Regional Climate Week

Asia-Pacific

Johor, Malaysia – 13-17 November 2023

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Session 2: Domestic considerations in choice of carbon pricing

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Carbon pricing compared to other instruments

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Carbon pricing…
….compared to other instruments

	Renewable energy	Low GHG fuels	Energy efficiency	Process emissions
Renewable energy mandates/markets/incentives	✓	✗	✗	✗
Energy efficiency certificate markets / incentives	✗	✗	✓	✗
Fossil-fuel tax (but one without "gaps")	✓	✓	✓	✗
Carbon pricing	✓	✓	✓	✓

Broadest range

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Instruments to create a price signal on carbon

Energy-sector-only instruments	Pricing on GHG emissions
Fossil fuel tax	Carbon tax
Tradable energy efficiency certificates	Emission trading system (ETS)
Payments for renewable energy	Payments for emission reductions (e.g., CDM; carbon funds; etc.)
Tradable renewable energy certificates	Payments for REDD activities *(forestry)*
Incentivizing clean energy	Incentivizing emission reductions and carbon stocks

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Key aspects to consider

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Common themes

- Scope & coverage: which sectors/GHGs to include? Which threshold?
- Governance and oversight: which are the institutional arrangements?
- MRV and enforcement: who is in charge of MRV? Where does it take place?
- Revenues: how are revenues used?
- Flexibility and linking:
- Stringency setting (cap or price level): how to set it? When should it be revised?
- Discount or allocation of emission rights: yes or no? on which basis?

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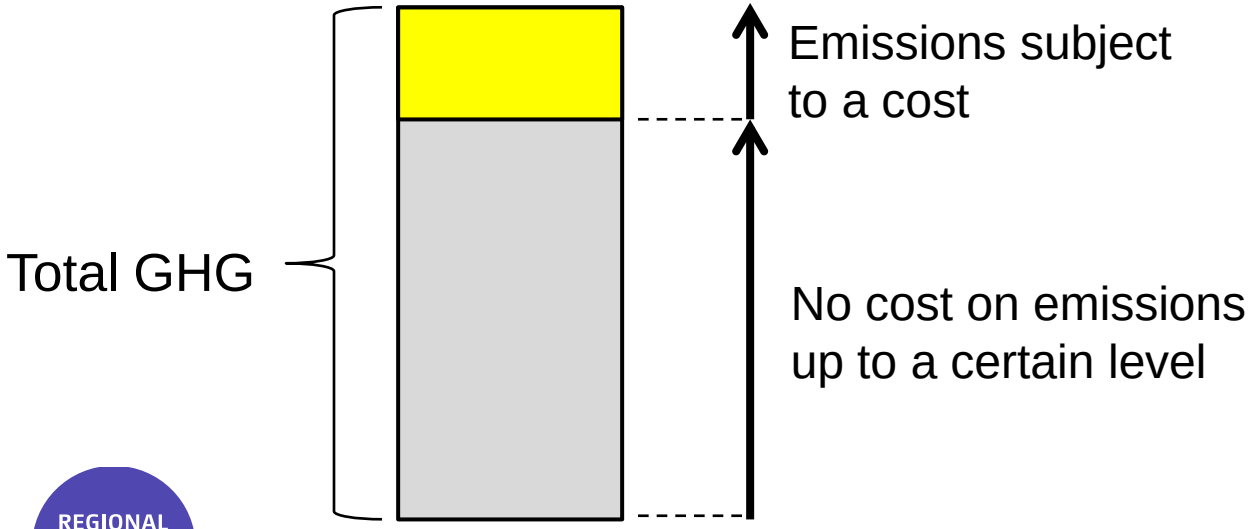
Price and cost: not the same

Cost: expense incurred ≠ **Price:** agreed value per unit

Concern: International competition limits the ability of many sectors to pass the carbon price to final customers: risk of "carbon leakage"

Solution: Allow a certain level of emissions which can be emitted free of cost for some sectors… while preserving the price signal on emissions:



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Price and cost: not the same

In carbon tax: tax-free threshold

➢ carbon tax applies only above this threshold)

In ETS: free allowance

➢ participants receive emission allowances up to a certain level)

Approaches for granting this rebate:

- Standard intensity-based benchmark
  (X tCO2e / tonne of product (benchmark)
- Relative discount: X% of emissions
- Grandfathering: on basis of historical emissions

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ETS: The challenge of setting the cap

- Cap set too low: low prices / lack of incentive
- Cap set too high: high prices – too strong impact on trade-exposed sectors

Some solutions:

- Start with a “trial phase” (e.g., provincial ETS in China)
- Price adjustment mechanism (price ceiling/floor)
- Start operating at “fixed price” before leaving the price to the market (proposed approach in Australia)
- Use a “flexible cap” (e.g., intensity based: New Zealand) – based on “output”
- Offer flexibility (use of units from domestic emission reductions projects)

Elaborating an instrument which fits national circumstances and objectives

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Guidance

- Carbon pricing / market instrument

  - No single solution
  - Needs to be tailored to fit the national context
    - Circumstances (economic, social, governance, etc.)
    - Gaps
    - Objectives/priorities

