ENERGY CLUB
IIT BOMBAY

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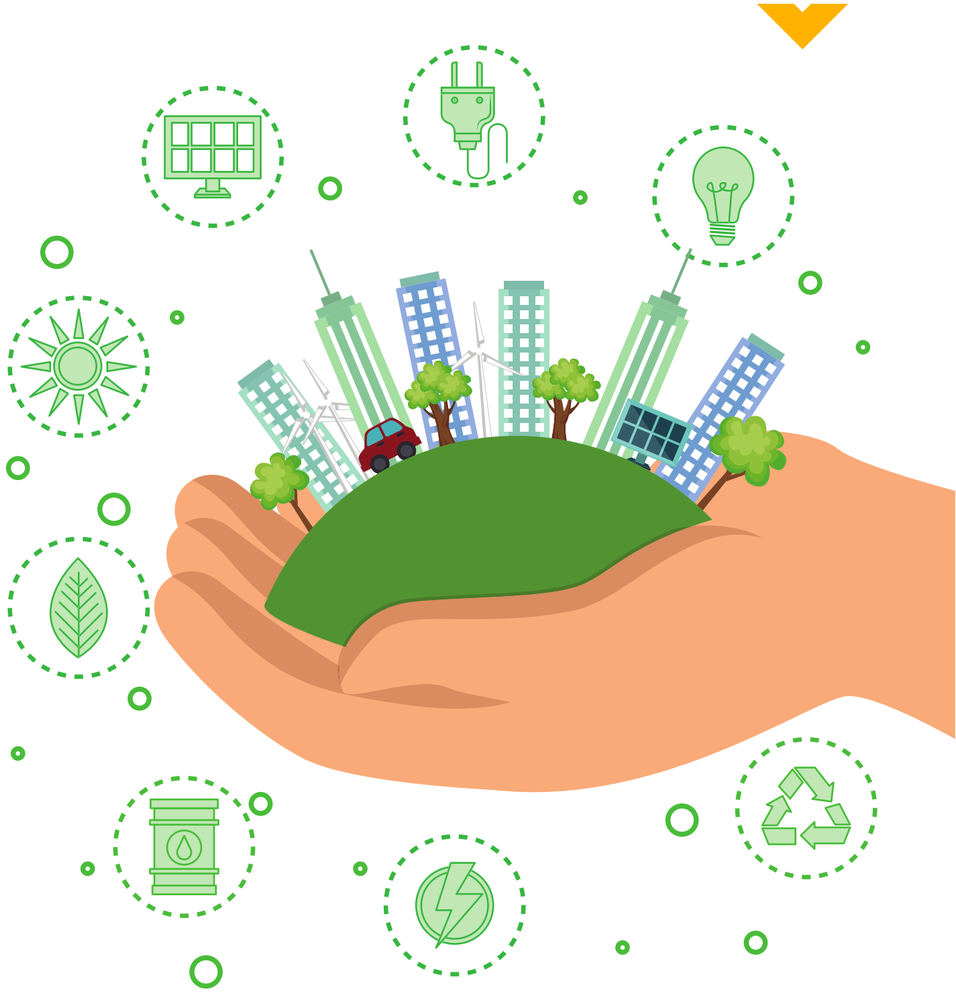
THE CARBON CODE: TRADING, TRACKING AND TRANSFORMING EMISSIONS

WEEK 2- DAY 3

CRAFTING A CREDIT- STEP BY STEP



Baseline Setting: What would have happened
Leakage Safeguards: Enquiring deforestation does not shift elsewhere
MRV: Monitoring, Reporting, Verification

CARBON CREDIT CRAFTING: A BRIEF OVERVIEW

Carbon credits are generated through projects that either reduce emissions (e.g., renewable energy) or remove CO_2 (e.g., reforestation). However, their **credibility** depends on **three critical pillars:**

Baseline Setting – Predicting what emissions would have been without the project (the "counterfactual").

Leakage Prevention – Ensuring emissions don’t simply shift elsewhere.

MRV (Monitoring, Reporting, Verification) – Proving real-world impact with data.

Why This Matters:

Flaws in these steps lead to worthless credits, undermining climate action.

Companies and regulators rely on this process for net-zero claims.

1. Baseline Setting: The Counterfactual Problem

Core Theory:

Definition: A baseline is a hypothetical scenario estimating emissions without the carbon project.

Key Challenge: Predicting an unobservable future ("what would have happened").

Theoretical Approaches:

Method	Description	Limitations
Historical Average	Uses past emissions/deforestation rates (e.g., last 10 years).	Fails if historical trends aren’t predictive (e.g., post-war recovery).
Reference Region	Compares to similar, unprotected areas.	Matching regions perfectly is impossible; selection bias risks
Model-Based	Uses algorithms (e.g., VCS VM0009’s deforestation models).	Models rely on assumptions (e.g., economic drivers) that can be gamed.

Critical Debate:

"Additionality Paradox": If a project is profitable without credits, it’s not additional. But proving a negative ("this wouldn’t have happened") is inherently subjective.

Example:

A wind farm in India claims it needed carbon revenue to be built-but government subsidies already made it viable.

2. Leakage: The Displacement Dilemma

Core Theory:

Definition: When emissions reductions in one area shift emissions elsewhere.

Types:

Activity Shifting: Loggers move to a neighboring forest.

Market Effects: Reduced timber supply raises prices, incentivizing more logging.

Theoretical Safeguards:

Approach	How It Works	Weaknesses
Buffer Zones	Protect areas around the project boundary.	Leakage can occur beyond the buffer.
Economic Modeling	Predicts how markets might react (e.g., timber demand shifts).	Models often underestimate real-world complexity.
Policy Linkage	Lobby governments to enforce regional laws against leakage.	Slow, politically fraught.

Case Study:

Brazil’s Amazon Fund reduced deforestation but may have pushed loggers into Cerrado savannas (Nature, 2021).

3. MRV: The Trust Architecture

Core Theory:

Monitoring: Collecting data (e.g., satellite images, soil samples).

Reporting: Documenting emissions changes.

Verification: Independent audits to confirm claims.

Theoretical Frameworks:

Component	Gold Standard	Critiques
Monitoring	Remote sensing (30m resolution) + ground truthing.	Satellite gaps (clouds, canopy cover).
Reporting	Transparent, public archives.	Proprietary "black box" models still common.
Verification	Third-party auditors (e.g., DNV, SCS).	Auditors paid by developers → conflicts of interest.

Key Concept: Permanence

Problem: Stored carbon can be re-released (e.g., forests burn, soils erode).

Theoretical Solutions:

Buffer Pools: Reserve credits to cover losses (but often underfunded).

Insurance Bonds: Financial guarantees (rarely used).

How to Get Paid for Carbon Credits

The carbon market is growing, rapidly, creating a lot of opportunity. Here we cover how to get paid for carbon credits this year.

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THANK YOU