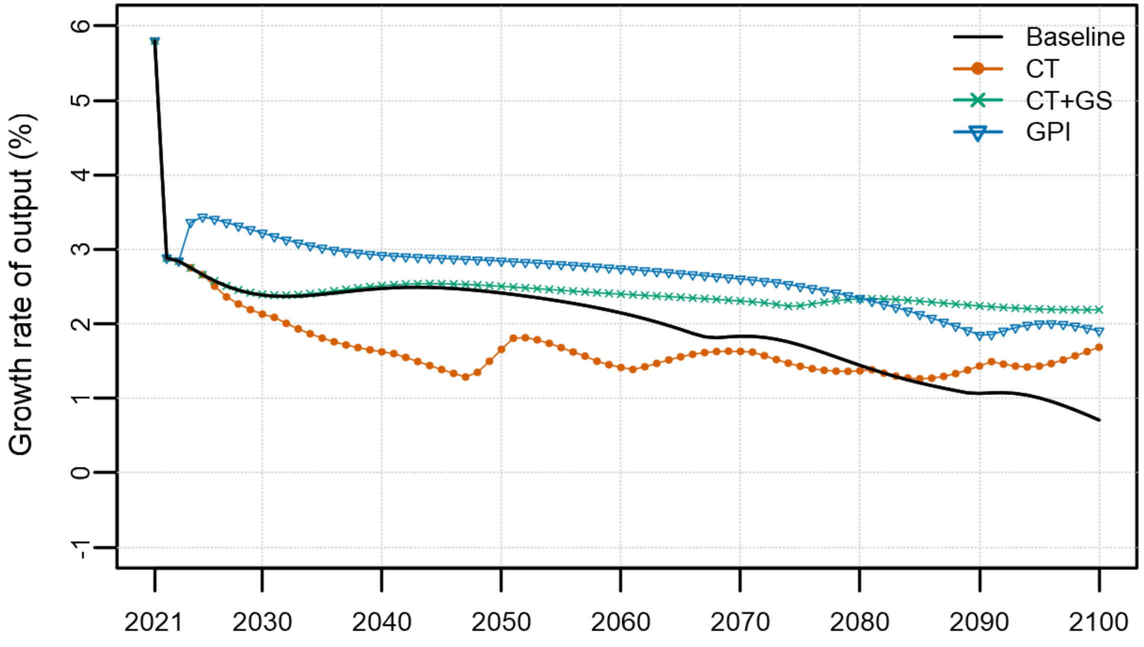
The effects of green fiscal policy tools: a global perspective

Using an **ecological stock-flow consistent model** (see Dafermos, Nikolaidi and Galanis, 2017, 2018 and Dafermos and Nikolaidi, 2019, 2022), we have analysed the effects of hypothetical global fiscal policy scenarios. We consider the case in which these policies are introduced in 2024.

