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MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

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TARGET CLIMATE WEBINAR: DAY 2

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OVERVIEW

WORKSHOP 2

- Recap
- GHG Protocol
- Carbon footprint – Guidance Document
- Carbon footprint – xl Tool
- Target Setting

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Recap

IMPORTANCE OF GREENHOUSE GASES

BALANCE

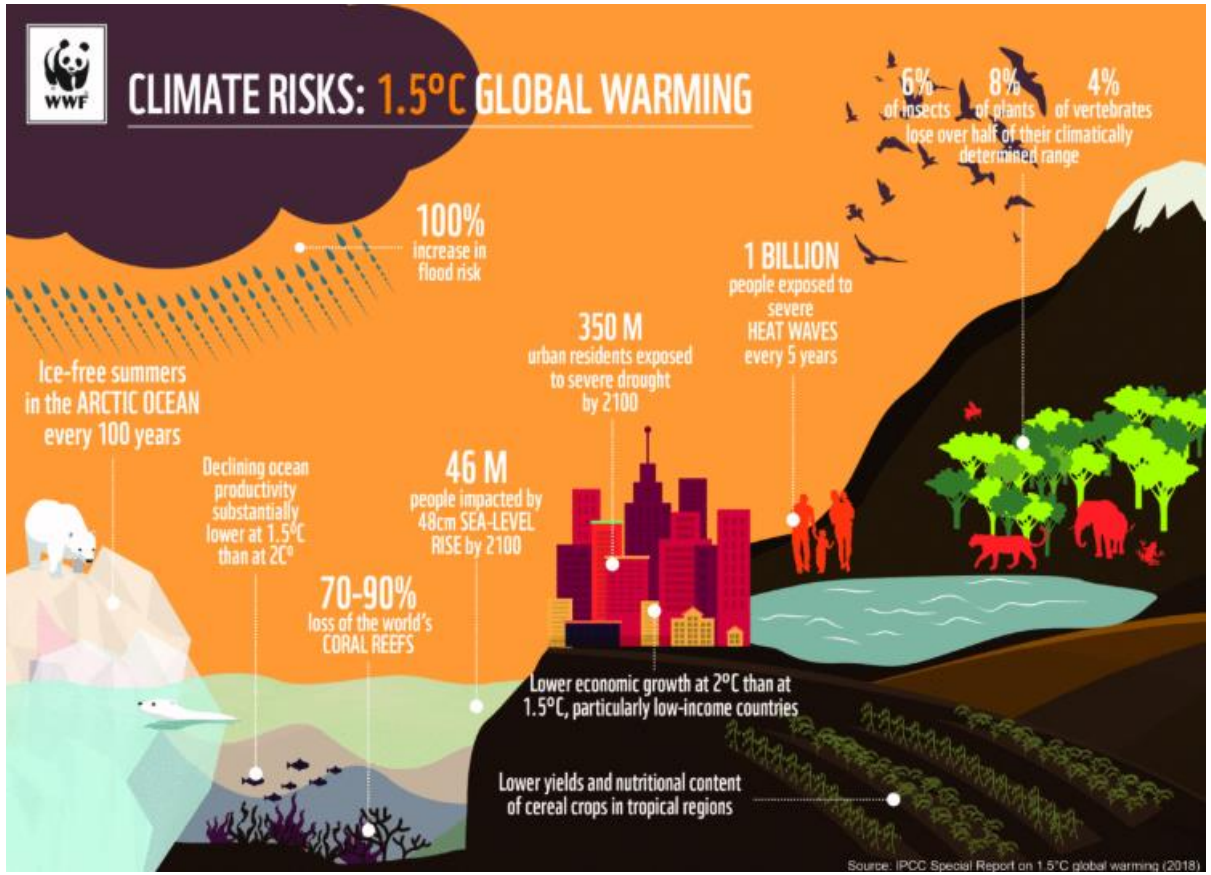
- Without greenhouse gases, our planet would be a freezing wasteland and most likely uninhabitable for humans