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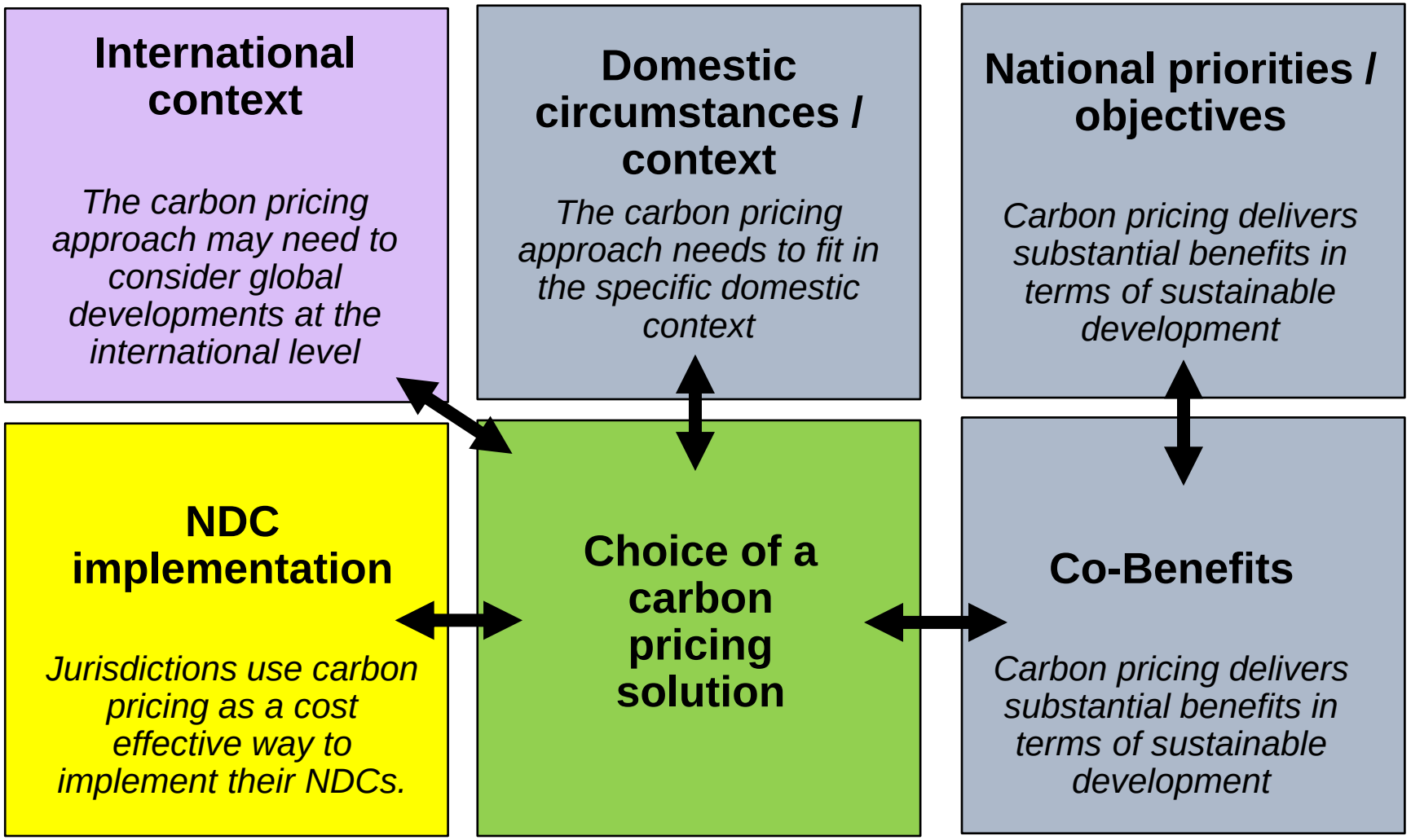
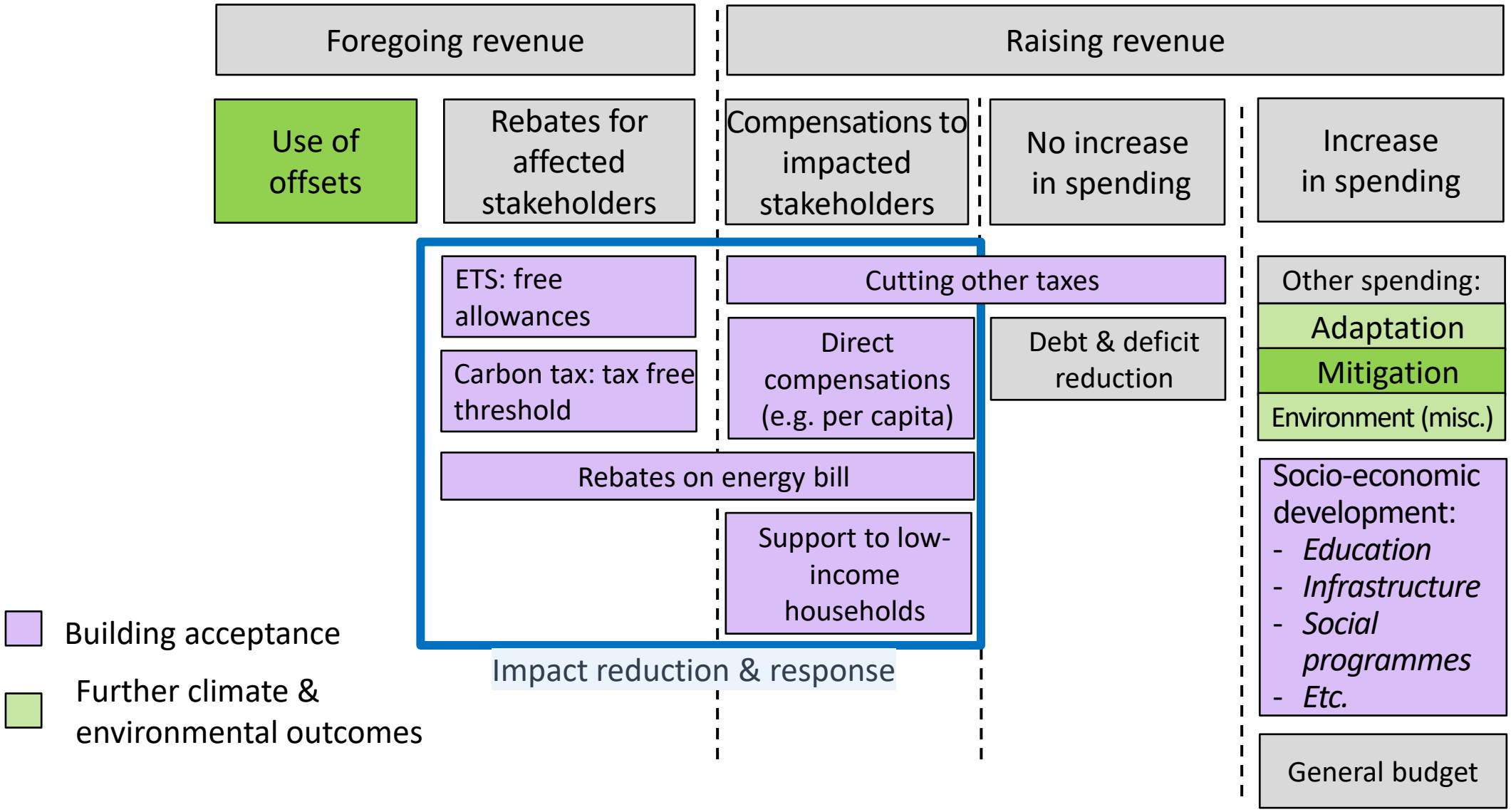
Choice of a carbon pricing solution



