ASSESSING CLIMATE POLICY INSTRUMENTS:

Greenhouse gas emissions mapping methodology for climate change mitigation and mitigation-relevant policy

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BETTER POLICIES FOR BETTER LIVES

How is climate action implemented?

Targets and commitments

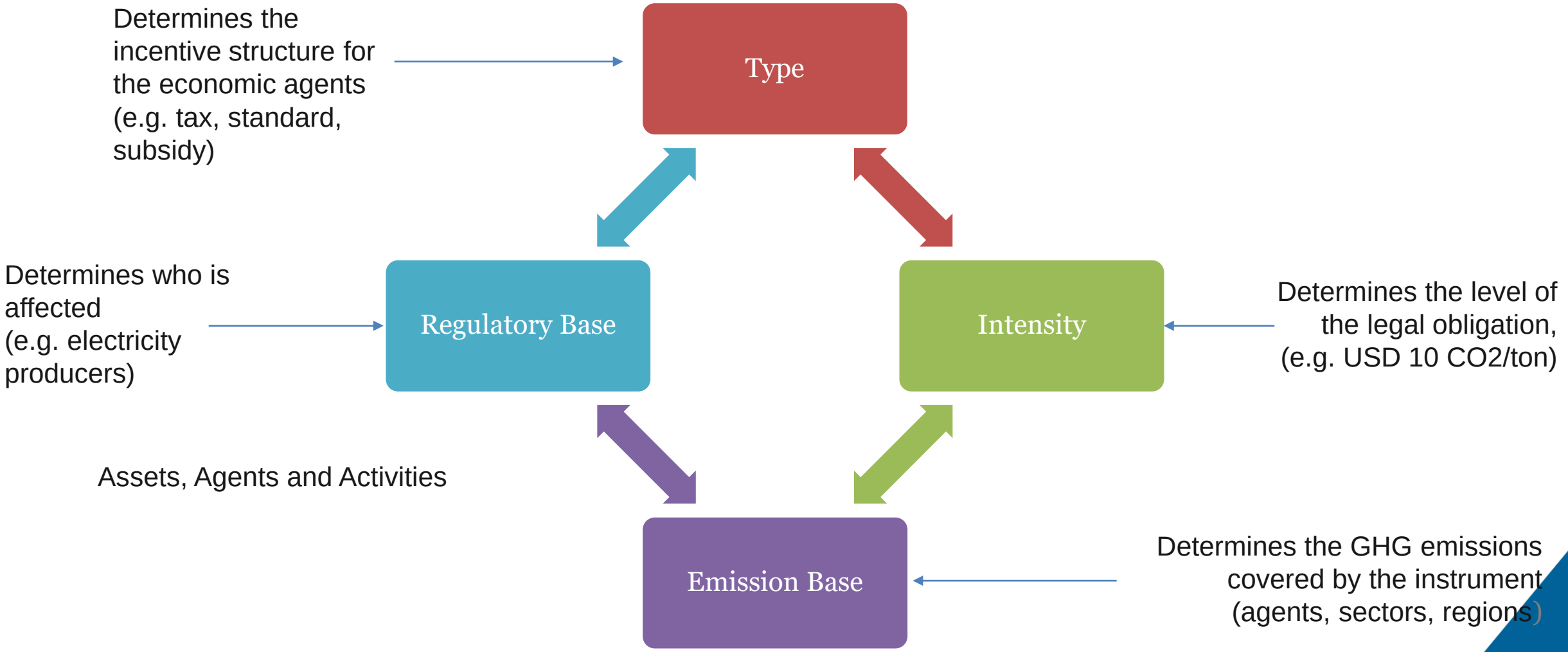
Institutional framework

Policy instruments

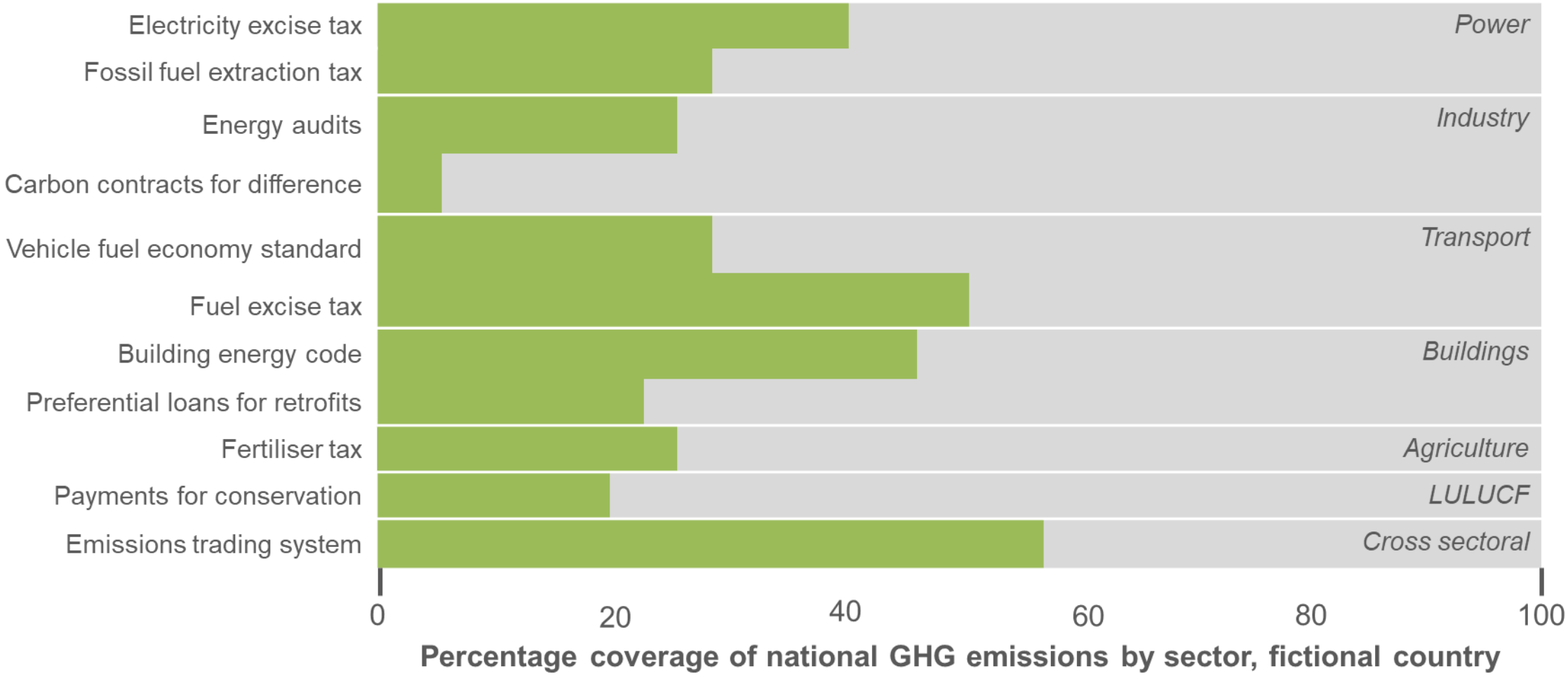
What are policy instruments?

- Policy instruments are institutional tools through which governments: influence, enforce or guide behaviour
- Most policy instruments create legally binding obligations, whose compliance and enforcement are implemented through dedicated laws, regulations, or other legal frameworks.
- But how do we characterise and compare across instruments
- How do we assess their impact :
  - Effectiveness
  - Efficiency,
  - Fairness

How to characterise a policy instrument?



