Fiscal policies for a low-carbon economy -- A green (and more inclusive) recovery from the COVID-19 crisis

*Based on a **World Bank report** that is going to be published soon:*
Semmler, W., Braga, J., Lichtenberger, A., Toure, M., E. Hayde. (2021). Fiscal policies for a low-carbon economy, World Bank Report.

1. Green fiscal policies : the need for Carbon Taxes (CT) and Green bonds (GB)

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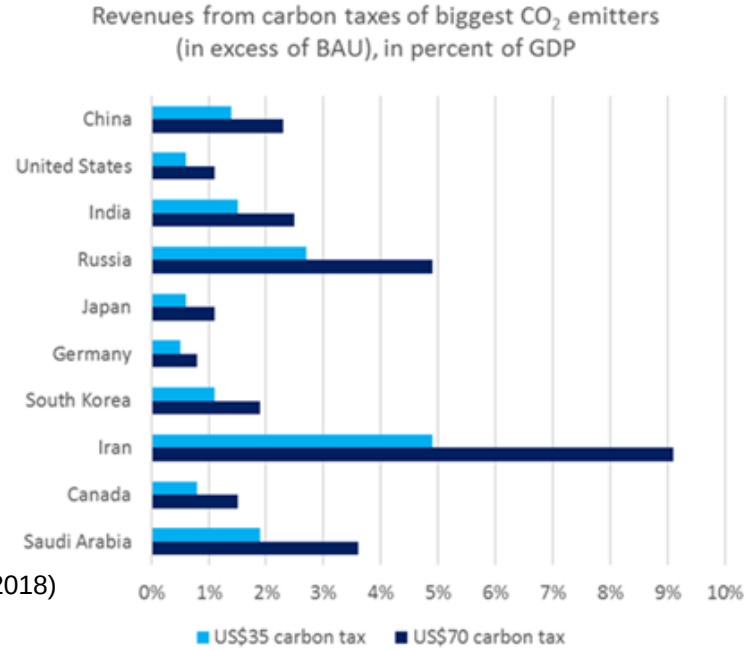
- One needs a mix of policies: fiscal, monetary, regulation, and regulatory standards.

- Carbon taxation benefits:
  - A **Pigouvian tax** that addresses negative externalities: **Repricing of goods, services → substitution effects**
    (see Nordhaus, 2008 and Acemoglu et al., 2012)
  - **Co-benefits beyond carbon emissions:** reduce costs of healthcare through less air pollution, fewer respiratory diseases and virus outbreaks
  - **Provides domestic revenues:** use for green innovation and compensations -- best results when used to subsidize low-carbon products
    (Parry et al., 2014b, Acemoglu et al., 2012 and Kato et al., 2015).
- Carbon taxation disadvantages:
  - To be effective alone: $80-$100 per ton (Heal & Schenker, 2018) → may face **political constraints** (Grubb, 2014)
  - current generation carries the burden
    (see Orlov et al., 2018)



Source: Author calculations based on IMF (2019) and IEA.

1. Green fiscal policies: the need for Carbon Taxes (CT) and Green bonds (GB)

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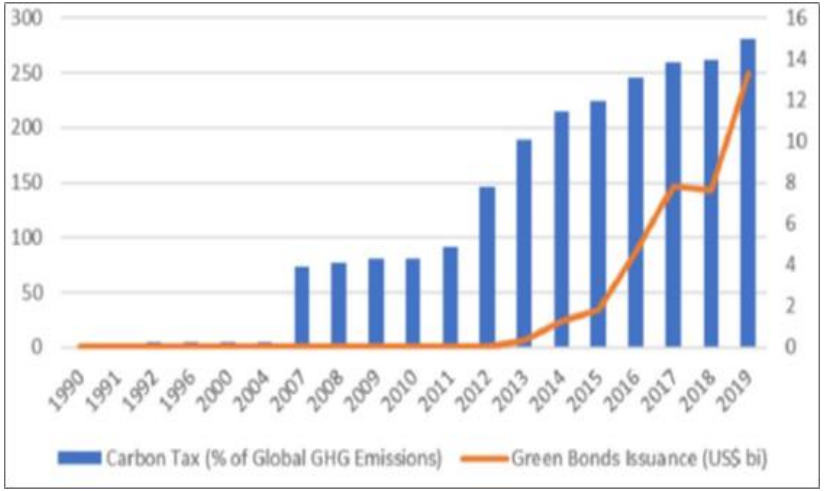
Green Bonds

