



Tracking of progress of mitigation policies and goals

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Key concepts out of the Policy and Action Standard: **Table of contents**

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Example of policy design and implementation cycle

Who does What?

(data collection,
monitoring,
coordination,
verification)

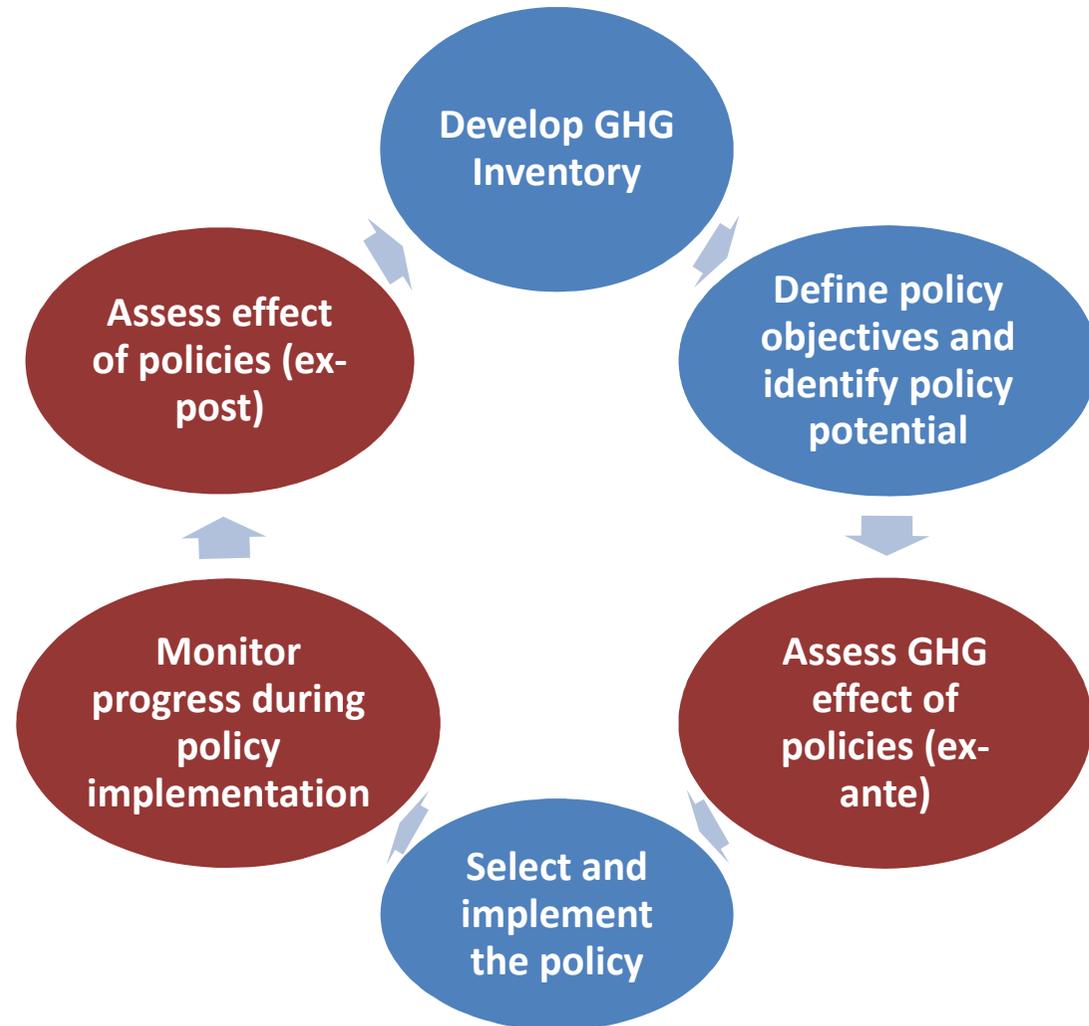
Timing?

Channels of reporting
(internal/external)?

Instruments and tools
of assessments?

Legal enforcement?

