

# Training

## Carbon Footprint Scope 1 & 2

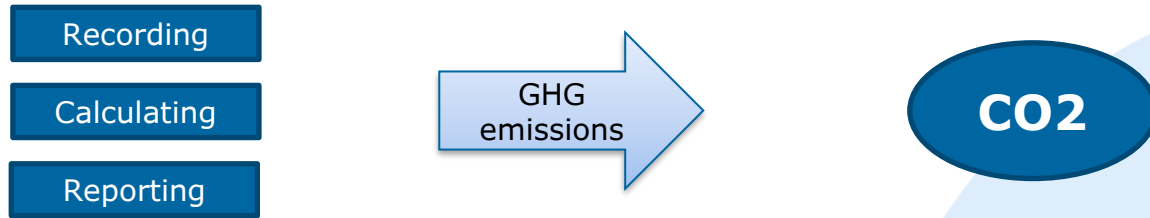


# Introduction to Carbon Footprint

# Introduction to Carbon Footprint

## What is a carbon footprint?

- ▶ A company's carbon footprint accounts for the emissions that are generated as a result of a company's activities.



- ▶ Reducing your carbon footprint is essentially an optimization process, meaning that reductions in your carbon footprint are likely to bring business and production operations closer to an optimal point.

Carbon footprints will allow you to identify and quantify the organization's main sources of emissions. This helps identify carbon emission reduction opportunities within the organization, enabling monitoring and management of carbon emissions by setting emission reduction targets and measuring progress.

# Introduction to Carbon Footprint

## Greenhouse Gases

- **Carbon dioxide** is one of the six greenhouse gases (GHGs) that have **increased** since the industrial revolution.
- **GHGs trap heat** in the earth's atmosphere and cause global temperatures to rise.
- Carbon is commonly used **interchangeably** with greenhouse gases (GHGs).
- GHGs generally refer to the **6 main greenhouse gases** set out in the Kyoto Protocol.
- **GHGs and carbon** in this context are therefore **equivalent**.

CO<sub>2</sub>

CH<sub>4</sub>

N<sub>2</sub>O

SF<sub>6</sub>

HFCs

PFCs

# Introduction to Carbon Footprint Environmental Standards

There are different methodologies for calculating the corporate carbon footprint. Internationally validated and recognized, the Greenhouse Gas Protocol and the ISO 14064: 1 (2018) standard are environmental standards that provide methodologies for calculating GHG emissions, thus allowing organizations to use recognized methods and standardizing the calculation to facilitate the comparison of different footprints.

## ISO14064-1

- ▶ Published in 2006, part of the ISO series on environmental management
- ▶ Provides guidance on GHG reporting principles and requirements
- ▶ Additional guidance on verification, data validation and external reporting.

## GHG Protocol

- ▶ The corporate and value chain standards of the GHG Protocol are emission accounting tools
- ▶ Widely used by companies and organizations around the world.
- ▶ Provides a consistent approach to corporate carbon accounting and reporting.

## ISAE-3410

- ▶ In 2007, the IAASB began a project to develop a standard for greenhouse gas (GHG) statement assurance engagements (which is a statement that sets out the constituent elements and quantification of an entity's GHG emissions (including carbon emissions)).

