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TITLE PAGE

- **Problem Statement ID – SIH25038**
- **Problem Statement Title - Blockchain-Based Blue Carbon Registry and MRV System**
- **Theme- Clean & Green Technology**
- **PS Category- Software**
- **Team ID-**
- **Team Name : Dive Into Infinity**

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CARBONE

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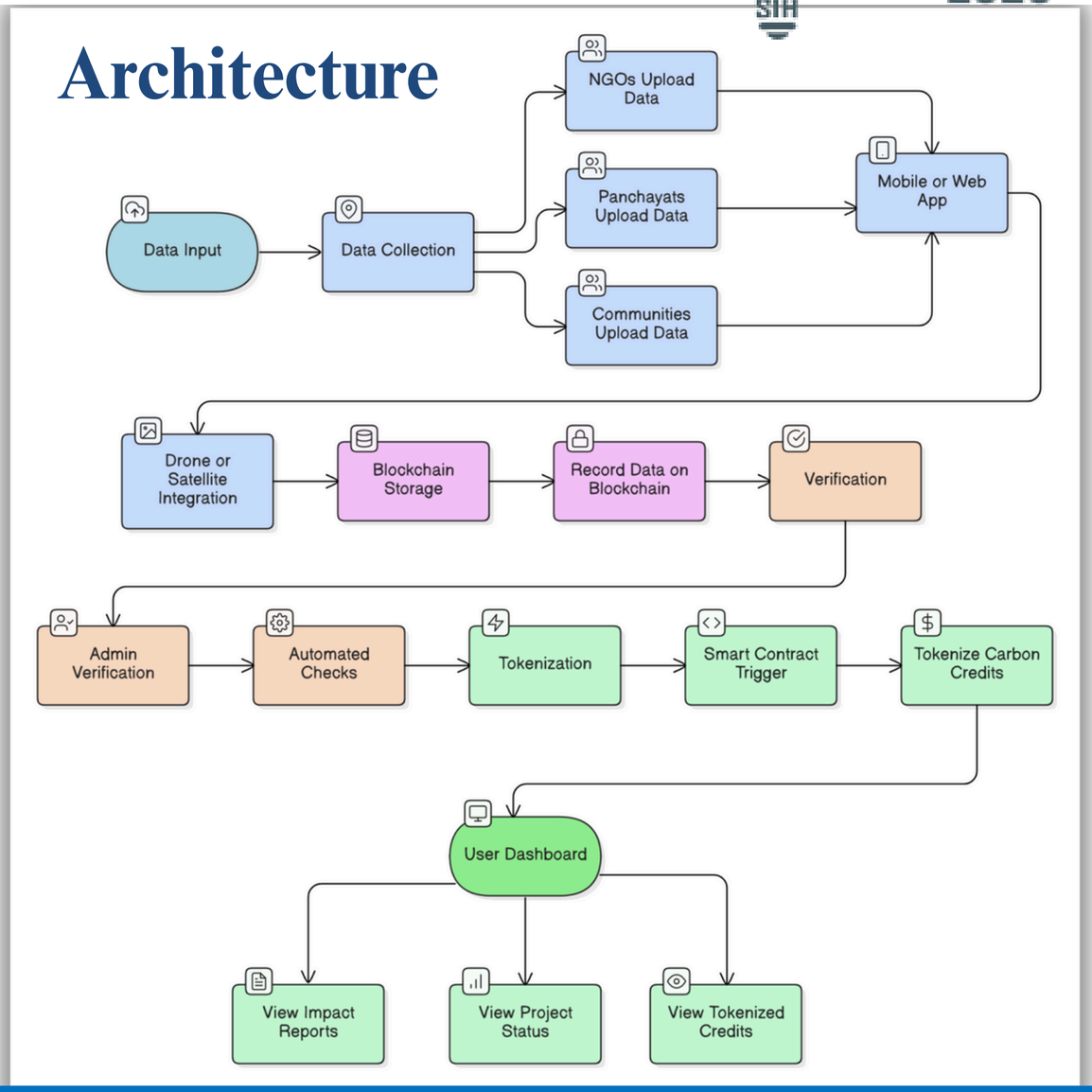
Proposed Solution

- **Blockchain Registry**: Stores restoration data immutably, ensuring transparency and security.
- **Smart Contracts**: Automatically mint verified carbon credits, making them traceable and unique.
- **Mobile Interface**: Lets NGOs and communities upload geo-tagged images and field data easily.
- **NCCR/Admin Dashboard**: Tools for verification, compliance checks, and report generation.
- **User Dashboards**: Shows credits, project status, wallet balance, and impact reports.
- **Scalability & Future Scope**: Enables future audits, credit trading, and global registry integration.