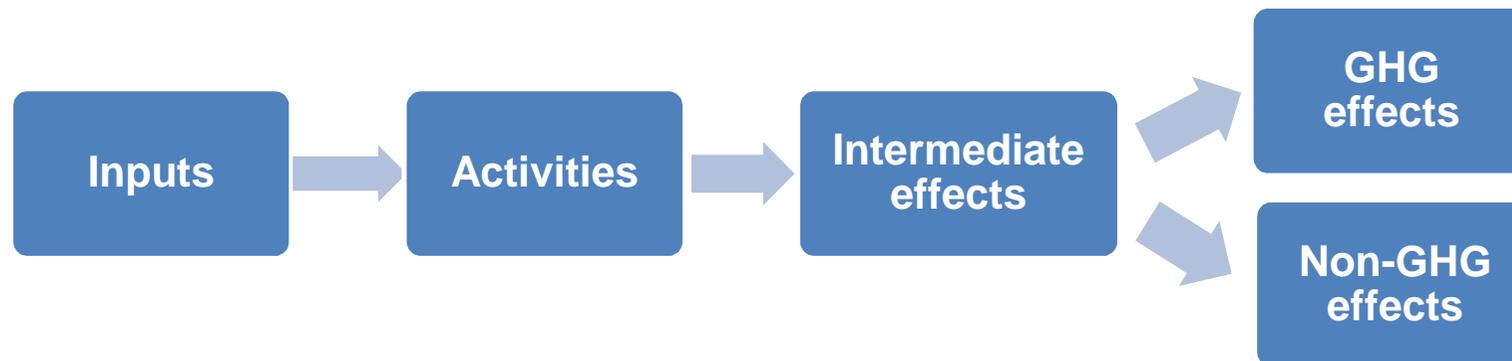
Addressed by this
standard





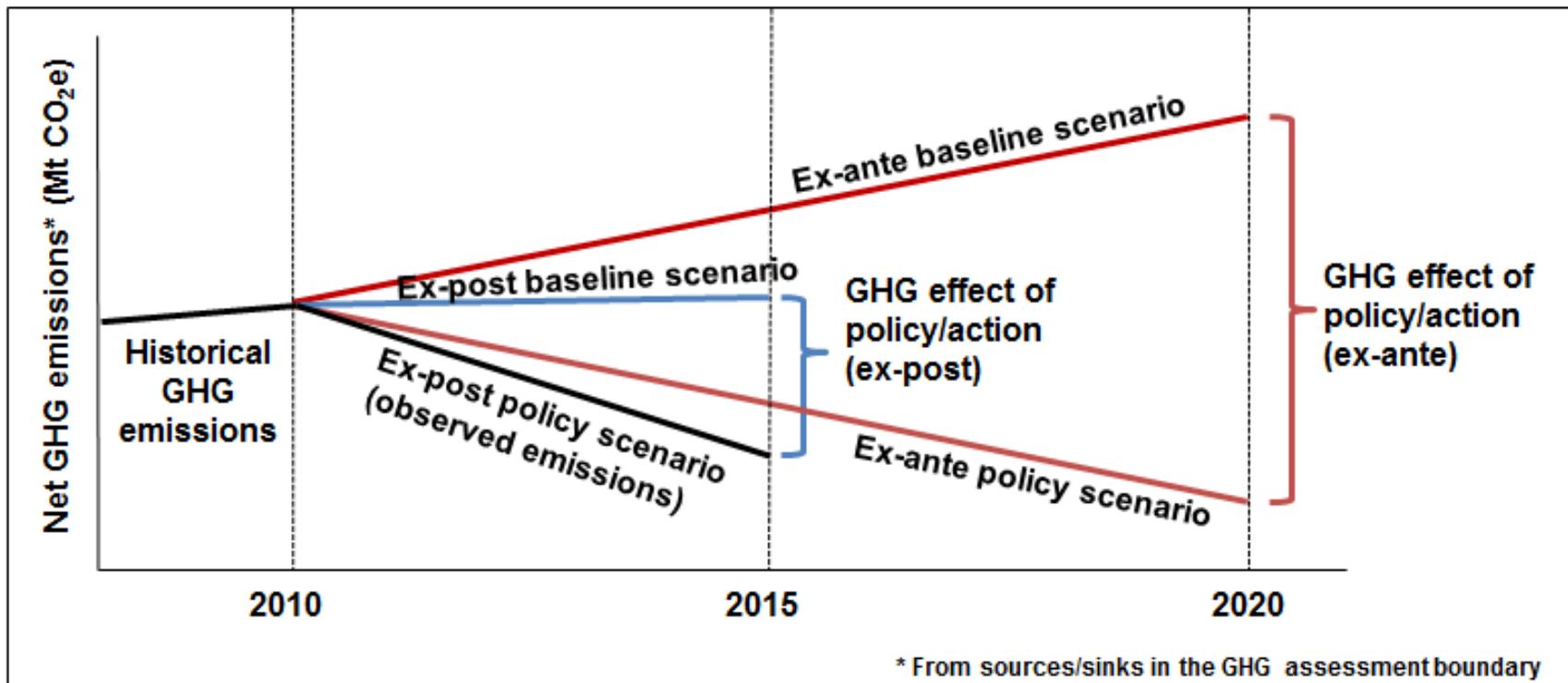
Performance Indicators

- Performance indicators are means to track progress in terms of the relevant inputs, activities, intermediate effects and GHG or non-GHG effects associated with it



- Performance indicators are likely to provide useful information on:
 - Whether the policy or action has been implemented as expected
 - Validation of the ex-ante assumptions on key parameters

Relationship between ex-ante and ex-post assessment



Examples of Indicators for an example policy

Indicator relating to:	Examples for a home insulation subsidy program
Inputs	
Activities	
Intermediate effects	
GHG effects	
Non-GHG effects	

*Based on IPCC Fourth Assessment Report

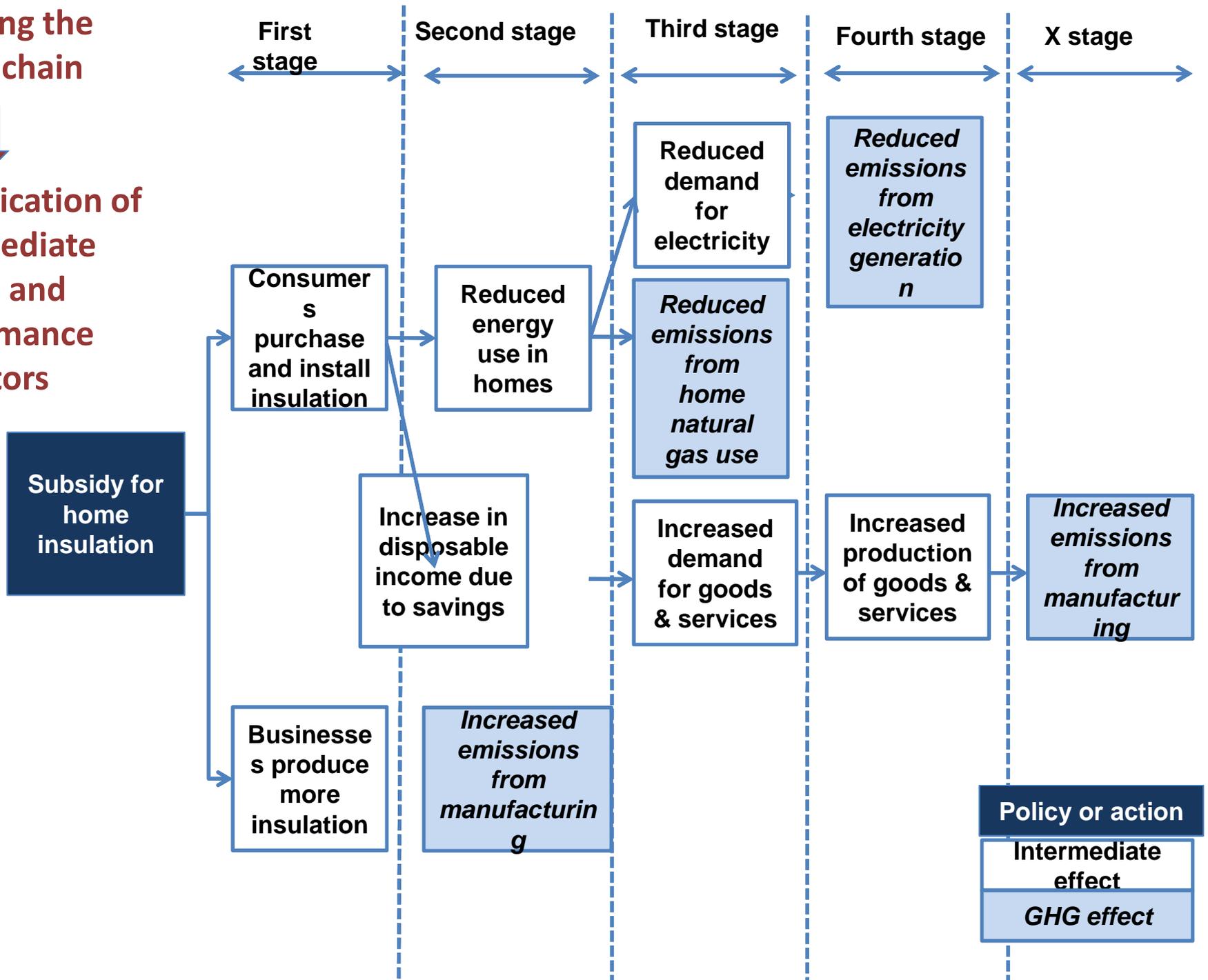
Examples of Indicators for an example policy