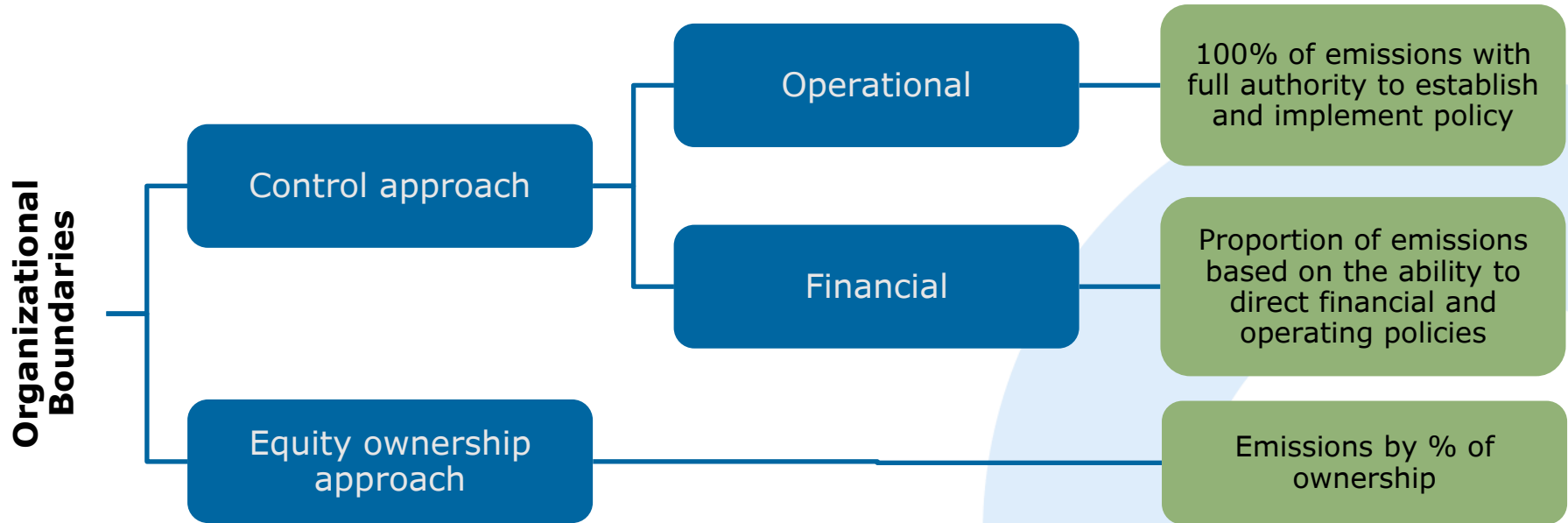


GREENHOUSE  
GAS PROTOCOL



# Introduction to Carbon Footprint

## Organizational Boundaries



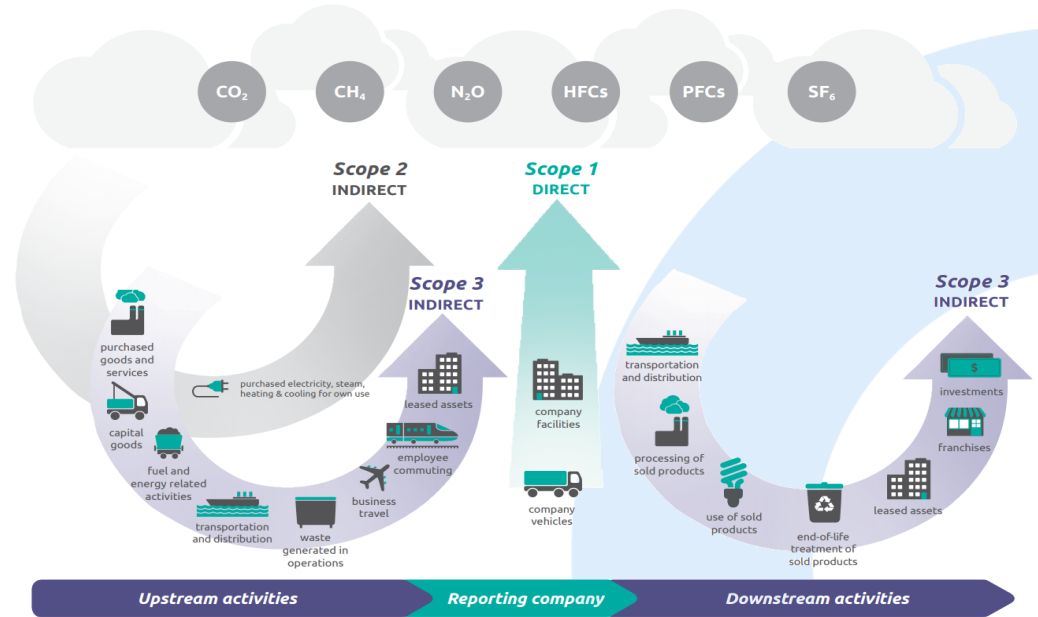
# Introduction to Carbon Footprint Structure

The GHG Protocol Corporate Accounting and Reporting Standard provides requirements and guidance for companies preparing a corporate GHG inventory or carbon footprint, created to increase consistency and transparency in GHG accounting and reporting among various companies. In it, emissions are classified between: Scope 1, Scope 2, and Scope 3.