Architecture



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TECHNICAL APPROACH

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Techstack

Blockchain
- Ethereum
- Solidity
- Hardhat,Remix ide,
- ethers.js/web3.js

Web Frontend
- Next Js
- TailwindCss

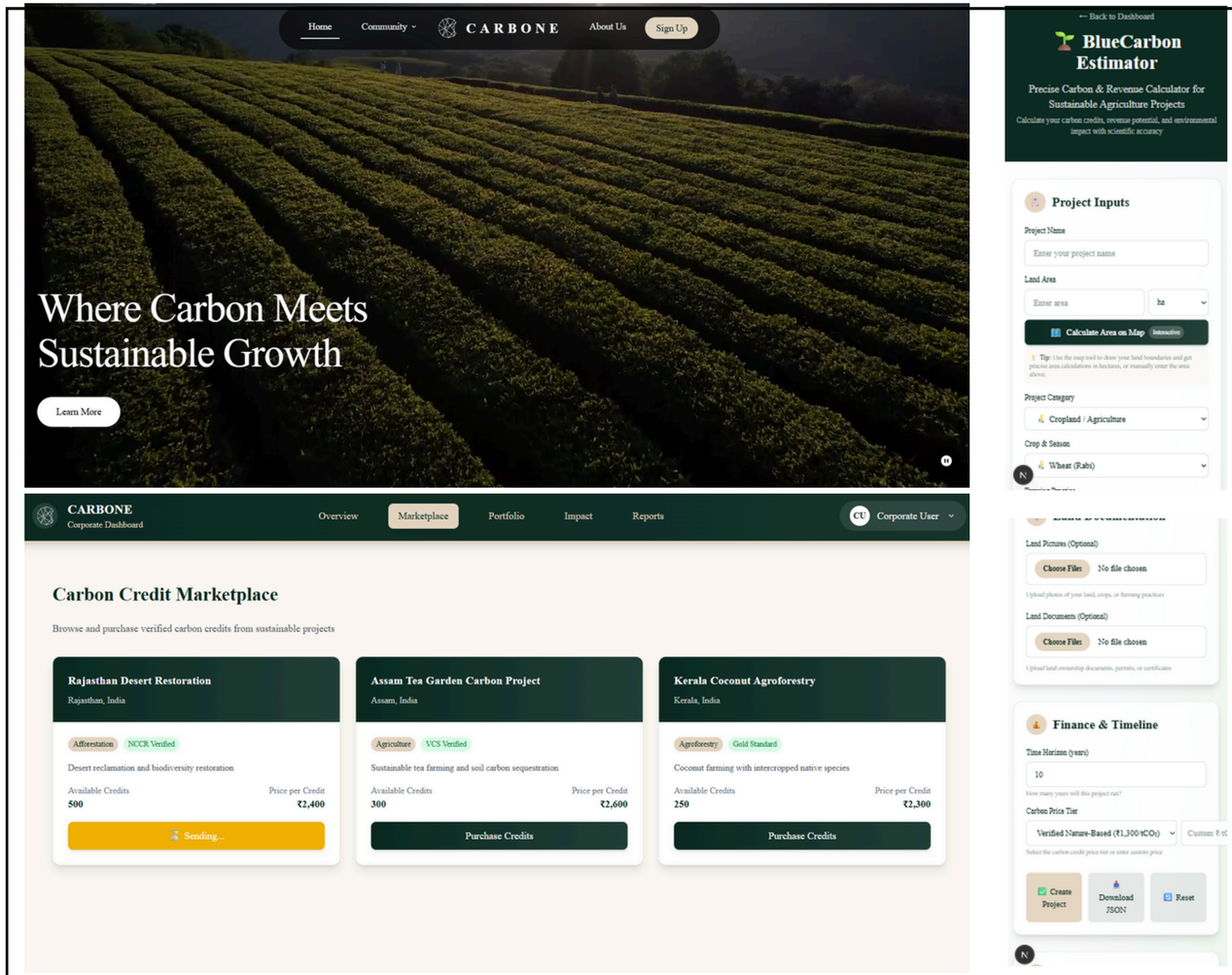
Backend/API
- Node.js (Express)
- MongoDB

Data Integration
- Bhuvan + Leaflet
- Python (FastAPI/Flask)

Admin/onboarding
- Wallet auth (MetaMask)

Mobile App
- Flutter

Prototype



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FEASIBILITY AND VIABILITY

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⚙️ **Feasibility**	Blockchain ensures immutable, secure records	Mobile/web apps enable easy onboarding	GPS and Map integrations ensure reliable data collection
📈 **Viability**	Smart contracts automate credit issuance	Scalable across regions & communities	Supports future integrations (trading, third-party audits)
⚠️ **Challenges**	Data authenticity: risk → mitigated via multi-layer verification	Adoption barriers: low tech familiarity → mitigated with training & workshops	Regulatory compliance: alignment with standards → built-in reporting & verification
🌱 **Use Cases**	NGOs tracking coastal/mangrove restoration	Panchayats managing community-led projects	Government monitoring of blue carbon contributions
💰 **Business Potential**	Tokenized credits generate revenue for communities & NGOs	Platform can become a national registry	Partnerships with corporates for ESG & carbon offset goals