Indicator relating to:	Examples for a home insulation subsidy program
Inputs	Money spent to implement the subsidy program
Activities	Number of energy audits carried out, total subsidies provided
Intermediate effects	Amount of insulation purchased and installed by consumers, fraction of homes that have insulation, amount of natural gas consumed in homes (or per home)
GHG effects	CO ₂ , CH ₄ , and N ₂ O emissions from natural gas use
Non-GHG effects	Household disposable income from energy savings

Mapping the causal chain



Identification of intermediate effects and Performance Indicators



Examples of indicators for various policies

Examples of policies	Examples of intermediate effects used as KPIs
Renewable portfolio standard	Total electricity generation by source (e.g., wind power, solar power, coal, natural gas)
Public transit policies	Vehicle-kilometers traveled by mode (e.g., subway, bus, train, private car, taxi, bicycle)
Waste management policies	Tonnes of waste sent to landfills; recycling facilities; incineration facilities
Landfill gas management policies	Tonnes of methane captured and flared or used
Sustainable agriculture policies	Soil carbon content; tonnes of synthetic fertilizers applied; crop yields
Afforestation/ reforestation policies	Area of forest by type
Grants for replacing kerosene lamps with renewable lamps	Number of renewable lamps sold; market share of renewable lamps; volume of fossil fuel used
Subsidy for building retrofits	Number of buildings retrofitted

Example: Indicators used by UK

- The United Kingdom Committee on Climate Change (the CCC) and the UK Government have developed a series of indicators to track whether UK policies are on track in its annual assessment of progress.

- In the residential sector, the CCC uses insulation measures installed (by type) as an indicator to track the effectiveness of the Carbon Emission Reduction Target (CERT), an energy efficiency policy.

Insulation measures	Total needed to achieve carbon budgets (from 2008)	Delivered under CERT in 08/09	Installations needed per year to achieve carbon budgets
Lofts	10 million (by 2015)	0.7 million	1.3 million
Cavity walls	7.5 million (by 2015)	0.5 million	1 million
Solid walls	2.3 million (by 2022)	8600	165,000

- The progress of the indicator to date is compared to the total number of installations needed per year to achieve the UK's carbon budgets.

Example: Indicators used by UK (contd.) in the context of International climate Finance (ICF)

- The UK's ICF uses a set of high level indicators to measure impact and value for money.
- One set of indicators relates to the GHG emissions reduced or avoided. Others include:
 - Number of poor people (women and men) with access to low carbon energy
 - Gigawatts (GW) of low carbon energy capacity supported in developing countries
 - Number of jobs created (women/men/poor people) in low carbon development
 - Volume of leveraged low carbon finance (including private finance and MDB finance)
 - Leveraged ratio of UK public finance (including to private finance, and MDB finance)
 - Number of low carbon policy plans drawn up and implemented

Monitoring Performances - Purposes

Monitoring performance during the policy implementation period serves two related functions:

- Monitoring trends in key performance indicators in order to understand whether the policy or action is on track, being implemented as planned, and delivering the expected results
- Collect data on the various parameters needed to estimate ex-post policy scenario emissions in order to estimate GHG effects ex-post

Monitoring Performances: tracking period

- **Policy implementation period** is the time period during which the policy or action is in effect
- **GHG assessment period** is the time period over which GHG effects associated with the policy and its effects are assessed
- **The policy monitoring period** is the time period over which the policy or action is monitored

Example	Years							
	2005 – 2009	2010 - 2014	2015 - 2019	2020 - 2024	2025 - 2029	2030 - 2034	2035 - 2039	2040 - 2045
Policy implementation period								
Policy monitoring period								
GHG assessment period								