Achieving national priorities

Objective / priority	Solution
Trigger investments	Revenues from carbon pricing to give loan guarantees for investors (e.g. in sustainable energy projects)
Limit trade exposure from pricing carbon	Provide large discounts and compensations to entities covered (e.g. free allowances under ETS)
Reduce poverty	Focus reinvestments in job creation
Increase energy access	Reuse income to fund/support sustainable decentralized energy access
Increase income equality	Redistribute the proceeds on a per capita basis
Improve business climate/competitiveness	Use revenues to cut taxes which hinder wealth creation (income tax / capital gain tax)
Ensure adaptation	Investments in adaptation measures
Increase energy independence	Reinvest in measures which reduce energy imports

Carbon revenues



Issues with carbon pricing

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Issues to consider related to carbon pricing

- A number of conditions are required to ensure that carbon pricing works:
  - A potential for low carbon alternatives…
    - Exists
    - Can be mobilized (not too high barriers - ideally an initial penetration of solutions already exists)
  - Funding/Financing is available for the economy to respond to the price signal
    - Returning the revenues of carbon pricing in the form of soft-loans is one option

Sectors where carbon pricing may not work

- Motorized vehicles:
  - The key barrier for switching to low carbon alternatives is the initial investment (purchase of a car)
  - Increasing the “cost of use” through carbon pricing will only marginally affect the purchase decision

  ➔ Sector better addressed through “fee-bates” (fees/rebate schemes)
- Informal sectors
  - Operation outside the legal framework → would not respond to an economic policy
- Agriculture
  - Scattered sources of emission which are difficult to control ➔ better mobilized with incentive schemes
- Forestry
  - Highly complex sector which is better mobilized through other means

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Issues to discuss about carbon pricing

- Initial introductory price may not be sufficient for putting countries on a path towards achieving the Paris Agreement

  - Carbon pricing alone may not be sufficient
  - Complementary measures may be needed (e.g., setting standards)

  - Economic actors however understand (and often expect) that carbon pricing will increase over time → planning for future higher carbon prices
  - Carbon pricing is a flexible instrument; its stringency and coverage can be revised up over time (e.g., along with climate commitments)
  - Long-term: Carbon pricing is an important tool for managing GHG emissions for as long as there are GHG emissions to manage