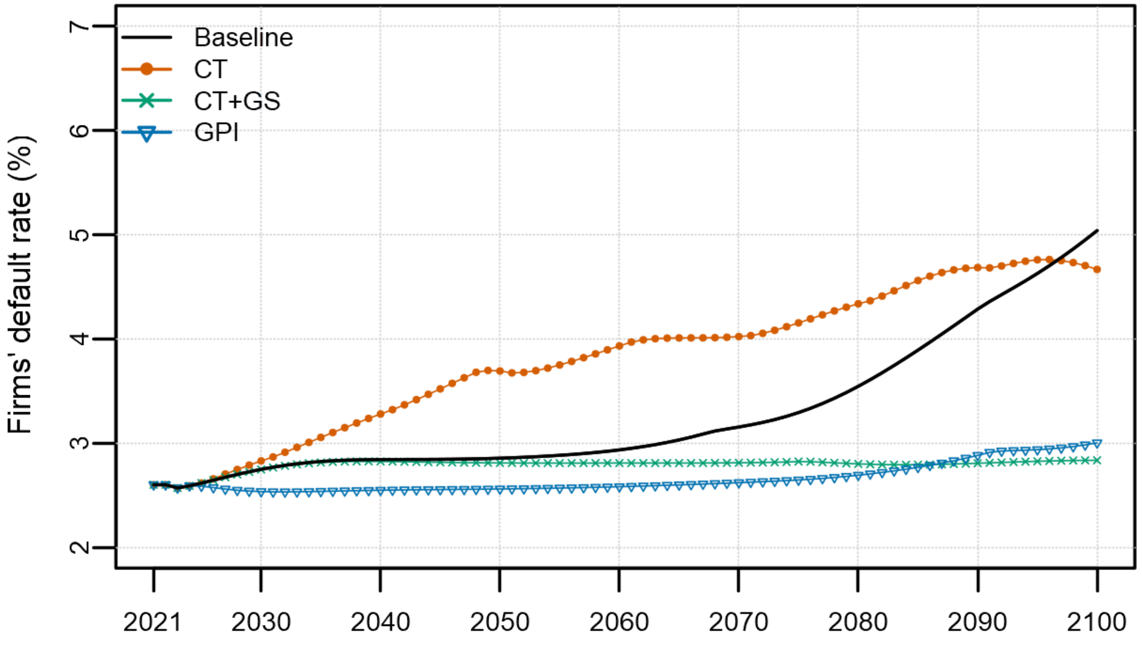
- **Carbon tax**: The carbon tax increases in line with the SSP3 4.5 W/m^2 scenario.
- **Carbon taxes+Green subsidies**: Carbon taxes are recycled in the form of green subsidies.
- **Green public investment**: The green investment of the government increases from 0.2% to 0.8% (as a proportion of GDP).

The effects of green fiscal policy tools: a global perspective

Growth rate of output



Default rate



Source: Dafermos and Nikolaidi (2022)
CT: Carbon Tax
CT+GS: Carbon Tax + Green Subsidy
GPI: Green Public Investment

