Causal chain for policies

Regional workshop of the Anglophone Cluster

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CAUSAL CHAIN

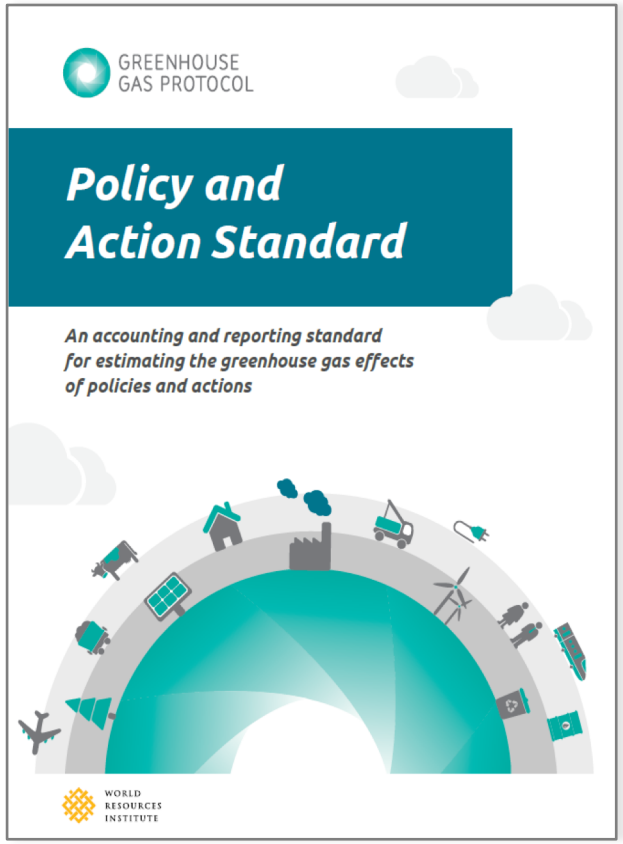
A causal chain is an ordered sequence of events, in which any one event in the chain causes the next.

A causal chain can clarify the effect of specific policies and mitigation actions.

MITIGATION ACTIONS

… any action, policy, measure, plan, program or strategy that changes the emissions of GHG emissions compared to “business as usual”.

HOW TO ASSESS THE IMPACTS OF A MITIGATION ACTION



GHG Protocol Policy and Action standard

Developed by the Greenhouse Gas Protocol (GHG Protocol), which is a partnership of businesses, NGOs, governments, academics etc. The mission of the GHG Protocol is to develop internationally accepted GHG accounting and reporting standards and tools institutions.

- The GHG Protocol Policy and Action Standard provides a **standardized approach** for estimating the greenhouse gas effect of policies and actions.
- A guideline to help users **assess GHG effects** of specific policies and actions in an accurate, consistent, transparent and complete way
- To help policymakers **develop effective strategies** for managing and reducing GHG emissions
- Additional guidance for different sectors is provided

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HOW TO ASSESS THE IMPACTS OF A MITIGATION ACTION

This standard helps answer the following questions:

- What effect is a given policy or action likely to have on GHG emissions in the future?
- Is a given policy or action on track and delivering expected results?
- What effect has a given policy or action had on GHG emissions?

