SolChain

Grey Devs

Fatema Begum

Miss Fatema Begum's ambition to sell cold drinks was stifled by the **unreliable power grid**. She couldn't risk her inventory on an appliance that would fail during constant blackouts. Her business was stuck, watching her potential income melt away.

PROBLEMS

Bangladesh's Energy Challenge

Dependence on Fossil Fuels

Over 98% of Bangladesh's electricity comes from fossil fuels, a costly and environmentally damaging reliance.

Grid Instability & Lack of Control

The national grid suffers from frequent blackouts and an insufficient and unreliable supply, especially in rural areas.

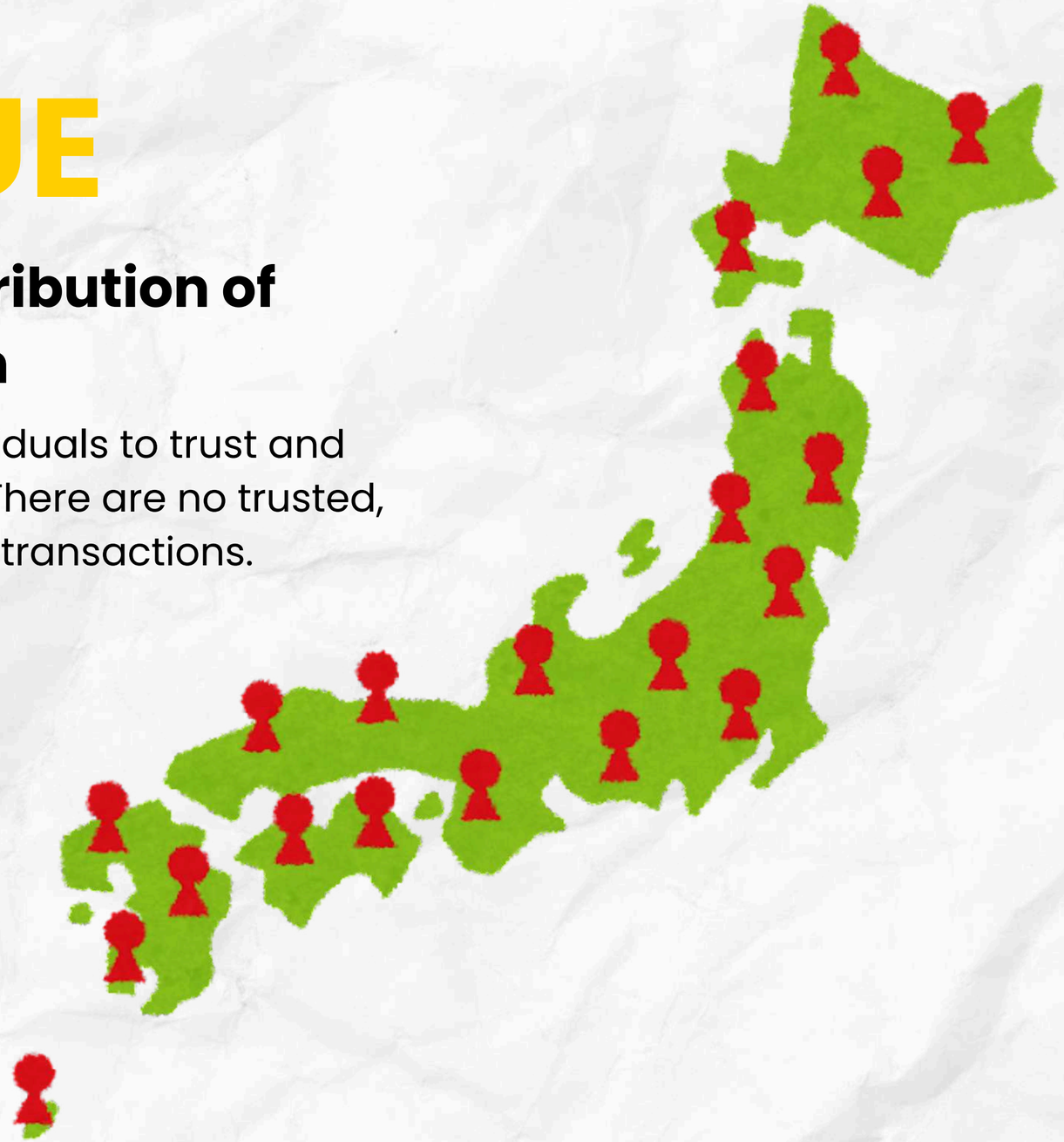
Wasted Energy

Millions of households with solar home systems (SHS) have a surplus of energy that goes to waste.