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IMPACT AND BENEFITS

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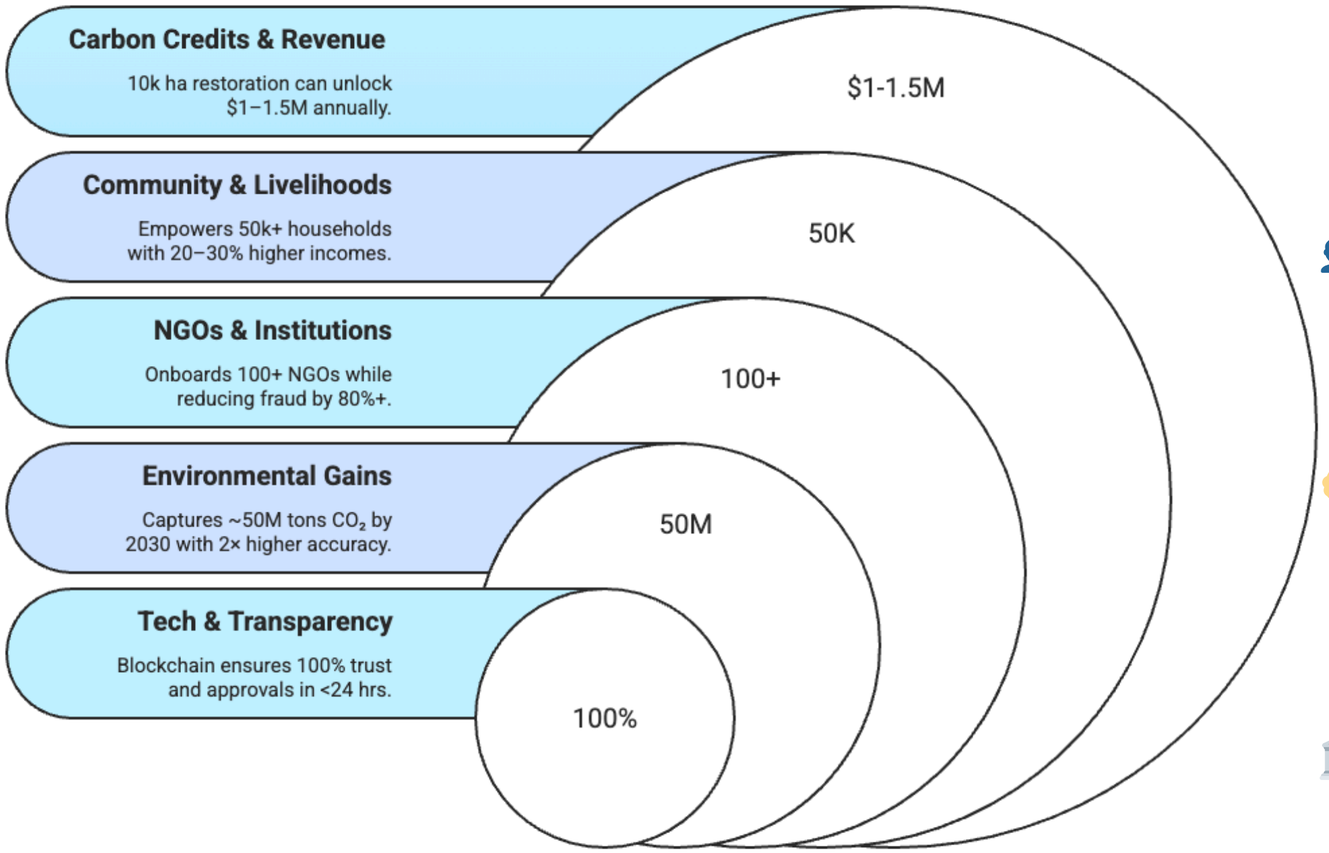
Potential impact on the target audience



Benefits of the solution

Environmental Benefits

- Captures millions of tons of CO_2 through large-scale restoration.
- Protects mangroves, seagrasses & wetlands while boosting coastal resilience.

Social Benefits

- Direct income to communities & panchayats via credits.
- Creates new livelihoods (eco-tourism, conservation jobs).

Economic Benefits

- Unlocks sustainable revenue from global carbon markets.
- Cuts fraud by 80%+ through blockchain-based verification.

Institutional Benefits

- Equips NCCR with faster MRV & transparent tools.
- Strengthens compliance with national & global climate goals.

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RESEARCH AND REFERENCES

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References

- MoEFCC, Govt. of India
- NITI Aayog Reports
- IPCC (MRV Guidelines & Climate Reports)
- UNFCCC (Paris Agreement, Carbon Markets)
- FAO (Regenerative Farming & Carbon Sequestration)
- World Bank – Carbon Pricing Dashboard
- UN Climate Blockchain Initiative
- Blue Carbon Potential
- Global Blue Carbon Repository in India Mongabay India (2025)

Comparison with Existing Systems

Feature	Kumi Analytics	Project Map	Blueprint	Mangrove Systems	Carbone
Remote sensing / Field Data	✗(basic)	✓	✓	✓	✓
Verification / compliance	✓	✗	✓	✓	✓
Tokenization / blockchain	✗	✗	✗(basic)	✗(basic)	✓
Community involvement	✗(basic)	✓	✓	✓	✓
Public visibility / status tracking	✓	✓	✓	✓	✓

Live Demo : Carbone360.vercel.app