https://ghgprotocol.org/policy-and-action-standard

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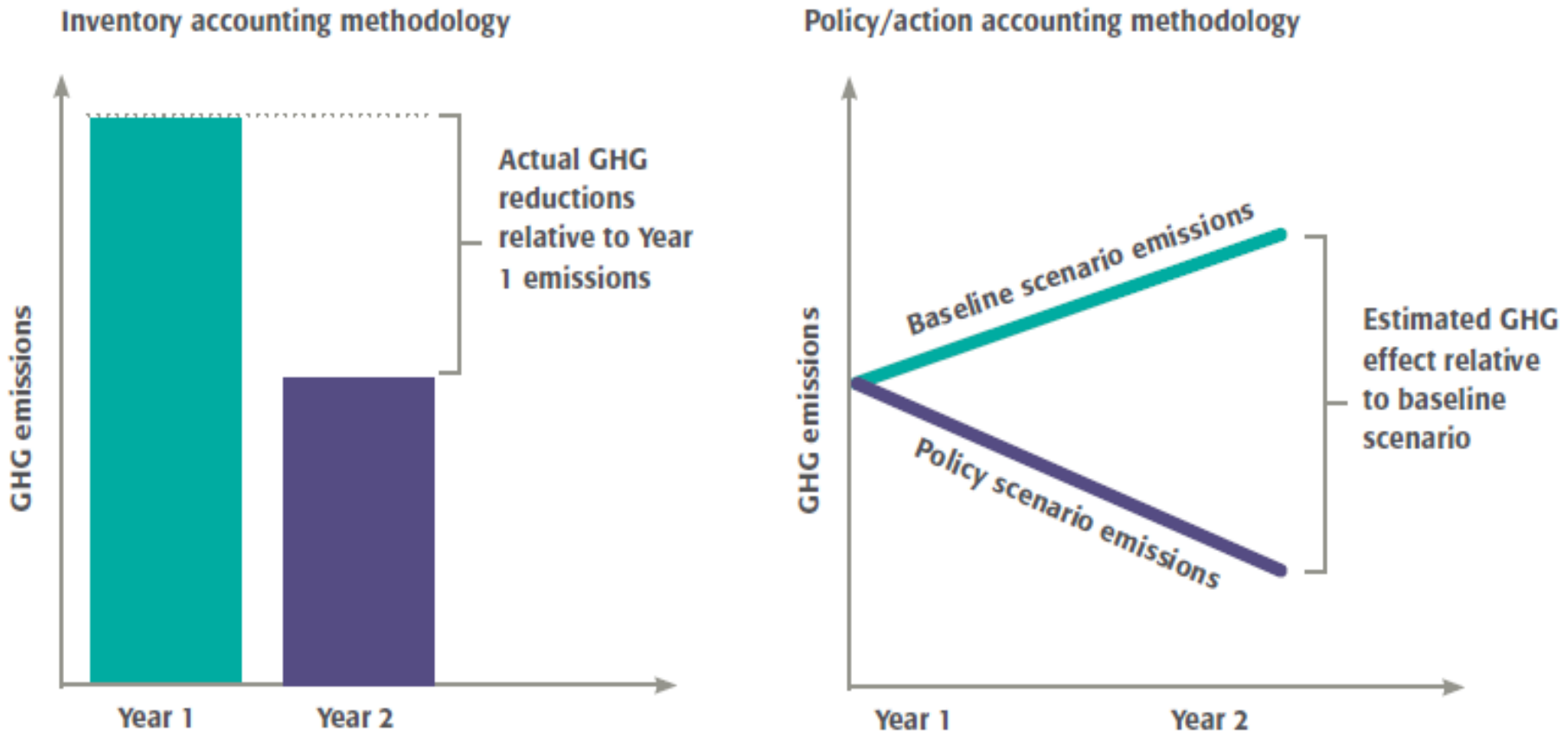
COMPARISON OF GHG INVENTORY and POLICY/ACTION ACCOUNTING

Type of accounting	Purpose	Limitations
GHG inventory accounting	• Comprehensive accounting of a jurisdiction's or organization's GHG emissions impact on the atmosphere • Provides information on the sources of emissions and trends over time • Necessary to track overall progress toward GHG reduction goals	• May not explain why emissions change over time • Does not reveal the effects of individual policies
Policy/action accounting	• Attributes changes in emissions to specific policies and actions • Informs policy design and evaluation	• Not a comprehensive accounting of total emissions; overall emissions may increase even if individual policies and actions are reducing emissions (compared to a baseline scenario)

