PracticalSustainability

...with you from theory to practice

BREAKING DOWN

EMISSIONS

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Sustainability Metrics

Sustainability metrics are quantitative measures used to assess and track an organization's performance in terms of environmental, social, and economic sustainability.

These metrics help organizations understand their impact on the planet, society, and their own financial health.

A key metric that's currently receiving a lot of focus is ***emissions*** and the ways in which they are reported.

Emissions

What Are They?

Emissions refer to the release of substances into the atmosphere. These can include gases, particles, or other pollutants that result from various human activities and natural processes.

These pollutants can come from various sources, including industrial processes, transportation, agriculture, and energy production.

Emissions are a crucial sustainability metric, as they ***directly*** relate to the impact an organization has on the environment, particularly concerning climate change.

Measuring and reporting emissions helps organizations understand their carbon footprint and identify areas for improvement.

TYPES OF EMISSIONS

1. Green House Gases
2. Air Pollution
3. Industrial Emissions
4. Natural Emissions

1

GHG

Green House Gases

Impact

Climate Change & High Global Warming

#1

Carbon Dioxide (CO_2)

01 What Is It?

It is a gas that is released from burning fossil fuels (coal, oil, and natural gas), deforestation, and industrial processes.

02 % of Global Emissons

The percentage of carbon dioxide is approximately **76%**.

03 Who Needs To Act?

Governments, Industries and Individuals

04 Ways to reduce them

Use renewable energy, reforest and be energy efficient

Did you know?

CO_2 levels are now higher than at any point in at least 800,000 years.

#2
Methane (CH_4)

01 What Is It?

It is a gas that is released from agriculture (especially livestock), landfills, and natural gas production.

02 % of Global Emissons

The percentage of methane is approximately **16%**.

03 Who Needs To Act?

Farmers, Waste Managers, Energy Sectors

04 Ways to reduce them

Better waste management, improve livestock diets

Did you know?

Methane has a warming potential, more than 25 times greater than CO_2 over a 100-year period.

#3

Nitrous Oxide (N_2O)

01 What Is It?

It is a gas that is released from agricultural activities, fossil fuel combustion, and industrial processes.

02 % of Global Emissons

The percentage of nitrous oxide is approximately **6%**.

03 Who Needs To Act?

Farmers, Energy Sectors

04 Ways to reduce them

Optimize fertilizer use, reduce fossil fuel use

Did you know?

N_2O emissions from agriculture have increased by nearly 30% over the past 3 decades.

#4
Fluorinated Gases

01 What Is It?

Synthetic gases used in industrial applications like refrigerants and solvents.

02 % of Global Emissons

The percentage of fluorinated gases is approximately less than **2%**.

03 Who Needs To Act?

Industries, Manufacturers

04 Ways to reduce them

Use natural refrigerants, improve leak detection

Did you know?

Fluorinated gases can remain in the atmosphere for thousands of years.

2

AP

Air Pollutants

Impact

Smog, Acid Rain & Health Risks

#1

Sulfur Dioxide (SO_2)

01 What Is It?

It is a gas that comes from burning fossil fuels containing sulfur, industrial processes, and volcanic eruptions.

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Government, Industries

04 Ways to reduce them

Switch to cleaner energy, use air scrubbers

Did you know?

SO_2 is the major cause of respiratory diseases and acid rain.

#2

Nitrogen Oxides (NO_2)

01 What Is It?

It is a gas that is emitted during combustion processes, especially from vehicles and power plants.

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Government, Auto Manufacturers

04 Ways to reduce them

Use catalytic converters, adopt electric vehicles

Did you know?

NO_2 contributes to the formation of ground-level ozone (smog).

#3
Particulate Matter

01 What Is It?

Tiny particles or droplets in the air, coming from combustion processes, construction activities, and industrial emissions.

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Construction industry, Governments

04 Ways to reduce them

Use particulate filters, reduce combustion dust

Did you know?

PM2.5 particles penetrate deep into the lungs and bloodstream causing health problems.

#4

Carbon Monoxide

01 What Is It?

A gas that is the result of incomplete combustion of fossil fuels, commonly from vehicles and residential heating.

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Auto Manufacturers, Individuals

04 Ways to reduce them

Ensure complete combustion, use cleaner fuels

Did you know?

CO can cause harmful effects by reducing the amount of oxygen travelling in the bloodstream.

#5

Volatile Organic Compounds

01 What Is It?

A gas emitted from industrial processes, use of solvents, and vehicle emissions

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Industries, Consumers

04 Ways to reduce them

Use low VOC products, reduce solvent use

Did you know?