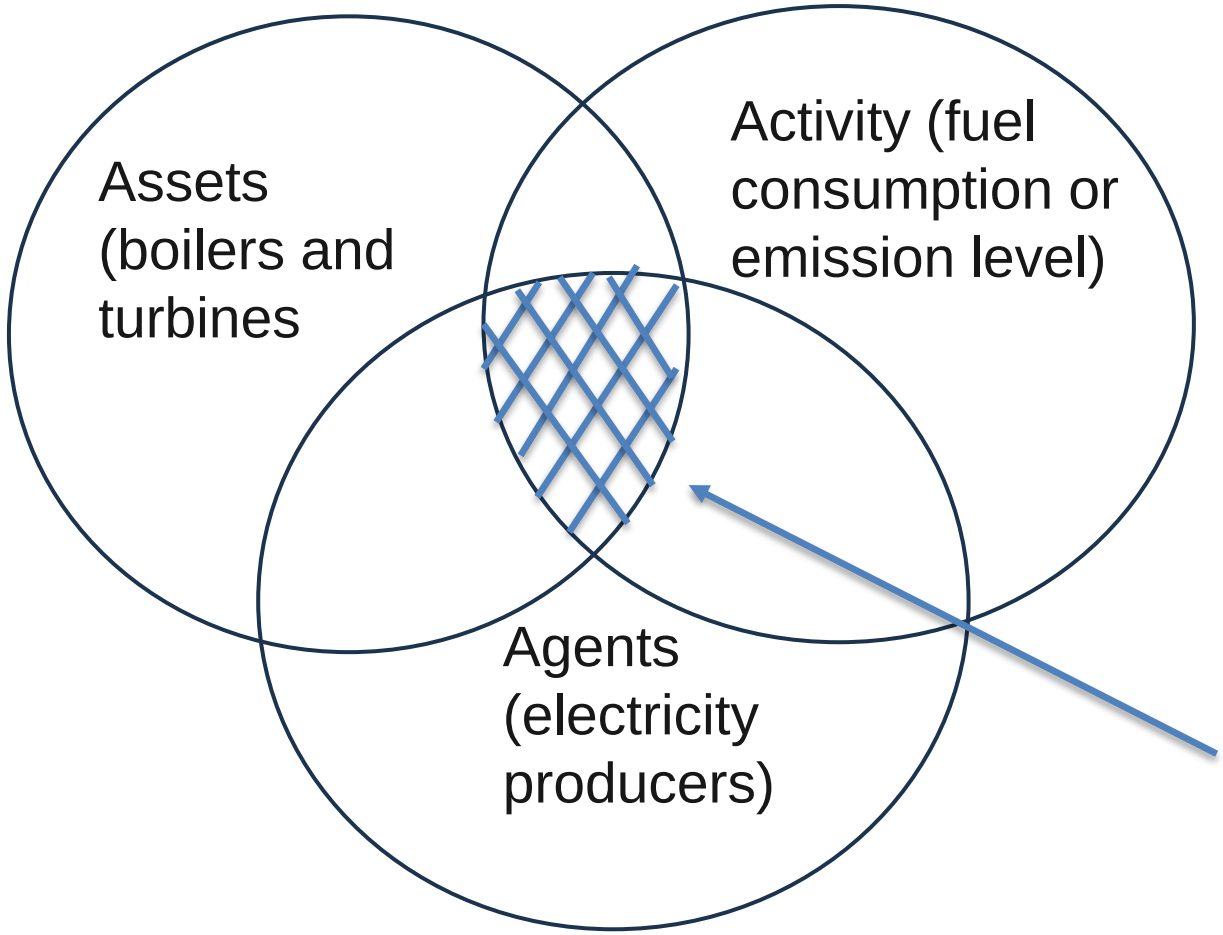
The objective of GHG emissions mapping is to identify the share of emissions covered by each instrument



The Challenge

1. The regulatory space maybe restricted
   - Limiting the assets, agents or activities regulated by the policy instrument
2. Not all policy instruments regulate emissions directly:
   - Regulate an asset that is generating emissions.
   - Promote an asset that is reducing emissions.
   - Promote an asset that is enabling emission reductions.
3. Three key concepts:
   - The regulatory/policy base.
   - Emission relevant assets (ERAs)
   - Policy design

Regulatory/Policy Base



E.g. Chile's carbon tax

1. Tax affects boilers and turbines over 50 MW, except biomass

2. Now GHG emissions over 25m tons

Types of emission-relevant assets

GHG emissions

The regulatory base of instruments is defined directly over GHG emissions or an asset which has a proportional relationship to them.

E.g. CO_2 emissions, gasoline.

Emission-relevant assets

GHG emitting assets

Assets that generate GHG-emissions through their use.

E.g. thermal power plants, farming animals.

Low-GHG emitting or GHG removing assets

Assets that generate low/ no emissions through their use, or that remove emissions.

E.g. electric passenger cars, solar panels.

Enabling assets

Assets whose diffusion can support the adoption (or restrict the use) of low-GHG assets.

E.g. EV charging stations; dedicated EV parking space.