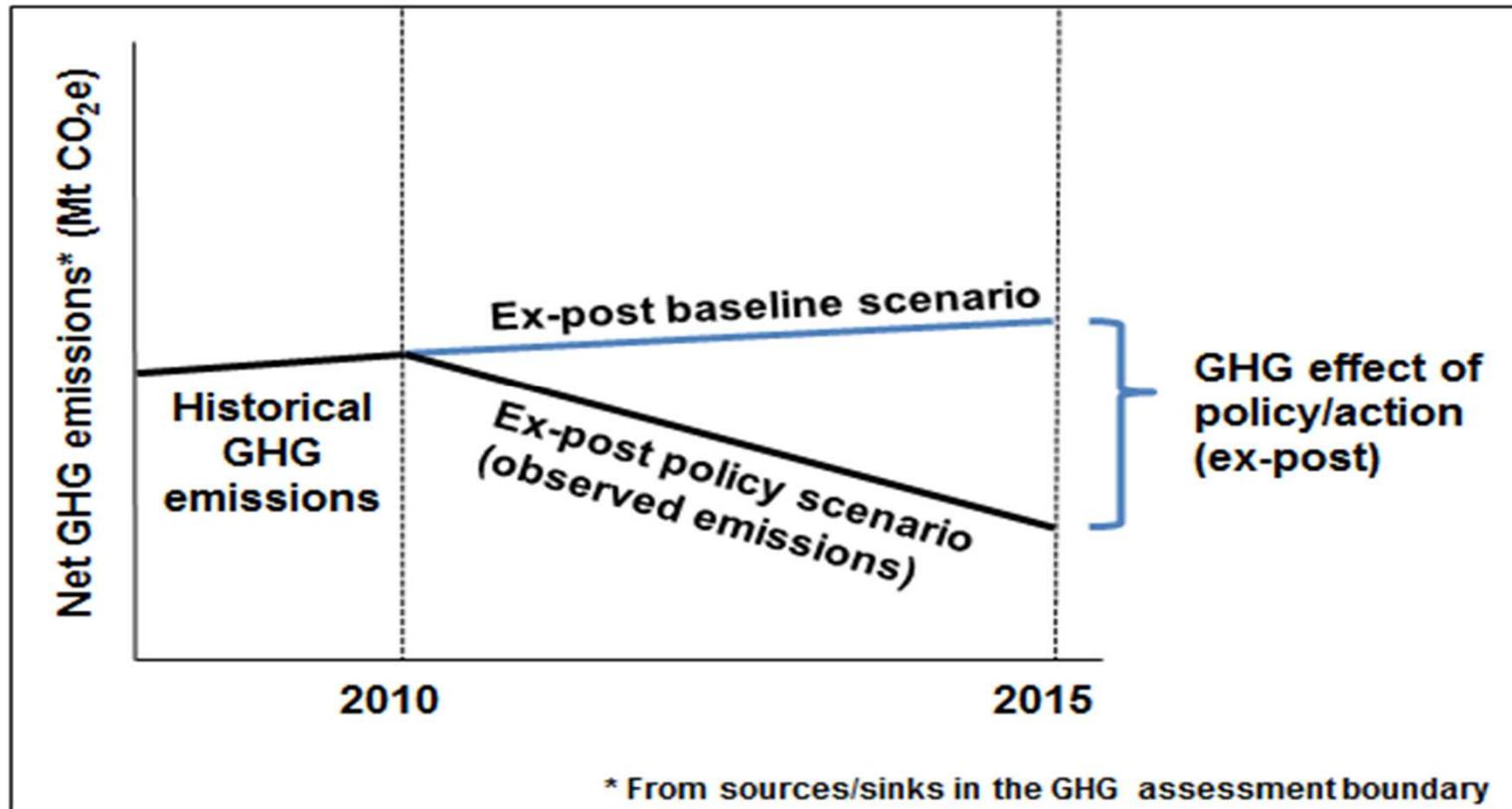
Elements of a monitoring plan

- Data collection methods and procedures
- Sources of data (either existing data sources or additional data collected specifically to monitor the indicators)
- Monitoring frequency
- Units of measure
- Nature of results: measured, modeled, calculated or estimated
- Level of uncertainty in measurements or estimates; and accounting for this uncertainty
- Sampling procedures (if applicable)
- Verification of data (procedures, frequency etc.)
- Any other relevant information

Ex-post assessment - Purposes

- Evaluate policy effectiveness and understand whether implemented policies and actions are delivering intended results
- Learn from experience to identify and share best practices, improve policy design, and decide whether to continue current activities or implement additional policies
- Evaluate the contribution of policies and actions toward GHG reduction goals
- Ensure policies and actions are cost-effective and that limited resources are invested efficiently
- Report on the GHG effects of policies and actions over time
- Meet funder requirements to estimate GHG reductions from mitigation actions

Ex-post Assessment



Steps for ex-post assessment



Total net change in GHG emissions and removals resulting from the policy or action (Mt CO₂e) = Total net baseline scenario emissions (Mt CO₂e) – Total net policy scenario emissions (Mt CO₂e)

Ex-Post Assessment

- **Bottom-up methods** (e.g., engineering models) calculate or model the change in GHG 1 emissions for each source, project, or entity (e.g., through changes in behavior or technology), 2 then aggregate across all sources, projects, or entities to determine the total change in GHG 3 emissions. 4
- **Top-down methods** (e.g., econometric models or regression analysis) use statistical methods to 5 calculate or model changes in GHG emissions and can be applied to either bottom-up or top-6 down data.

Parameters:

- **Data availability** (type, quantity, quality, and resolution of data available)
- **Type of policy and sector**
- **Number of interacting or overlapping policies and actions** (typically top-down methods are more appropriate when there are a large number of interacting policies)
- **Number of actors influenced by the policy** (typically top-down methods are more appropriate when there are a large of number of affected actors)
- **Capacity, resources, and level of expertise** available to carry out the assessment

Examples of applicable ex-post methods

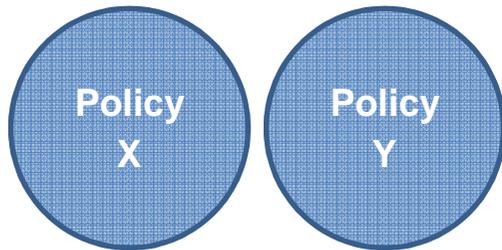
Type of policy or action	Bottom-up methods	Bottom-up or top-down methods	Top-down methods
Regulations and standards	Collection of data from affected participants; engineering estimates	Stock modelling, diffusion indicators	Monitoring specific consumption or activity indicators
Fiscal instruments	Mixed deemed and ex-post estimates; enhanced engineering estimates; deemed savings; stock modelling	Diffusion indicators	Economic modelling Monitoring specific consumption or activity indicators
Information instruments	All bottom-up methods, frequently combined with surveys of consumer behavior or monitoring of end-use actions	Diffusion indicators, stock modeling	Monitoring specific consumption or activity indicators
Voluntary agreements	Benchmarking of targeted sectors or end-uses; mixed deemed savings and ex-post estimates; deemed savings	Diffusion indicators	Monitoring specific consumption or activity indicators

Addressing policy interactions

Type	Description
Independent	The combined effect of implementing the policies together is equal to the sum of the individual effects of implementing the policies separately.
Overlapping	The combined effect of implementing the policies together is less than the sum of the individual effects of implementing the policies separately. They are sometimes referred to as counteracting policies.
Reinforcing	The combined effect of implementing the policies together is greater than the sum of the individual effects of implementing the policies separately.