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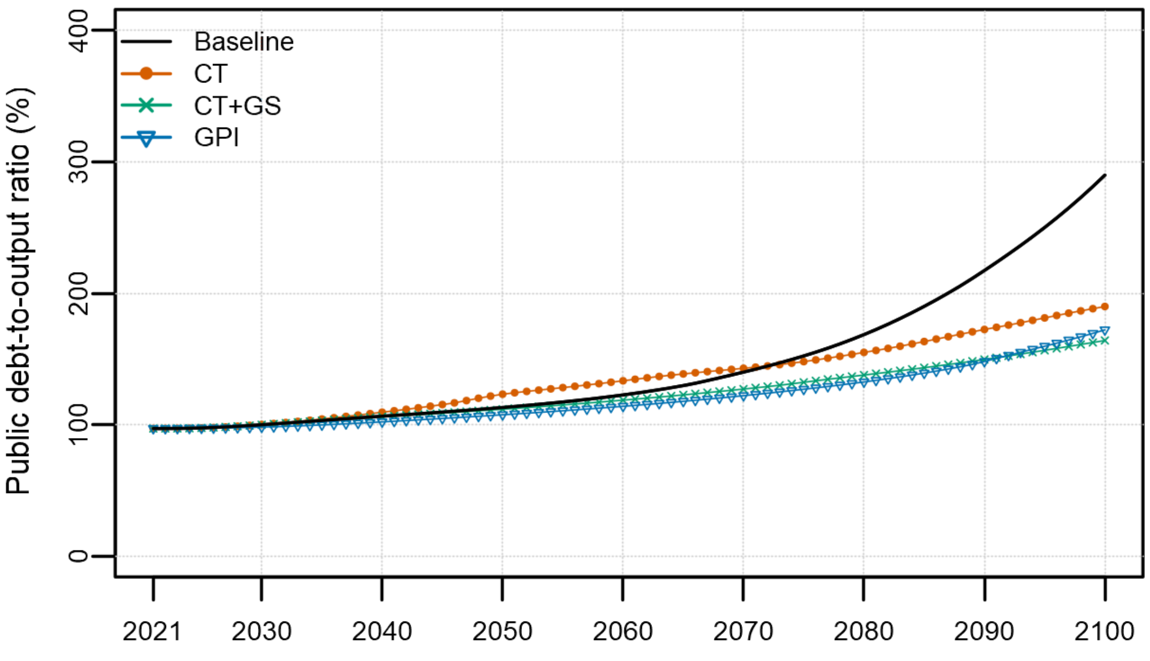
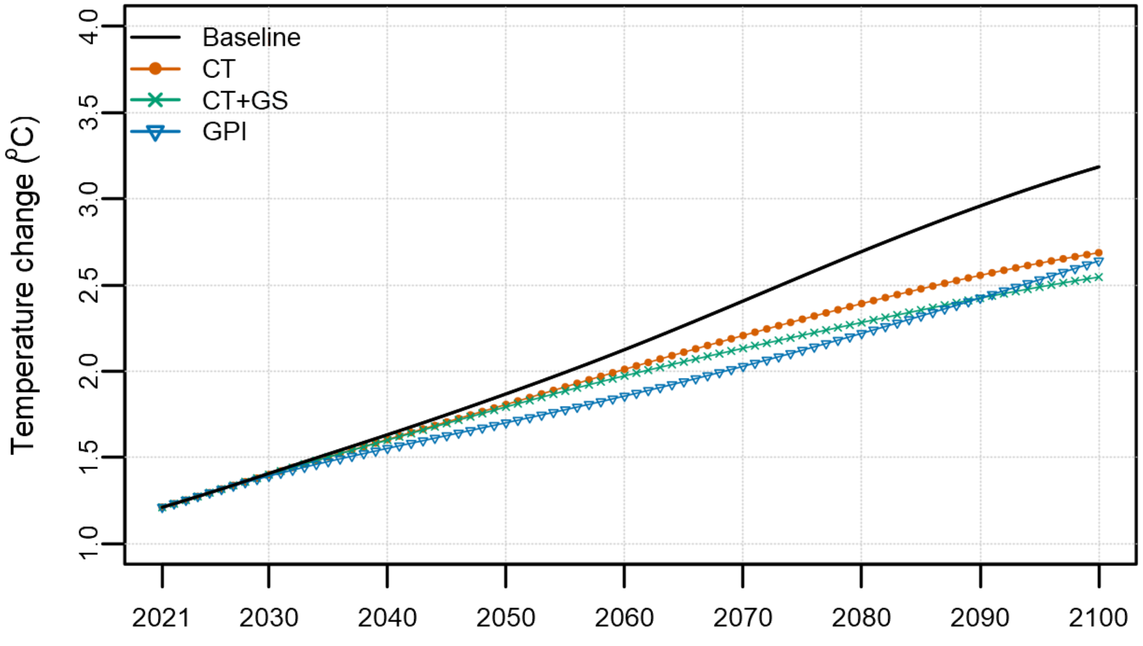
Public debt-to-GDP ratio



Atmospheric temperature



Source: Dafermos and Nikolaidi (2022)
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The effects of green fiscal policy tools: a global perspective