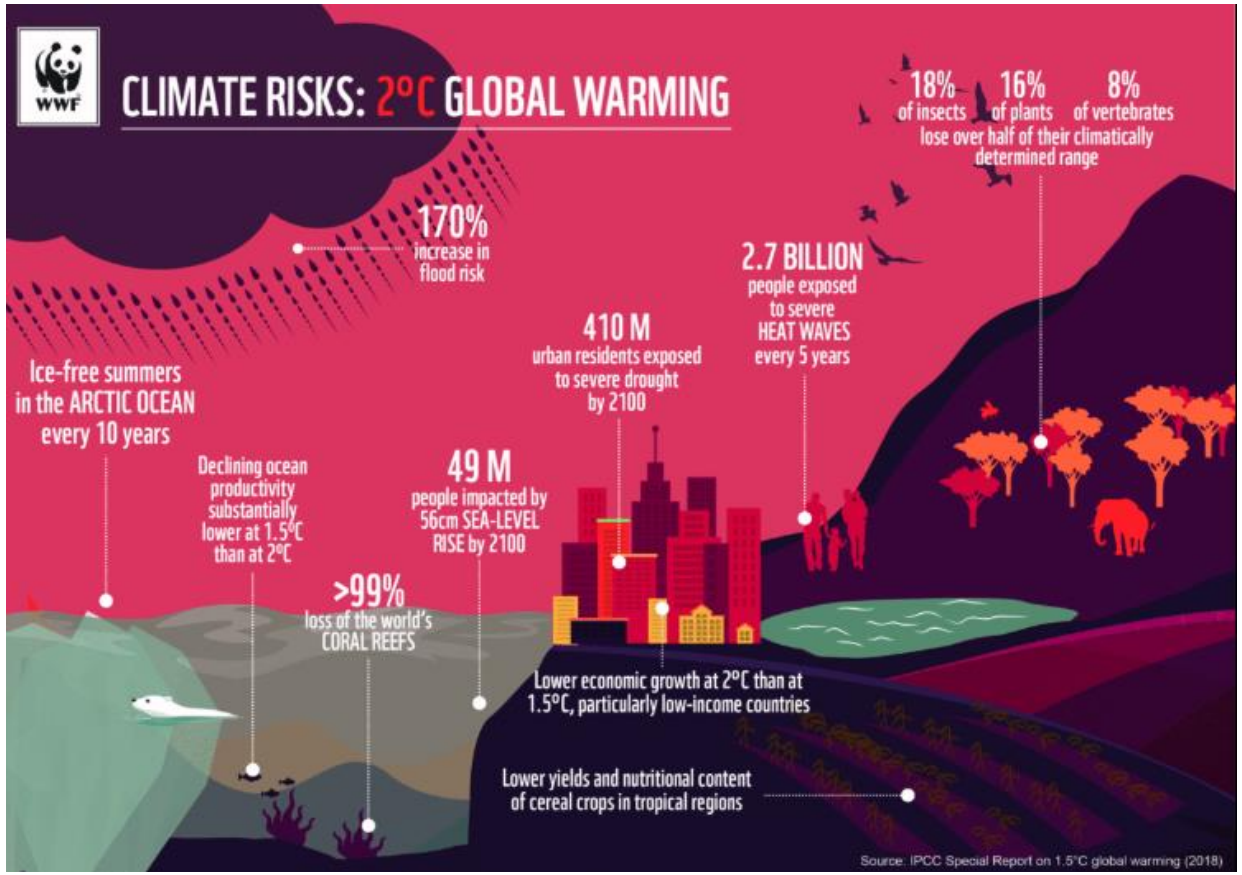
Too little or no greenhouse gases will make the Earth too cold

