Global Trade Analysis Project

EU Green Deal and Circular Economy Transition: Impacts and Interactions

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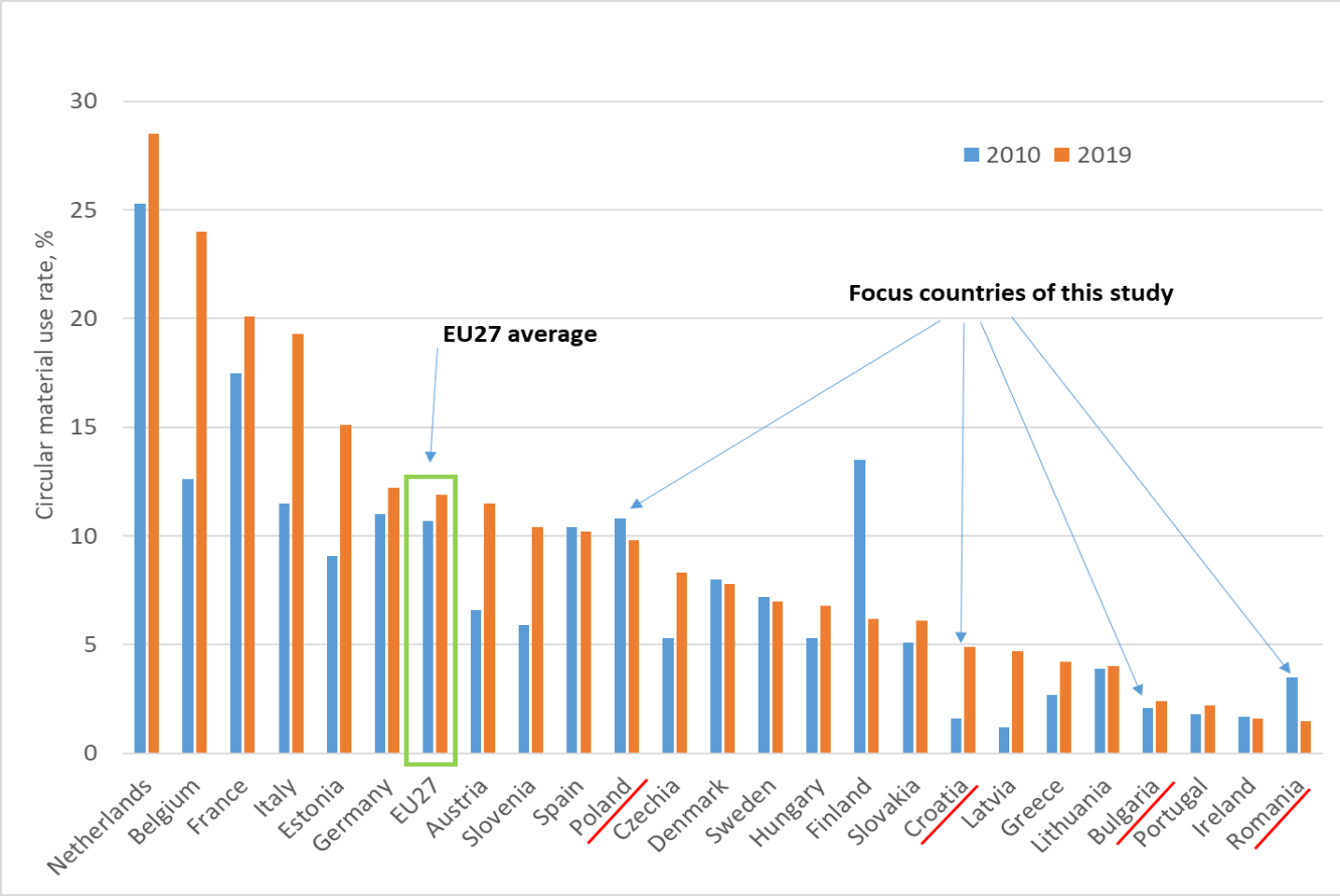
Introduction

- **Increasing material extraction is putting major pressure on ecosystems (Otero et al., 2020)**
- Projected income and population growth could **more than double global material demand by 2050** (IRP, 2019)
  - Such trends could also put at risk the success of future climate mitigation policies, as materials management is a major contributor of the global greenhouse gas emissions (Hertwich et al., 2019).
- **An absolute decoupling** of material use from GDP **is essential** to preserve safe operating boundaries (Steffen et al., 2015)
- This study examines the **interaction between circular economy and climate mitigation policies**
  - Focus is on Europe, in particular, four Eastern European Member States – Poland, Romania, Bulgaria and Croatia.

Circular material use rates vary widely across EU

- In 2015, the European Commission adopted the first Circular Economy (CE) Action Plan.
- This plan was updated in 2020 – one of the main blocks of the European Green Deal.
- The level of efforts toward CE transition at the EU country level is something decided by national and subnational governments.