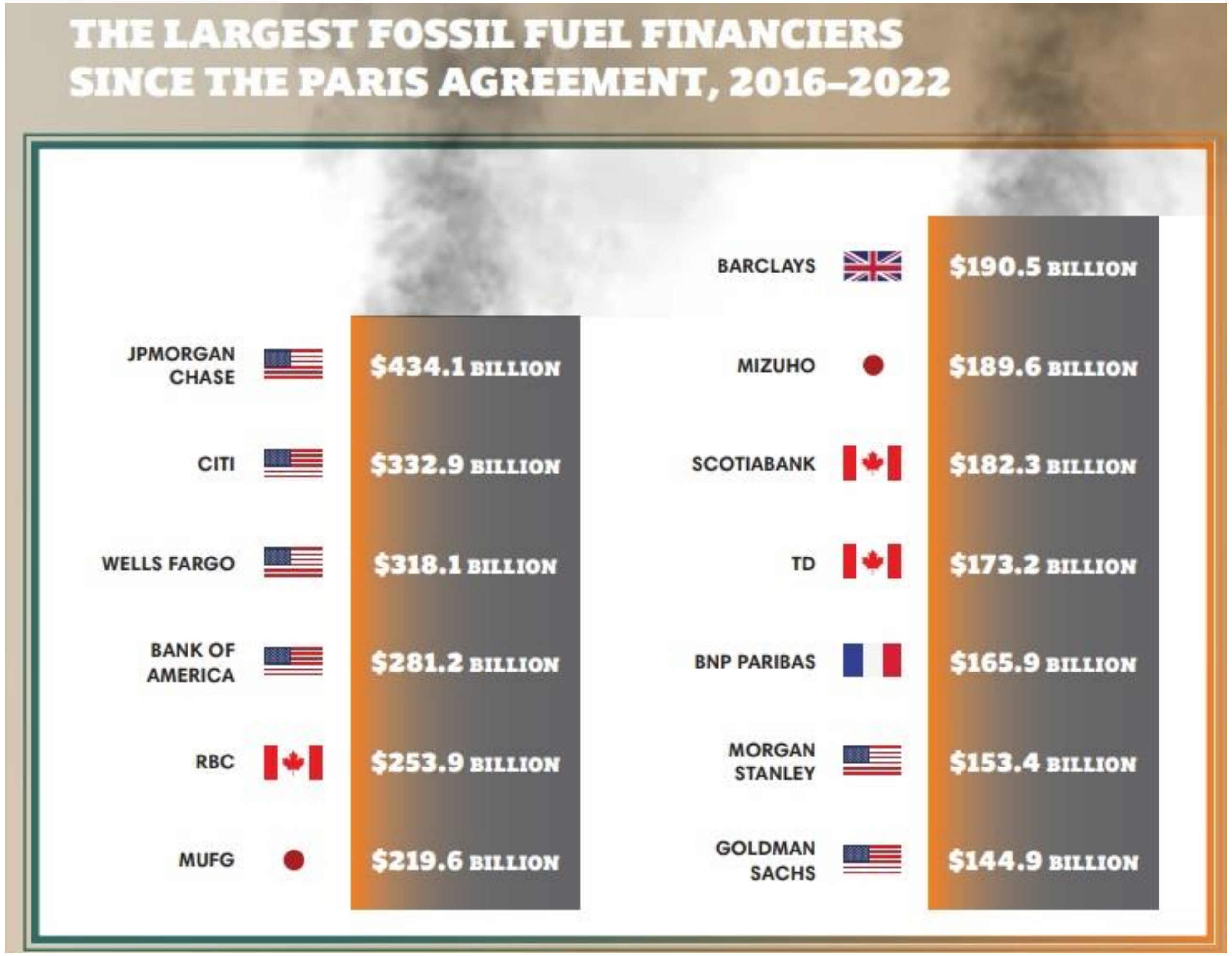
Comparative evaluation

Type of indicator	Indicator	Carbon Tax		Carbon Tax+Green Subsidy		Green Public Investment	
		Short run	Long run	Short run	Long run	Short run	Long run
Ecological	Temperature	Mildly declines	Declines	Mildly declines	Declines	Mildly declines	Declines
	Waste per capita	Mildly declines	Declines	Mildly declines	Declines	Mildly declines	Mildly increases
Macroeconomic-social	Unemployment rate	Mildly increases	Increases	Mildly declines	Declines	Mildly declines	Declines
	Wage share	Mildly declines	Declines	Mildly increases	Increases	Mildly increases	Increases
Financial	Default rate	Increases	Mildly declines	Mildly declines	Declines	Mildly declines	Declines
	Banks' leverage ratio	Increases	Mildly declines	Mildly declines	Mildly declines	Mildly declines	Declines
	Public debt-to-output ratio	Increases	Declines	Declines	Declines	Declines	Declines

Source: Dafermos and Nikolaidi (2022)

Why do we need to decarbonise finance?

- The current financial system provides a significant amount of credit to **high-carbon activities**.
- By doing so, it contributes to climate change.



Source: RAN et al (2023)
Note: RBC (Royal Bank of Canada), MUFG (Mitsubishi UFJ Financial Group), TD (Toronto-Dominion Bank)