Similarly, a lot of greenhouse gases will make the Earth too warm

PROJECTED IMPACTS OF CLIMATE CHANGE

THE FIGHT TO STAY BELOW 1.5 C





GREENHOUSE GASES

Gas	Source	GWP
Carbon Dioxide (CO_2)	Emission from factories, Deforestation	1
Methane	Waste disposal, Mining activities, and Agricultural grazing	28
Nitrous oxide (N2O)	Emission from cars, Emission from factories, and Fertilizers	298
Sulfur Hexafluoride (SF6)	Electrical substations, Magnesium smelters	22,800
Hydrofluorocarbons (HFCs)	Refrigerators, Deodorants, and Air conditioners	124 -14,800
Perfluorocarbons (PFCs)	Foil paper and Chipset	7,390 -12,200

GHG INVENTORY STEPS

Methodology

Define Boundary

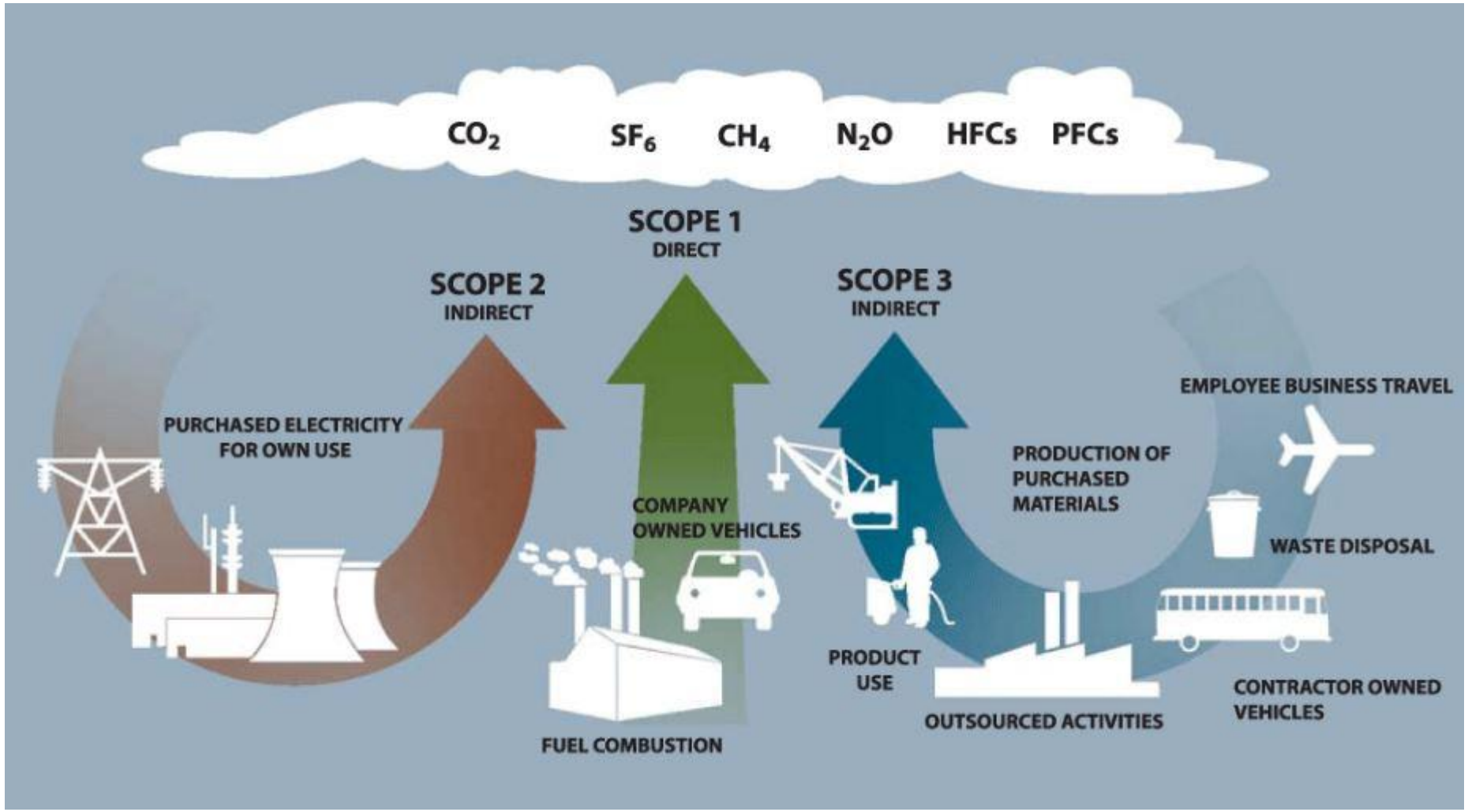
Identify emission sources

Collect Activity Data

Set Emission Factors

Calculate Emissions

EMISSION SCOPES



Source: https://i2.wp.com/synergyfiles.com

EMISSIONS FROM SEWAGE TREATMENT PLANT

Quantity of water treated : **1,923,000 Liter**

BOD (kg/l) : **0.000086**

CH_4 emission Kg: **0.18 kg CH_4/ Kg BOD**

CH_4 Global Warming Potential: **28**

Methane emissions

= Quantity of water treated * BOD* CH_4 Emission

= 1,923,000* 0.000086 * 0.18

= 29.76 kg Methane

= 29.76*28 kg CO_2

= 833 tCO_2e

QUIZ TIME

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GHG Protocol Standards

What is GHG Protocol?

- GHG Protocol is an NGO-based partnership between WRI and WBCSD
- It develops frameworks to measure and manage greenhouse gas (GHG) emissions
- Provides online training on it’s standards and tools
- Widely used guidelines to develop GHG inventory
- More than 9o% of Fortune 500 companies reporting on carbon disclosure used GHG Protocol