CORE ISSUE

Inefficient and inequitable distribution of energy in Bangladesh

The current system lacks a mechanism for individuals to trust and coordinate with each other for energy exchange. There are no trusted, low-cost intermediaries to facilitate secure transactions.



OUR BIG IDEA

SolChain: A Blockchain & AI-Powered P2P Energy Trading System

SolChain

We are building a decentralized, P2P energy trading system that allows individuals and communities to buy and sell surplus solar energy directly to their neighbors.

Blockchain
To create a transparent, immutable, and trustless ledger for all transactions.

Artificial Intelligence
To optimize energy distribution, predict supply/demand, and set dynamic, fair pricing.

Smart Meters
Our proprietary smart meters track energy production and consumption in real-time.

WHY BLOCKCHAIN?

Addressing the Trust Deficit

Smart Contracts

A smart contract automatically executes the energy trade and payment when pre-defined conditions are met

Cloud vs. Blockchain

A conventional cloud solution or database would require a central entity to host and manage the data

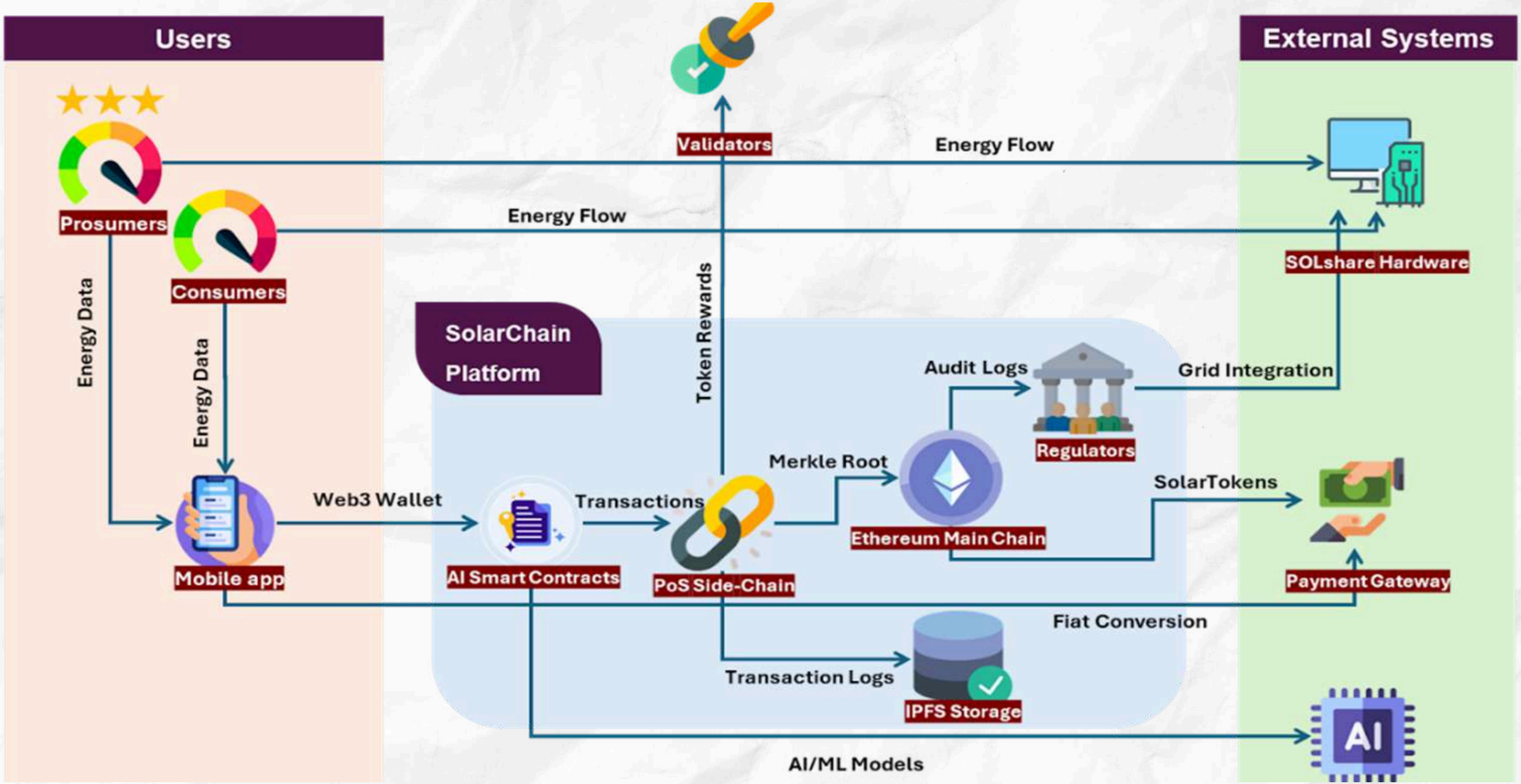
Immutabality

Once a transaction is recorded on the blockchain, it cannot be altered or deleted.

Decentralization

Blockchain eliminates the need for a central, trusted intermediary to manage transactions.

ARCHITECTURE



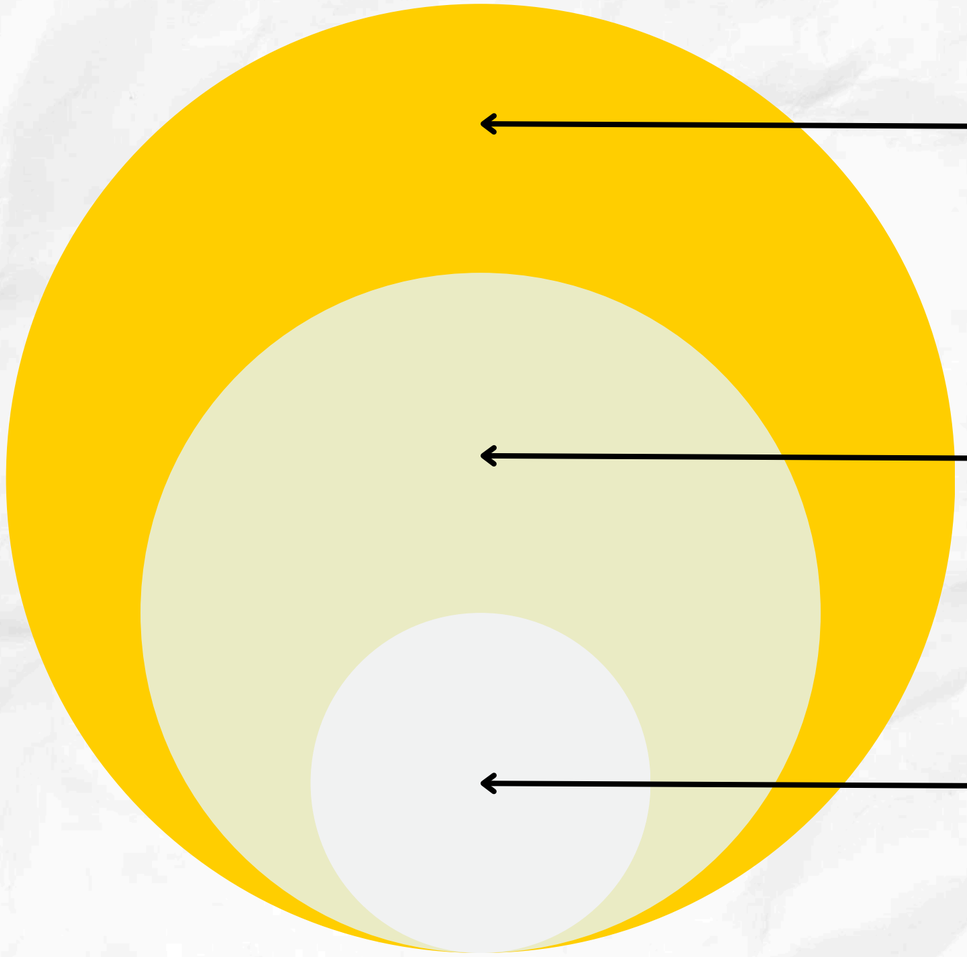
OUR COMPETITORS ARE OUR PARTNERS

solshare®

SREDA
Sustainable and Renewable Energy Development Authority

We are going to integrate our technology with their already existing infrastructure.

MARKET SIZE



USD 47B

TAM

This represents the total potential market for microgrid deployments worldwide, which SolChain's system falls under.