**Scope 1:** GHG emissions from sources owned or controlled by the company (e.g., combustion in boilers, vehicles, etc.).

**Scope 2:** Emissions from purchased electricity generation consumed by the company.

**Scope 3:** Result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain.



# Calculating Carbon Footprint

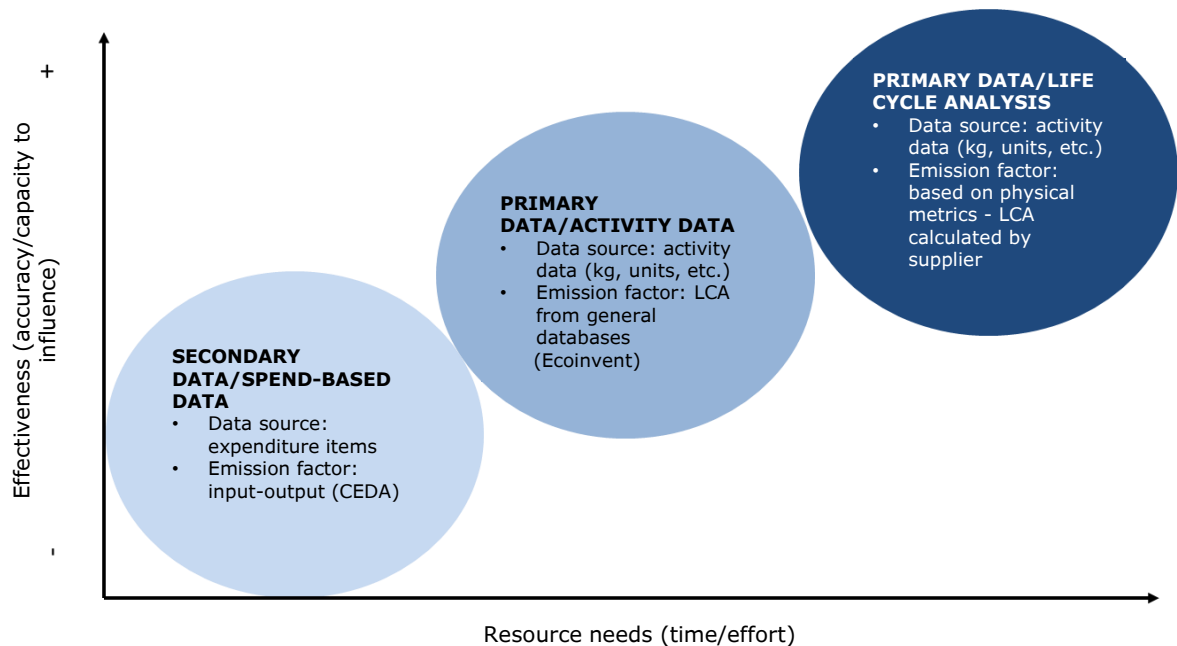




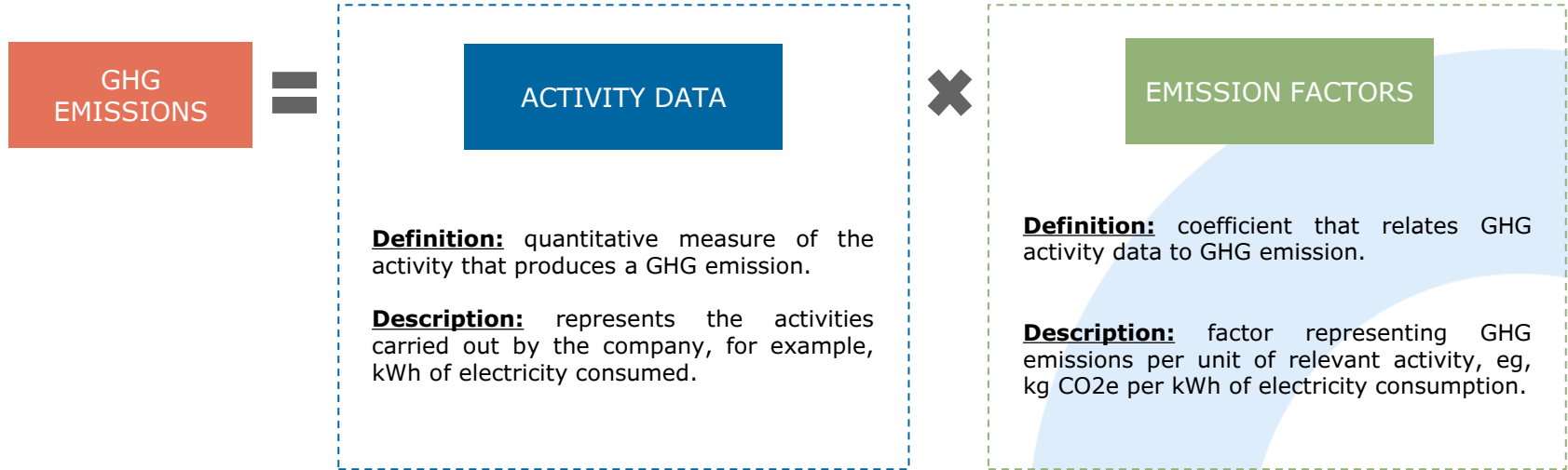
# Calculation of emissions

## Types of calculation methods

There are several methods for calculating Scope 1, 2 & 3 emissions. These can range from a high-level analysis based on expenditure using industry averages to a deeper and more accurate analysis at the supplier and/or material level.



# Calculating Carbon Footprint Methodology



# Calculating Carbon Footprint Methodology

GHG  
EMISSIONS

=

ACTIVITY DATA

×

EMISSION FACTORS