Different types of carbon pricing instruments

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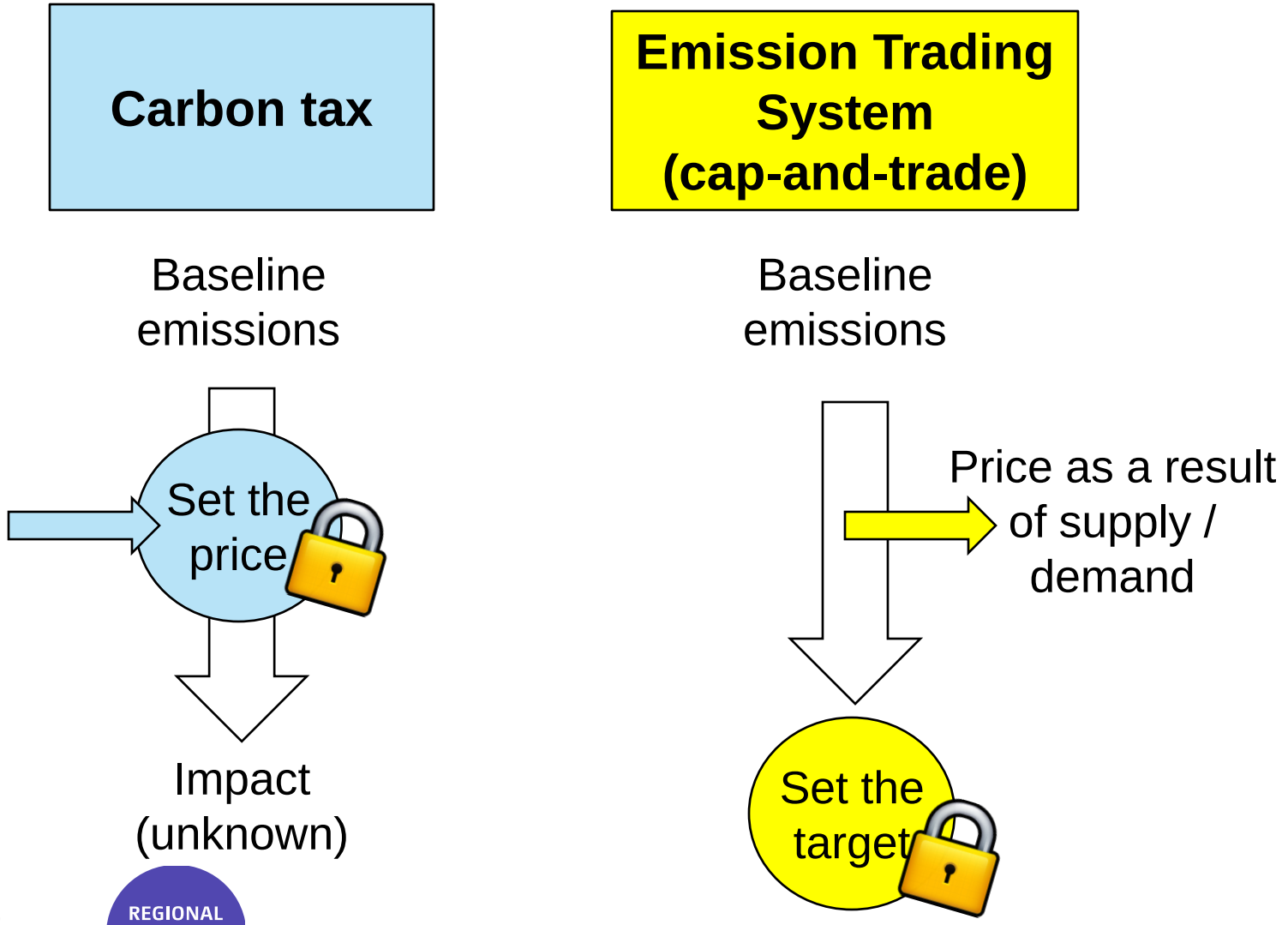
Pricing carbon emissions: major approaches



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Pricing carbon emissions: carbon taxes

Carbon taxes

Principle: Entities covered by a carbon tax are required to pay a fee (level of the tax) in accordance with their emissions

-Fixed price (therefore predictable) on GHG emissions provides investment certainty

-Comparatively simple to implement (verification + tax collection)

- No need to define an emission cap
- Short implementation time
- Can also be a stepping stone for adopting an ETS later

-Increasingly considered to raise funds for mitigation activity

-Possible large coverage which can include small sources of direct/indirect emissions

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Pricing carbon emissions: carbon taxes

Carbon taxes

- Tax-free threshold can be applied to protect trade-exposed sectors
- Flexibility and linking (with other countries) is also possible
  - For example, participants in South African carbon tax can lower their taxable emissions by acquiring "emission reduction units" from activities outside the scope of the tax (e.g., afforestation activities, reduction of methane emissions from landfills)
- Major difficulty: assessing the impact of the carbon tax
  - Impact = actual GHG – baseline GHG