USD 150M

SAM

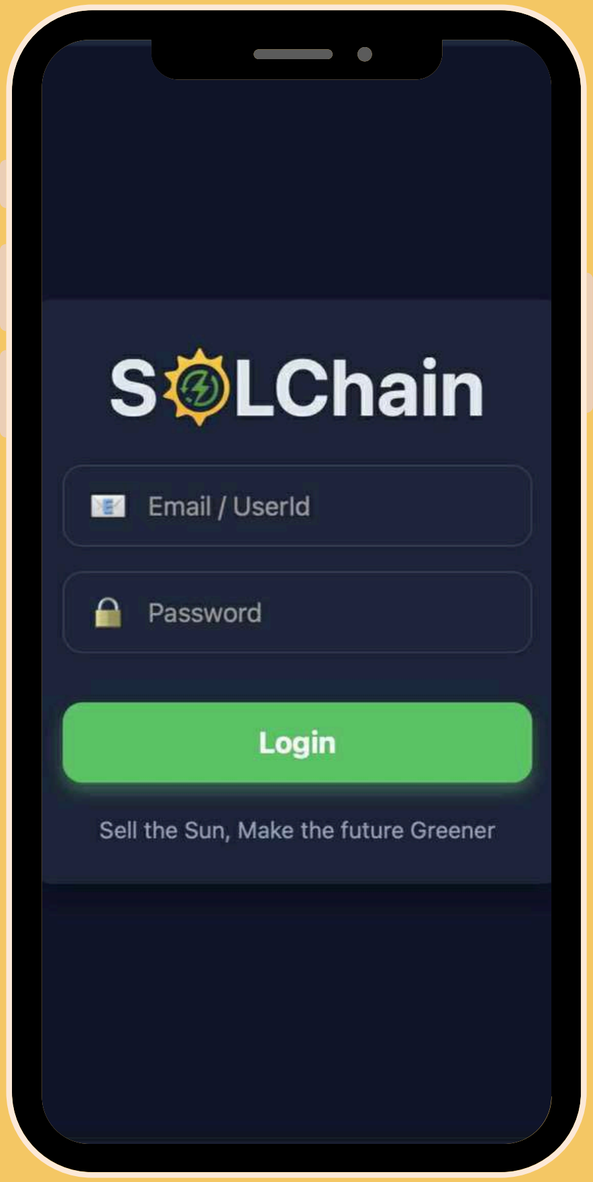
This is an estimation of the total value of deploying these nanogrids.

USD 10M

SOM

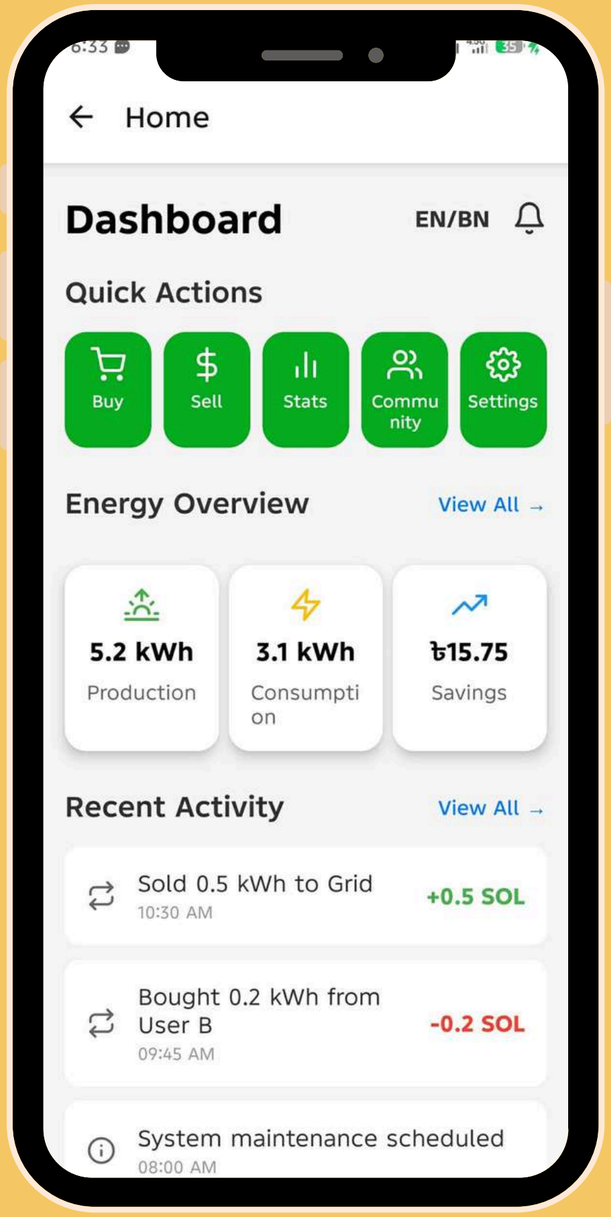
This corresponds to capturing 5-10% of the target customers by 2030