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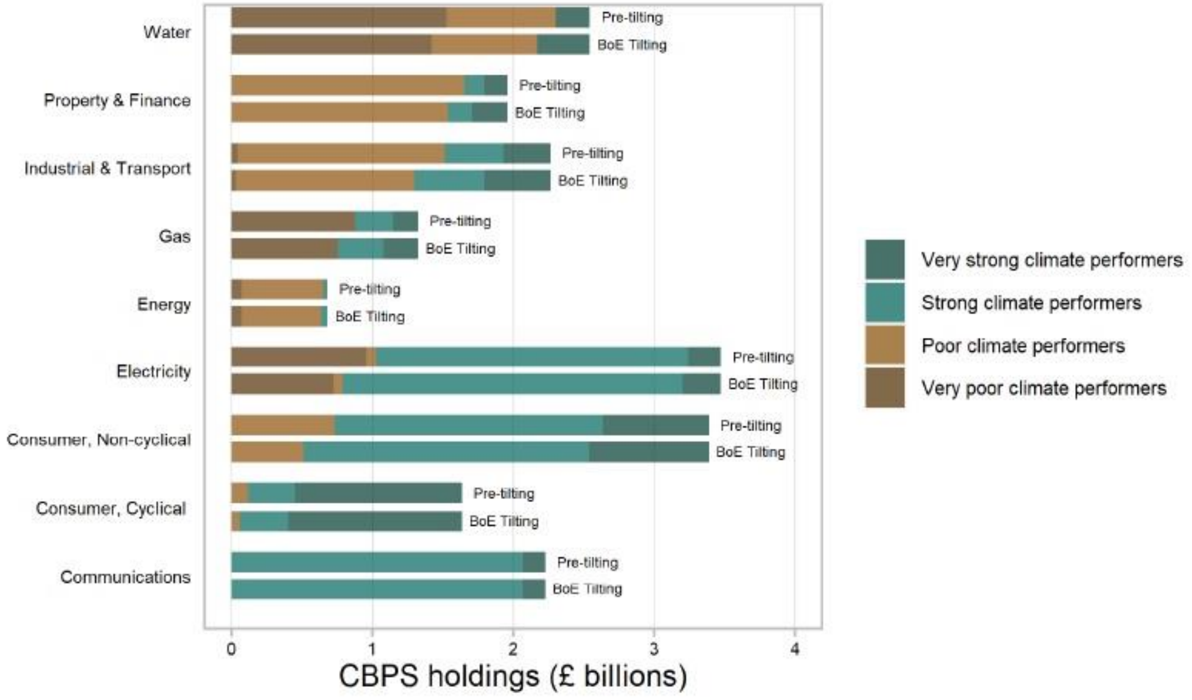
Green public banking

- Public banks need to be transformed to support the transition to a low-carbon economy.
- For example, the **UK Infrastructure Bank**, which was created in 2021, has a £22 billion financial capacity but it has no specific targets for green lending.
- On the contrary, the **European Investment Bank (EIB)** targets 50% of green lending by 2025 and stopped direct support for fossil-fuel projects, such as drilling for oil, at the end of 2021.
- However, there are some loopholes around what green lending means. Moreover, the capital of the EIB needs to increase even more to support the green transition.

Decarbonised central bank asset purchases

- In 2021 the **Bank of England (BoE)** decided to **green** their Corporate Bond Purchase Scheme (CBPS) as a reaction to the update of its mandate.
- However, the approach that the BoE has taken to green the CBPS **lacked** ambition: the Bank a) remained committed to the principle of *market neutrality* and b) was in favour of *carrots first, sticks later*.
- For the carbon bias to be addressed, the Bank should have abandoned market neutrality and targeted, instead, **climate neutrality**.

Decomposition of CBPS holdings by climate bucket, pre-tilting and BoE Tilting



Source: BoE (bond ISIN codes, 5 November 2021), Refinitiv Eikon (bond outstanding amount, November 2021; financial and environmental variables) and authors' calculations

Source: Dafermos, Gabor, Nikolaidi and van Lerven (2022)

Decarbonised central bank asset purchases

- In October 2022, the European Central Bank (ECB) started **decarbonising its corporate bond purchases** (see the figure).
- However, the ECB decided to implement climate criteria **only to re-investments**, not the whole stock of its holdings, restricting its ability to decarbonise its portfolio quickly.