COMPARISON OF GHG INVENTORY AND POLICY/ACTION ACCOUNTING



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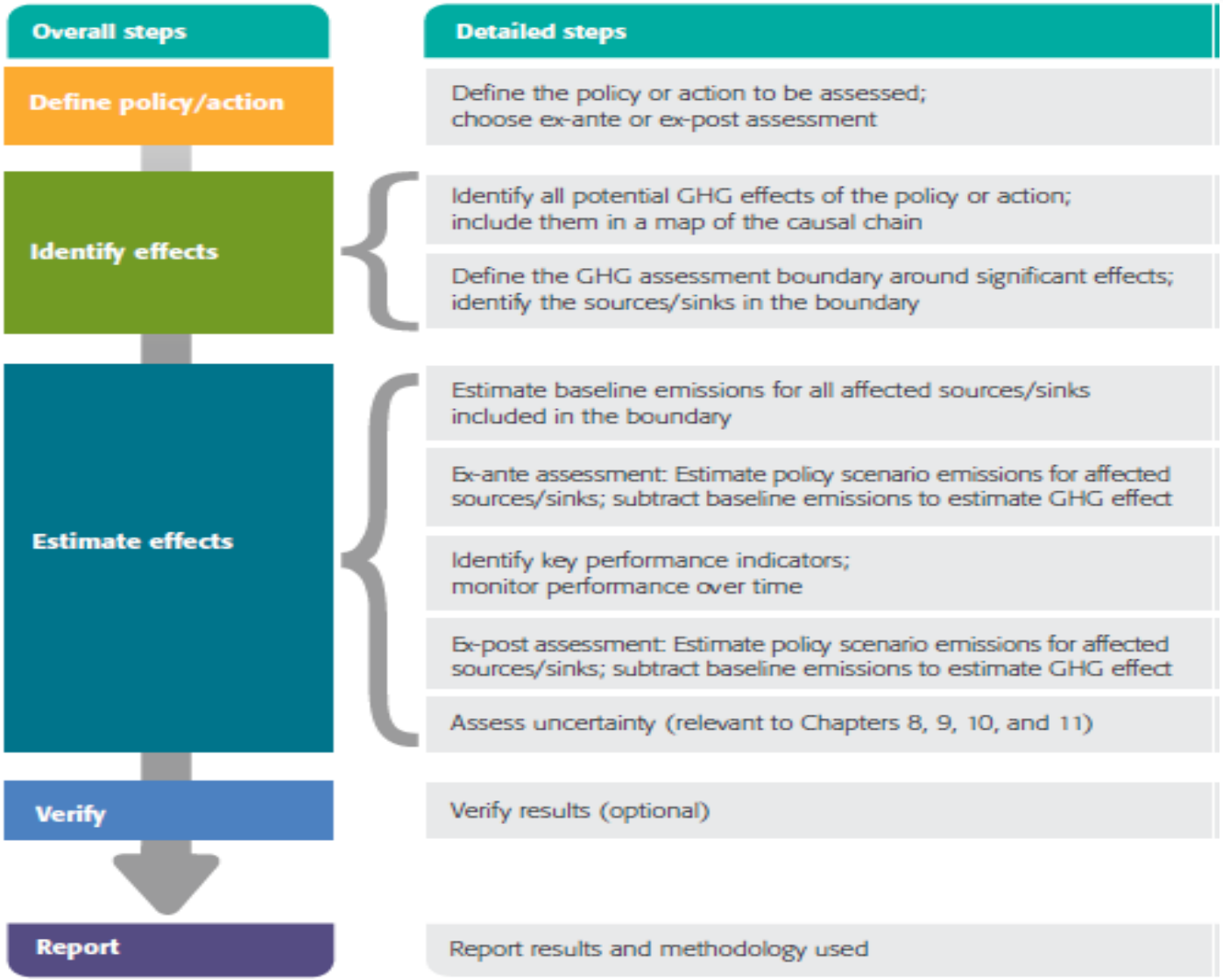
STEPS INVOLVED IN POLICY AND ACTION ACCOUNTING AND REPORTING



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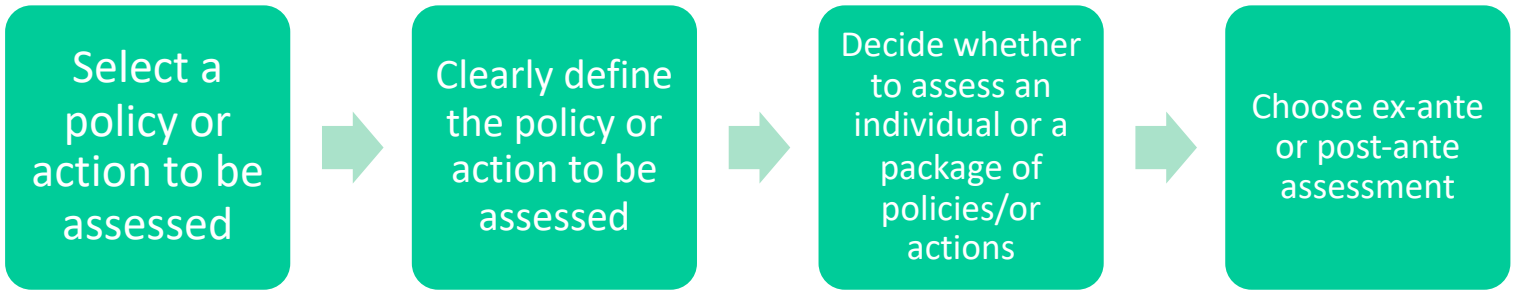
STEP 1. CHOOSE A POLICY OR MITIGATION ACTION TO ASSESS