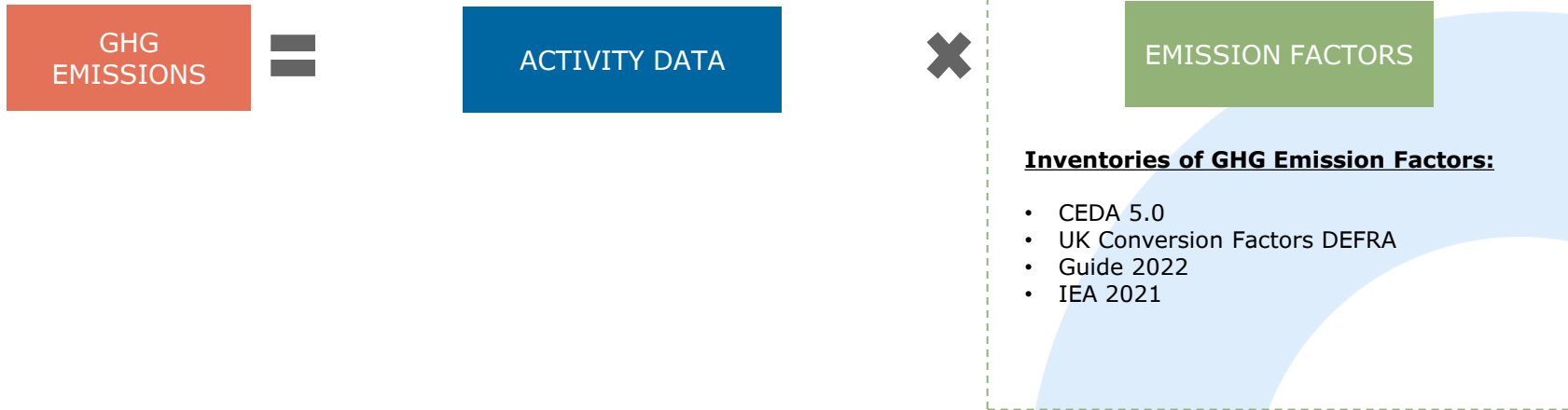
**Primary Data:** Data obtained through measurements or calculations based on measurements. Primary data make it possible to identify relevant opportunities for emission reductions

**Example:** kg consumption of raw materials in 2020.

**Secondary Data:** Any data other than primary Used where no primary data is available . Typically, of lower quality and relevance than primary data. Limited ability to reduce emissions with secondary data.

**Example:** ratio of energy consumption per square meter.

# Calculating Carbon Footprint Methodology



# Scopes 1 & 2



# Scope 1 - Sources of emissions

## Activities

GHG emissions derived from sources controlled by the company:

### STATIONARY COMBUSTION

- ▶ Burning of fossil fuels in boilers, furnaces and turbines.
- ▶ On-site generation of electricity, heat and steam.