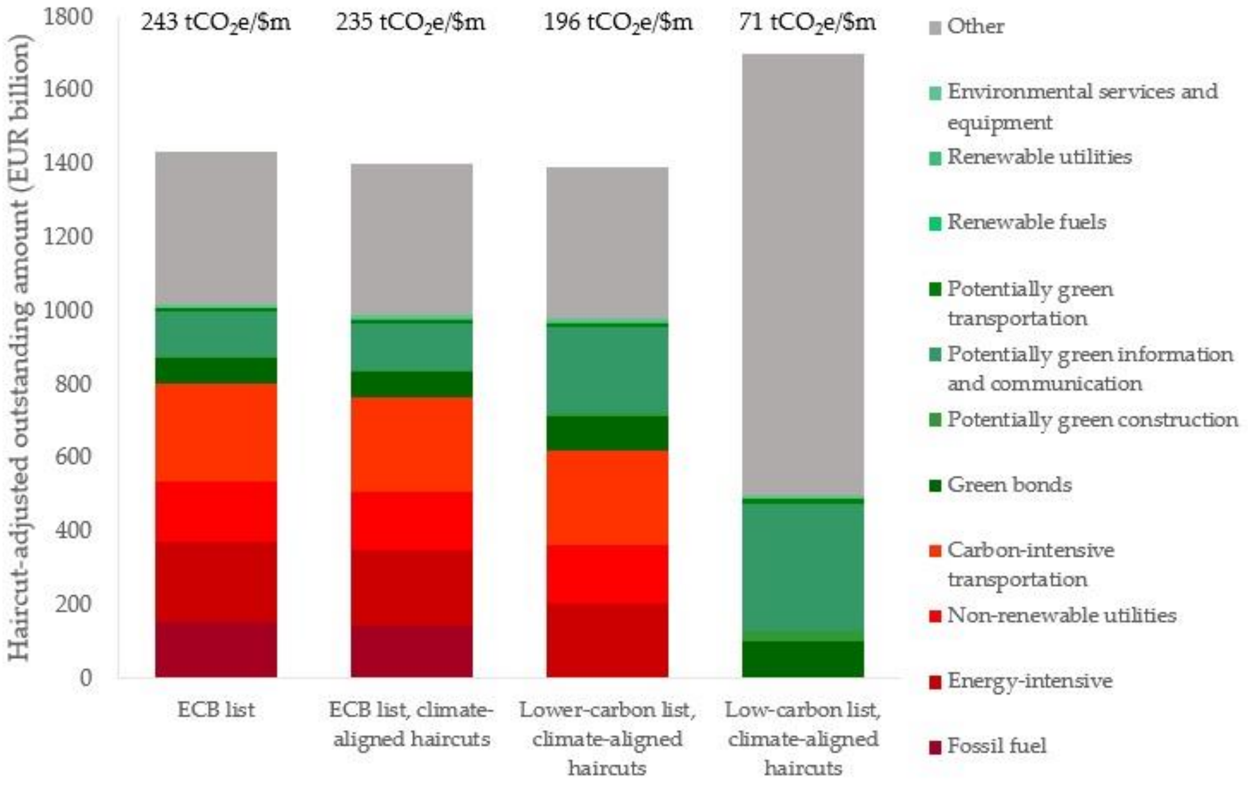
Objective	Aligning the implementation of corporate sector portfolios with the ECB's objective on climate change
Approach	1. Combination of best-in-class and best-in-universe approaches for assessing carbon intensity • Reported scope 1 & 2 greenhouse gas emissions data • Sectoral average scope 3 greenhouse gas emissions data 2. Validation by a third party of the ambitiousness of the greenhouse gas emissions target 3. Quality of disclosures: e.g., completeness and third-party verification of emissions
Tools	Based on issuers' climate scores: • Purchases guided by tilted benchmark towards issuers with higher climate scores • Maturity limits set for lower scoring issuers • Primary market bid that favours issuers with higher climate scores • Primary market bid that favours eligible issuers' green bonds that fulfil stringent criteria
Targets	Decarbonisation of the portfolio on a path consistent with the goals of the Paris Agreement and the EU climate neutrality objectives.

Source: ECB (2023), available at:
https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230323~05efc3cf49.en.html

Decarbonised collateral frameworks

- Central banks can introduce **climate-related criteria** for the assets that can serve as collateral.
- **Haircuts** need to be adjusted based on the climate footprint of the bond issuers.
- In addition, bonds issued by carbon-intensive companies can be excluded from collateral frameworks.
- In 2018, the People’s Bank of China broadened its asset classes and accepted **green bonds** as collateral for its Medium Term Lending Facility.