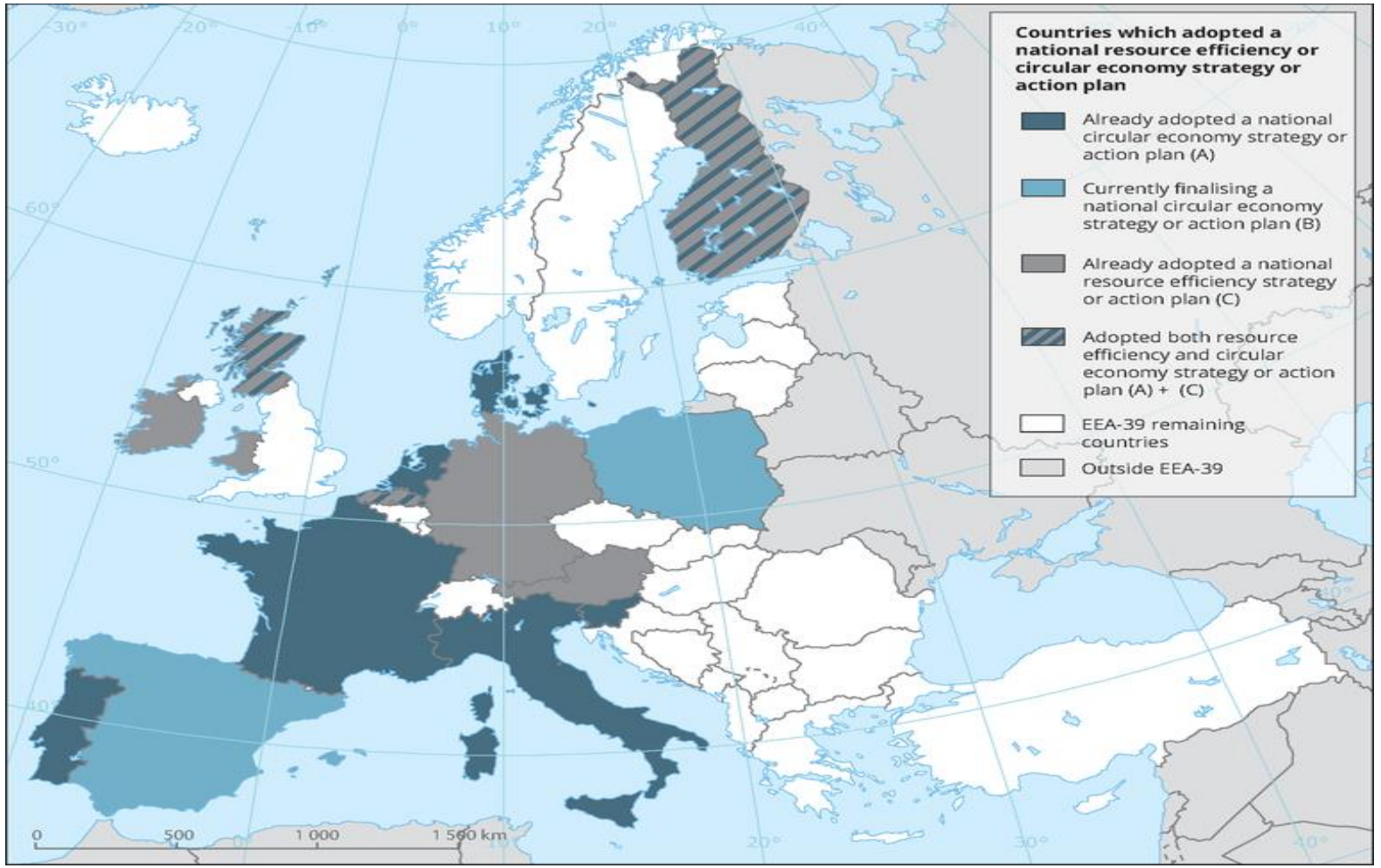


Circular material use rate in the selected EU countries in 2010 and 2019, %

Notes: The indicator measures the share of material recovered and fed back into the economy - thus saving extraction of primary raw materials - in overall material use.
Source: EC (2020b).

Few EU countries have adopted CE strategies

- Policy makers are not always well equipped with the sufficient knowledge of the circularity principles and potential impacts of the CE policies on the economy (Domenech and Bahn-Walkowiak, 2019).