- **Fixed-income securities** (usually certified by a third-party) to leverage financial resources for **green investments** (e.g.: clean energy, low-carbon transport, green building, etc. and bridge finance see EU taxonomy)
- Unlock substitutions effects/ elasticities
  → **bridge finance**
- Allow for **intertemporal burden sharing** -- "intergenerational fairness"
  (Sachs, 2014, Flaherty et al, 2016; Orlov et al, 2018)
- **Green bonds de-risk portfolio holdings of investors;** good hedge against oil price volatility and fossil fuel asset volatility
- Green bonds depend on the **fiscal space and debt sustainability should be considered. → case for green Convertible bonds? (Appendix)**



Source: Heine et al. (2019)

1. Green fiscal policies: There are benefits in combining CT and GB

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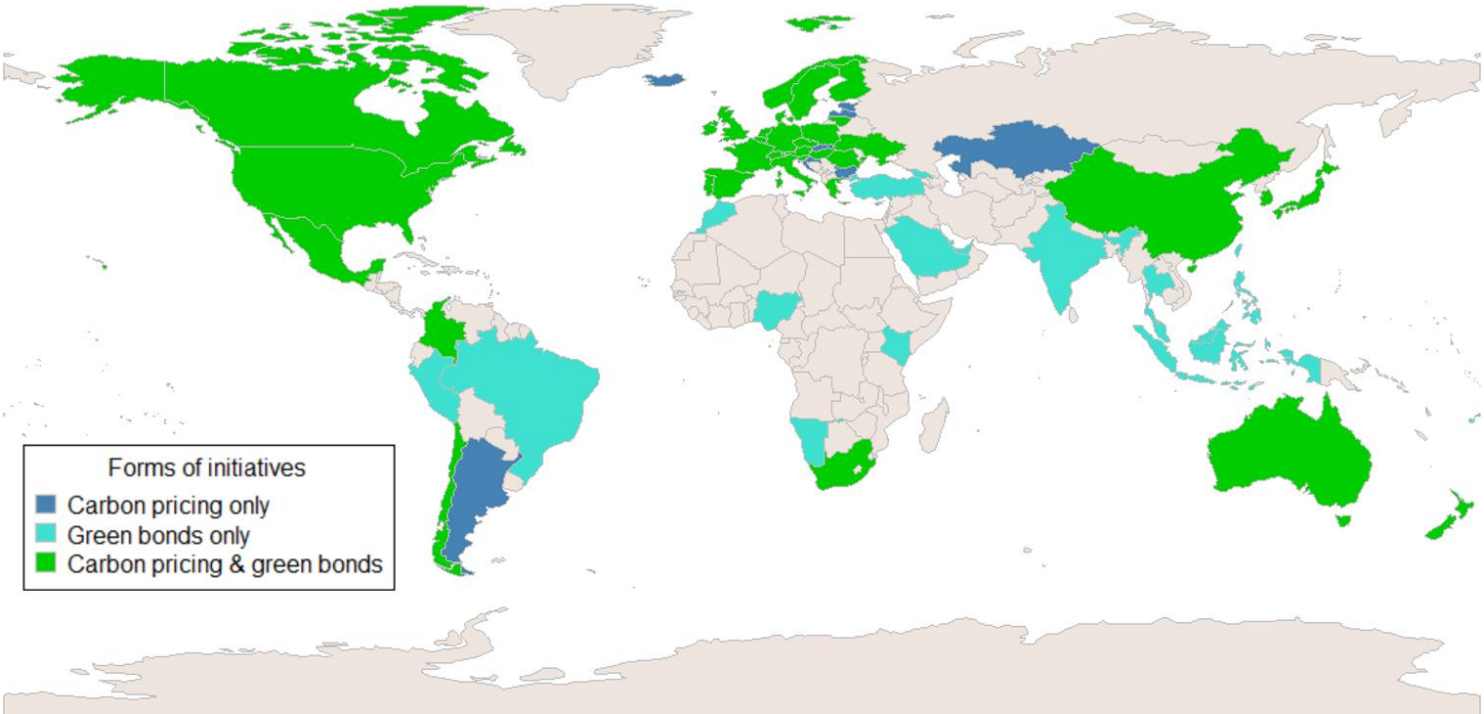
- CT lead to structural change but not sufficiently (e.g. political constraints)
  (Lagarde & Gaspar, 2019; Grub, 2014)
- **Unlock carbon pricing elasticities** + **bridge finance.** Need for large scale Investments on renewable energy sources
  (Semmler et al. 2018, Heine et al., 2019).
- Carbon taxation **increases green bonds' relative returns and decreases volatility of returns**
  (Flaherty, 2017; Heine et al., 2019)
- Mixing **speeds up transition** and makes the **green debt more sustainable**
  (Heine et al., 2019; Orlov et al., 2018; Semmler et al., 2019; Mittnik et al., 2020)

1. Green fiscal policies: Countries world wide where carbon pricing initiatives* were implemented and/or green bonds were issued



Note: Carbon pricing initiatives implemented as of October 2020. Green bonds issued between January 2017 and October 2020.