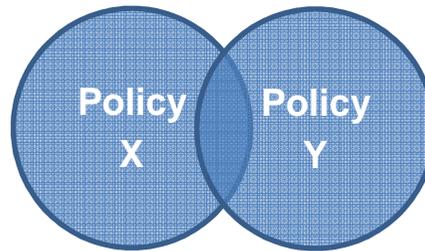
Addressing policy interactions (contd.)

Independent



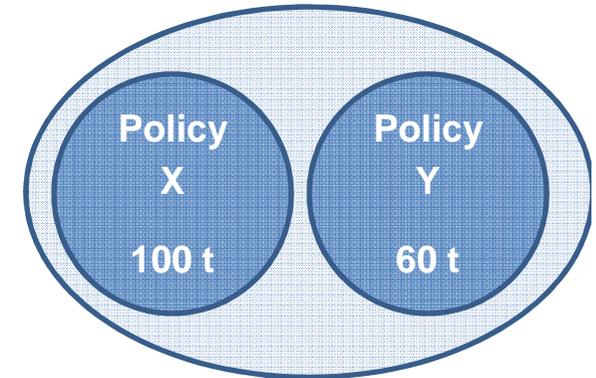
Combined effect = X + Y

Overlapping



Combined effect < X + Y

Reinforcing



Combined effect > X + Y

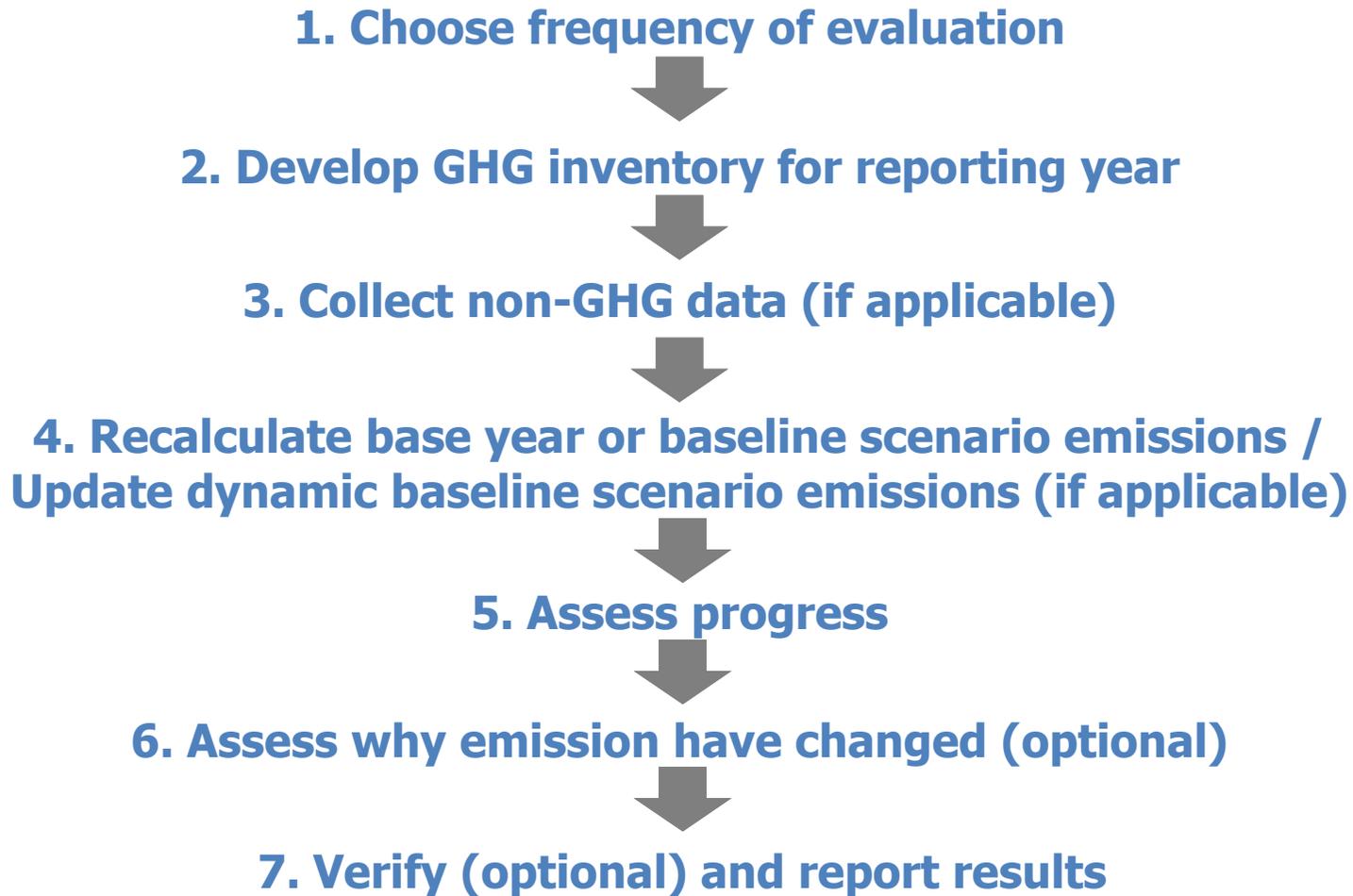
Key concepts from the Mitigation Goals Standard: **Table of contents**

1. Introduction
2. Objectives
3. Key concepts, overview of steps, and summary of requirements
4. Accounting and reporting principles
5. Designing a mitigation goal (type, boundary, level, length)
6. Estimating base year or baseline scenario emissions
7. Accounting for the land-use sector
8. Accounting for transferable emissions units
9. Calculating expected emissions in the target year and emissions reductions needed to meet the goal
10. **Assessing progress during and after the goal period**
11. Verification
12. Reporting