Circular economy strategies or action plans adoption status

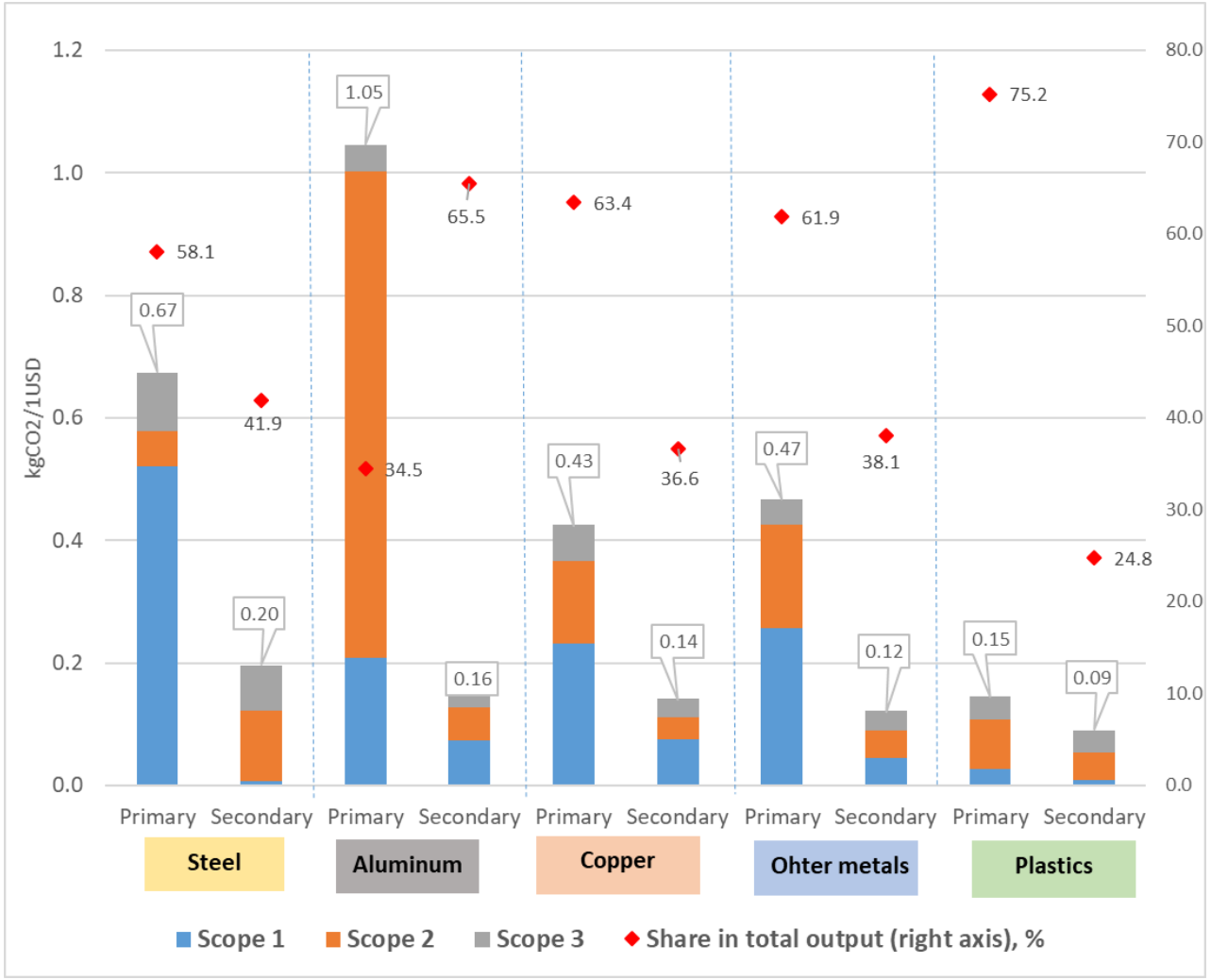
Source: EEA (2020).