Identifying the intended emissions base of instruments on emissions-relevant assets

GHG emissions

GHG emitting assets

Low-GHG assets

Enabling assets

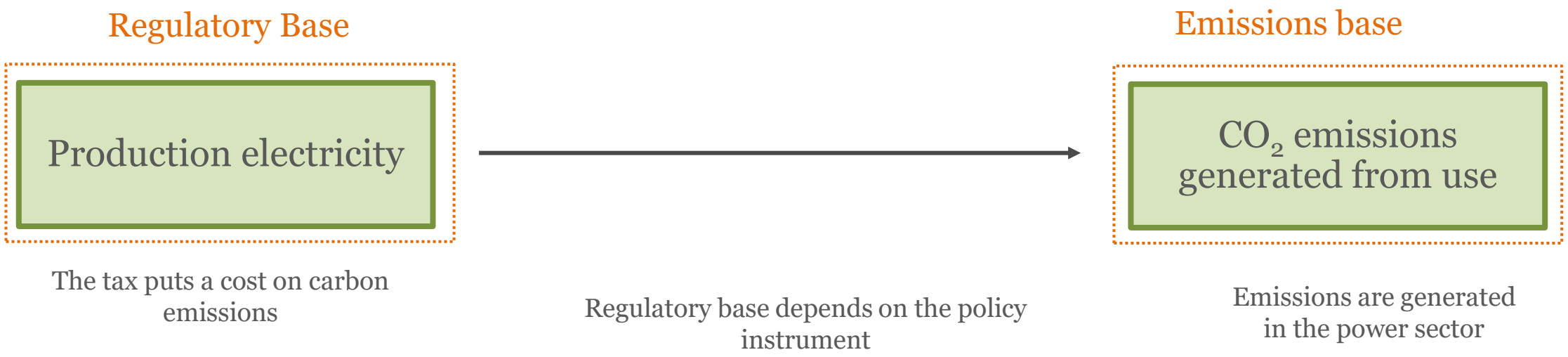
There are two key challenges in identifying the intended emissions base of instruments on emissions-relevant assets:

- **Value chain:** the regulatory base and intended emissions base may not always coincide
  - Some instruments may target emissions further down or up the value chain, beyond the regulatory base

- **Substitution:** some instruments encourage the uptake of low-GHG assets to replace GHG emitting assets

Direct Policy Design

- **The "regulated entity" is the "emitter".**
  - E.g. instruments regulate the behaviour of producers who generate emissions
- *Example: An carbon tax*



Indirect Policy design: Value chain

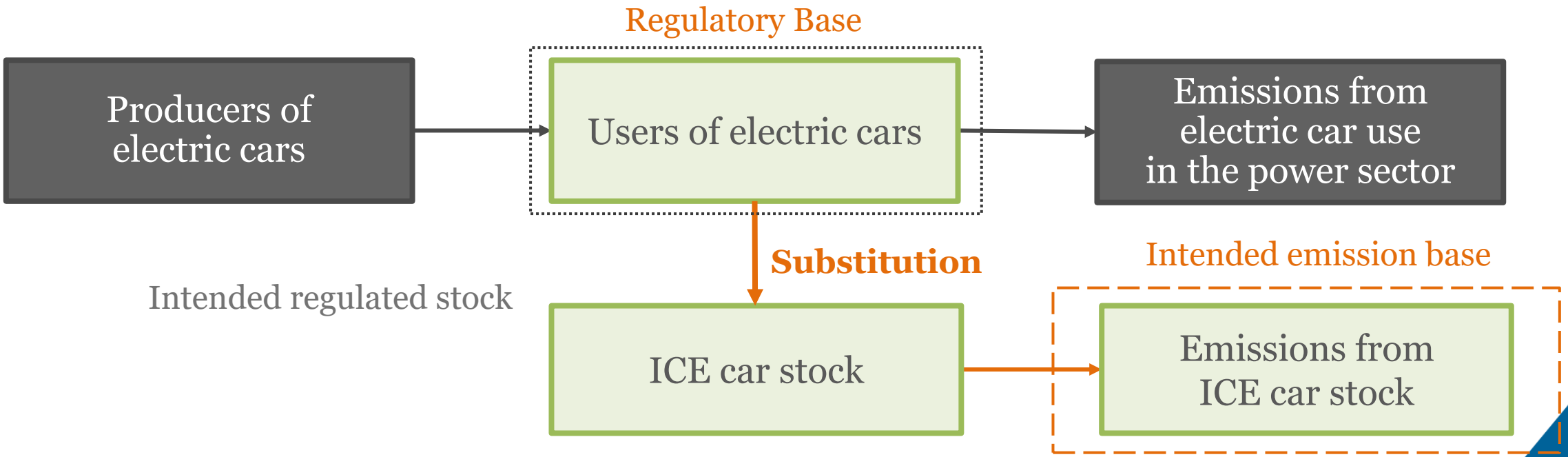
- **The "regulated entity" is not always the "emitter".**
  - E.g. instruments may regulate the behaviour of producers to induce a change in the emissions generated by users