VOCs contribute to the formation of ground-level ozone and smog.

3

IA

Industrial Emissions

Impact

Health Risks & Environmental Harm

#1
Heavy Metals

01 What Is It?

Such as mercury, lead, and cadmium, released from industrial processes, mining, and smelting.

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Industries, Governments

04 Ways to reduce them

Use cleaner technologies, recycle metal

Did you know?

Heavy metals accumulate in the environment and enter the food chain causing health risks.

#2
Chemical Pollutants

01 What Is It?

A gas emanating from manufacturing processes, including those used in producing plastics, pharmaceuticals, and other chemicals.

02 % of Global Emissons

Localized Impact

03 Who Needs To Act?

Industries, Regulatory Bodies

04 Ways to reduce them

Implement green chemistry, use safer alternatives

Did you know?

Chemical pollutants can have long-term effects on ecosystems and human health.

4

NE

Natural Emissions

Impact

Climate Change, Air Pollution & Cooling

#1
Volcanic Eruptions

01 **What Is It?**

Volcanic eruptions emit sulfur dioxide and particulate matter.

02 **% of Global Emissons**

Event-based

03 **Who Needs To Act?**

Scientists, goverments

04 **Ways to reduce them**

Monitor volcanic activity, prepare for impacts

Did you know?

Volcanic eruptions temporarily cool the Earth's surface by releasing particles that reflect sunlight.

#2
Forest Fires

01 What Is It?

Forest fires release carbon dioxide and other pollutants.

02 % of Global Emissons

Event-based

03 Who Needs To Act?

Forest services, local authorities

04 Ways to reduce them

Improve forest management, use controlled burns

Did you know?

Forest fires contribute to both air pollution and climate change.

#3

Plant and Soil Respiration

01 What Is It?

Natural emission of greenhouse gases.

02 % of Global Emissons

Natural process

03 Who Needs To Act?

Land managers, farmers

04 Ways to reduce them

Manage land use to reduce emissions

Did you know?

Plant and soil respiration are natural parts of the carbon cycle but are influenced by human activity.

CLASSIFYING EMISSIONS

1. Scope 1 - Direct Emissions
2. Scope 2 - Indirect Emissions
3. Scope 3 - Other Indirect Emissions
4. Scope 4

Scope 1
Direct Emissions

Definition

Direct emissions are emissions that are owned and controlled by the organization.

Arising From

- On-Site Fuel Combustion (fossil fuel burning)
- Company Vehicles
- Fugitive Emissions (unintentional leaks)

Applicable Standards

- GHG Protocol
- ISO14064-1

% of Global Emissions

15%

Measurement

- Direct Monitoring (measure emissions directly using sensors)
- Fuel Consumption Data (calculation based on amount of fuel used)
- Emission Factors (applying standard factors that relate the quantity of emissions per unit of activity

Applicable To

Companies, factories and any entities with direct control over emissions.

Interesting Fact

Scope 1 emissions are often the easiest to measure and control directly.

Scope 2
Indirect Emissions

Definition

Indirect emissions from purchased electricity, steam, heating and cooling.

Arising From

- Purchased Electricity (emissions from power plants)
- Heating and Cooling (emissions from facilities offering service)
- Steam (emissions from facilities offering service)

Applicable Standards

- GHG Protocol
- ISO14064-1

% of Global Emissions

25%

Measurement

- Energy Consumption Data (recording the amount of electricity, heating cooling and steam consumed)
- Emission Factors (applying factors specific to the energy type and its source.

Applicable To

Any entity that purchases electricity, steam, heating or cooling for their operations.

Interesting Fact

Scope 2 emissions can be reduced by switching to renewable energy sources.

Scope 3
All Other Indirect Emissions

Definition

All other indirect emissions occurring in the value chain of the reporting organization.

Arising From

- The production of goods and services
- Company paid travel
- Employees travelling to and from work
- The use of the products sold
- The disposal of the products sold (end-of-life)
- Third-party suppliers and other upstream activities

Applicable Standards

- GHG Protocol
- ISO14064-1
- CDP

% of Global Emissions

60%

Measurement

- Activity Data (Collecting information on various activities)
- Supplier Specific Emissions (using data provided by suppliers to calculate emissions associated with purchased goods and services
- Lifecycle Assessments (conducting comprehensive analysis to estimate emissions over the entire lifecycle of products/services

Applicable To

Companies that need to consider emissions from their entire value chain - including suppliers and customers.

