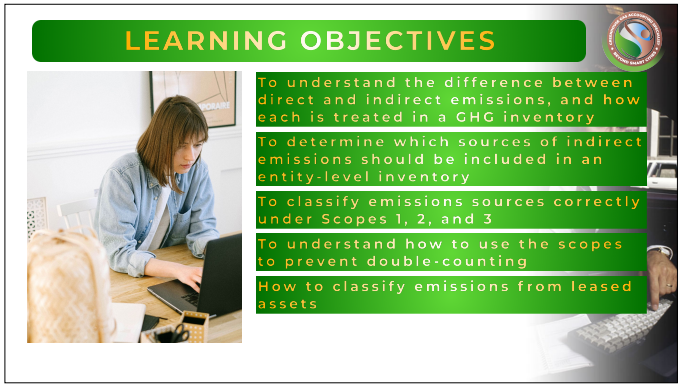
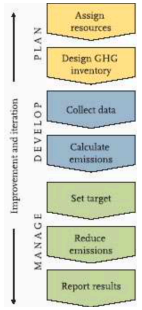
BEYOND
SMART CITIES
FUNDAMENTALS OF ORGANIZATIONAL GHG ACCOUNTING
FOR ENVIRONMENTAL AND GHG SPECIALISTS
KRISHNAJI PAWAR, LEED AP BD+C,GSAS CGP,ISO 14001:2015,GCP
ENVIRONMENTAL SPECIALIST CURRICULUM

OPERATIONAL BOUNDARIES
FOR ENVIRONMENTAL AND GHG PROFESSIONALS
KRISHNAJI PAWAR, LEED AP BD+C,GSAS CGP,ISO 14001:2015,GCP
ENVIRONMENTAL SPECIALIST CURRICULUM


LEARNING OBJECTIVES
To understand the difference between direct and indirect emissions, and how each is treated in a GHG inventory
To determine which sources of indirect emissions should be included in an entity-level inventory
To classify emissions sources correctly under Scopes 1, 2, and 3
To understand how to use the scopes to prevent double-counting
How to classify emissions from leased assets

INVENTORY STEPS



- In the last lesson, we left off in the second step of the corporate GHG management process – designing the GHG inventory – and specifically, identifying organizational boundaries. We'll pick up where we left off in that step, looking at how to establish operational boundaries for your inventory.

Direct emissions: sources that are owned or controlled by the company

Indirect emissions: consequence of the activities of the company, but occur from sources owned or controlled by another company.

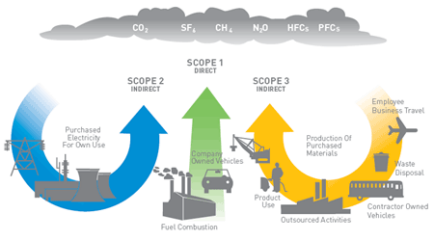
WHAT ARE OPERATIONAL BOUNDARIES?

Operational boundaries classify GHG-emitting activities to determine which of them need to be included in your GHG inventory.

Setting operational boundaries involves:

- Identifying emissions associated with operations
- Classifying them as direct or indirect emissions
- Choosing the "scope" of accounting and reporting for indirect emissions

CLASSIFYING EMISSIONS



Direct emissions are emissions within your company's organizational boundary from sources that your company owns or controls, like business travel in company vehicles or the combustion of fuel in the company's boilers and furnaces. For reporting purposes, all direct emissions should be classified under Scope 1.

CLASSIFYING EMISSIONS +

Indirect emissions are related to your company's activities but come from sources owned or controlled by another company. The most prominent example is electricity. Although all companies use electricity, the emissions associated with electricity use occur at the point where the electricity is generated, often at a power plant not owned or controlled by your company. Therefore, in such cases, the emissions associated with the company's electricity use are indirect.

Another example of indirect emissions are those from business travel in a vehicle not owned or controlled by your company. For example, if your company's employees fly to business meetings in a commercial aircraft, the emissions from the aircraft are indirect because the plane is not owned or controlled by your company. On the other hand, if the employees were to fly in a corporate jet, the emissions would be direct because the corporate jet is owned/controlled by your company.

Indirect emissions are further classified into Scope 2 and Scope 3. Scope 2 emissions are emissions from the generation of electricity, heat, or steam that is purchased by your company from a source that is not owned and controlled by your company. Scope 2 emissions are required to be included in GHG inventories.

Scope 3 emissions are all other indirect emissions. For example, your employees emissions associated with their business travel flights on a commercial airline would be Scope 3. They are optional under the GHG Protocol and under ISO 14064-Part 1;however, some GHG reporting programs require that certain Scope 3 emissions be included under certain circumstances.

SCOPE 1 EMISSIONS

Scope 1 emissions are direct GHG emissions from sources that a company owns or controls

Scope 1 emissions can come from:

- ☑Generation of electricity, heat, or steam
- ☑Physical or chemical processing
- ☑Transportation of materials, products, waste, and employees
- ☑Fugitive emissions
- ☑As long as your company owns/controls the source they are direct emissions (Scope 1)
- ☑Otherwise the emissions are classified as indirect (Scope 2 or 3)

Emissions from any electricity generated within your company's boundaries are included in Scope 1 – even if you sell the electricity to another company.

Scope 1 emissions are required to be included in GHG inventories.

SCOPE 1 EMISSIONS +

Generation of electricity, heat, or steam - combustion of fuels in stationary sources (e.g., boilers, furnaces, turbines) Physical or chemical processing - manufacture or processing of chemicals and materials (e.g., cement, aluminum, waste processing) Mobile combustion sources (e.g., trucks, trains, ships, airplanes, cars, buses) Fugitive emissions – uncontrolled, unintentional emissions (e.g. methane emissions due to natural gas leakage)

Own-generated electricity - If a company generates electricity and then sells it, it still has to count those emissions under its Scope 1. However, emissions associated with the sale/transfer of own-generated electricity may be reported in optional information.