To estimate the GHG effects of a policy or action, users first need:

- Select a policy/action to be assessed
- Define and provide a detailed description of the policy or action
- Decide whether to assess an individual policy/action or a package of related policies/actions
- Choose whether to assessment before or after the policy action is implemented



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EXAMPLES OF POLICIES AND ACTIONS

Type of policy or action	Description
Regulations and standards	Regulations or standards that specify technology standards or minimum requirements for energy consumption, pollution output etc.
Taxes and charges	A levy imposed on each unit of activity by a source, such as a fuel tax, carbon tax, traffic congestion charge, or import or export tax.
Subsidies and incentives	Direct payments, tax reductions, price supports or the equivalent for implementing a practice or performing a specified action.
Infrastructure programs	Provision of (or granting a government permit for) infrastructure, such as roads, water, urban services, and high speed rail.
Implementation of new technologies, processes, or practices	Implementation of new technologies, processes, or practices at a broad scale; for example, those that reduce emissions compared to existing technologies, processes, or practices.

STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

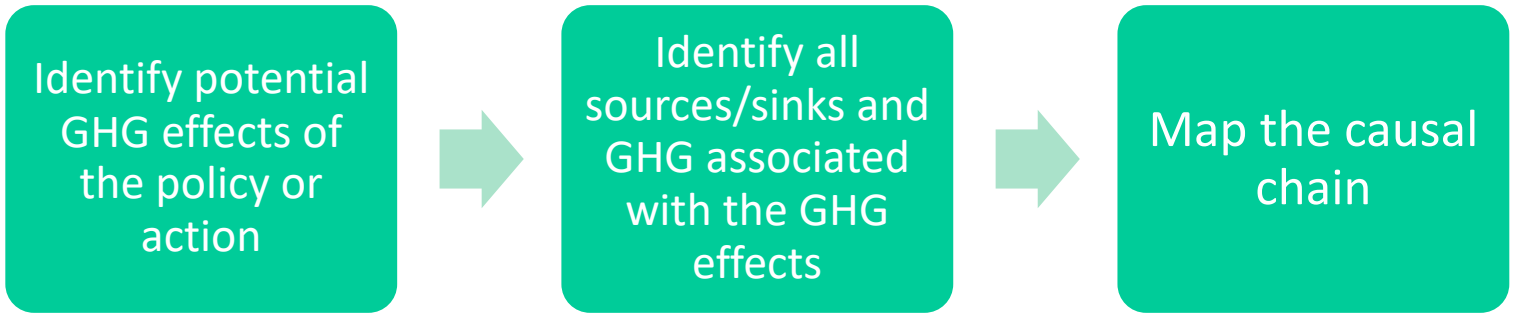
To estimate the GHG effects of a policy or action, users first need:

a) Identify all potential GHG effects of the policy or action

b) Identify all sources/sinks and GHG associated with the GHG effects

- Greenhouse gases include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) for non-annex I countries.

c) Map the causal chain



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STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

Identify potential GHG effects of a mitigation action

- Useful to consider how the policy or action is implemented by **identifying the relevant inputs and activities** associated with implementing the policy or action.
- Users should then **identify all intermediate effects** of the policy or action that may lead to GHG effects

