EcoFund - Decentralized Crowdfunding Platform

Final Examination Project Report

Student: Askhat Amirkhanov, Askar Alimkulov, Bexultan Zhanadil
Course: Blockchain Development
Project Title: EcoFund - Decentralized Crowdfunding DApp
Year: 2026

1. Project Overview

EcoFund is a decentralized crowdfunding platform built on Ethereum blockchain. It allows users to create fundraising campaigns and receive donations in ETH. Donors are rewarded with platform tokens for supporting campaigns.

The platform operates without centralized control and uses smart contracts to ensure transparency and secure fund handling.

2. Project Objective

The objective of this project is to:

- Build a blockchain-based crowdfunding platform
- Allow users to create campaigns
- Allow users to donate ETH
- Automatically reward donors with tokens
- Provide a user-friendly web interface
- Demonstrate smart contract deployment and interaction

3. Technologies Used

Technology	Purpose
Solidity	Smart contracts
Hardhat	Local blockchain & deployment
Ethereum	Blockchain platform
MetaMask	Wallet connection
Ethers.js	Contract interaction
HTML/CSS/JS	Frontend interface
OpenZeppelin	ERC20 token implementation

4. System Architecture

The system consists of three main parts:

Smart Contracts

- EcoFund contract handles campaigns and donations.
- EcoRewardToken contract mints reward tokens.

Blockchain Network

Contracts run on a local Hardhat blockchain network.

Frontend Application

Users interact with the contracts through a web interface connected via MetaMask.

5. Smart Contract Functionality

Campaign Creation

Users create campaigns with:

- Title
- Description
- Funding goal
- Duration

Donations

Users donate ETH to campaigns.

The contract:

- Records contributions
- Adds funds to campaign
- Rewards donor with tokens

Reward System

Donors receive ECO tokens equal to ETH donated.

Example:

- Donate 1 ETH → receive reward tokens.

6. Application Features

The application supports:

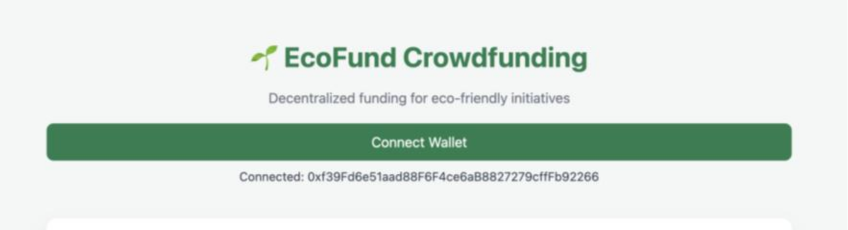
✓ Wallet connection
✓ Campaign creation
✓ Campaign listing
✓ Donation system
✓ Reward token minting
✓ Campaign deadline tracking
✓ Real-time updates

7. User Workflow

1. User connects MetaMask wallet.
2. User creates or selects a campaign.
3. User donates ETH.
4. Smart contract updates campaign balance.
5. Reward tokens are minted automatically.

