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PROBLEM STATEMENT

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Blockchain based Blue Carbon Registry and MRV System

A **Carbon Credit** is essentially a certificate for environmental cleanup that represents the reduction or removal of one metric ton of carbon dioxide

Companies, that have to reduce their pollution caused by their activities, buy these credits from sellers such as NGOs, Communities, Coastal Panchayats.

The credits are earned by projects that clean up the air, like **planting and protecting forests**, especially special coastal trees (mangroves) that soak up pollution

NeelKadam transforms the market by providing speed, transparency, and fairness, directly fixing the failures of the old system.

Major Problems

Approval Bottleneck: "Traditional carbon verification takes 18-24 MONTHS"

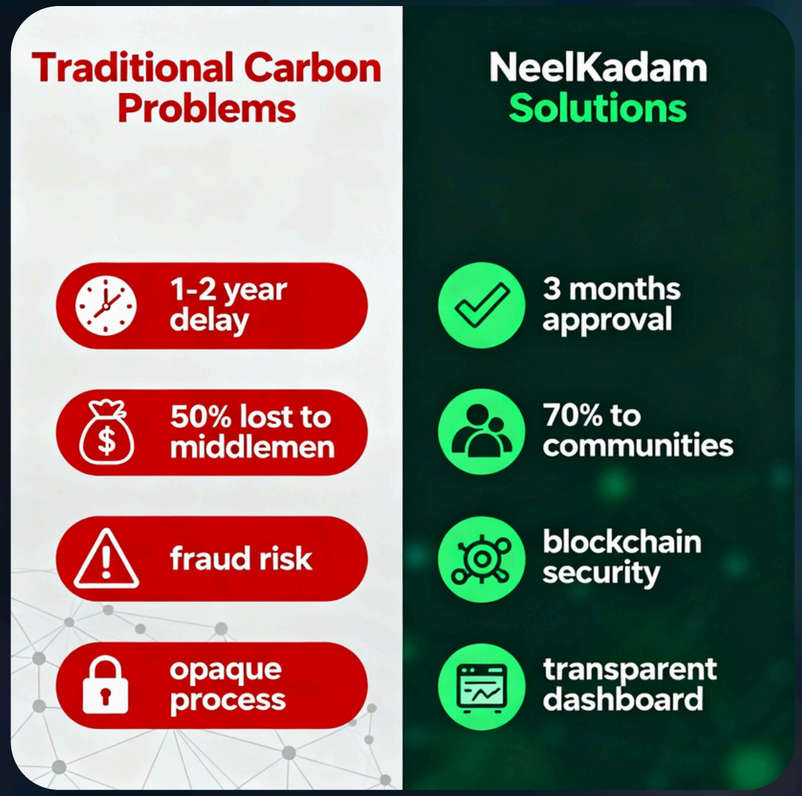
Revenue Loss: "Communities lose 40-50% to intermediaries"

Fraud Risk: "Manual processes allow 15% fraudulent credits"

Market Gap: Blue carbon at record $29.30/ton but only 81 projects globally

SOLUTION

NeelKadam creates India's first blockchain-based blue carbon registry that cuts verification time from years to months and market-place which allows a hassle free transfer of Carbon Credits between sellers and buyers.



UPLOADS PROJECT DATA

- Take photos with GPS location on smartphone
- Upload to NeelKadam projects
- System auto-verifies using Google Maps + satellite

GOVERNMENT VERIFIES

- Admin reviews photos + satellite images
- Checks: "Real mangroves? Right location?"
- Approves project on blockchain

CARBON CREDITS

- Admin approves credits for a project of seller
- Sellers can list their credits on the marketplace
- Buyers can buy the credits from the marketplace

CREDITS LOCKED

- Once company uses credit, it's burned on blockchain
- Cannot be resold or duplicated
- Prevents fraud of using credits more than once

SYSTEM DESIGN & DATA FLOW

Frontend Layer:

Step 2

NGO UPLOADS PROJECT

NGO (Seller) uses the Frontend to upload project details, photos, and GPS location.

Step 4

ADMIN VERIFIES DATA

Admin reviews project data, cross references photos with satellite imagery, and checks location.

Step 6

Admin clicks "Approve." The Backend sends a secure, authorized request to the Smart Contract.

Step 7

Smart Contract MINTS CREDITS

CREDITS LISTED ON MARKETPLACE

The verified credits are now visible on the marketplace for

The Smart Contract executes, calculates the actual_cc, and

The m el ly mited are automatically transferred to

TECHNOLOGY USED

Why These Technologies?