SCOPE 2 EMISSIONS

- ☑Scope 2 emissions are the indirect emissions that occur when the electricity, heat, or steam that your company purchases and consumes is generated at a source not owned or controlled by your company
- ☑Companies can control their Scope 2 emissions through energy efficiency and conservation measures
- ☑Accounting for Scope 2 allows companies to assess the GHG-related risks and opportunities associated with their selection and use of electricity-consuming equipment
- ☑Scope 2, which is a special class of indirect emissions, is necessary because for many companies, purchased electricity is a significant source of GHG emissions.Therefore, Scope 2 sources also represent a significant opportunity for a company to make GHG reductions

SCOPE 2 EMISSIONS +

- ☑Scope 2 is often the most important category for office-based organizations – for example in the service sector, the financial sector, etc. – where large stationary sources are absent.
- ☑Scope 2 is required to be included in GHG inventories

SCOPE 3 EMISSIONS

- ☑Scope 3 includes all other indirect emissions (besides those associated with the generation of purchased electricity/heat/steam)
- ☑Examples of Scope 3 emissions are:
  - ➡Transport (such as business travel or shipping) in vehicles not owned/controlled by your company.
  - ➡The energy consumed in products your company produces, when they are used by your customers.
- ☑Scope 3 emissions are optional under the GHG Protocol, but some GHG programs require them in some cases.

UNDER WHICH SCOPE SHOULD I REPORT?

Action	Scope 1	Scope 2	Scope 3
Install new thermal power plant; sell power to 3rd party			
Substitute new purchased vehicle fleet for leased vehicle fleet			
Install new on-site solar power generation plant to replace grid electricity			
Change from a natural-gas-based electricity supplier to a coal-based supplier			
Substitute fly ash for clinker			

WHY ARE OPERATIONAL BOUNDARIES IMPORTANT?

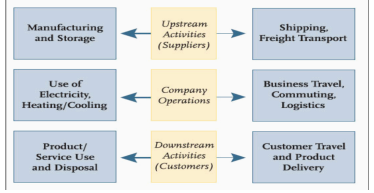
- ☑To know which types of sources of emissions to include in the inventory
- ☑To classify sources in a way that avoids double-counting
- ☑To provide more useful information to stakeholders
- ☑To help manage GHG risks and opportunities along the value chain

OPERATIONAL BOUNDARIES AND DOUBLE COUNTING

- ☑Double counting occurs when two or more reporting companies claim ownership of the same emissions or reductions
- ☑For example, emissions associated with electricity are reported twice – by the producer (e.g. a utility) and by the consumer (e.g. a manufacturing company)
- ☑But, the same emissions will never be reported twice under the same scope (except Scope 3)
- ☑The scopes allow companies to account for emissions along their value chains while preventing double-counting
- ☑Familiarity with the scopes is necessary in order to interpret corporate GHG data sets correctly

FURTHER GUIDANCE ON SCOPE 3

FIGURE 9 | UPSTREAM AND DOWNSTREAM ACTIVITIES



Scope 3 emissions can seem to have infinite sources and be difficult to account for, causing some companies not to consider them at all. However, with a step-by-step analysis, it is possible to narrow down the range of Scope 3 sources into a manageable set of sources that are highly relevant to the company and for which it is possible to obtain or estimate data.

Steps:
1. Describe the value chain – Consider inventory and business goals, create checklist of GHG sources, identify partners along the value chain with potentially large GHG emissions
2. Identify emissions sources along the value chain
3. Determine which sources are relevant to your business

FURTHER GUIDANCE ON SCOPE 3

Scope 3 emissions might be relevant if:
- They are a large source of emissions relative to the company's Scope 1 and Scope 2
- They contribute to a company's financial or regulatory risk exposure
- They are important to stakeholders - They offer big reduction opportunities

4. Determine for which of these sources it is possible to calculate or estimate emissions. (It is accepted that data accuracy may be lower for Scope 3 sources because data availability and/or reliability. Estimation is acceptable as long as methods are transparently reported.)

Scope	Mt CO2
Scope 1	7 265
Scope 2	52
Scope 3	327 634
Total	334 951

Scope 3 Example: DHL
- ☑DHL Express Nordic, based in northern Europe, serves large load and special transport needs as well as world wide express package and document deliveries.
- ☑98% of DHL's emissions in Sweden were Scope 3 (from subcontractors).
- ☑Scope 3 emission estimates led to:
  - ➡Increased possibilities for reducing emissions
  - ➡More information on cost saving opportunities
  - ➡More complete picture and effective management of emissions

DHL IS A PARTICIPANT IN BLICC (BUSINESS LEADERS INITIATIVE ON CLIMATE CHANGE)

- ☑98% of emissions in Sweden originate from the transport of goods via outsourced partner transportation firms.
- ☑Each partner required to enter data on vehicles used, distance traveled, fuel efficiency, and background data.
- ☑Information is used to calculate total emissions via tailored calculation tool for outsourced transportation
- ☑Improved information allows DHL to screen individual carriers for environmental performance and affect decisions based on each carrier's emissions performance.

OPERATIONAL BOUNDARIES SUMMARY

- ☑ Operational boundaries affect which types of sources are counted, and under what scope.
- ☑ The GHG Protocol includes direct (Scope 1) and indirect (Scopes 2 and 3) emissions.
- ☑ Scopes provide transparency and prevent double-counting.
- ☑ Scopes 1 and 2 are required in all corporate GHG inventories.
- ☑ Scope 3 is optional but very useful for some types of companies, and is required by some GHG programs.