8. Screenshots

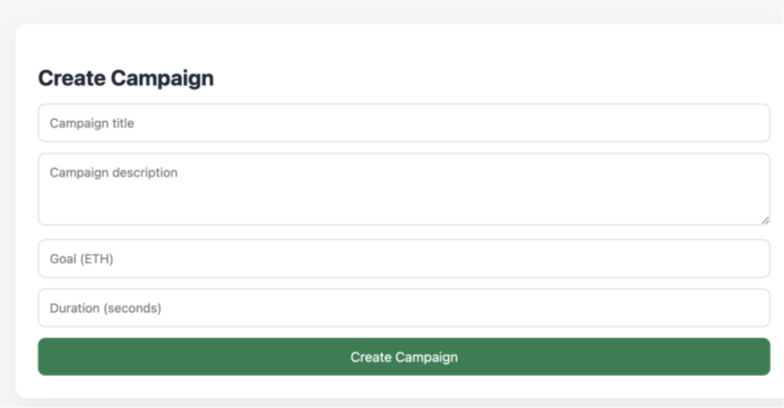
Screenshot 1 - Wallet Connected



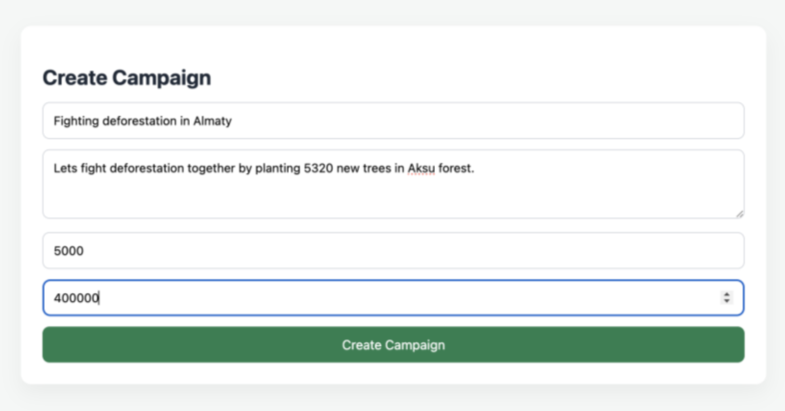
Connected: 0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266

Screenshot 2 - Campaign Creation Form

Empty form:



Step 1: Create



Create Campaign

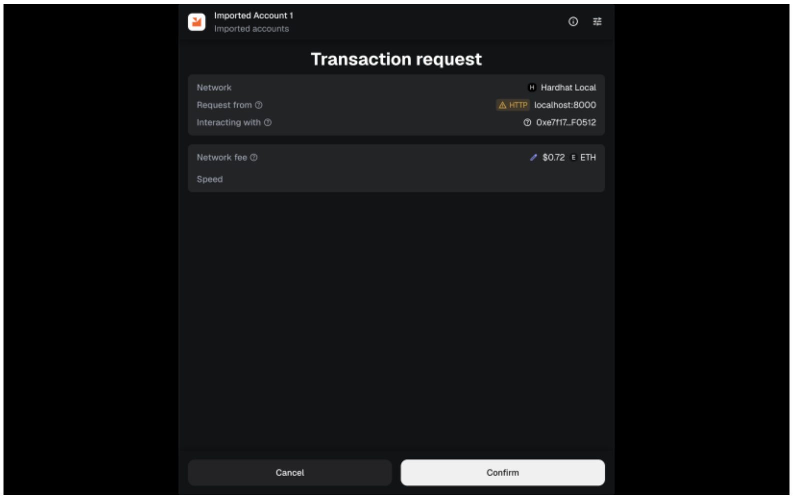
Fighting deforestation in Almaty

Lets fight deforestation together by planting 5320 new trees in Aksu forest.