Haircut-adjusted outstanding amount of eligible corporate bonds (in EUR billion) and weighted average carbon intensity (WACI) (in $tCO_2e/\$m$)



Source: Dafermos, Gabor, Nikolaidi, Pawloff and van Lerven (2021). Greening the Eurosystem collateral framework, New Economics Foundation, March.

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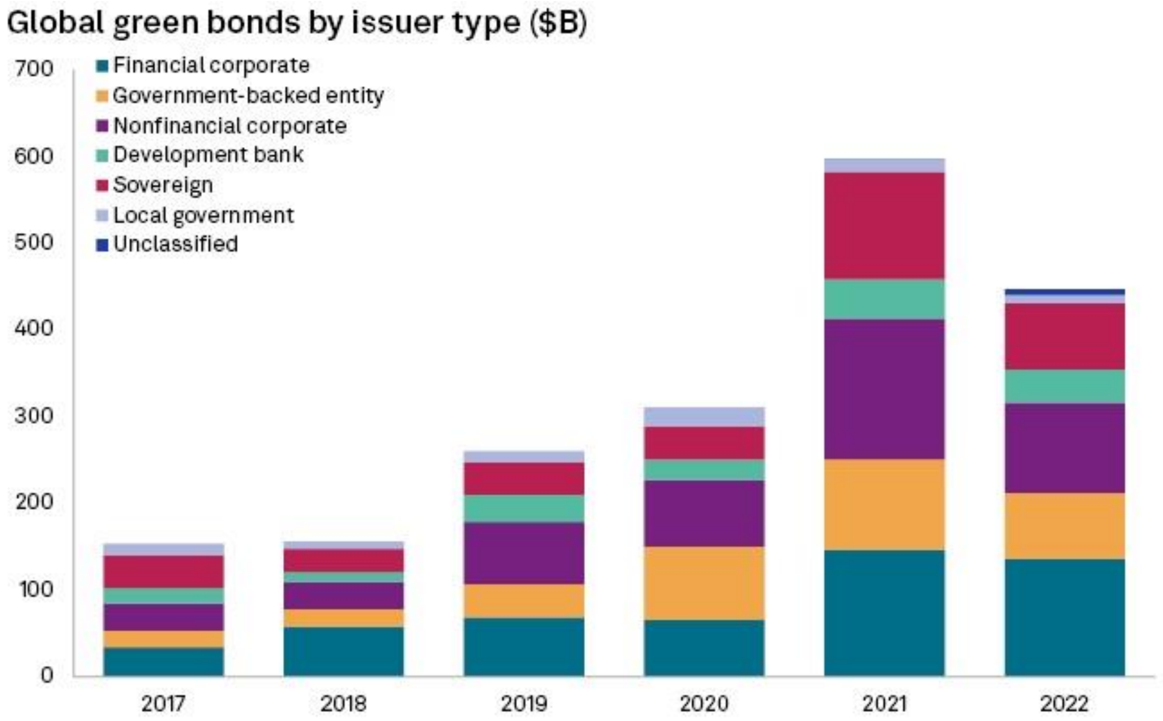
Green sovereign bonds

- Many governments around the world have recently issued **green sovereign bonds**.
- Central banks can provide preferential treatment to green sovereign bonds in **asset purchases and collateral frameworks**.
- They can do the same with green bonds issued by **development banks**.



Data compiled Jan. 19, 2023.
Internationally aligned green bonds are limited to those where at least 95% of proceeds are designated for green projects aligned with the Climate Bonds Taxonomy.
Does not include nonaligned bonds or bonds that have not been tagged as either aligned or nonaligned due to insufficient information.
Data compiled on a best-efforts basis.
Source: Climate Bonds Initiative.