### MOBILE COMBUSTION

- ▶ Burning of fossil fuels in company owned/controlled vehicles.
- ▶ E.g. fleet of cars, forklifts, trucks.



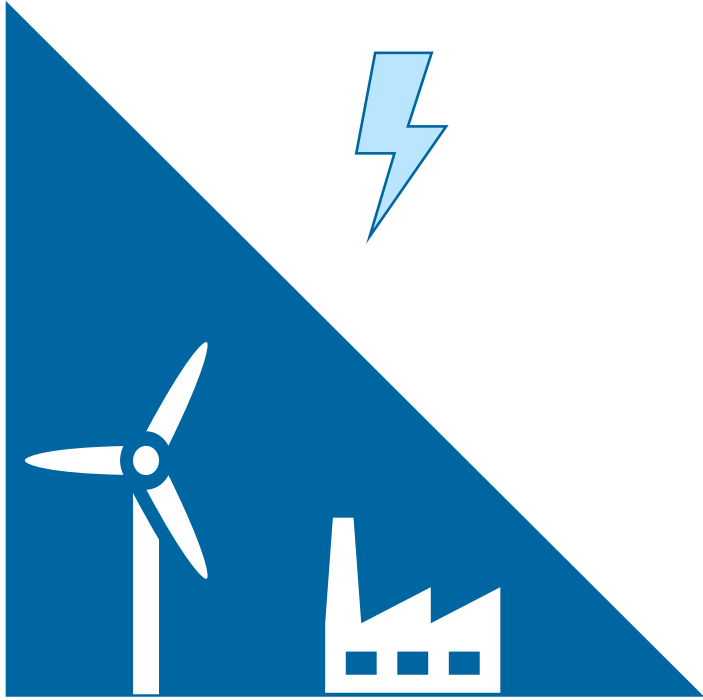
### FUGITIVE EMISSIONS

- ▶ Emissions caused by GHG leaks.
- ▶ E.g. propellants, refrigerants in air conditioning systems.



# Scope 2 – Sources of emissions

## Activities



- ▶ Scope 2 describes emissions associated with the generation of purchased electricity, steam, heat and cooling consumed within owned/controlled operations
- ▶ This includes electricity used in factories, offices and electric vehicles.
- ▶ The data required for the calculation is the electricity consumption in kWh.

# Scope 2 – Methodology

## Location-based

- ▶ To quantify Scope 2 emissions, the GHG Protocol Corporate Standard recommends that companies obtain source/supplier specific emission factors for purchased electricity. If these are not available, regional or grid emission factors should be used.

### CASE 1

A company has 2 installations.

Even knowing who the marketer is, the national mix is used to calculate the two installations.

<b>Provider Iberdola</b>	<b>GHG Emissions</b> 2,4 tCO <sub>2</sub> e Electricity emissions	=	<b>Activity</b> 10.000 MWh Electricity consumption	×	<b>Emission factor</b> 0,241 kgCO <sub>2</sub> e/MWh EF National mix
<b>Provider Endesa</b>	<b>GHG Emissions</b> 2,4 tCO <sub>2</sub> e Electricity emissions	=	<b>Activity</b> 10.000 MWh Electricity consumption	×	<b>Emission factor</b> 0,241 kgCO <sub>2</sub> e/MWh EF National mix





# Scope 2 – Methodology

## Market-based

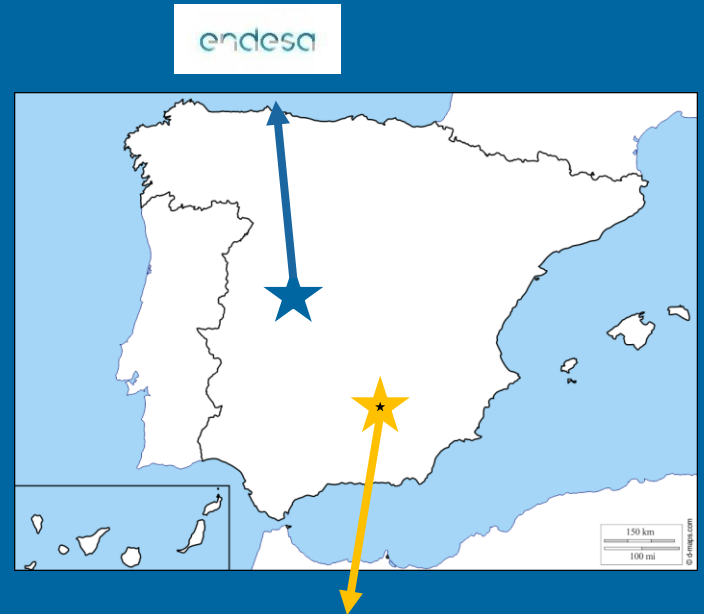
- To quantify Scope 2 emissions, the GHG Protocol Corporate Standard recommends that companies obtain source/supplier specific emission factors for purchased electricity. If these are not available, regional or grid emission factors should be used.