Tracking and reporting progress of mitigation goals

- Two approaches for tracking and reporting progress:
 1. During the goal period: Track and report progress toward goal
 2. After the goal period: Assess and report whether goal was achieved

Tracking progress during the goal period: Overview of steps



Developing a GHG inventory

- First step for tracking progress is to develop a GHG inventory for the reporting year
- GHG inventories are critical to tracking progress of goals since they provide the necessary GHG emissions data
- **For countries:** Inventories should be developed using IPCC methods
- **For subnational jurisdictions (e.g. cities and states):** Inventories should be developed using the *Global Protocol for Community-level Emissions (GPC)*, in addition to IPCC methods

Collect non-GHG data (if applicable)

- In addition to emissions data from the inventory, certain goals types will require additional non-GHG data
 - Intensity goals will require data for the unit of output (e.g. GDP)
 - Baseline scenario goals may require data for emissions drivers (e.g. GDP, energy prices, population)
- Data on use of transferable emissions units (credits and allowances) and land-use sector emissions will also be required

Adjusting inventory emissions

- To assess progress, a user must first adjust inventory emission in the reporting year to account for the use of transferable emissions units and emissions from the land-use sector

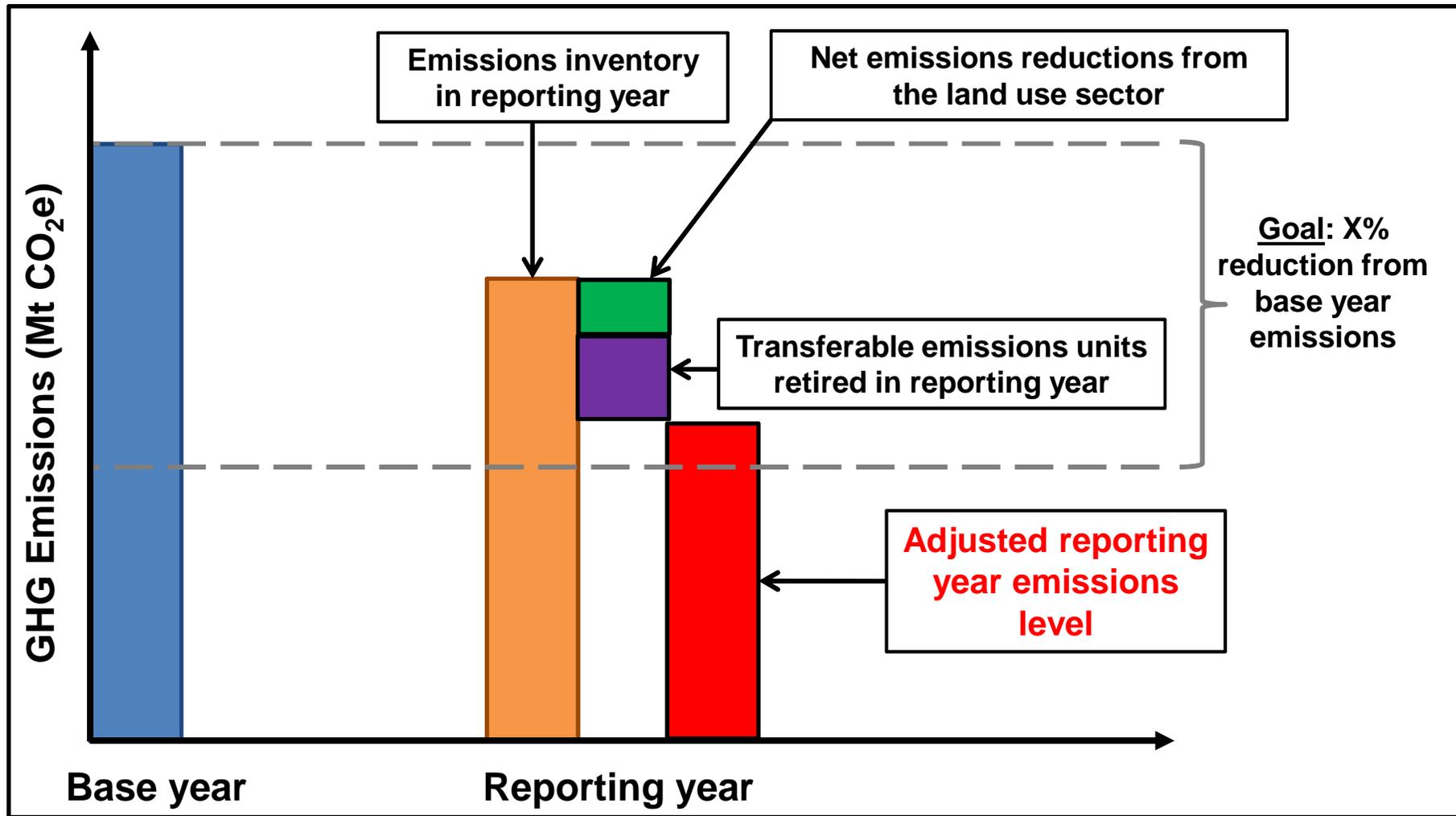
Adjusted reporting year emissions within the goal boundary =

(Emissions level in the goal boundary in the reporting year, incl. net emissions from land-use sector)

+ (Transferable emissions units sold in the reporting year)

– (Transferable emissions units retired in the reporting year)

Adjusting inventory emissions



Assessing progress during the goal period

- Quantify change in emissions between the reporting year and the:
 - base year (for base year goals)
 - start year of the baseline scenario (for baseline scenario goals)
 - year the goal was adopted (for fixed level goals)