** In the US carbon pricing initiatives were only implemented in several states, not nationally. In certain countries carbon pricing initiatives were implemented on a national and subnational level (e.g. Canada, China, Mexico).*

Source: Bloomberg Terminal data and World Bank Carbon Pricing Dashboard (10/2020)

2. Financial markets: Linkages to climate change

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Financial instability ⟺ **"Stranded assets"** (Carney, 2018) → **Losses and crashes** in stock market and banking system → **Green swan events**, losses due to climate uncertainties and climate disasters (Bolton et al., 2020)

Financial market as a roadblock

- Investor's short-termism
  (Haldane, Davies et al., 2014, Semmler et al., 2020)
- Reducing green investments

Financial market as a bridge

- Green bonds as bridge finance to scale up + increase elasticity
- Improve intertemporal fairness
  (Orlov et al., 2018; Sachs, 2014)
- Investor portfolio benefits (empirical findings)

3. Our data show that green bonds show on average lower yields, i.e. lower capital costs for bond issuers

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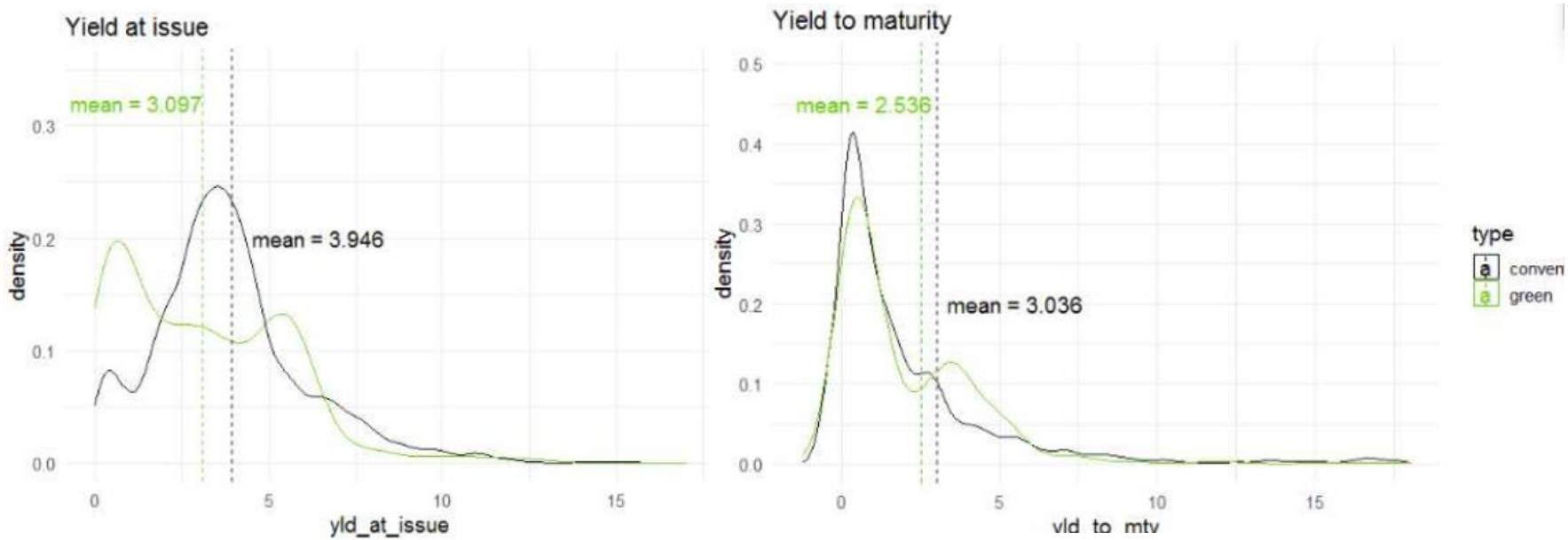
Primary market yields (= yield at issue)

Secondary market yields (= yield to maturity)



Source: Author calculations based on fixed income securities from Bloomberg terminal (10/2020)

