

# A Brief Overview to Green Environmental Issues

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## ABSTRACT:

The sustainability and health of our world are under risk from a variety of green environmental concerns. The need of solving these problems is emphasised in this chapter, which also identifies the main problems climate change, deforestation, pollution, and biodiversity loss. In order to address these difficulties, it highlights the urgent necessity for group effort and the adoption of sustainable practises. The chapter also highlights the advantages of a greener environment, including better public health, more lucrative prospects, and a robust ecosystem. We may fight to create a future where everyone is healthier and more sustainable by giving green environmental challenges priority.

## KEYWORDS:

Carbon, Emissions, Footprint, Greenhouse, Project, Scope.

## I. INTRODUCTION

The Clean Development Mechanism (CDM) is a financial tool for spurring actions to address the problems brought on by the looming danger of climate change. It is a framework for encouraging technology transfer and financial investment from developed to developing nations for initiatives to reduce greenhouse gas (GHG) emissions [1]–[3]. The mechanism enables the governments or private parties of developed countries to fund emission reduction initiatives in developing nations and, in return, receive the benefit in the form of Certified Emission Reduction (CER) that may be applied to their national emission reduction targets. The UN Framework Convention on Climate Change (UNFCCC), which was first proposed at the 1992 United Nations Conference on Environment and Development (Earth Summit), is where the notion of CDM originated. The growing body of research showing that human-caused emissions of greenhouse gases (GHGs), such as carbon dioxide, nitrous oxide, methane, halogenated hydrocarbons, and tropospheric ozone, are to blame for the earth's warming trend and the follow-up measures. A study found that doubling the amount of carbon dioxide in the atmosphere, or an equal increase in a combination of greenhouse gases, might result in a 1.5 to 4.5°C rise in global temperature, along with effects like sea level rise, flooding, and droughts [4]–[6].

### Purpose

The CDM's mission is to advance clean development in poor nations, sometimes known as nonAnnex I countries (those that are not included in the Framework Convention's Annex I). The CDM, which is intended to support initiatives that cut emissions, is one of the Protocol's project-based instruments. The concept of emission reduction production is the foundation of the CDM. These cuts are produced and then deducted from a fictitious baseline of emissions. The expected emissions in the absence of a specific CDM project are the emissions baseline. In order to give developing nations credit for achieving these carbon reductions, CDM projects are credited against this baseline. One of the flexibility mechanisms outlined in the Kyoto Protocol is the CDM. The flexibility options are intended to minimise the economic effect of Annex B nations meeting their emission reduction obligations (IPCC, 2007). The US administration added the flexibility mechanisms to the Kyoto Protocol.

### The Clean Development Mechanism (CDM) Project Cycle

The Clean Development Mechanism of the Kyoto Protocol defines a series of steps necessary to develop certified emissions reductions (CERs):

#### 1. Project Design.

2. Project Validation.
3. Host Country Approval.
4. Registration with the CDM Executive Board.
5. Implementation and Monitoring.
6. Verification/Certification and Issuance of CERs.
7. Sale of CERs.

### **Project Design**

The first phase is determining if the project idea would be eligible for a CDM project, which includes evaluating it against project requirements, calculating the size of emissions reductions, and creating a Project Design Document (PDD) that complies with certain requirements. The PDD must cover the following significant issues: Creating a baseline for the project, which indicates the anthropogenic emissions that would have place in the absence of the planned project activity? Setting this baseline may require taking into account the existing gas flaring. Showing additionality, or, more simply put, proving that the planned endeavour is not business as usual. Although this criterion has caused controversy on certain projects, there are now a number of standards for making the additionality demonstration. Moreover, initiatives of the kind envisioned for landfill gas recovery have already been done. A monitoring technique that effectively takes into account gas composition and flow. In order to legally own the project activity, such as the rights to the gas produced at a landfill or wastewater treatment facility, a foundation must be established.

### **Project Validation**

A designated operation entity (DOE) independently assesses the PDD in accordance with the CDM's standards as part of the validation process. The DOE must be a different entity from the party that developed the project and created the PDD. An examination of any environmental effects of the project's activities should be included in the information provided to the DOE, together with comments made by local stakeholders and a statement of how proper consideration of any such concerns was given. The project developer/PDD consultant must satisfy the DOE's questions and comments in order for the DOE to release the final validation report, which is based on its examination of the PDD and validation report and conclusion as to its sufficiency [7]–[9].