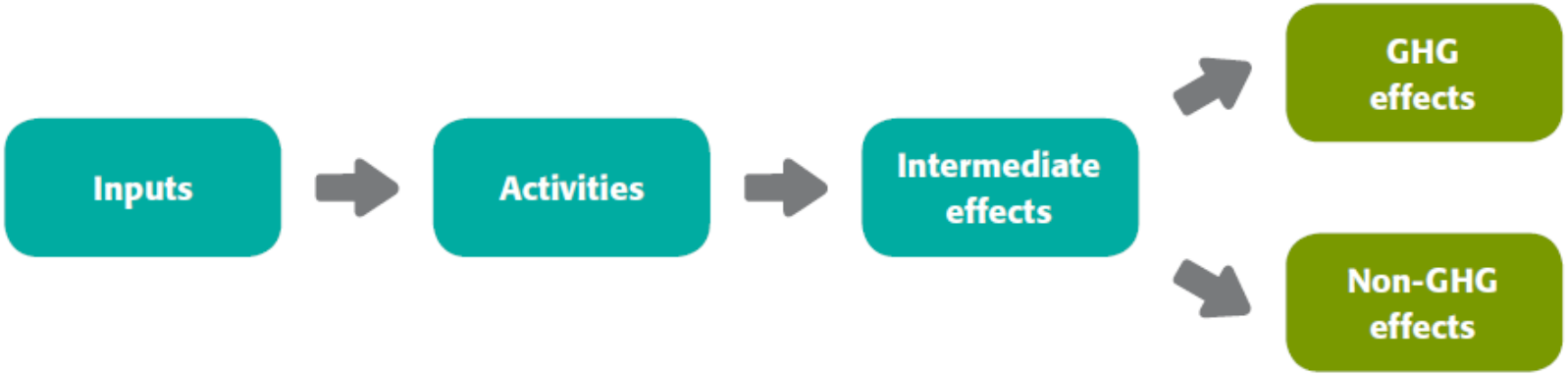
STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

Indicator types	Definition	Examples: here for a home insulation subsidy program
Inputs	Resources that go into implementing a policy or action, such as financing	Money needed to implement a subsidy program
Activities	Administrative activities involved in implementing the policy or action, such as permitting, licensing, procurement, or compliance and enforcement	Energy audits, provision of subsidies
Intermediate Effects	Changes in behavior, technology, processes, or practices that result from the policy or action	Consumers purchase and install insulation, home natural gas and electricity use are reduced
GHG Effects	Changes in GHG emissions by sources or removals by sinks that result from the intermediate effects of the policy or action	Reduced CO2, CH4, and N2O emissions from reduced natural gas and electricity use
Non-GHG Effects	Changes in relevant environmental, social, or economic conditions other than GHG emissions or climate change mitigation that result from the policy or action	Increase in disposable income due to energy savings

STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

The relationship of :

- Inputs
- Activities
- Intermediate effects
- GHG effects and
- non-GHG effects



STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

To ensure a complete GHG assessment, users should identify as many potential GHG effects as possible.

Users should consider all possible *types* of effects:

- In- and out jurisdiction
- Short- and long term
- Intended and unintended
- Likely, possible, and unlikely
- GHG increasing and GHG decreasing

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STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

Example of various effects for a United States vehicle fuel efficiency standard

Type of effect	Examples of effects
Intended effect	• Fuel consumption and tailpipe emissions per mile driven are reduced.
Unintended effect	• Some consumers drive further distances, since improved vehicle fuel efficiency decreases the cost of driving per kilometer, thereby reducing some of the emissions benefits. This is called a *rebound effect.* • Emissions from the U.S. electricity generation sector increase as a result of more electric vehicles being sold.
In-jurisdiction effect	• Automakers in the U.S. produce and sell more efficient cars, which reduces gasoline consumption in the United States.
Out-of-jurisdiction effect	• Because of the U.S. regulation, Canada adopts a similar vehicle fuel efficiency regulation, leading to reduced emissions from cars in Canada. This is a *spillover effect.* • U.S. automakers might sell old models to countries without similar standards, which could increase emissions in other countries *(leakage).*
Short-term effect	• U.S. automakers produce more efficient vehicles, using the same basic technology (cars fueled by gasoline and diesel).
Long-term effect	• U.S. automakers develop new vehicle technologies that reduce emissions even further, such as zero emissions vehicles.

STEP 2. IDENTIFYING POTENTIAL EFFECTS OF A POLICY OR ACTION

Identifying non-GHG effects

Users may also identify any non-GHG effects of the policy or action that are relevant to the assessment, which may include the following:

- Environmental effects, such as improved air quality or water quality
- Social effects, such as improved health or quality of life
- Economic effects, such as increased employment, income, or GDP

STEP 3: IDENTIFYING GHG EMISSION SOURCES / SINKS

Users shall identify and report a list of:

- all source/sink categories and
- greenhouse gases

… associated with the GHG effects of the policy or action.