    Difficult to determine
  - What GHG emissions have been in the baseline scenario? (without the tax)

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Pricing carbon emissions: ETS

Emission Trading systems *(cap-and-trade)*

Principle: Tradable-permit system for GHG emissions

- Aggregated limit (the cap) on GHG emissions which can be emitted

  - The number of emission units available is limited and reflects the size of the cap in the ETS

  - guarantees that aggregated emissions from all participants will remain within the level set by the cap

- Entities covered by the ETS need to hold one emission unit (allowances) for each tonne of GHG emitted but can buy / sell units

- Price on carbon: will depend on the balance of the demand (the total emissions of GHG emissions) and the supply (the size of the cap and corresponding number of emission units) in the ETS.

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Pricing carbon emissions: ETS

Emission Trading systems (cap-and-trade)

- Higher complexity (MRV and setting the cap)
  - Not suited for small-scale dispersed sources of GHG emissions
  - Many jurisdictions started with pilot/voluntary phase
- Certainty on achievement (cap on GHG emissions)
- Price uncertainty
  - Price/demand safeguards available (price floor, price ceiling, market stability reserve, etc.)
- Tradability (flexibility)
- Linking allows additional benefits (investor benefits from lower abatement costs; recipient benefits from investment flow)
- Revenue generation possible (auctioning of emission allowances)
- Compensation possible for sectors exposed to international competition

Pricing carbon emissions: ETS

Emission Trading systems (cap-and-trade)

- Well functioning market requires liquidity (sufficient number of participants)
  - Difficult for countries with very limited number of participants
  - Solutions for increasing flexibility/liquidity exist: use of offsets / linking with other jurisdictions / etc.

Comparing systems

	Carbon tax	Emission Trading System (ETS)	Hybrid system
Price setting	Direct 	Market	Direct or Market + safety system
Price certainty	Yes		Possible
Achievement certainty	Unknown	Known 	Possible
Coverage	Broad	Only large emitters	Flexible
Complexity	Low (levying a tax)	High	Depending on system
Transparency	High	Medium	Depending on system
Recognition of outcomes	Difficult	High	Possible
International linkage		Yes	Yes

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Hybrid systems

Current trend:

- Get the “best of both worlds” (ETS and carbon tax):
  - Flexibility for compliance
  - Price certainty

Example of hybrid system:

- Alberta (Canada); Participants can choose between
  (i) cutting their emission intensity;
  (ii) purchasing emission reduction credits or
  (iii) paying into an emission reduction fund

Many combinations of instruments possible

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Combining instruments

Many options and combinations of instruments possible

- ETS on large emitters / carbon tax on small sources of emissions
- ETS or carbon tax + emission reduction fund
- ETS + use of offsets (e.g., EU ETS)
- Flexible carbon tax with use of offsets (e.g., South Africa)
- Energy efficiency performance tradings scheme + offsets (Thailand)
- ETS with adjustments for price
- ETS with floating/intensity-based cap: New Zealand