GHG Protocol Standards

Mitigation Goal Standard

Corporate Standard

Corporate Value Chain (Scope 3) Standard

GHG Protocol for Cities

Policy and Action Standard

Product Standard

Project Protocol

https://ghgprotocol.org/

GHG Accounting and Reporting Principles

RELEVANCE

COMPLETENESS

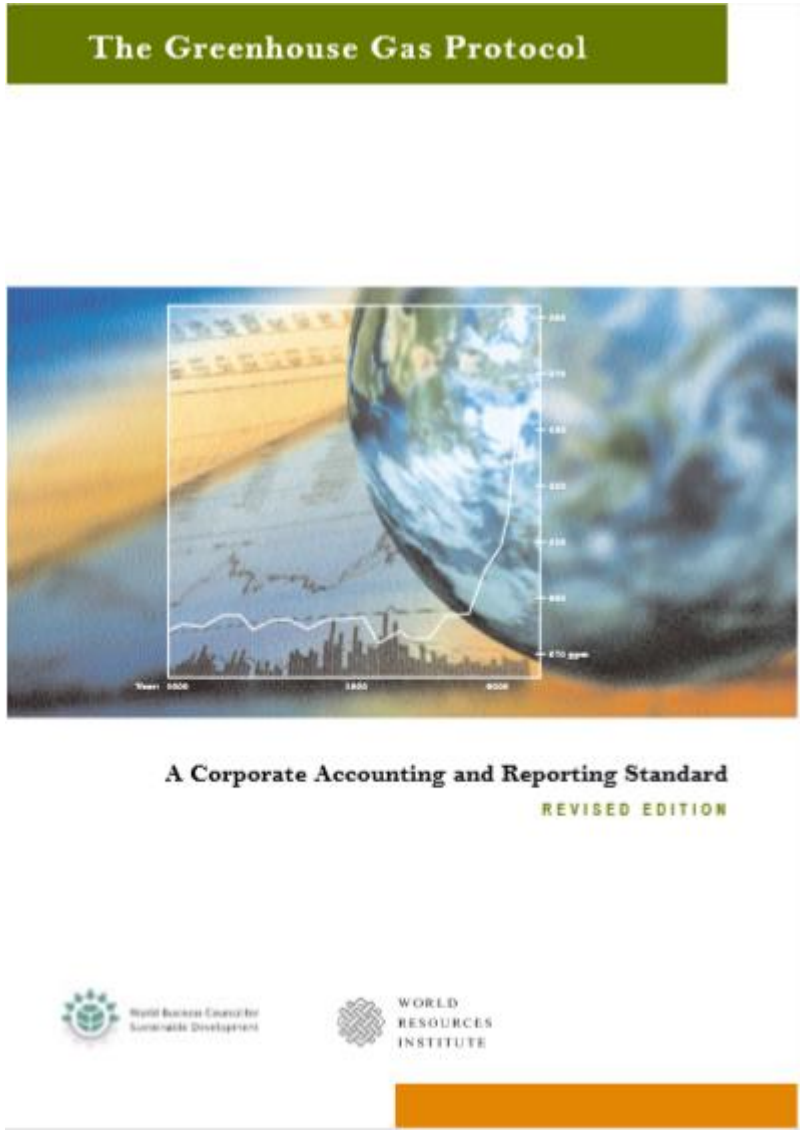