Overview of the GTAP-CE: Emission intensities

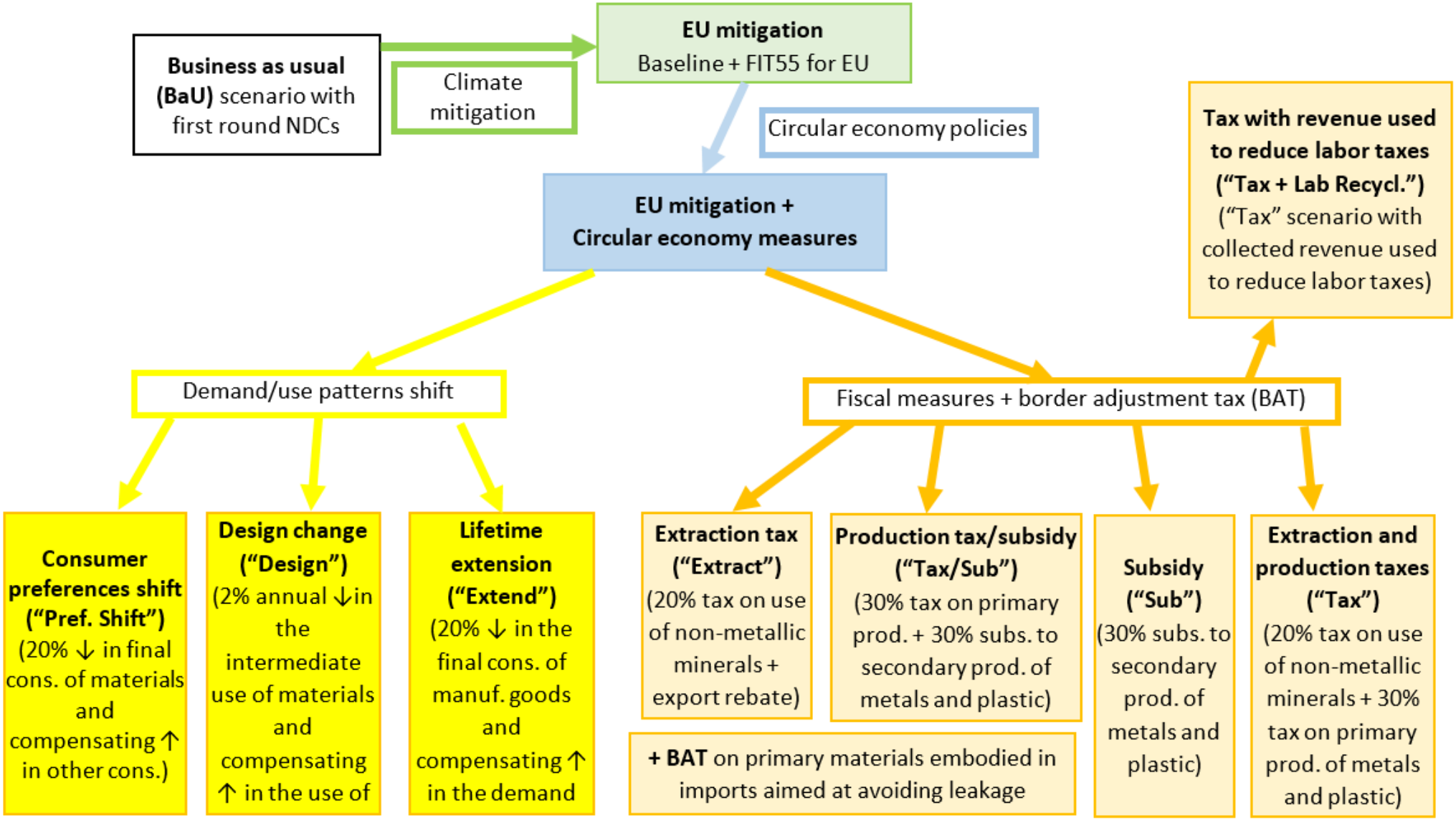
No.	GTAP	New sector	Description
1	Oxt	nmn	Non-metallic minerals mining
2		mio	Mining of iron ores
3		mao	Mining of aluminum ores
4		mco	Mining of copper ores
5		moo	Mining of other ores
6	Rpp	rbr	Rubber products
7		plp	Plastic products – primary
8		pls	Plastic products – secondary
9		plr	Recycling - plastics
10	I_s	isp	Iron and steel – primary
11		iss	Iron and steel – secondary
12		ris	Recycling - iron and steel
13		isc	Iron and steel casting
14	Nfm	app	Aluminum – primary
15		aps	Aluminum – secondary
16		ral	Recycling - aluminum
17		cpp	Copper – primary
18		cps	Copper – secondary
19		rcp	Recycling - copper
20		mpp	Other metals – primary
21		mps	Other metals – secondary
22		rom	Recycling - other metals
23		nfc	Non-ferrous metals casting

GTAP-CE database covers 141 regions and 95 sectors

Carbon intensity (kg CO_2/USD) and the share of corresponding technology in output (%): EU-27+UK average