5000

400000

Step 2: Confirm



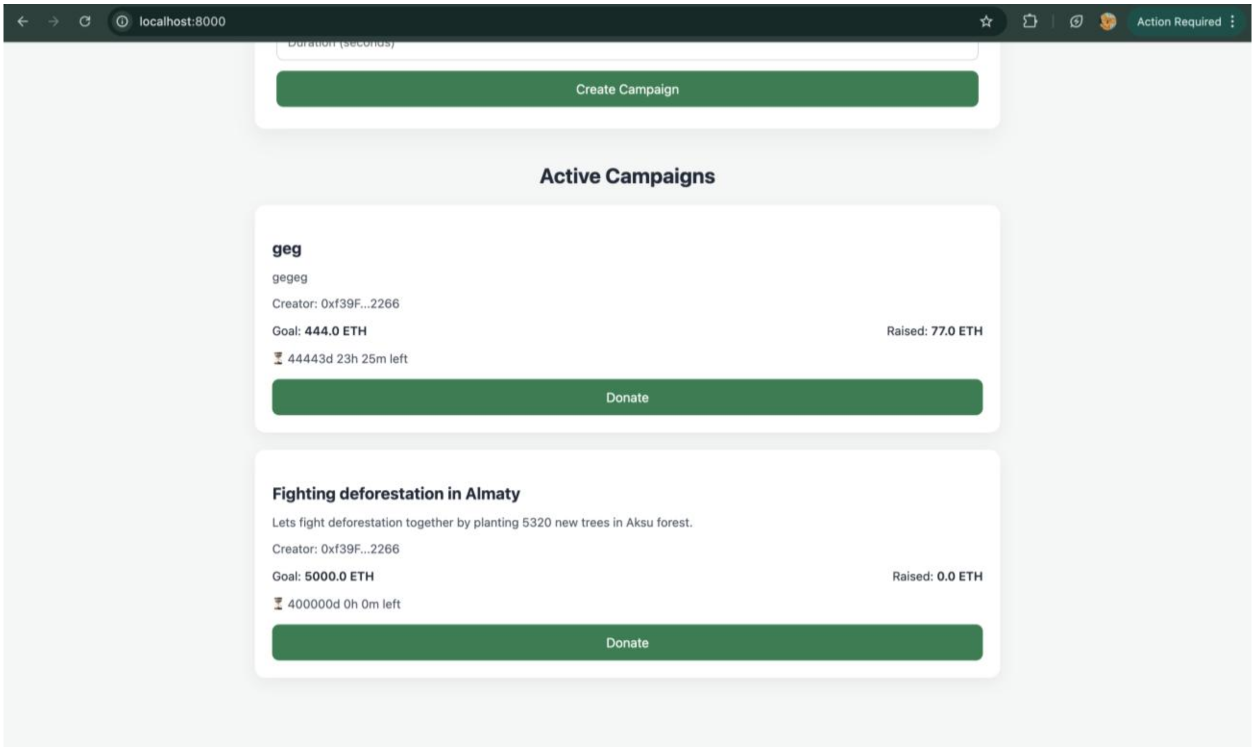
Imported Account 1
Imported accounts

Transaction request

Network: Hardhat Local
Request from: HTTP localhost:8000
Interacting with: 0xe7f17...F0512

Network fee: $0.72 ETH
Speed

Screenshot 3 - Campaign Created



Active Campaigns

geg

gegeg

Creator: 0xf39F...2266

Goal: **444.0 ETH**

Raised: **77.0 ETH**

⏳ 44443d 23h 25m left

Fighting deforestation in Almaty

Lets fight deforestation together by planting 5320 new trees in Aksu forest.