CONSISTENCY

TRANSPARENCY

ACCURACY

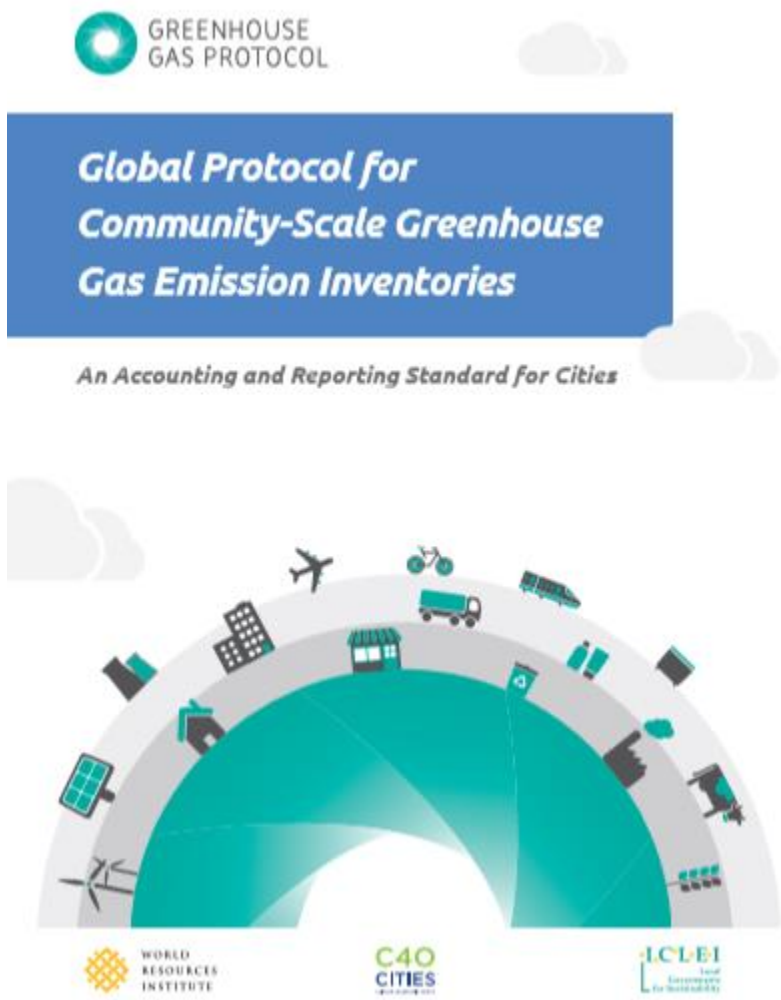
Corporate Accounting and Reporting Standard

- The GHG Protocol Corporate Accounting and Reporting Standard provides requirements and guidance for companies and other organizations preparing a corporate-level GHG emissions inventory.