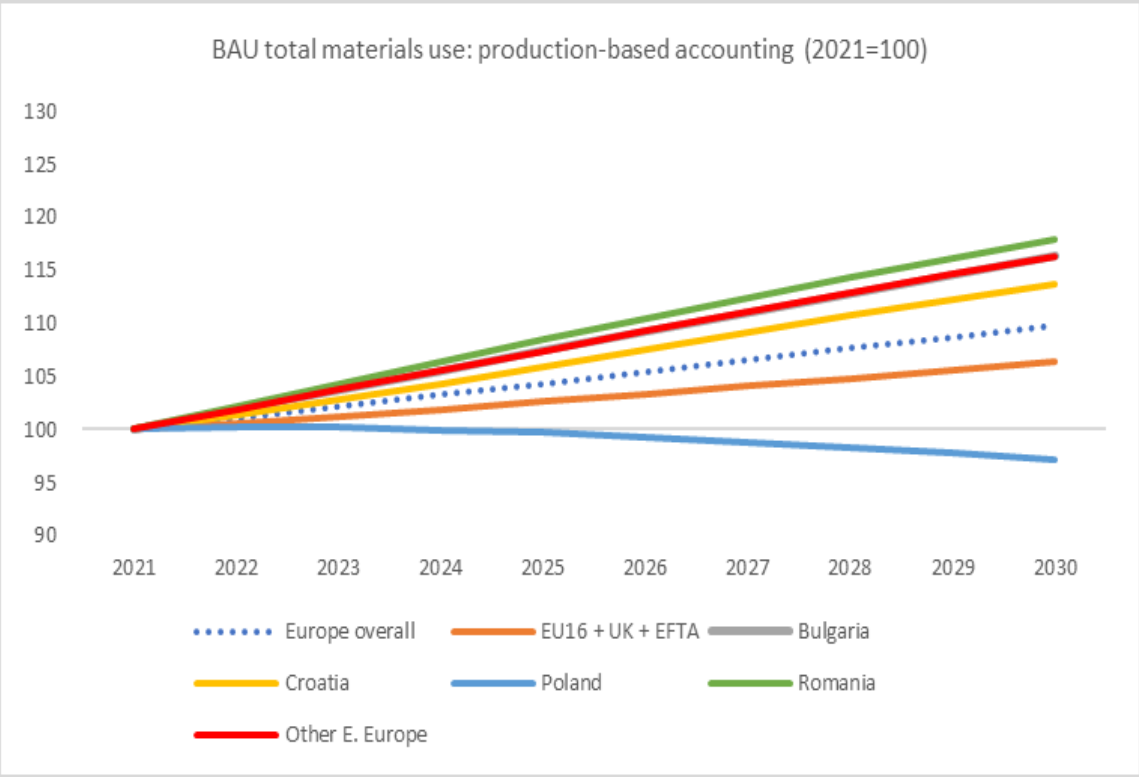


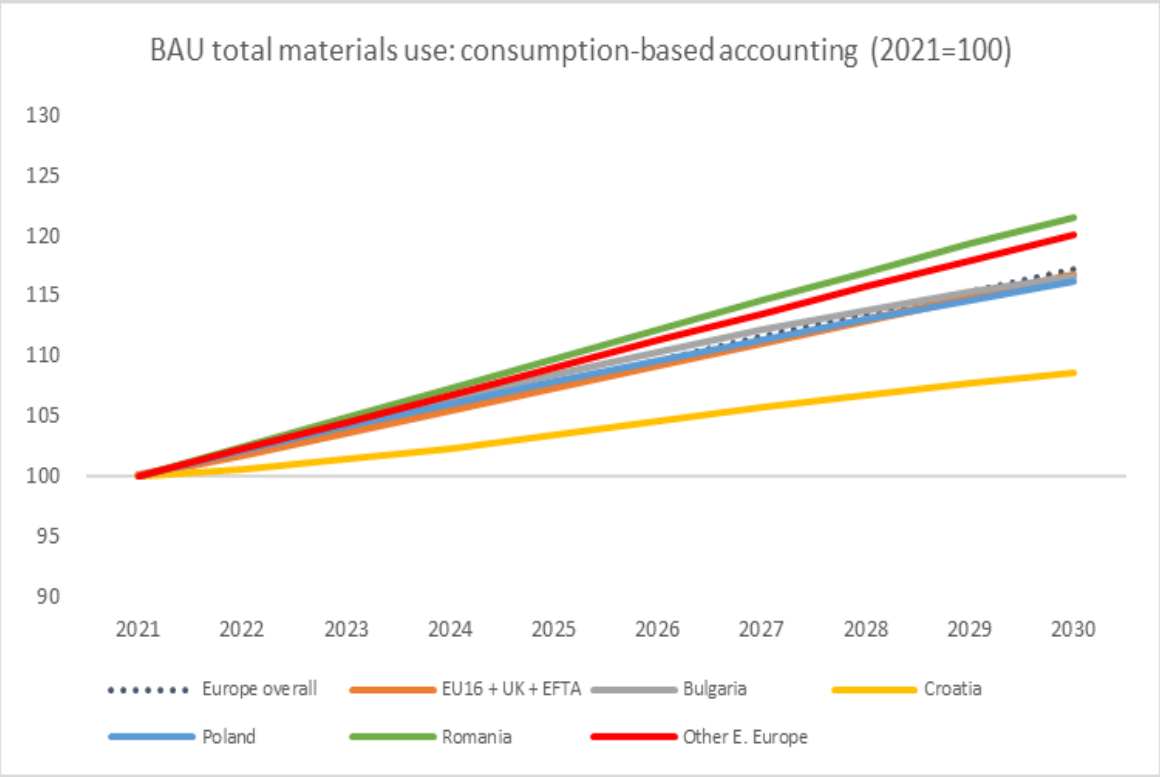
Scenario framework



+ COMBINED SCENARIO (Pref. Shift + Design + Extract)