The IPCC *Guidelines for National Greenhouse Gas Inventories* provides definitions of source/sink categories that may be used.

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STEP 3: IDENTIFYING GHG EMISSION SOURCES / SINKS

Source category	Description	Examples of emitting equipment or entity	Relevant GHG
Stationary fossil fuel combustion	Combustion of fuels to generate energy	Power plants, industrial facilities, boilers, turbines	CO_2, CH_4, N_2O
Mobile fossil fuel combustion	Combustion of fuels	Trucks, trains, airplanes, ships, cars, buses	CO_2, CH_4, N_2O
Cement manufacture	Chemical or physical processes	Industrial facilities	CO_2
Landfills	Degradation or decomposition of waste	Landfills	CH_4
Agricultural soil management	Biological processes, emissions from fertilizer use	Agricultural soils	CO_2, N_2O
Forests and other land use	Forest degradation, deforestation	Forests, vegetation, soils	CO_2, CH_4, N_2O

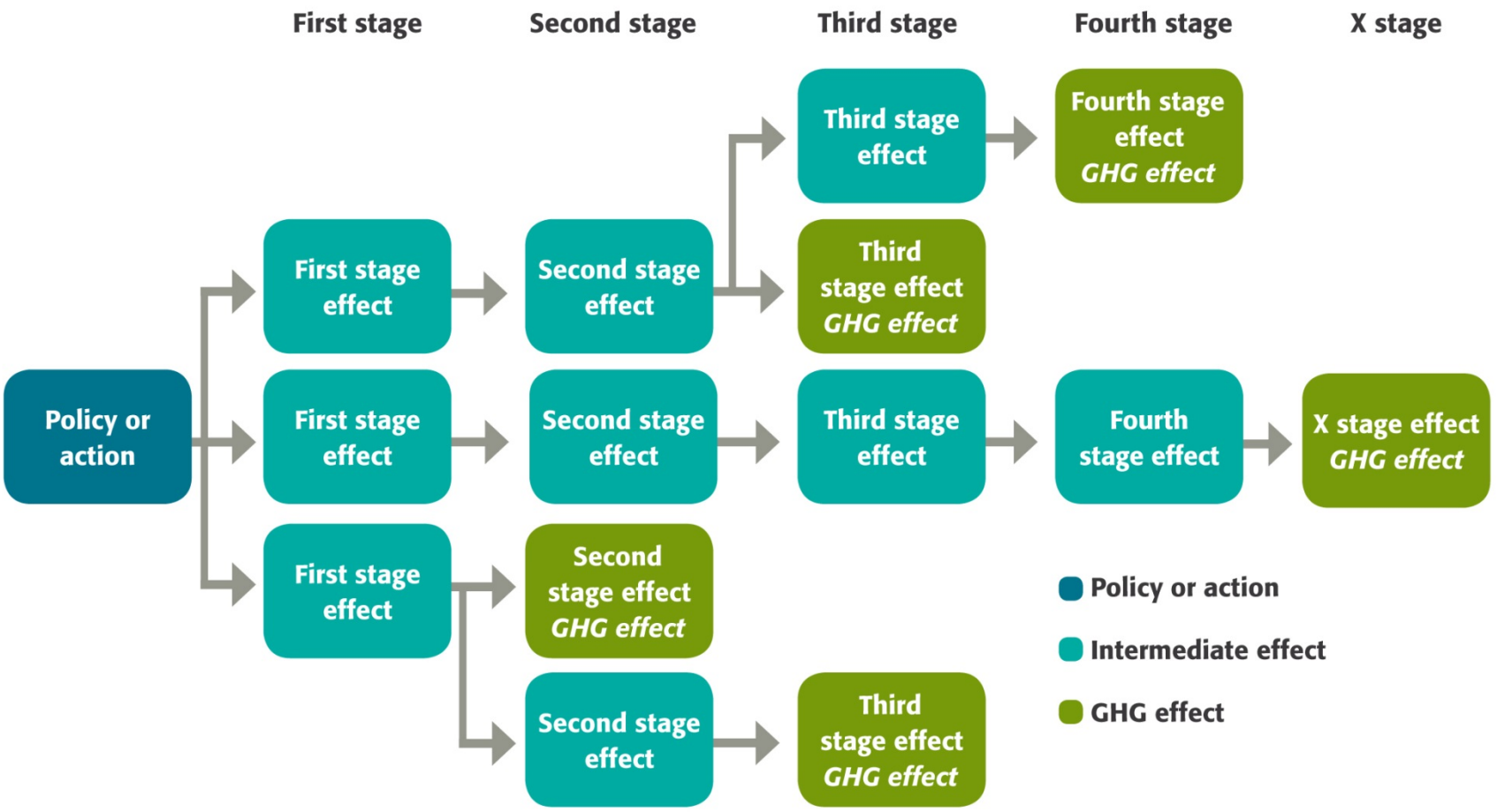
STEP 4: MAPPING THE CAUSAL CHAIN

The next step is to map and document a causal chain of the policy or action assessed, based on the effects, the sources/sinks and greenhouse gases identified.

Users may include inputs and activities in the causal chain as steps toward identification of effects.