Community Scale Greenhouse Gas emission inventories

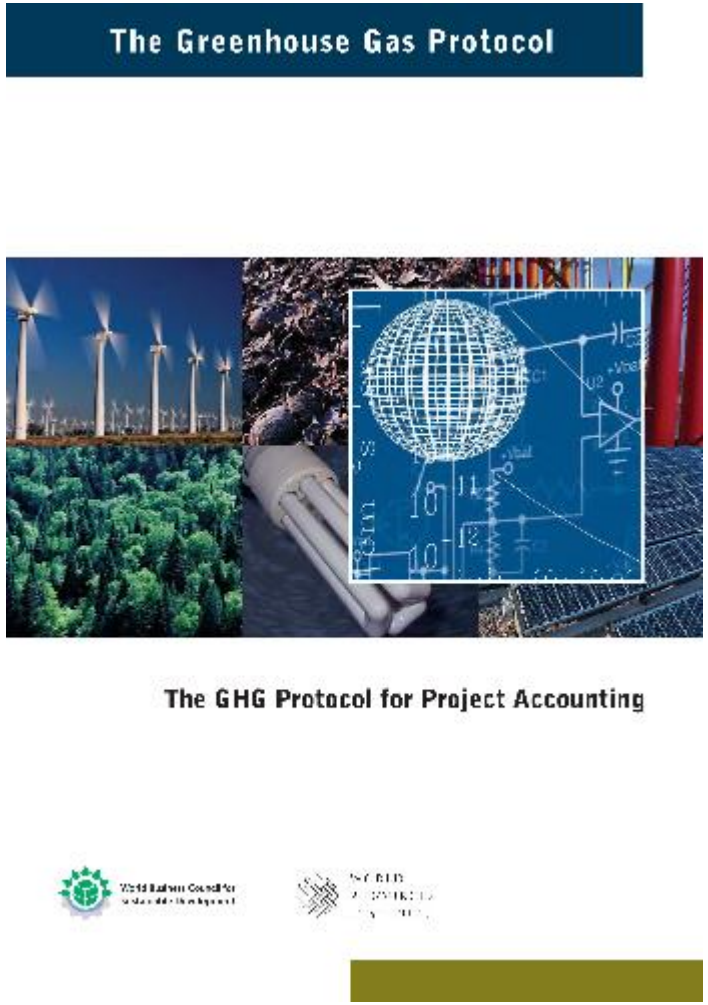
- An Accounting and Reporting Standard for Cities
- Responsible for more than 70 percent of global energy-related carbon dioxide emissions.
- Cities represent the single greatest opportunity for tackling climate change.



Project GHG Accounting

- The GHG Protocol for Project Accounting is for quantifying the greenhouse gas benefits of climate change mitigation projects.

- The Project Protocol provides specific principles, concepts, and methods for quantifying and reporting GHG reductions—i.e., the decreases in GHG emissions, or increases in removals and/or storage—from climate change mitigation projects (GHG projects).



Value chain – scope 3

- The Corporate Value Chain (Scope 3) Accounting and Reporting Standard allows companies to assess their entire value chain emissions impact and identify where to focus reduction activities.

Mitigation goal

- The GHG Protocol Mitigation Goal Standard provides guidance for designing national and subnational mitigation goals and a standardized approach for assessing and reporting progress toward goal achievement.

- The standard can help governments set emission-reduction targets, meet domestic and international emissions reporting obligations to groups like the UNFCCC, and ensure that efforts to reduce emissions are achieving their intended results.

Product life cycle

- The Product Life Cycle Accounting and Reporting Standard can be used to understand the full life cycle emissions of a product and focus efforts on the greatest GHG reduction opportunities.