- *Example: An energy efficiency standard for new refrigerators*

Indirect Policy design: Substitution of emissions-relevant assets

- Some policy instruments encourage the uptake of low-GHG assets to replace GHG emitting assets.

- *Example: Purchase subsidy for electric cars*



GHG emissions mapping – step by step

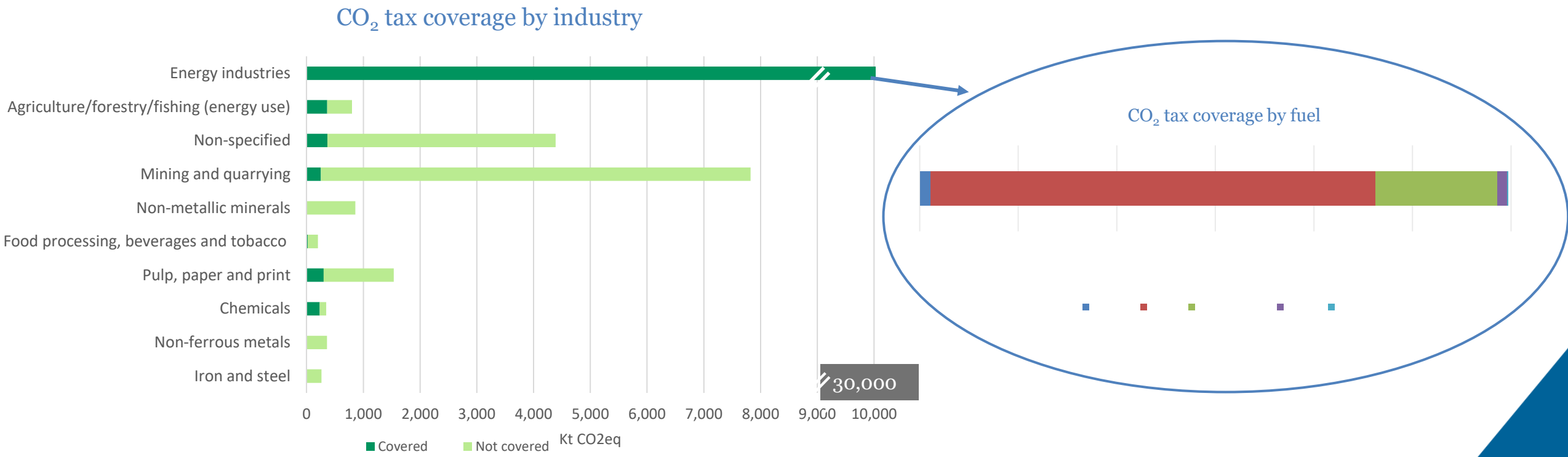
1 Stocktaking of the policy instrument	• Collect key attributes of policy instrument, e.g. date of enactment.
2 Characterise the regulatory base	• What is regulated: GHG emissions directly or a type of emission-relevant asset?
3 Identify the relevant emissions base	• Where is the point of regulation vs. point of emission? • Is the regulatory base equal to the intended emissions base?
4 Compute the emissions (regulated or intended)	• What are the GHG emissions?
5 Allocate emissions to relevant sector	• Allocate emissions to relevant sectors (e.g. emissions source sectors, economic sectors). • Compute the shares of emissions covered by the instrument.