ETHEREUM + SOLIDITY

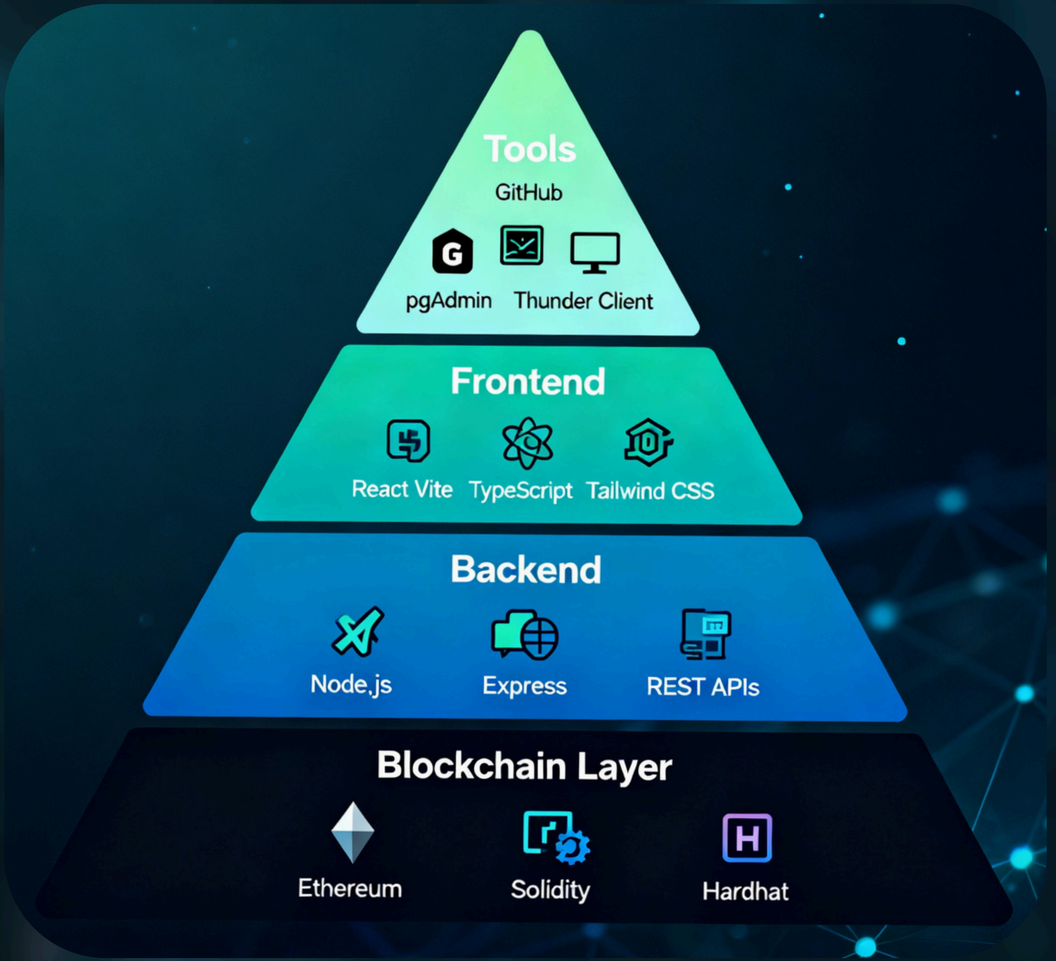
- Industry standard for carbon credit tokenization
- J.P. Morgan, Microsoft use Ethereum for carbon systems

POSTGRESQL:

- Handles complex relational data (projects, users, transactions)
- Supports ACID compliance for financial records

MULTI- SIGNATURE VERIFICATION:

- Requires 70%+ verifier approval before credit issuance
- Prevents single-point corruption



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FEATURE/USP

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- **Dectenlizated MRV System:** Reduces verification time by 70-80%
- Blockchain Immutuallity: Tamper-proof records prevent fraud.
- **Prevention of Double-Counting:** Each credit is a unique, non-non-duplicable token.
- Public Transparency Dashboard: All trastform bulboard: All transactions Platform built for NGOs, Panchayats, & communities.

Multi-Layer Verification Process

1. Geo-tagged Photos
2. Automated Satellite Satellite Validation
3. NCCR Government Approval
4. Smart Contract Multi-Sig Lock

REFERENCES/LINKS

1. We consulted the following resources:
2. [The Future of Blue Carbon Science] - (https://www.nature.com/articles/s41467-019-11693-wt)
3. [Dimensions of Blue Carbon and Emerging Perspectives] - (https://pmc.ncbi.nlm.nih.gov/articles/PMC6451379/)
4. [Blue Carbon Handbook] - (https://oceanpanel.org/wp-content/uploads/2023/06/23_REP_HLP_Blue-Carbon-Handbook_low-res.pdf)
5. [TheBlueCarbonInitiative] - (https://www.thebluecarboninitiative.org/library)
6. Additionally, we explored numerous case studies and gathered insights from potential users, professionals in the field, and various NGOs.
7. We also analyzed other digital platforms and successful global websites to enhance our understanding.

Github Repositry Link - https://github.com/saumy-github/NeelKadam

Video Link - https://youtu.be/kpIlNnXLj7k

Live Deployment - https://neel-kadam.vercel.app


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THANK YOU