4. EU Taxonomy for sustainable activities

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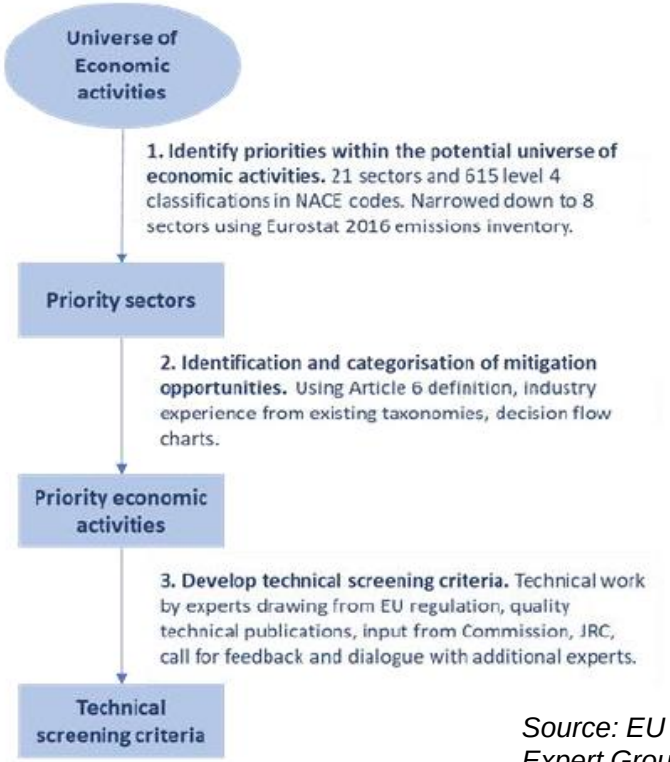
- It creates a EU standard to classify assets and investment according with their climate benefits, following new technological trends and indicator (Technical Expert Group on Sustainable Finance).
- Organized by sector and technology, it provide references to classify climate change mitigation and climate change adaptation activities, including criteria for do no significant harm to other environmental objectives
- It adds up to EU Green Bond Standard → enable green finance activities.



Source: EU Technical Expert Group (2020)

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5. Germany - Sovereign Green bonds (1st issuance 2020)

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The eligible green expenditures of €12.3 billion are split among five sectors and mapped to the six European environmental objectives set out in the EU Sustainable Finance Taxonomy[12]:

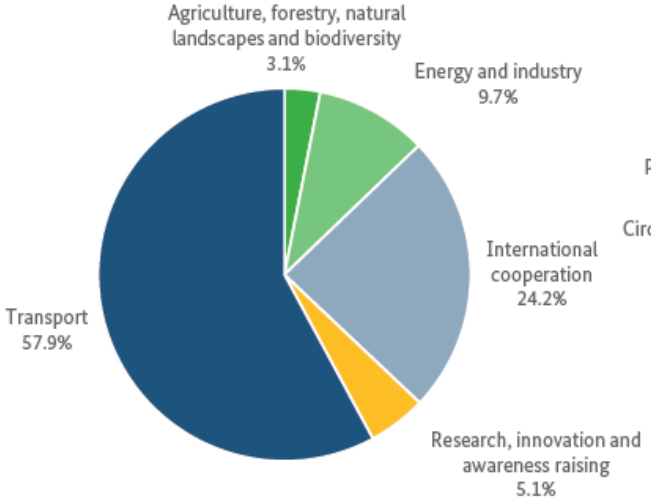

Figure 1: Breakdown by sector

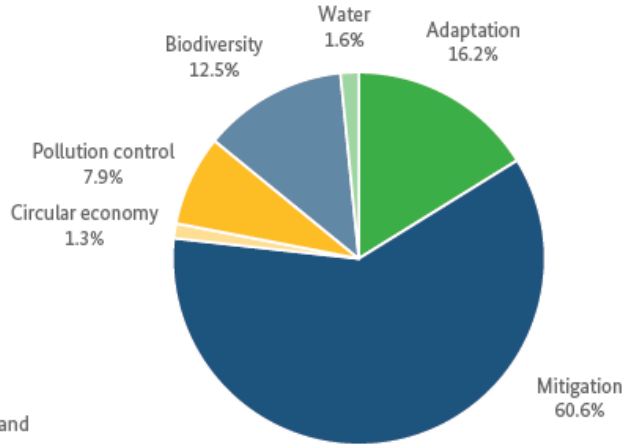

Figure 2: Breakdown by EU environmental objective

Source: DE Federal Ministry of Finance (2021)

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6. Green convertible bonds?

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- The convertible bond market index (ICE BofA US Convertible Index – VXA0) outperformed other market indices such as
  - the S&P 500 Bond Index (SP500BDT)
  - and the S&P 500 (SP500).
- In 2020 the VXA0 Yield-to-date returns (YTD) was 20.9% while the
  - SP500BDT was 7.85%
  - and the SP500 2.97%

Figure B2.1. Yield-to-date returns for convertible bond index vis-à-vis other market indices

Note: Base 100, on 12/31/2019
Source: Bloomberg and S&P

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