Use of materials continues to grow in baseline

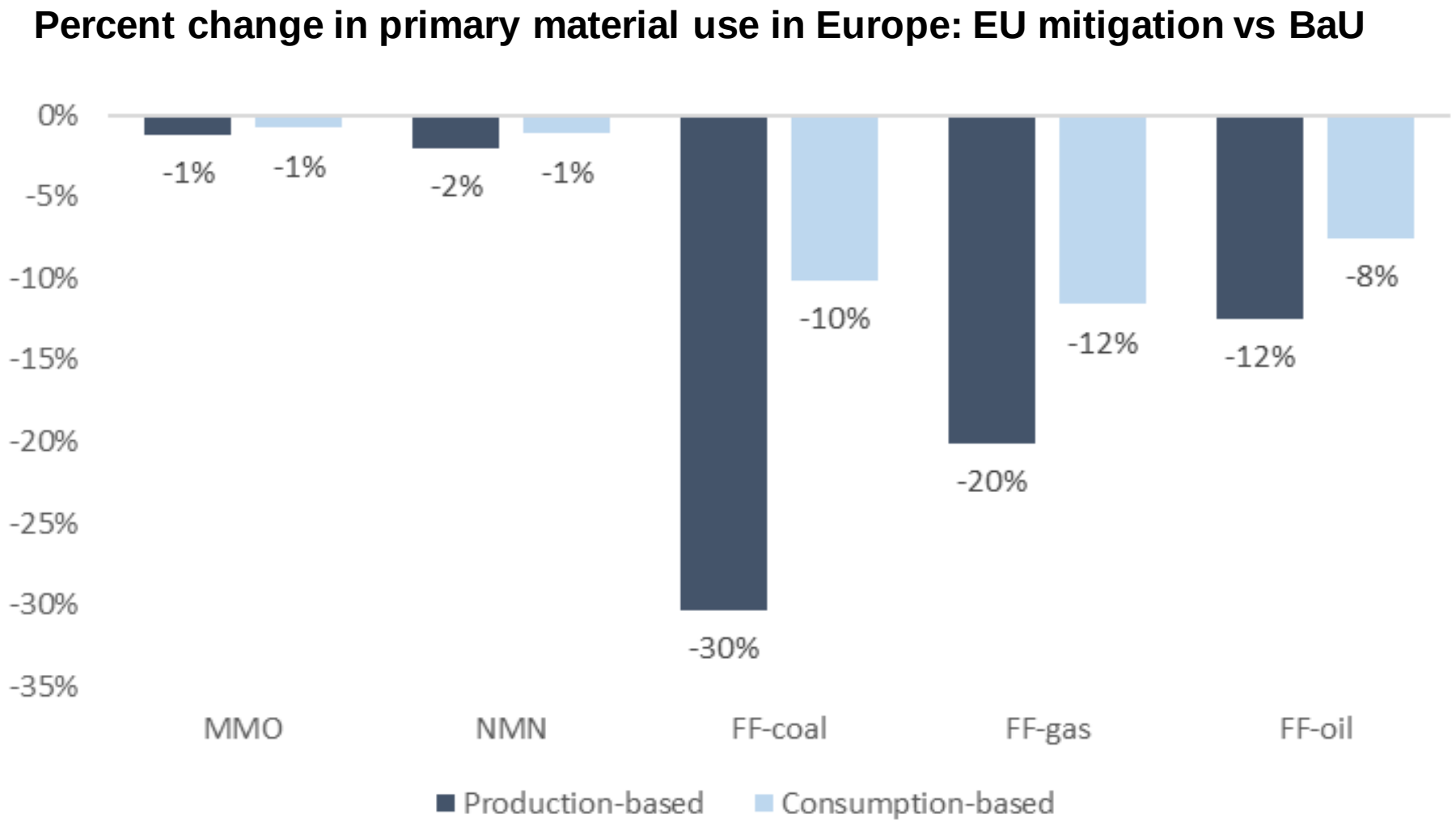




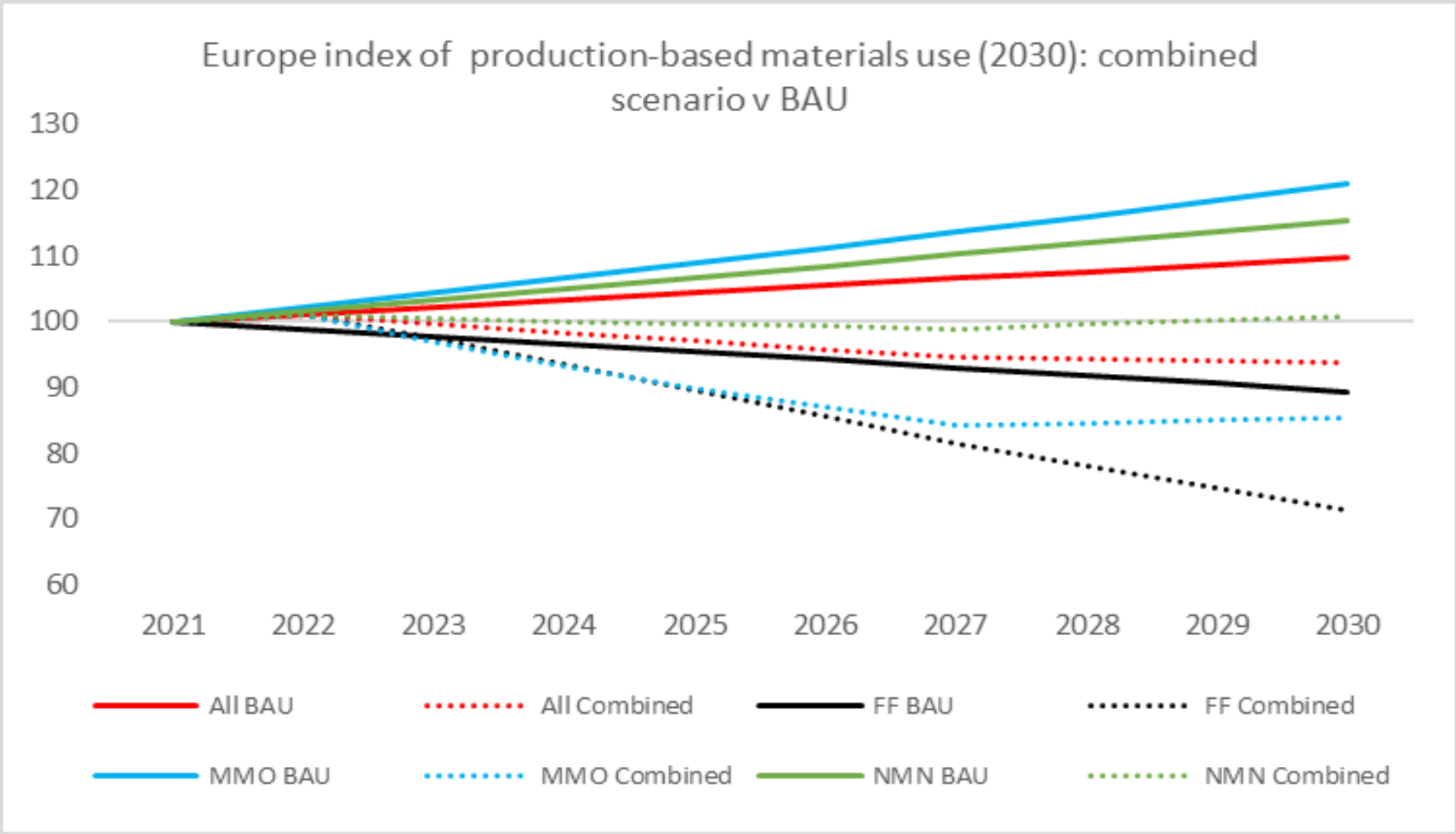
Production-based accounting adds domestic extraction and imports of the corresponding raw commodity and subtracting exports.