Interesting Fact

Scope 3 emissions often represents the largest portion of an organization's carbon footprint and is the most complex.

Scope 4
Emissions Avoided

Definition

Scope 4 emissions represent the *decrease* in greenhouse gas emissions occurring outside a company's value chain because of the use of its products or services.

Arising From

- Energy-efficient products
- Renewable energy
- Teleconferencing services

Applicable Standards

Not yet standardized

% of Global Emissions

N/A

Measurement

- Lifecycle Analysis
- Comparative Analysis

Challenges

- Measurement complexity as emissions are 'avoided emissions'
- Limited Recognition since it is not standardized

Applicable To

Innovative companies developing emission-reducing products and services.

Interesting Fact

Scope 4 is an emerging concept focusing on emissions avoided through sustainable practices.

The Importance of Emissions Reporting

1

ENVIRONMENTAL IMPACT

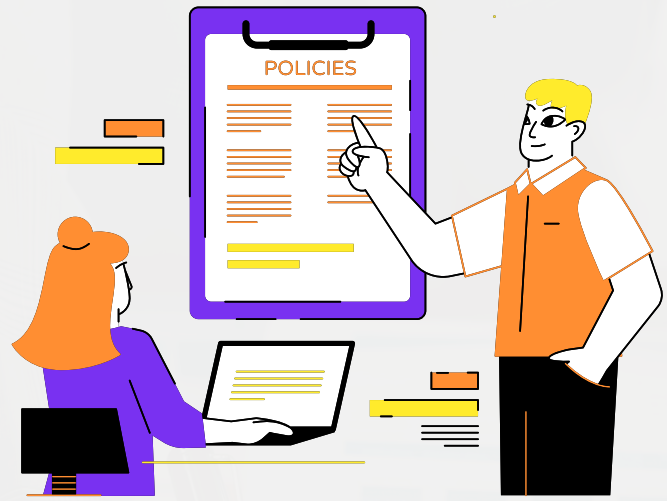
Monitoring and Mitigation

It facilitates tracking the environmental impact of different activities, allowing organizations and governments to devise strategies for reducing greenhouse gas emissions.

Climate Change

Precise emissions data is essential for comprehending and tackling climate change, as it guides policy decisions and climate action plans.

2



REGULATORY COMPLIANCE

Legal Requirements

Countries have regulations that mandate companies to report their emissions. Adhering to these regulations helps organizations avoid legal complications.

Global Standards

Emissions reporting aligns with international agreements, such as the Paris Agreement, which aims to restrict the global temperature increase.

3

CORPORATE ACCOUNTABILITY

Transparency

It promotes transparency and accountability, enabling stakeholders, such as investors, customers, and the public, to evaluate an organization's environmental performance.

Reputation Management

Showcasing a commitment to sustainability can boost an organization's reputation and brand image.

4

ECONOMIC BENEFITS

Cost Savings

Implementing emissions reduction measures can result in substantial cost savings by enhancing energy efficiency and minimizing waste.

Market Advantage

Companies that actively manage their emissions can gain a competitive edge in markets that prioritize sustainability.

5

STAKEHOLDER ENGAGEMENT

Investor Confidence

Investors are increasingly considering environmental, social, and governance (ESG) criteria. Emissions reporting supplies the necessary data for them to make informed.

Customer Trust

Consumers are more inclined to support companies that are transparent about their environmental impact and are actively working to reduce it.

6

RISK MANAGEMENT

Identify Risk

Emissions reporting assists organizations in recognizing risks associated with climate change and regulatory changes, allowing them to develop strategies to mitigate these risks.

Resilience

By comprehending their emissions profile, organizations can enhance their resilience against future environmental and regulatory challenges.

7

INNOVATION AND IMPROVEMENT

Continuous Improvement

Regular emissions reporting fosters ongoing enhancements and improvements in the organization’s environmental performance.

Innovation

It spurs innovation in processes, products, and services to reduce emissions and enhance sustainability.

Conclusion

Emissions and their reporting play a vital role in the global effort to combat climate change.

By meticulously measuring, transparently reporting, and proactively reducing greenhouse gas emissions, we can greatly diminish the environmental impact of human activities.

It ensures not only regulatory compliance and corporate accountability but also unlocks economic advantages, enhances risk management, and fosters innovation.

Through transparent practices and sustainable strategies, it empowers organizations, governments, and individuals to make informed decisions that contribute to a more sustainable and resilient future.

Embracing this responsibility is crucial for safeguarding our planet and ensuring the well-being of future generations.

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