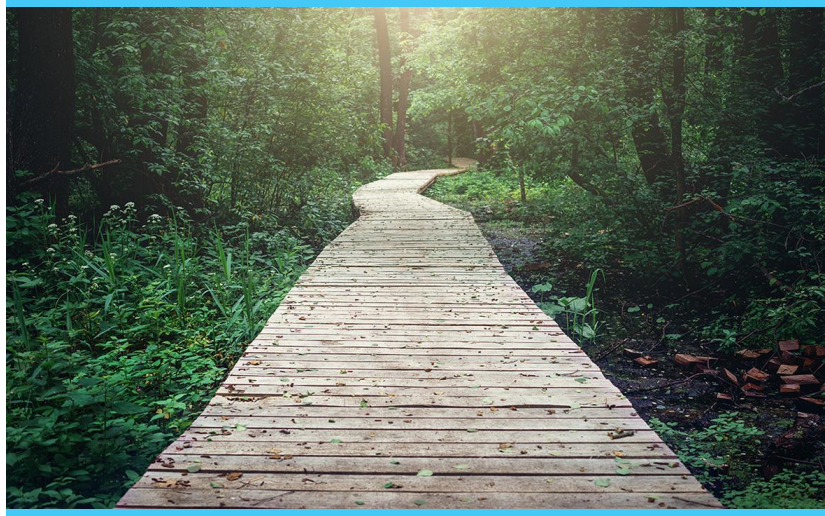
Policy & Action

- The GHG Protocol Policy and Action Standard provides a standardized approach for estimating the greenhouse gas effect of policies and actions.

- Analysts at both the national and local levels can evaluate the GHG impacts of specific policies to improve their effectiveness in reducing emissions and inform where to invest resources to achieve the best results.

Guidance Document

Steps to create a GHG inventory



Emission Sources

SN	Emission Sources	Description	GHGs
1	Electricity consumption	Industries utilise electricity for running their operations. This electricity is usually supplied from the utility company/grid. The electricity is generally produced by combusting fossil fuel in power plants, which leads to emissions.	CO_2
2	Water consumption	Industries use water for several purposes in their operations. Most of the supplied water in the UAE is from desalination. Desalination plants in the UAE utilise fossil fuels and thus release GHGs.	CO_2
3	Fuel combustion in equipment	Industries normally have equipment that consumes fossil fuels e.g. boilers, heaters, diesel generators etc. Combustion of fuel leads to greenhouse gas emissions.	CO_2
4	Vehicles	Vehicles owned by companies consume diesel/gasoline, thereby emitting CO_2.	CO_2
5	Solid waste	Generally, solid waste generated is disposed of in landfills. The organic components of solid waste undergo anaerobic decomposition in the landfill and release methane.	CH_4
6	Wastewater	Wastewater treatment also releases methane through anaerobic degradation of the organic content of the water.	CH_4
7	Refrigerants	Refrigerating equipment such as chiller, Heating Ventilation and Air Conditioning (HVAC) contain refrigerants. Many of these refrigerants are HFCs and HCFCs which are greenhouse gases. The leakage of these refrigerants in the atmosphere leads to emission of these GHGs.	HFCs & HCFCs
8	Air travel by employees, cargo movement etc.	The combustion of aviation fuel in the aircraft releases GHGs.	CO_2

Data requirements

SN	Emission Sources	Activity Data	Units
1	Electricity consumption	Electricity purchased/ consumed	kWh MWh
2	Water consumption	Water consumed for each type of water source	Litres Kilolitres M^3
3	Fuel combustion in equipment	Quantity of fuel consumed/ combusted	Litres Kilolitres M^3
4	Vehicles	Diesel/ gasoline consumed and kilometres travelled	Litres Kilolitres M^3 Kilometres
5	Solid waste	Quantity of waste generated	Kilograms

Emission Factors

SN	Emission Sources	Emission Factor	Value	Unit
1	Electricity consumption	Grid Emission Factor (Dubai)	0.4258	tCO_2/MWh
		Grid Emission Factor (Abu Dhabi)	0.410	$kgCO_2/kWh$
2	Desalinated water		13.76	$kgCO_2/M^3$
3	Fuel consumption	Diesel	0.0031	tCO_2e/litre
4		Gasoline	0.00239	
5		LPG	0.00157	
6	Road transport	Diesel	0.16533	$kgCO_2e/km$
7		Gasoline	0.2079	
8	Air travel	Emissions per passenger per km of distance flown	0.19562	tCO_2e/ Passenger/km