Example: Base year goal

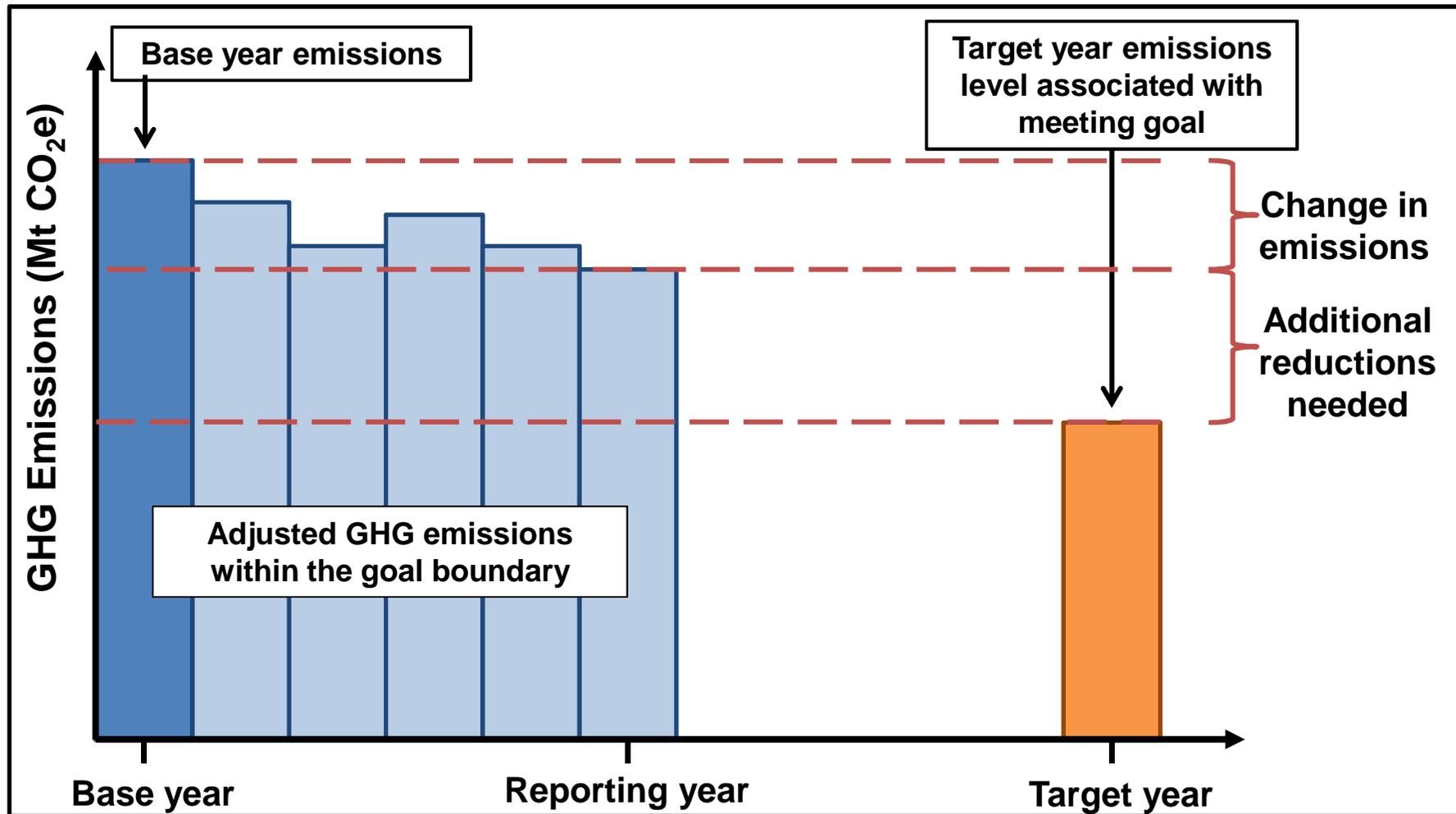
Change in emissions between reporting year and base year = (Adjusted reporting year emissions within the goal boundary) – (Base year emissions within the goal boundary)

Assessing progress during the goal period

- Quantify the additional emissions reductions needed to meet the goal

Additional emissions reductions needed to meet the goal =
(Adjusted reporting year emissions within goal boundary) –
(Target year emissions level associated with meeting the goal)

Assessing progress during the goal period



Assessing progress after the goal period

- Determine whether the goal has been achieved

Example: Base year goal

(Adjusted target year emissions) – (Target year emissions level associated with meeting the goal)

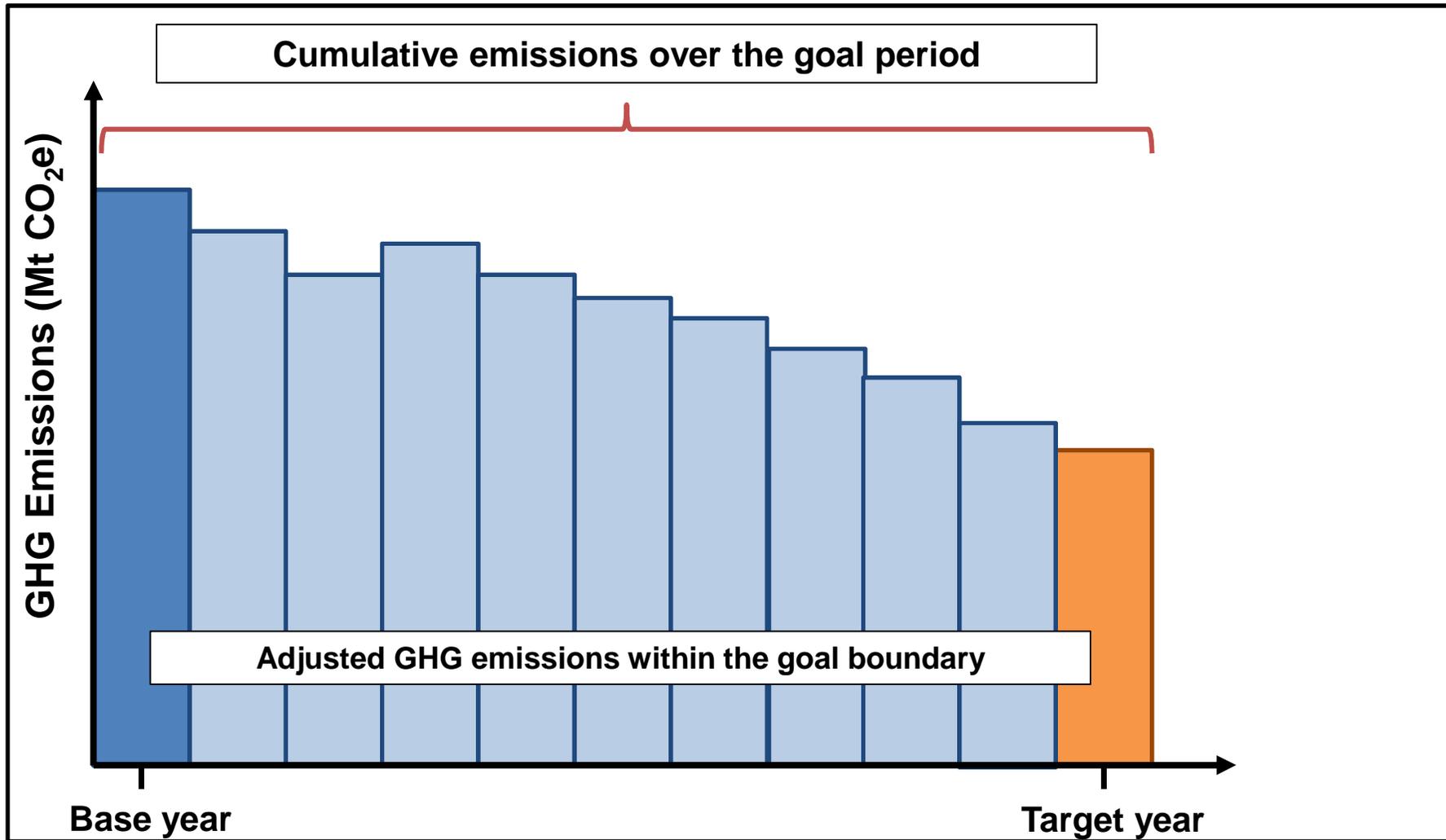
- If the goal has been achieved, the result will be zero (or less than zero if the goal is exceeded)