### **Host Country Acceptance**

After the DOE has approved the project, the designated national authority (DNA) must receive the following papers for host country approval:

1. The validation report, to start.
2. The PDD, which outlines the project's contribution to sustainable development.
3. An approved environmental impact assessment, if local law requires it.
4. A formal promise to provide a yearly report detailing CER monitoring, certification, and issuance outcomes.
5. The project receives a letter of approval if the DNA criteria have been met.

### **Registration with the CDM Executive Board**

After the Letter of Approval is issued, the CDM Executive Board receives a request for registration in the form of the validation report, which also includes the PDD, the written approval of the DNA, and an explanation of how this takes into account any criticisms received [10]. Before rejecting or approving the plan, which becomes a public document once it is submitted to the CDM Executive Board, the CDM Executive Board evaluates the proposal and may seek public comment or request further information/details. The CDM Executive Board's formal approval of a validated project as a CDM project activity via registration is the project's ability to produce CER.

### **Implementation and Monitoring**

After the project has been confirmed, detailed engineering work may be done concurrently with CDM approval. Normally, no building would start until the CDM Executive Board gave its permission. The emissions of the project activity must be deducted from the reference scenario or Baseline described in the PDD in order to compute the emissions reductions, which would then be monitored as indicated in the PDD monitoring plan.

## CER issuance and verification/certification

To show that actual emissions reductions are compatible with the PDD, a DOE must conduct verification, independent of the DOE responsible for project validation and the DOE who prepared the PDD. Every year, a certification report is needed to quantify the actual emissions reductions made during that time. A verification report is sent to the CDM Executive Board by the second DOE, who also does on-site inspections, evaluates monitoring data, and conducts verifications. The certification serves as a request to the CDM Executive Board for the issuing of CERs in an amount corresponding to the verified amount of project-related reductions. Unless the CDM Executive Board or other parties concerned raise objections, this issuance should be regarded as final 15 days from the day it was requested. The required number of CERs are subsequently placed into the project developer's registry account.<sup>7</sup> CERs are sold. As the PDD is being finalised, negotiations for the sale of the CERs may often begin. When creating the so-called Emissions Reductions Purchase Agreement (ERPA), the provisions of the agreement are first laid out in a Term Sheet. These agreements specify the number of CERs that will be transferred, the purchase price, the delivery window, and other pertinent terms. In the market for carbon reductions, ENVIRON has expertise creating these agreements and collaborating with purchasers, such as the World Bank's Prototype Carbon Fund, national government tenders, brokers, and private sector buyers.

## II. DISCUSSION

### Benefits and beneficiaries of the CDM

1. The CDM has the potential of multi-faceted benefits and multiple beneficiaries
2. Global reduction of greenhouse gases.
3. Lesser cost of climate change mitigation.
4. Additional benefits through reduction of other pollutants besides GHGs.
5. Opening a market for carbon investment.
6. Additional financial resources and alternative technologies.
7. Initiatives for adaptation to climate change impacts.
8. Focus on sustainable development.
9. Scope for cooperation at various levels (national, sub-regional, Regional and global).

### Beneficiaries

- a. Developed countries.
- b. Countries with economy in transition.
- c. Developing countries.
- d. Small inland countries.
- e. Public sector.
- f. Private sector

### Carbon Print

**The entire greenhouse gas emissions that a person, business, occasion, or product is** responsible for, both directly and indirectly, are measured as carbon footprint. Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>) are all taken into account in the footprint calculation. Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) are the units used to calculate a carbon footprint. When compared to one unit of carbon dioxide, the various greenhouse gases may be compared on an equal footing using the carbon dioxide equivalent (CO<sub>2</sub>e). The global warming potential (GWP) of each of the six greenhouse gases is multiplied by the emissions of each gas to produce CO<sub>2</sub>e. The three primary categories of an organization's carbon footprint are:

### Organisational Carbon Footprint

Emissions from all organisational operations, including the usage of business cars, industrial processes, and building energy consumption. An organization's or company's carbon footprint calculates the total amount of greenhouse gas emissions that result from all of its operations. Our carbon footprint **metre is a useful tool for** estimating the carbon impact of your company. Continue reading for more information on corporate carbon footprints. Organisational carbon footprints: types of emissions, reasons to calculate them, and methods of computation Three groupings, or scopes, are often used to classify an organization's emissions according to the Greenhouse Gas Protocol standard:

### **Scope 1: Direct Emissions Under**

direct emissions brought caused by actions within the control of the organisation. consists of on-site fuel burning, emissions from manufacturing and processing, refrigerant losses, and business cars.

### **Scope 2: Heat and Electricity Indirect Emissions**

Indirect emissions from the organization's purchases and use of heat, steam, and electricity.