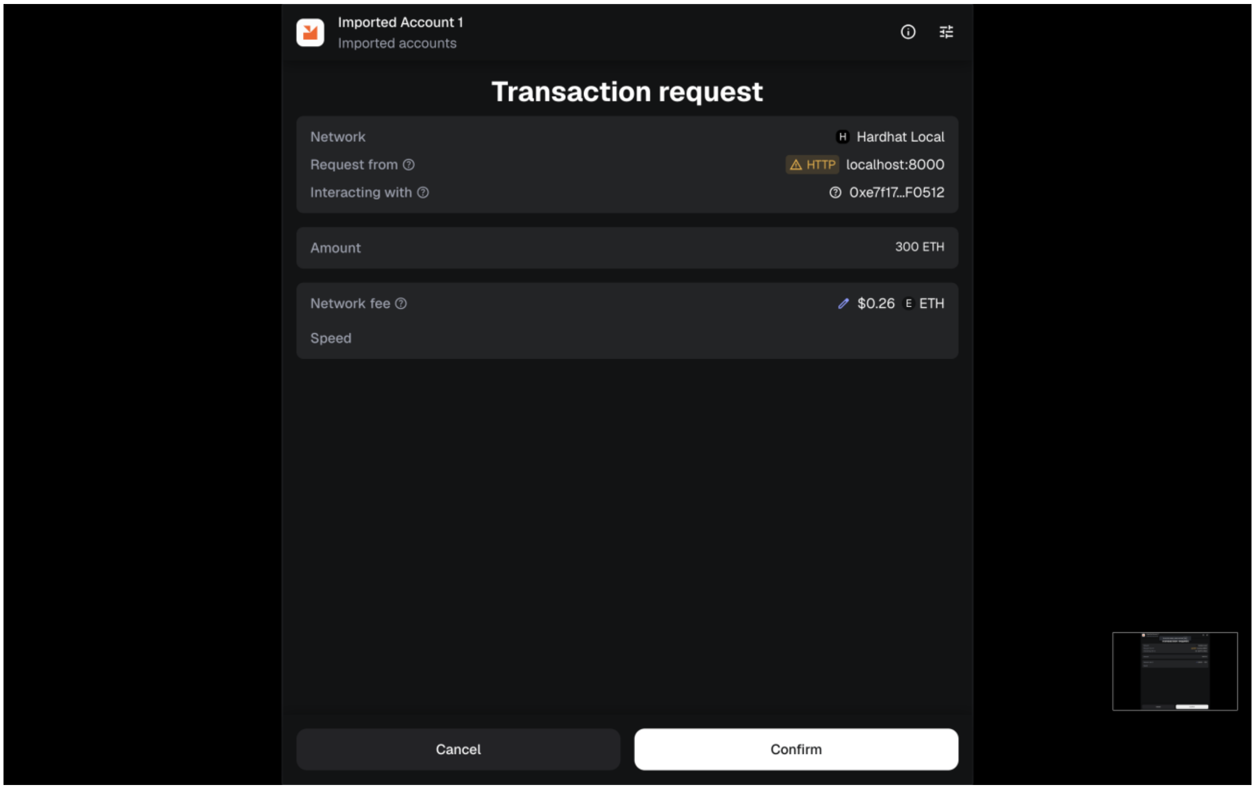
Creator: 0xf39F...2266

Goal: **5000.0 ETH**

Raised: **0.0 ETH**

⏳ 400000d 0h 0m left

Screenshot 4 – Donation Transaction



Transaction request

Network: Hardhat Local

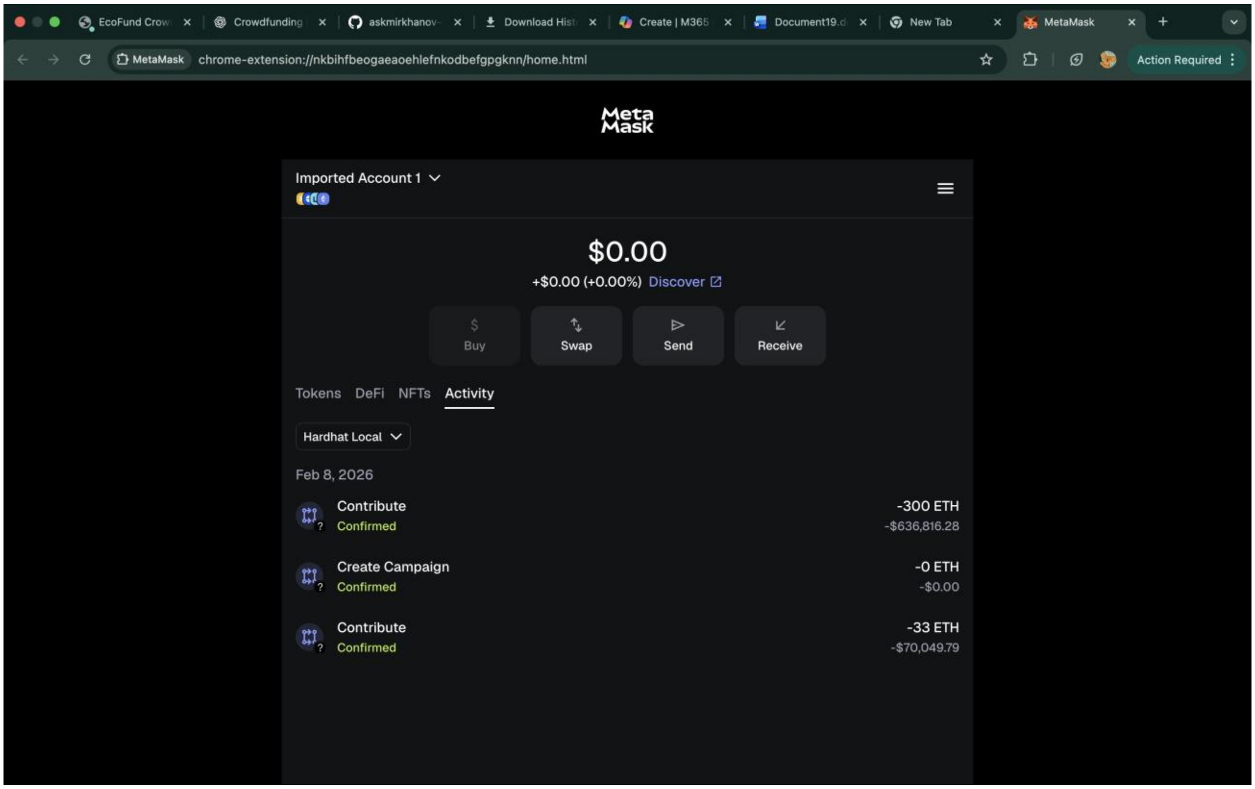
Request from: HTTP localhost:8000

Interacting with: 0xe7f17...F0512

Amount: 300 ETH

Network fee: $0.26 ETH

Speed



chrome-extension://nkbihfbeogaeaoehlefnkodbefgpgknn/home.html

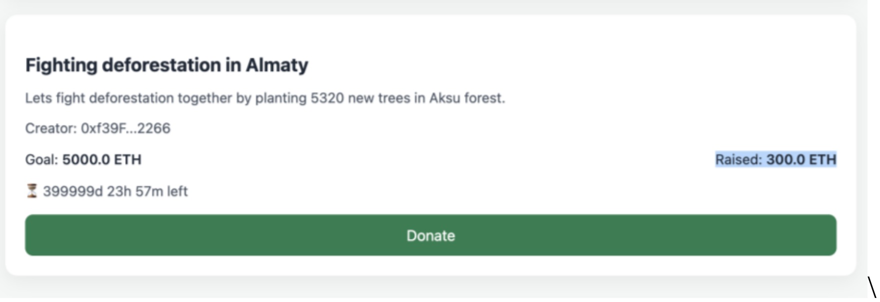
$0.00

+$0.00 (+0.00%) Discover

Feb 8, 2026