### CASE 2

A company has 2 installations.

For the installation with renewable energy a zero emission factor is applied, but for the other, the specific factor is applied.

<b>Provider Endesa</b>	<b>GHG Emissions</b>	=	<b>Activity</b>	×	<b>Emission factor</b>
	3,7 tCO <sub>2</sub> e Electricity emissions		10.000 MWh Electricity consumption		0,37 kgCO <sub>2</sub> e/MWh EF Provided by Endesa
<b>Renewable Installation</b>	<b>GHG Emissions</b>	=	<b>Activity</b>	×	<b>Emission factor</b>
	0 tCO <sub>2</sub> e Electricity emissions		10.000 MWh Electricity consumption		0 kgCO <sub>2</sub> e/MWh EF Renewable energy



# Scope 2 – Methodology

## Market-based

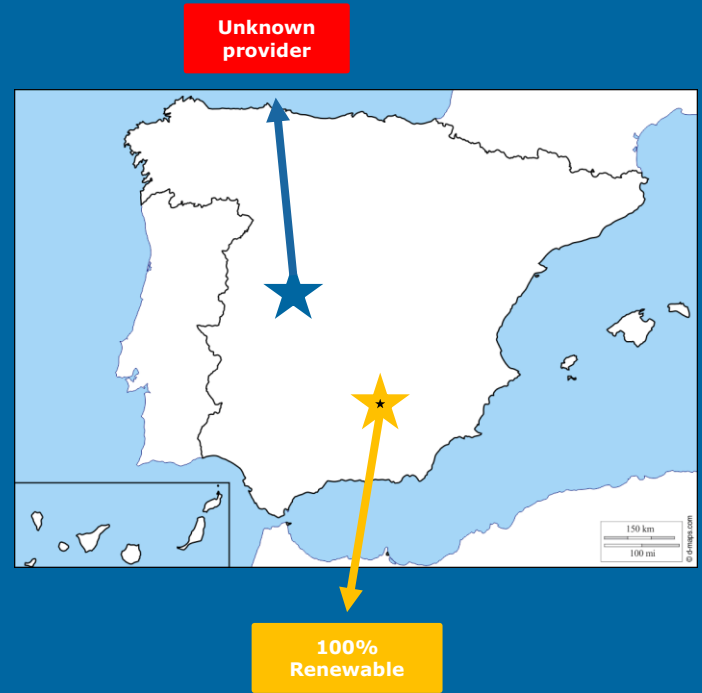
- To quantify Scope 2 emissions, the GHG Protocol Corporate Standard recommends that companies obtain source/supplier specific emission factors for purchased electricity. If these are not available, regional or grid emission factors should be used.

### CASE 3

A company has 2 installations. For the installation with renewable energy a zero-emission factor is applied, but for the other we apply the country's residual factor. There may be a case where it is not available. Then, the energy mix would be used (location criteria).

**DOUBLE ACCOUNTING** - if we use the national mix, the renewable energy previously accounted would be doublecounted.

<b>Unknown provider</b>	<b>GHG Emissions</b>	=	<b>Activity</b>	×	<b>Emission factor</b>
	4,5 tCO <sub>2</sub> e Electricity emissions		10.000 MWh Electricity consumption		0,45 kgCO <sub>2</sub> e/MWh Residual EF
<b>Renewable Installation</b>	<b>GHG Emissions</b>	=	<b>Activity</b>	×	<b>Emission factor</b>
	0 tCO <sub>2</sub> e Electricity emissions		10.000 MWh Electricity consumption		0 kgCO <sub>2</sub> e/MWh EF Renewable energy



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