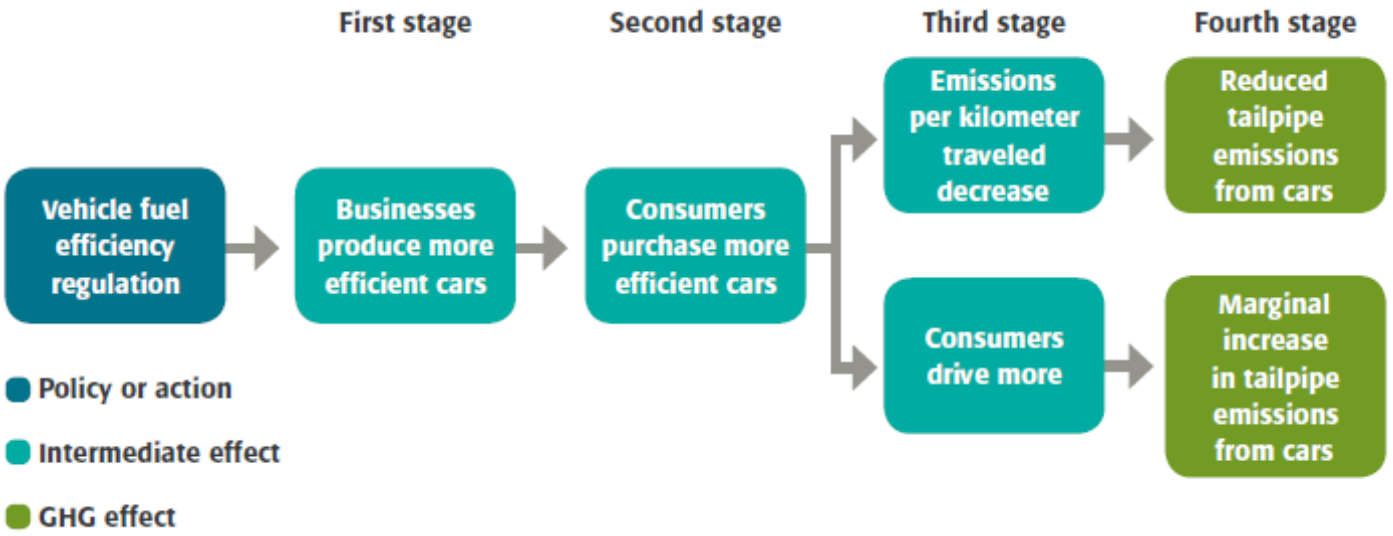
STEP 4: MAPPING THE CAUSAL CHAIN

Generic example of mapping GHG effects by stage



STEP 4: MAPPING THE CAUSAL CHAIN

Example of multiple effects illustrative vehicle fuel efficiency regulation



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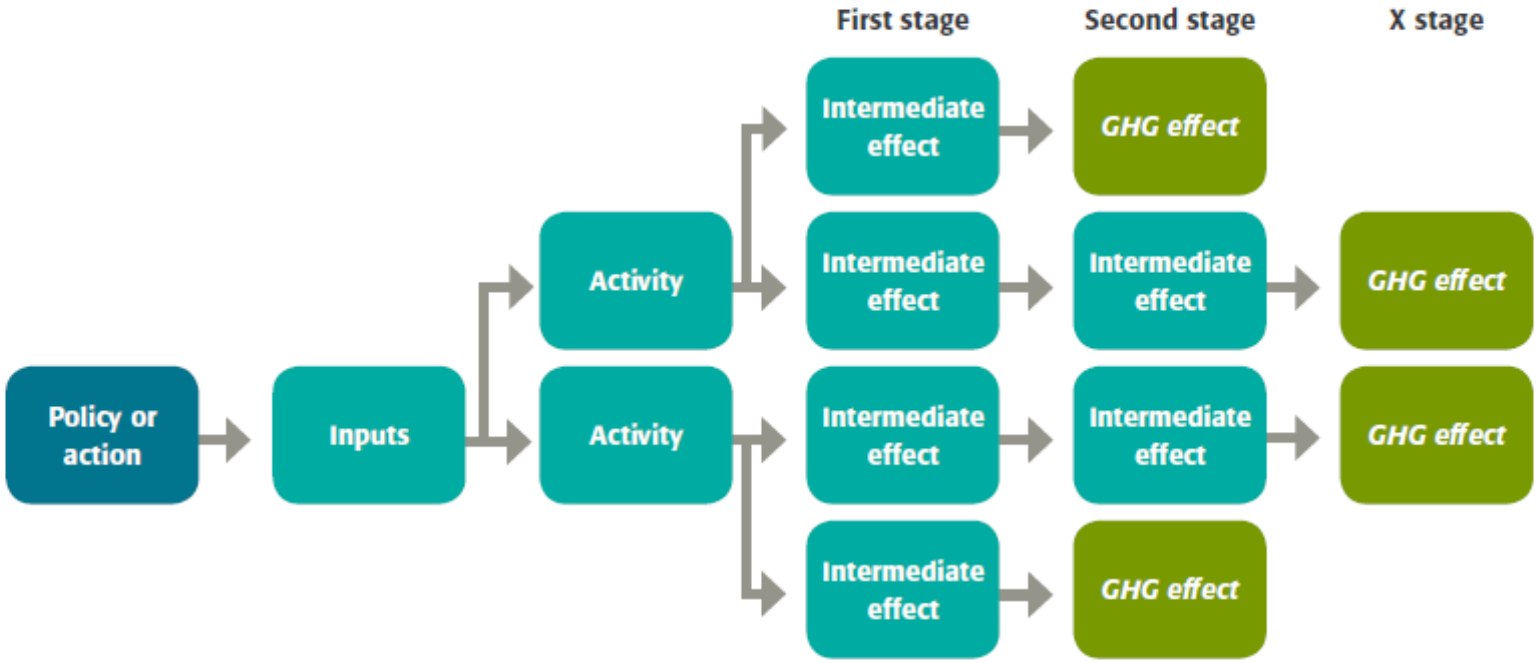
STEP 4: MAPPING THE CAUSAL CHAIN

Generic example of mapping inputs, activities, and effects by stage



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DEVELOPING A CAUSAL CHAIN

Exercise 1 – 30 mins (inc group discussion at end)

- Develop a causal chain for policies in the transport sector.
  - In Ghana the government subsidies the fuel LPG, hoping to decrease the use of wood for cooking. An unexpected result, was the conversion of cars to be able to use LPG as motor fuel.
  - We didn't have time to develop the casual chain, but used this as an example in the discussion of making a casual chain.
- You pick a policy and develop a causal chain showing likely impacts, and deciding which ones are more important for monitoring.

INDICATORS FOR CHOSEN POLICY/ACTION

Exercise 2 – 30 mins (inc group discussion at end)

- Indicators for different policies. Groups are given a range of transport-related indicators and asked to pick which ones could be best used to describe different impacts in the causal chain.
  - We talked about different indicators for transport along the day, as it was relevant. How it is a useful and comprehensive tool, to follow up specific policies or actions.
  - We also talked about how it can be difficult to know if the impact in the emission of greenhouse gases is the effect of only one or a group of policies/activities.

SUPPLY OF DATA FOR INDICATORS

Exercise or group discussion (30 mins)

- Who owns the data? Participants look at the indicators they've selected and think about which institutions would need to be involved in providing and checking/validating this data.