Source: S&P Global (2023), available at: https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/global-green-bond-issuance-poised-for-rebound-in-2023-amid-policy-push-73931433

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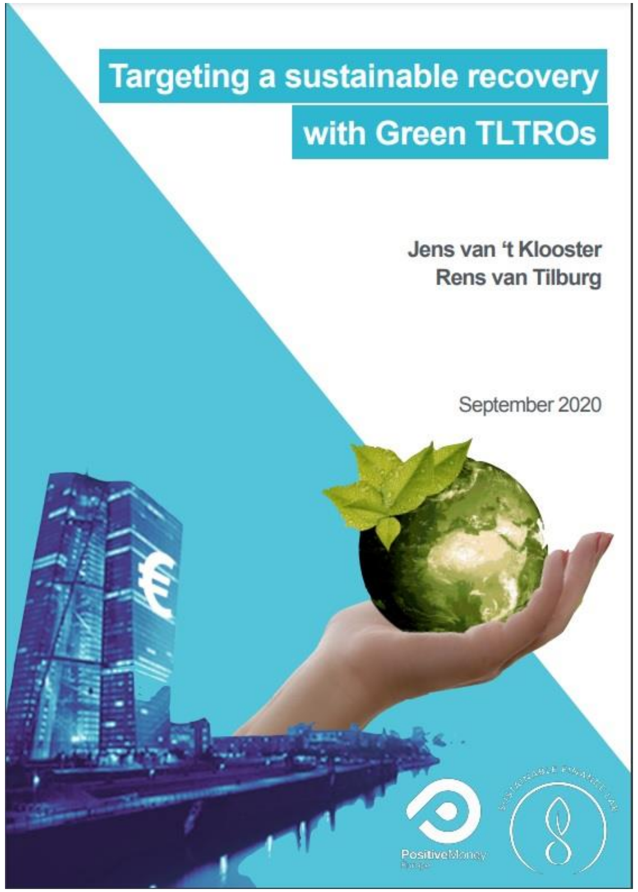
Green refinancing operations

- Central banks can use **targeted funding and refinancing schemes** to offer cheap funding for sustainable investments (see e.g. the TLTROs proposal of van’t Klooster and van Tilburg, 2020). They can also set higher interest rates for banks that provide too many dirty loans.
- In 2009, the Bangladesh Bank established a **refinancing scheme** through which commercial banks had access to lower interest rates when they extended loans for sustainable investment projects.
- In January 2022, the **Bank of Japan** made the first auction in a new green loans scheme, providing zero-interest financing to lenders supporting action to address climate change.



Green financial regulation

- **Green differentiated capital requirements** can be introduced to account for the environmental impact of loans.
- Green differentiated capital requirements can take, for example, the form of a '**dirty penalising factor**': capital requirements on dirty loans increase.
- For the period 2020 to 2023, the **Magyar Nemzeti Bank (MNB) in Hungary** has lowered the capital requirements linked to energy-efficient properties.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THE INSPIRE SUSTAINABLE CENTRAL BANKING TOOLBOX
Policy Briefing Paper 08

Greening capital requirements

October 2022

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Maria Nikolaidi (University of Greenwich)

Summary

Capital requirements play a central role in financial regulation and have significant implications for financial stability and credit allocation. However, in their existing form, they fail to capture environment-related financial risks and act as a barrier to the transition to an environmentally sustainable economy.

Environmental issues can be incorporated into capital requirements using three different approaches: (i) microprudential approaches, which suggest that capital requirements need to be adjusted based on micro-level exposures to environmental risks; (ii) weak macroprudential approaches, which emphasise the exposure of financial institutions to systemic risks linked to specific sectors and geographical areas; and (iii) strong macroprudential approaches, whereby systemic risks are analysed by explicitly considering macrofinancial feedback loops and double materiality.

In the age of environmental crisis, strong macroprudential approaches should play a prominent role in the greening of capital requirements. Green differentiated capital requirements (GDCRs) are one of the tools that are consistent with a strong macroprudential approach. If designed to accurately capture the environmental footprint of bank assets and minimise adverse financial side effects, GDCRs can contribute to the greening of the banking system and the reduction of physical risks. The positive effects of GDCRs can be enhanced if they are combined with other financial and non-financial environmental policy tools.

This paper is part of a toolbox designed to support central bankers and financial supervisors in calibrating monetary, prudential and other instruments in accordance with sustainability goals, as they address the ramifications of climate change and other environmental challenges. The papers have been written and peer-reviewed by leading experts from academia, think tanks and central banks and are based on cutting-edge research, drawing from best practice in central banking and supervision.

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