From a **consumption perspective**, raw materials used in the production of exported goods should be accounted for in the importing country.

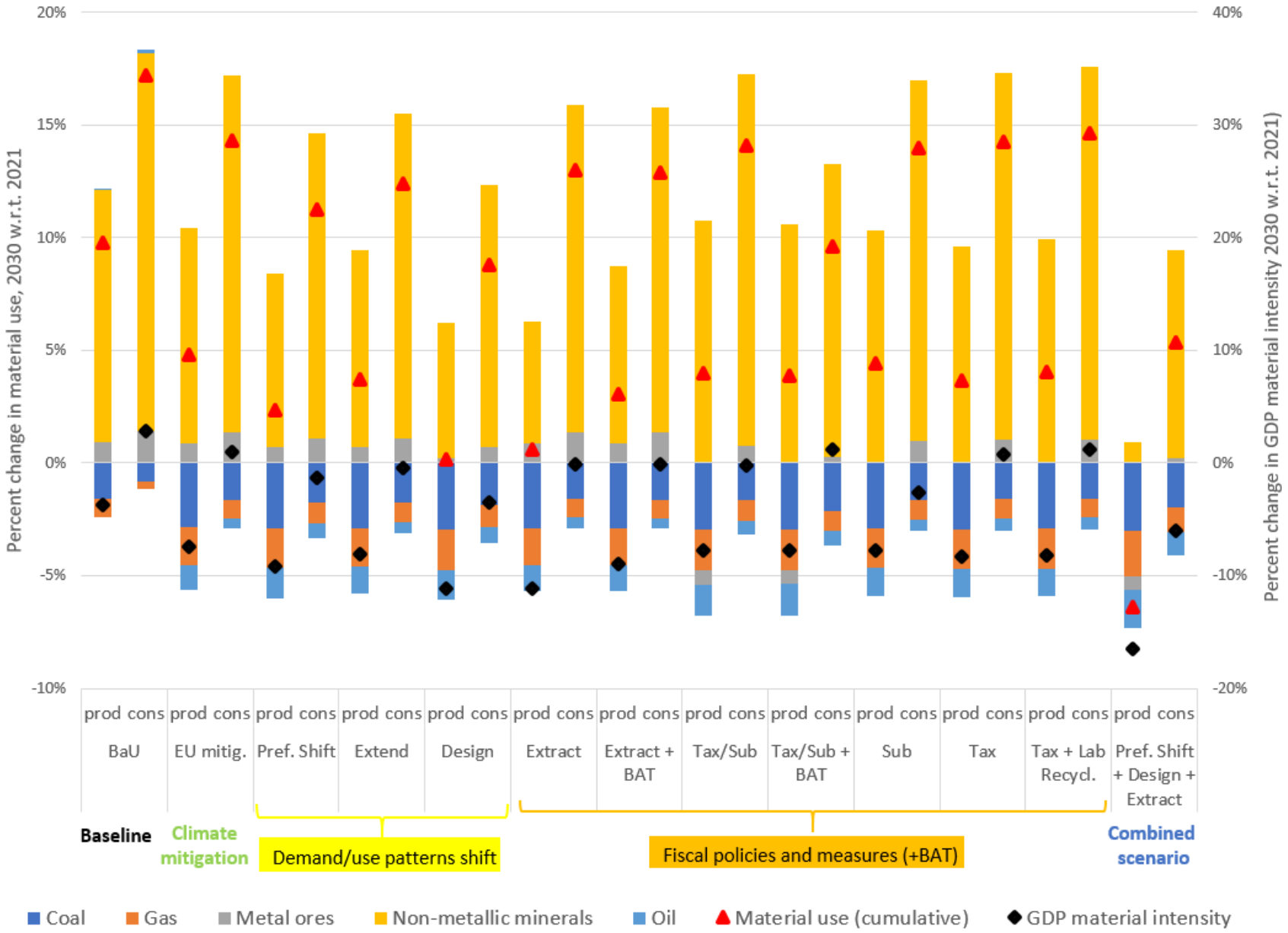
EU mitigation has limited impact on material use