Assessing progress after the goal period

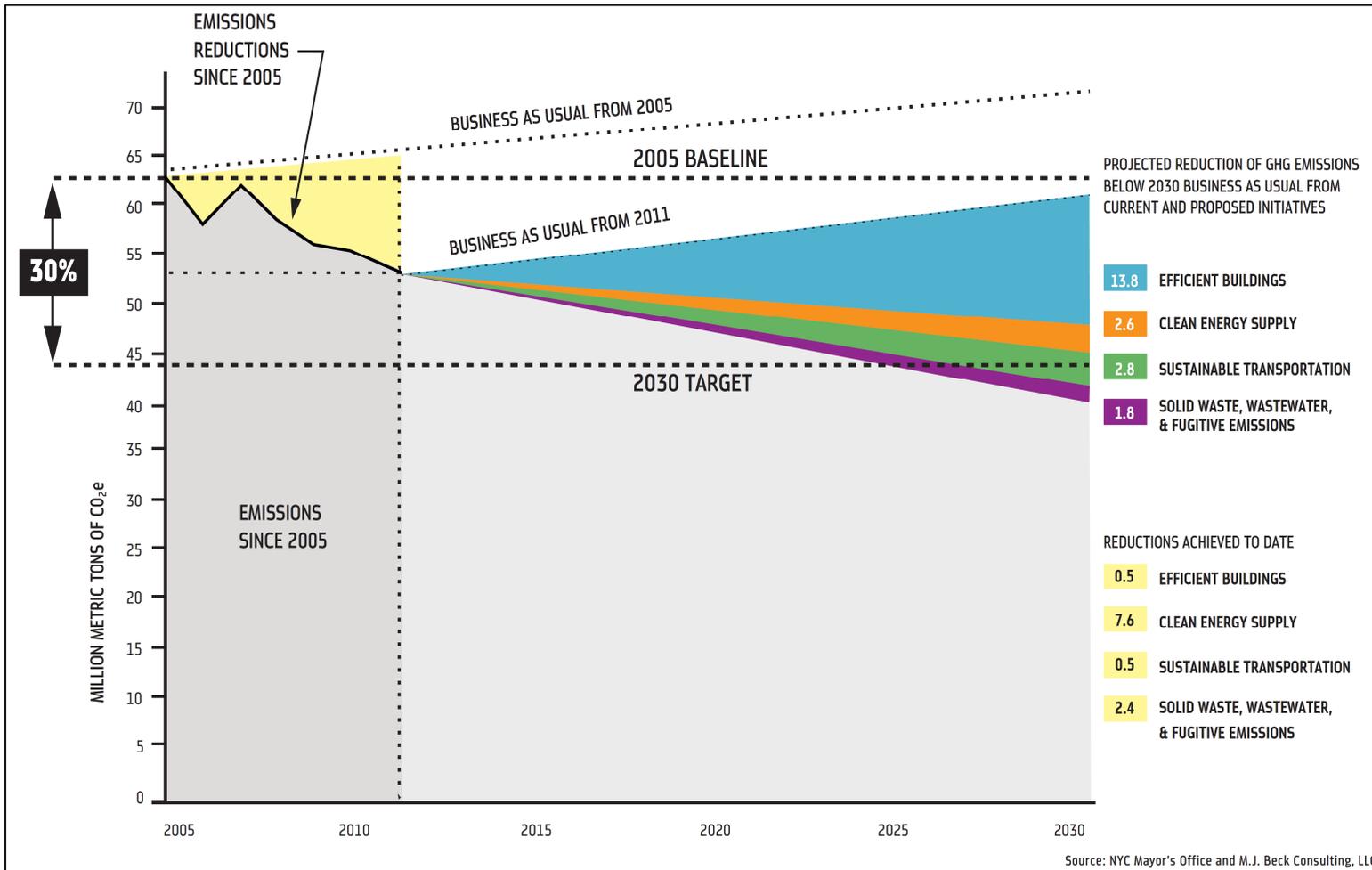
- Quantify cumulative level of emissions over goal period

Cumulative emissions over goal period = Sum of adjusted emissions for each year in goal period

Assessing progress after the goal period



Example: Tracking progress toward NYC's 30% reduction goal



Source: City of New York, 2013



Thank you

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www.ghgprotocol.org/mitigation-accounting

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