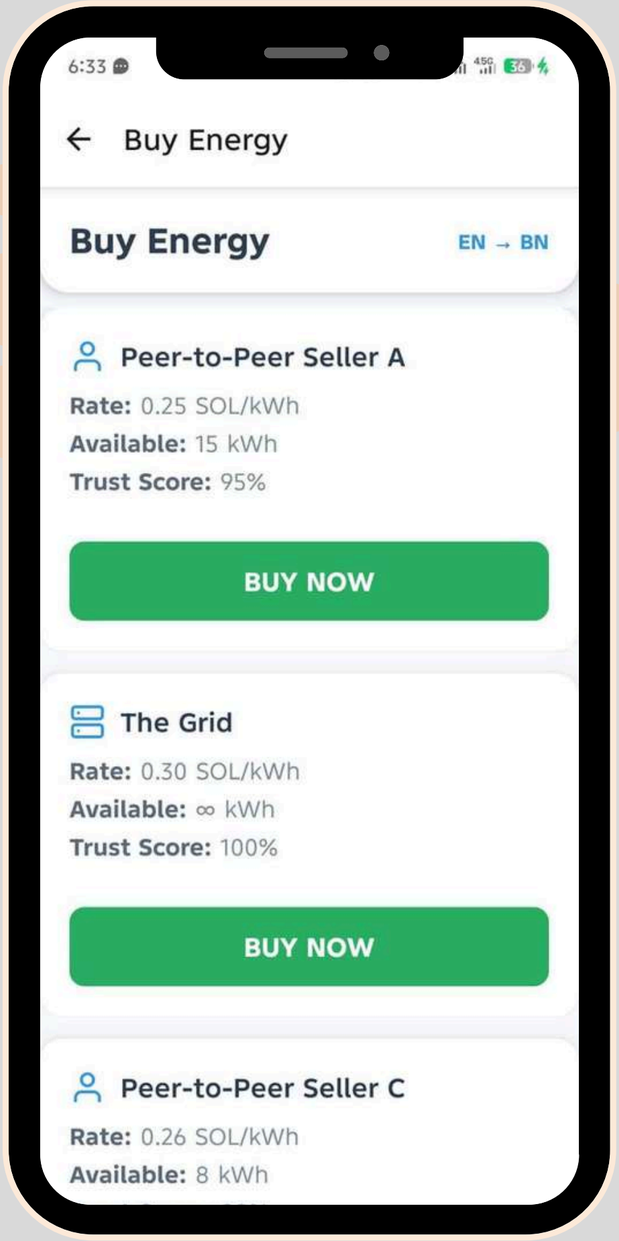
MOBILE APP INTERFACE




```
class AuthService {
    constructor(userService, energyService) {
        this.userService = userService;
        this.energyService = energyService;
        this.jwtSecret = process.env.JWT_SECRET || 'your-secret-key';
    }

    // Login user
    async loginUser(email, password) {
        try {
            console.log(`🔐 Login attempt for: ${email}`);

            // 1. Find user in database
            const user = await database.findUserByEmail(email);
            if (!user) {
                return { success: false, error: 'Invalid email or password' };
            }

            // 2. Verify password
            const passwordValid = await bcrypt.compare(password, user.hashedPassword);
            if (!passwordValid) {
                return { success: false, error: 'Invalid email or password' };
            }

            // 3. Check if user is active
            if (!user.isActive) {
                return { success: false, error: 'Account is deactivated' };
            }

            // 4. Decrypt private key for blockchain access
            const privateKey = await this.userService.decryptPrivateKey(
                user.encryptedPrivateKey,
                password
            );
```