Contribute Confirmed	-300 ETH -$636,816.28
Create Campaign Confirmed	-0 ETH -$0.00
Contribute Confirmed	-33 ETH -$70,049.79

Screenshot 5 – Updated Campaign Funds



Fighting deforestation in Almaty

Lets fight deforestation together by planting 5320 new trees in Aksu forest.

Creator: 0xf39F...2266

Goal: **5000.0 ETH** Raised: **300.0 ETH**

⏳ 399999d 23h 57m left

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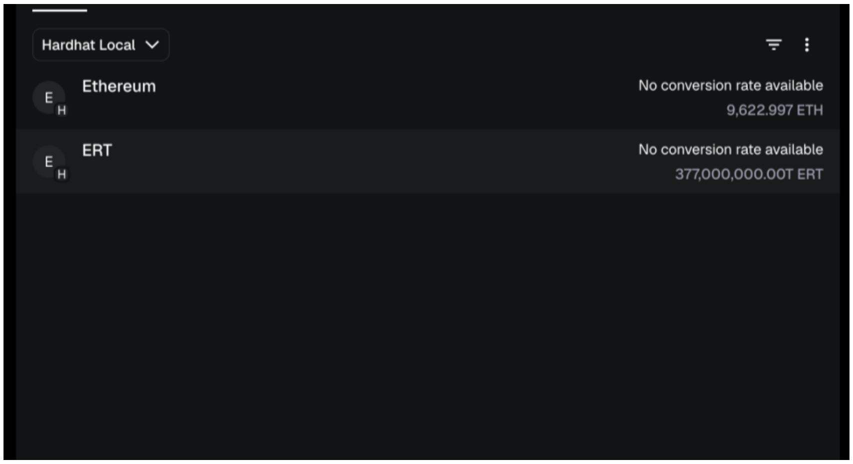
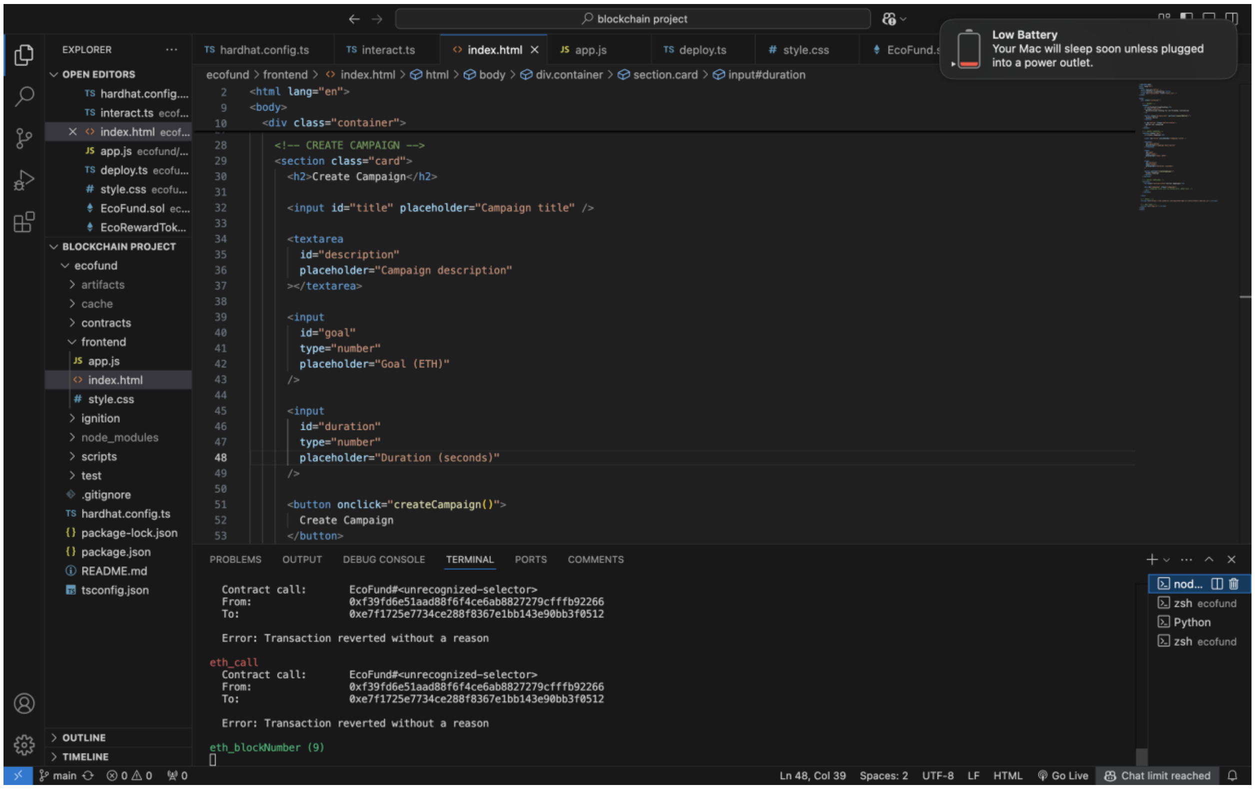
Screenshot 6 – Reward Tokens in Wallet