Combination of CE policies results in absolute decoupling



Complementarity of demand-side and fiscal policies

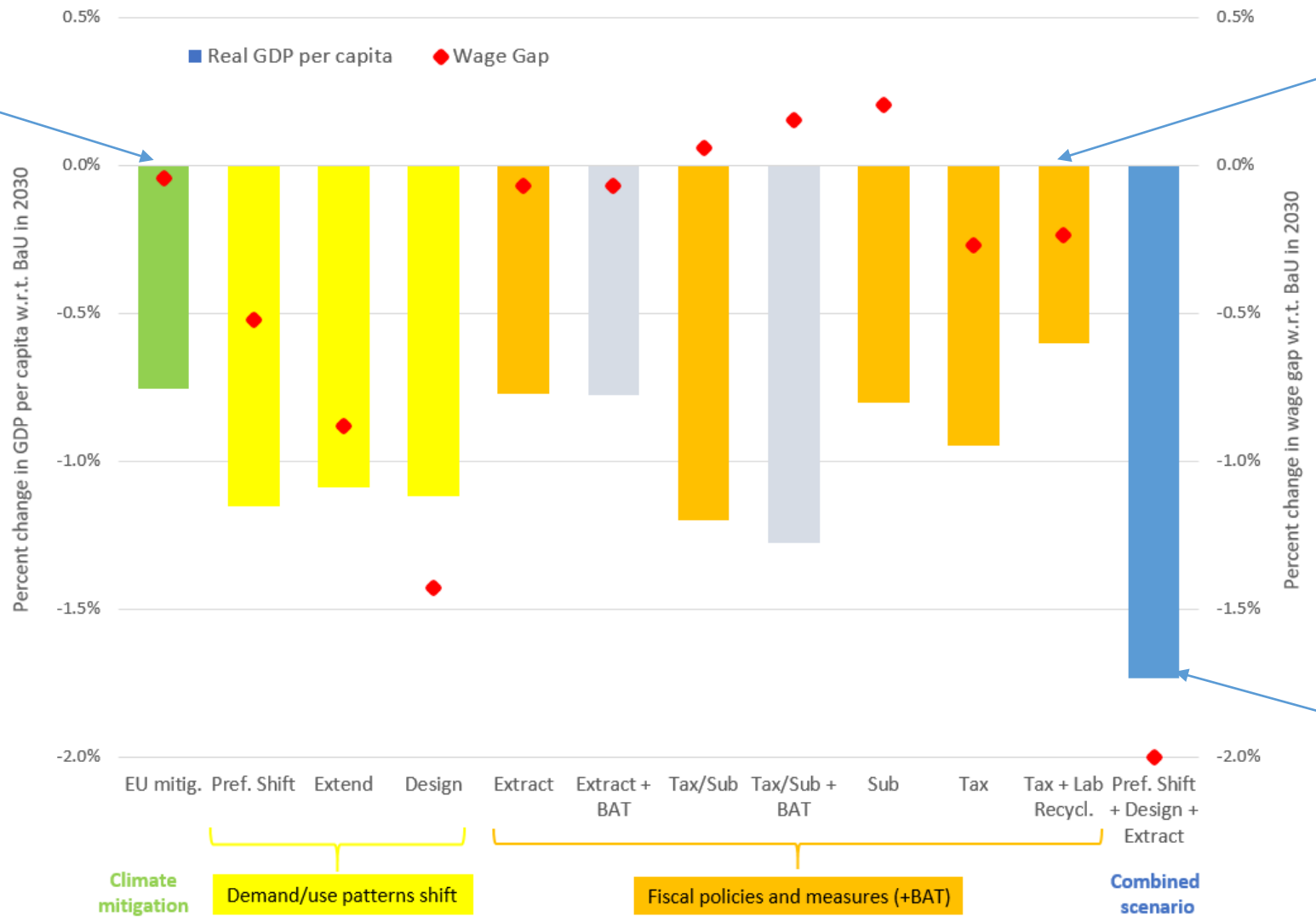


Notes: "prod" and "cons" labels correspond to production- and consumption-based material accounting methods.

Macro impacts are moderate but wage gap is increasing

FIT for 55 mitigation

Double dividends under labor tax recycling



Most ambitious combined scenario

Conclusions

- **Climate and CE policies are complementary**.
- **CE measures can lead to absolute decoupling:** aggregate production based material use in the EU could decline up to 6% (in 2030 w.r.t. 2021).
- **Measures must be targeted:** response to CE polices varies by materials.
- **Leakage may arise with production-based policies:** benefits and drawbacks of BAT to be considered.
- Using CE production taxes' revenue to **reduce labor taxes increases growth and welfare:** allows to reach double dividends.
- **Increasing skill premium** could result in regressive distributional impacts.

Next steps:

- Split of the **building/construction** sector into **conventional and green**.
- Represent **conventional vs green cement/concrete** production.

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Thank you!

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