### **Scope 3: Indirect Emissions**

Any additional indirect emissions from sources not directly under the organization's control are included in employee commuting, outsourced transportation, waste management, water use, and employee business travel are a few examples. A company's carbon footprint must take into account. Scope 1 and Scope 2 emissions in accordance with the Greenhouse Gas Protocol. There is a lot of latitude in deciding whether Scope 3 emissions should be included in a company's carbon footprint. For instance, organisations often include employee business travel and garbage sent to landfills as scope 3 emissions. Utilise our carbon footprint calculator to determine your organization's carbon footprint if you have information on your energy consumption. You should calculate your organization's carbon footprint for two major reasons. Managing and reducing emissions Cost savings are often achieved by lowering your company's carbon impact. You may discover and priorities areas for possible reduction by looking at your company's carbon footprint. More and more businesses want to be able to show their carbon impact because:

#### **1. Mandatory Reporting Requirements**

Such reporting is required, for instance, by climate change legislation like the EU Emissions Trading Scheme or the Carbon Reduction Commitment Energy Efficiency Scheme (CRC).

#### **2. CSR, or Corporate Social Responsibility**

It is more crucial than ever to demonstrate that you are acting responsibly and ethically.

#### **3. Responding to Requests**

Data on carbon emissions are becoming more and more interesting to partners, clients, and investors. There are additional programmes for disclosing carbon emissions, such the Carbon Disclosure Project.

#### **Steps:**

The following are the first six stages needed to determine an organization's carbon footprint:

##### **1. Establishment of the Assessment Boundaries:**

- a. Organizational.
- b. Operational.
- c. Greenhouse gases.

##### **2. Gathering of data.**

Using the proper emissions factors to calculate emissions. Calculate utilisation as CO<sub>2</sub> equivalent. Checking the outcomes (optional). Compiling carbon footprint data.

##### **Defining a Method**

If you want to depend on several individuals to gather and evaluate data, you must have a methodical approach if you want reliable findings. An excellent place to find standards is:

- a. Greenhouse Gas Protocol A set of generally accepted norms.
- b. ISO 14064 from the International Organisation for Standardisation.
- c. A few of the ideas established by the GHG Protocol are built upon.

##### **Setting up the Assessment Parameters**

You'll need to establish:

- a. Boundaries within organisations

- b. What divisions of the company are included? Large companies with several subsidiaries, joint ventures, or leased assets may find this challenging.

### Functional limitations

- a. The organisation may decide which scope 3 emissions to include, but all scope 1 and scope 2 emissions should be included.
- b. Try to consider your organization's operational procedures, including reporting deadlines, statutory obligations, and the practicality of data gathering while selecting a boundary.

### Gather Data

It is crucial to gather data as correctly and completely as possible. Typically, the main data sources are Metre readings or invoices for gas and electricity (kWh). Usage of other fuels (in litres, kWh, MJ, or litres). Transportation fuel type consumption (if this is not available, approximate it using vehicle miles and fuel economy assumptions)

### Convert Usage into CO<sub>2</sub> equivalent

Tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) are used to calculate the carbon footprint. The facts you have gathered are converted to arrive at this calculation. Always utilise conversions from reliable sources; for more information, read our tables of conversion factors. It's crucial to note any data gaps and provide a summary of the presumptions you used to determine the footprint.

### Verifying the Results

It makes logical for a third party to confirm your carbon footprint to provide credence. One organisation that can accomplish this is The Carbon Trust Standard. They can also assist you with measuring, lowering, and communicating your carbon impact.

### Reporting the Carbon Footprint

Be careful to disclose your carbon footprint in an accurate and transparent manner. For each of the aforementioned phases, this entails giving detailed information, including the methodologies, footprint bounds, data quality, and assumptions. Additionally, make an effort to maintain consistency over years, explaining any modifications to the reporting or organisational structure that may have an effect on the footprint.

## III. CONCLUSION

Green environmental concerns present serious difficulties that need for prompt attention and action. In order to preserve a sustainable and livable world for both the present and future generations, our conclusion underscores the necessity of tackling these concerns. One of the most important green environmental problems today is climate change, which is responsible for increasing sea levels, harsh weather, and world temperatures. Transitioning to renewable energy sources, cutting greenhouse gas emissions, and putting sustainable land-use practises in place are all necessary for climate change mitigation. Additionally, habitat loss, a fall in biodiversity, and carbon emissions are all a result of deforestation, which is fueled by unsustainable agriculture methods and urbanisation. For the purpose of reducing climate change and maintaining biodiversity, forests must be preserved and restored.

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