Example 1: The Chilean carbon tax

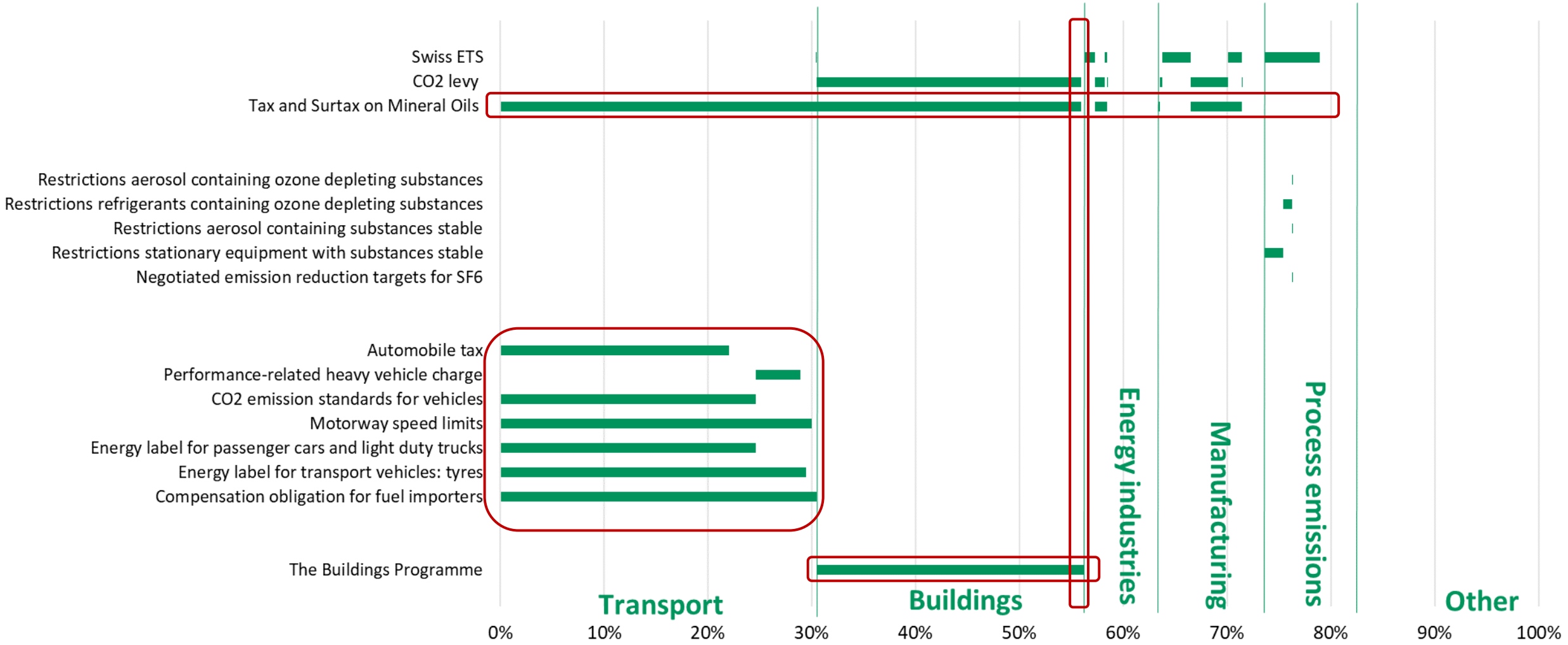
1. **Understanding the policy instrument**
   - Tax is levied on establishments whose emission sources, individually or as a whole, emit 25,000 tCO2 per year or more. Thermal plants fueled by biomass are exempt.
2. **Identifying the regulatory base**
   - Establishments whose emission sources emit 25,000 tCO2 per year or more.
3. **Identifying the policy design**
   - Direct policy design: the instrument targets emissions generated by the assets and agents directly defined in the regulatory base → emissions base equals emissions of the regulatory base
4. **Assessing potential data sources for the mapping**
   - Emissions of relevant establishments are not directly available in Chile's NIR.
   - MRV data provides CO2 emissions of all firms the tax is levied on, allowing a direct mapping

Example: The Chilean carbon tax (ctd.)

- Mapping can also shed light on the different industries and fuels covered by a specific instrument
- For the Chilean carbon tax, and thanks to the granular MRV data provided by Chile, it is possible to identify specific sub-sectors covered and not covered by the tax, and to identify the covered fuels for energy industries



Example: Overlapping coverage (Switzerland)



Final thoughts

- Climate change is an existential threat.
- Increasing demand for accurate information and policy indicators.
- New concepts and approaches and more detailed information is needed to support to understand the impact of climate policy instruments
- The emission base is one of many new concepts that requires additional statistical information to support policy analysis.

THANK YOU

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