ETS

Upstream carbon tax

Downstream carbon tax

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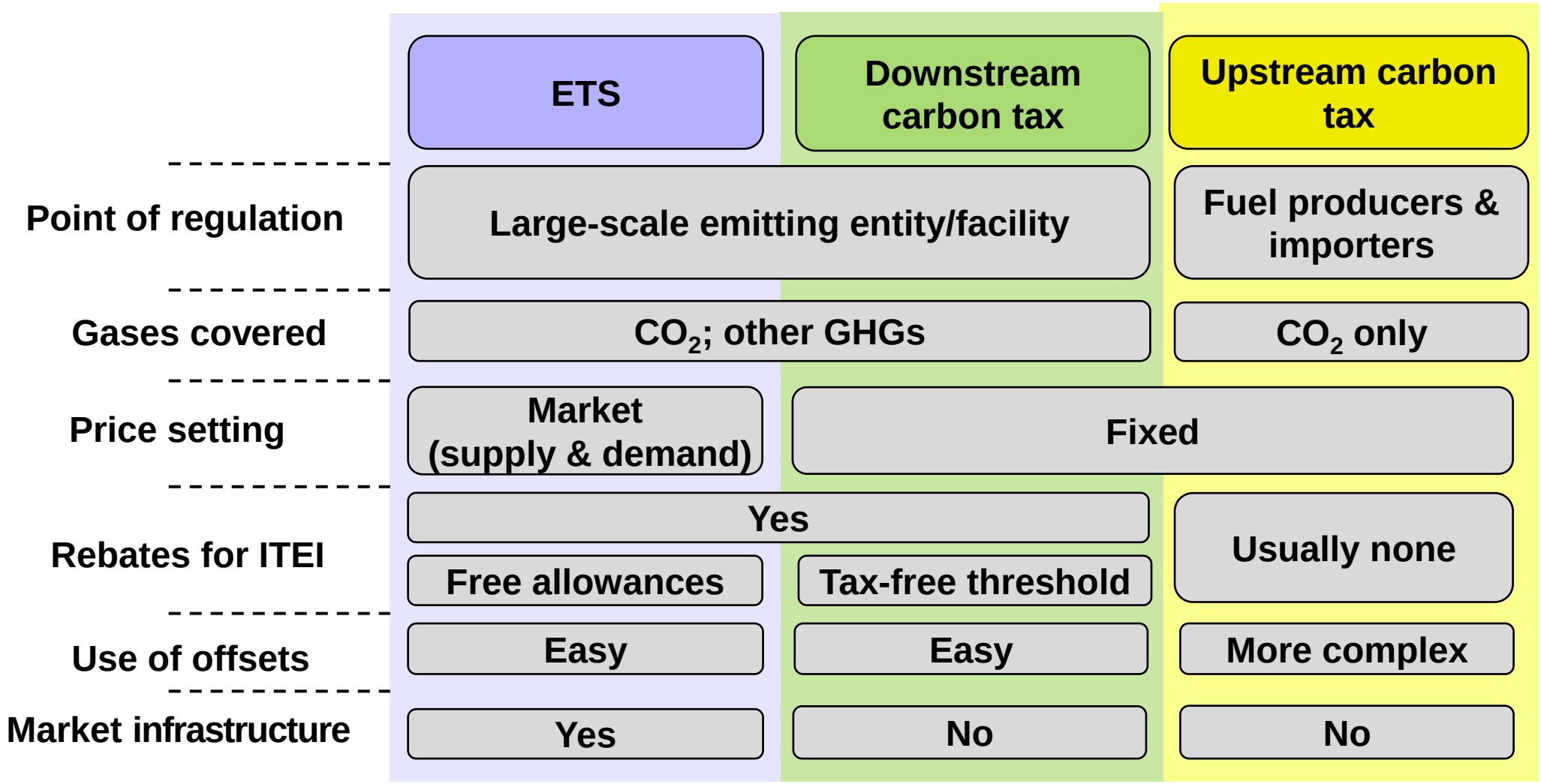
ETS, facility-based carbon tax, upstream carbon tax



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Transition possible

ETS, facility-based carbon tax, upstream carbon tax

ETS and downstream carbon tax:

Overall strong similarities !

- Same coverage: large scale emitters
- Both have a more granular and complex MRV – which also enables the coverage of more GHGs
- Both allow exemptions for internationally trade-exposed industries
- Key difference: price setting and need for market infrastructure
  - ETS: set by the ratio between demand and cap stringency
  - Tax: set fixed
- A downstream carbon tax can transition into an ETS
  - Additional elements required: market infrastructure; cap-setting approach; allocation approach

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The national landscape
… which elements are present?

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The national landscape … which elements are present?

	Examples	Likely impact on allowance demand and carbon price in an ETS
Complementary improve functioning of carbon markets	• energy market reform (e.g. facilitating cost pass-through) • infrastructure upgrades • energy efficiency labeling • pollution/emissions measurement	
Overlapping duplicate incentives in carbon markets	• feed in tariffs • green certificate programs, such as renewable energy targets	
Countervailing oppose incentives in carbon markets	• fossil fuel subsidies • industry tax breaks and special treatment	

Source: *Emissions Trading in Practice: A Handbook on Design and Implementation* 2021.

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The national landscape: which elements are present?

Type	
☐ Fossil fuel subsidies	❑ Electricity sold under real cost (generation + distribution) ❑ Fuels sold at prices below international market price ❑ Direct spending (e.g., grants) on fossil-fuel infrastructure ❑ Support to state-owned enterprises for the operation of fossil-fuel assets ❑ Tax breaks and preferential financing benefitting fossil fuels

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The national landscape: which elements are present?

Type	
☐ Feed-in tariff for RE ☐ Tradable RECs ☐ Auctions for RE ☐ Tax credit/exemption ☐ Public grants/loans	(Renewable Energy Certificates)
☐ Fossil fuel taxes and levies	(which fuels/sectors), e.g., coal, gasoline, diesel, natural gas
☐ "Feebates"	(Fee / Rebates depending on GHG) e.g., tax fuel inefficient cars on one side, incentivize low GHG cars on the other side)

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The national landscape: which elements are present?

Type	
☐ Domestic climate fund	To collect / disburse money towards climate action
☐ Use of green bonds	To raise capital towards green activities
☐ Electricity taxes and fees that can be repackaged into carbon pricing?	E.g., Together with its carbon price plans, South Africa reduced/cut taxes & fees on electricity
☐ Any other tax that influences GHG or specifically applies on GHG intensive products?	E.g., some countries tax heavy industrial goods based on output (e.g., cement, glass, etc.) ➜ can easily be switched to tax on GHG emissions instead… without increase in fiscal pressure!
☐ Net metering of electricity ☐ Merit order dispatch	Let consumer self-generate with solar PV Use renewable power first when available

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The national landscape: which elements are present?