Ethereum No conversion rate available
9,622.997 ETH

ERT No conversion rate available
377,000,000.00T ERT

Screenshot 7 – Terminal Deployment



Low Battery
Your Mac will sleep soon unless plugged into a power outlet.

```html
<html lang="en">
<body>
  <div class="container">
    <!-- CREATE CAMPAIGN -->
    <section class="card">
      <h2>Create Campaign</h2>

      <input id="title" placeholder="Campaign title" />

      <textarea
        id="description"
        placeholder="Campaign description"
      ></textarea>

      <input
        id="goal"
        type="number"
        placeholder="Goal (ETH)"
      />

      <input
        id="duration"
        type="number"
        placeholder="Duration (seconds)"
      />

      <button onclick="createCampaign()">
        Create Campaign
      </button>
```

```
  Contract call:       EcoFund#<unrecognized-selector>
  From:                0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
  To:                  0xe7f1725e7734ce288f8367e1bb143e90bb3f0512

  Error: Transaction reverted without a reason

eth_call
  Contract call:       EcoFund#<unrecognized-selector>
  From:                0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266
  To:                  0xe7f1725e7734ce288f8367e1bb143e90bb3f0512

  Error: Transaction reverted without a reason

eth_blockNumber (9)
```

9. Testing Results

The application was tested locally:

- Campaign creation works correctly.
- Donations update campaign balance.
- Reward tokens are minted successfully.
- MetaMask transactions confirm correctly.
- Frontend updates dynamically.

No critical issues were encountered.

10. Challenges Faced

Main challenges included:

- Contract deployment errors
- Network resets
- Wallet synchronization issues
- Frontend contract connection bugs

All issues were resolved through debugging and redeployment.

11. Future Improvements

Possible improvements:

- Campaign fund withdrawal system
- Campaign categories
- User profiles
- Token marketplace integration
- Mainnet deployment
- UI improvements

12. Conclusion

EcoFund successfully demonstrates a decentralized crowdfunding system using blockchain technology. Smart contracts securely handle campaigns and donations while automatically rewarding users.

The project fulfills all requirements of a decentralized application and proves practical blockchain usage.

13. References

- Ethereum Documentation

- Hardhat Documentation
- OpenZeppelin Contracts
- Ethers.js Documentation