Sample calculations

EMISSIONS FROM ELECTRICITY CONSUMPTION

Activity Data	Value
GHG emissions	= Electricity consumption * Emission Factor
Annual electricity consumption	1,200,000 kWh
Grid Emission Factor	0.4258 tCO_2e/MWh
GHG emissions	= 1,200 MWh * 0.4258 tCO_2e/MWh
	= 511 tCO_2e

EMISSIONS FROM WATER CONSUMPTION

Activity Data	Value
GHG emissions	= Water consumption * Emission Factor
Annual water consumption	20,200,000 litres
	20,200,000 litres = 20,200 M^3
Emission Factor	13.76 $kgCO_2e/M^3$
GHG emissions	= 20,200 M^3 * 13.76 $kgCO_2e/M^3$
	= 277,952 $kgCO_2e$
	= 278 tCO_2e

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GHG Calculator - xl tool

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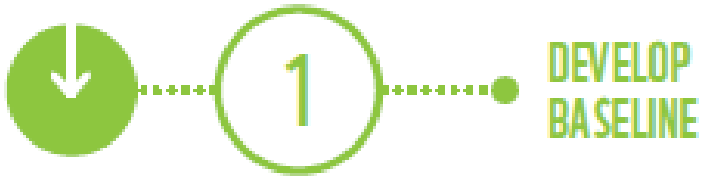
Target Setting

Target setting

1. DEVELOP BASELINE
2. FORECAST EMISSIONS
3. IDENTIFY EMISSION REDUCTION POTENTIAL
4. ESTABLISH TARGET
5. MONITOR & REPORT

Develop Baseline



- Select base year(s)
- Estimate emissions for the base year(s)
- Ensure that the base years are representative of typical business operation

Baseline emission

Rolling & Fixed Target Base Year

Two general approaches are available: a fixed target base year or a rolling target base year.

- **Using a Fixed Target Base Year:** Most emission reduction targets are defined as a percentage reduction in energy consumption below a fixed target base year.

- **Using a Rolling Target Base Year:** Companies may consider using a rolling target base year if obtaining and maintaining reliable and verifiable data for a fixed target base year is likely to be challenging, or if the company is in a continuous growth phase with dynamic business operations

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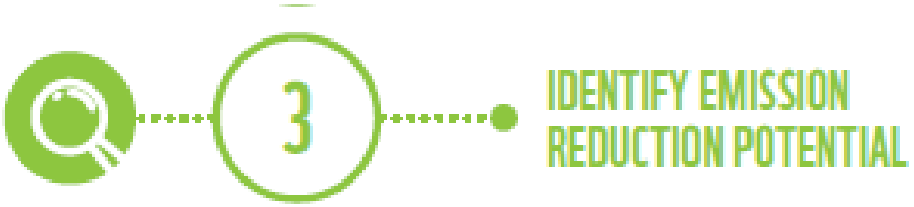
Forecast emissions

- Model the expected emissions from business operation considering expected growth and diversification as per companies business plans and targets.

- Identify any planned changes that would have effect on GHG emissions and consider them in emission forecasts

Estimate Emission Reduction Opportunities



- Understand the drive of senior management
- Assess the availability of the budgets in the following years
- Undertake assessments for the following:
    - Energy efficiency
    - Water optimization
    - Fuel switch
    - Renewable energy integration etc

Set Target

There are two broad types of targets: Absolute and Intensity-based.

- An absolute target is usually expressed in terms of a reduction over time in a specified quantity of emissions, the unit typically being Kg or tCO2e.

- An intensity target is usually expressed as a reduction in the ratio of GHG emissions relative to another business metric (for e.g. KgCO2e/Sq.ft).

- To facilitate transparency, companies using an intensity target should also report the absolute emissions from sources covered by the target.

Develop Baseline

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