Type	
☐ Schemes for compensation to impacted stakeholders	Flat rebates on electricity bills Progressive electricity tariffs Monthly payments for households Support programmes for vulnerable groups Social safety net Reduction of taxes/fees on basic needs and public transportation
☐ Monitoring of GHGs	• Monitoring and reporting of emissions (pollutants/GHGs) • Procedures / database and statistics • Corresponding institution in place • Laws/decrees underpinning MRV activities
☐ Institutional framework	• Laws/decrees allowing the taxation of GHGs • Climate change framework mentioning carbon pricing

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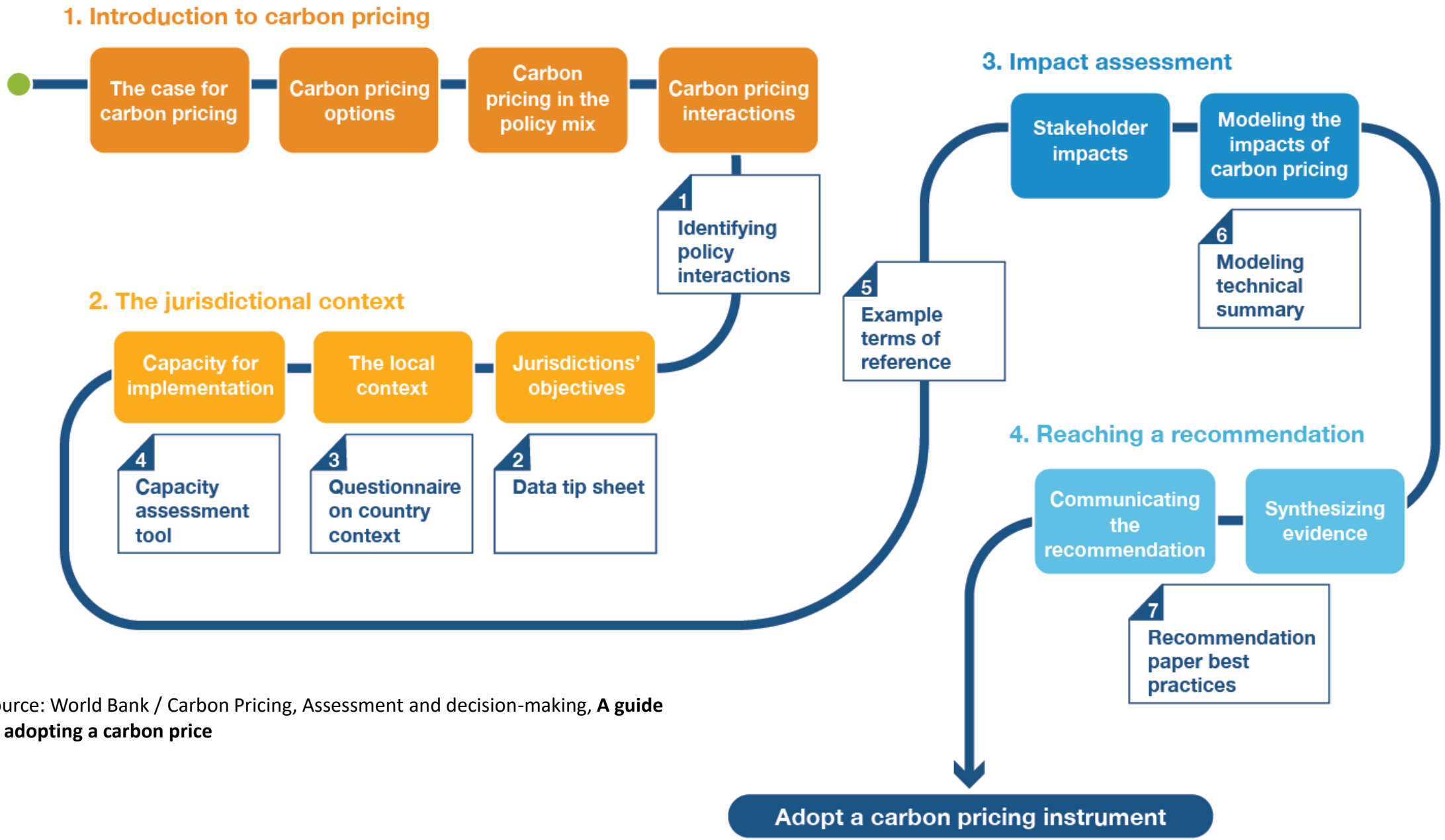
Carbon Tax - Key Design Elements

Policymakers must consider a range of design choices, including:

- **Scope** – For instance, a carbon tax could be levied on the carbon dioxide content of fossil fuels.
- **Point of Taxation** – A carbon tax can be levied at any point in the energy supply chain. “upstream,” - fewest entities (for instance, suppliers of coal, natural gas processing facilities, and oil refineries) “midstream” (electric utilities) or downstream (energy-using industries, households, or vehicles).
- **Tax and Escalation Rates** –The tax rate should also rise over time to reflect the growing damage expected from climate change. An increasing price over time also provides a signal to emitters that they will need to do more and that their investments in more aggressive technologies will be economically justified.
- **Distributional Impacts** – Lower-income households spend a larger share of their income on energy than higher-income households. As a result, a price on carbon that increases energy costs can have a greater impact on lower-income individuals.
- **Competitiveness** – A carbon price could put domestic energy-intensive, trade-exposed industries (EITEs), such as chemicals, cement/concrete, and steel, at a competitive disadvantage against international competitors that do not face an equivalent price. A shift in demand to those countries could result in “emissions leakage” from one country to another
- **Revenues** – A carbon tax can raise significant revenue. How that revenue is used will ultimately be a political choice. Some or all of it could be returned to consumers in the form of a dividend, or alternatively, it could be reinvested in climate purposes, such as advancing low-carbon technologies or building resilience.

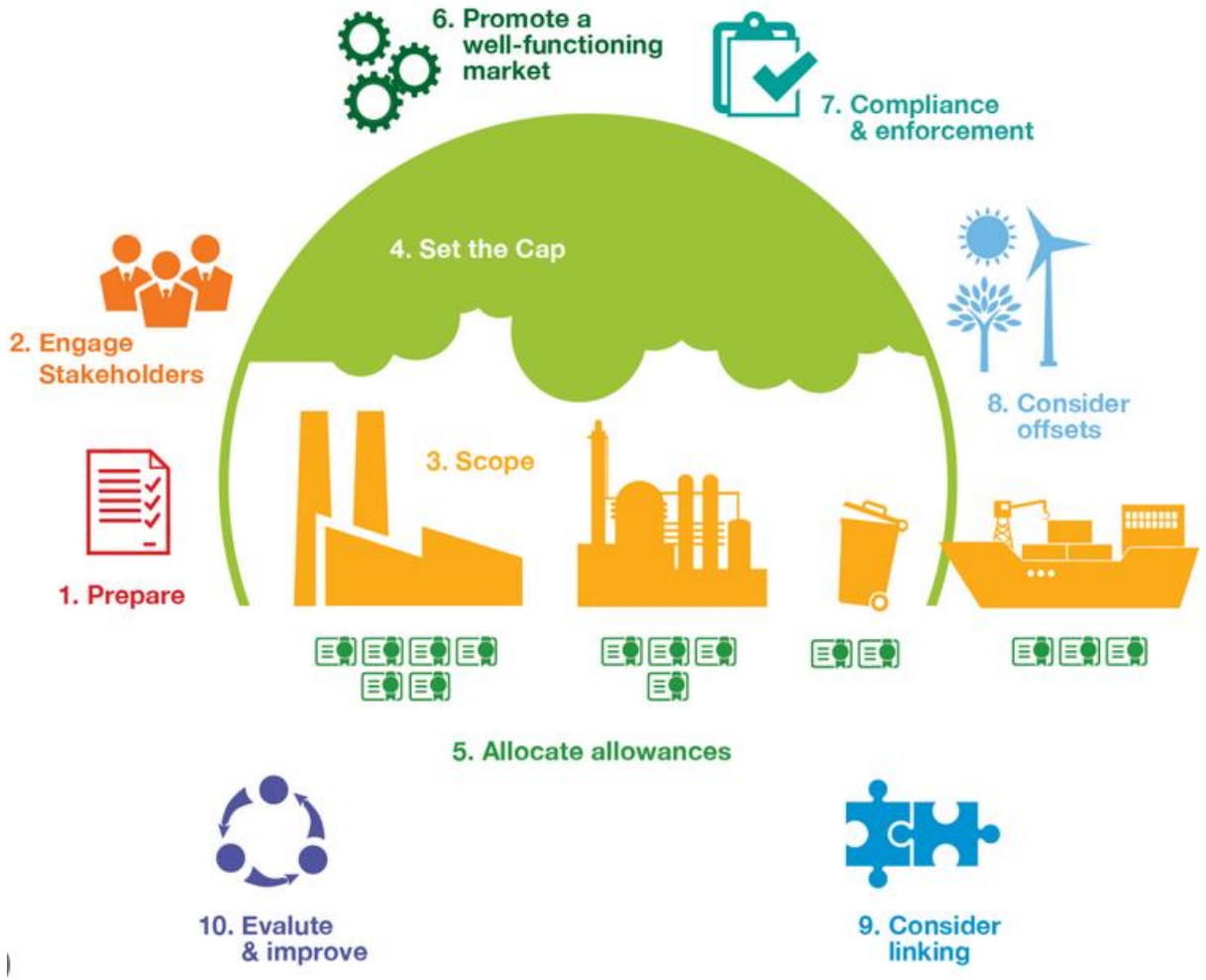
https://www.c2es.org/content/carbon-tax-basics/

Steps to consider and introduce carbon pricing



Source: World Bank / Carbon Pricing, Assessment and decision-making, **A guide to adopting a carbon price**

Steps to design and implement an ETS



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International Carbon Action Partnership (ICAP). **Updated Handbook for Emissions Trading Design and Implementation**

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