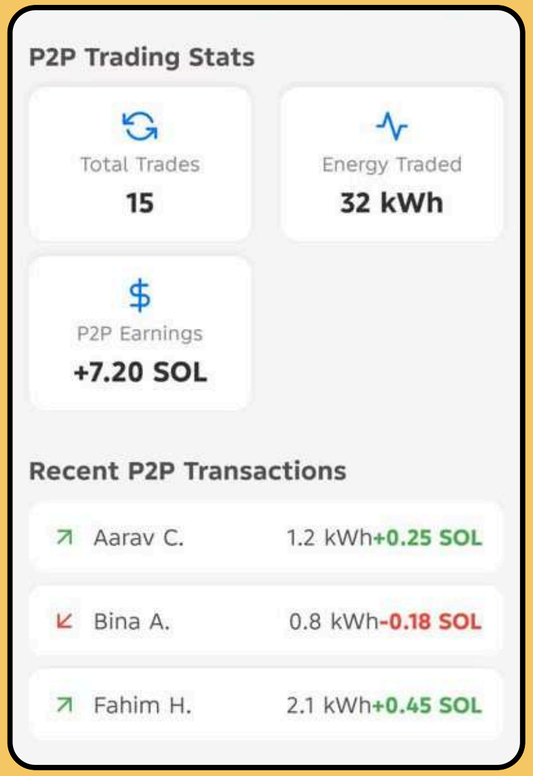
The users can login to their account and the can view their dashboard.They can buy and sell energy just by a click of a button.

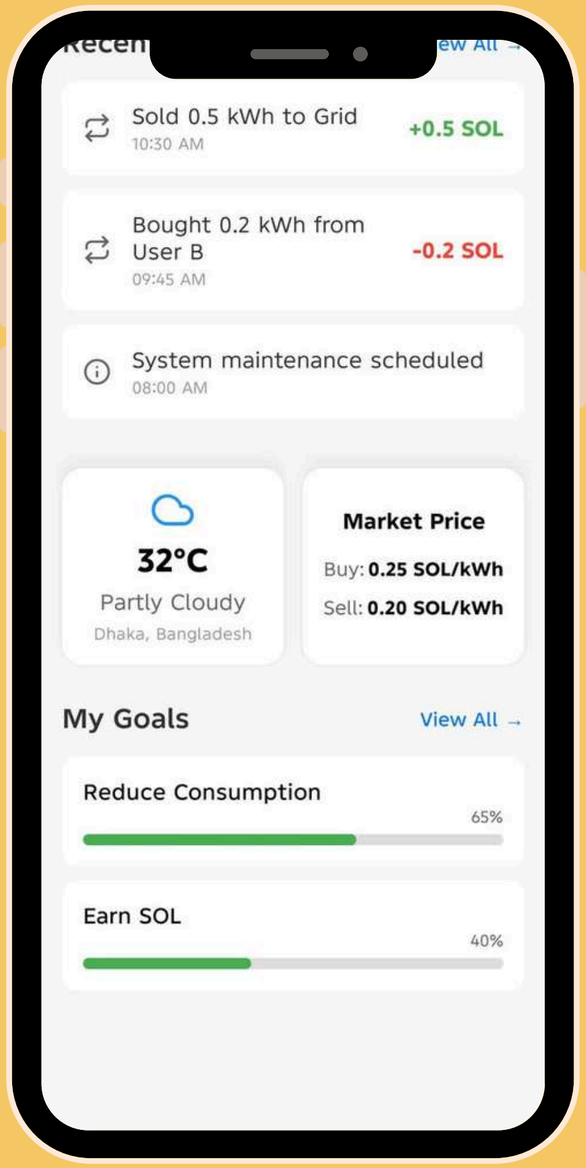





```solidity
function acceptOffer(uint256 _offerId) external whenNotPaused nonReentrant returns (uint256) {
    Offer storage offer = offers[_offerId];

    if (blacklistedUsers[msg.sender]) revert UserIsBlacklisted(msg.sender);
    if (offer.creator == msg.sender) revert UnauthorizedAccess(msg.sender);
    if (offer.status != OfferStatus.ACTIVE) revert OfferNotActive(_offerId);
    if (block.timestamp > offer.deadline) revert OfferExpired(offer.deadline);

    offer.status = OfferStatus.EXECUTED;

    address buyer = offer.offerType == OfferType.BUY ? offer.creator : msg.sender;
    address seller = offer.offerType == OfferType.SELL ? offer.creator : msg.sender;

    // For buy offers, transfer payment from buyer
    if (offer.offerType == OfferType.BUY) {
        solarToken.safeTransferFrom(buyer, address(this), offer.totalPrice);
    } else {
        // For sell offers, transfer payment from acceptor (buyer)
        solarToken.safeTransferFrom(buyer, address(this), offer.totalPrice);
    }
```

Blockchain based trading system is set up, making it free from corruption

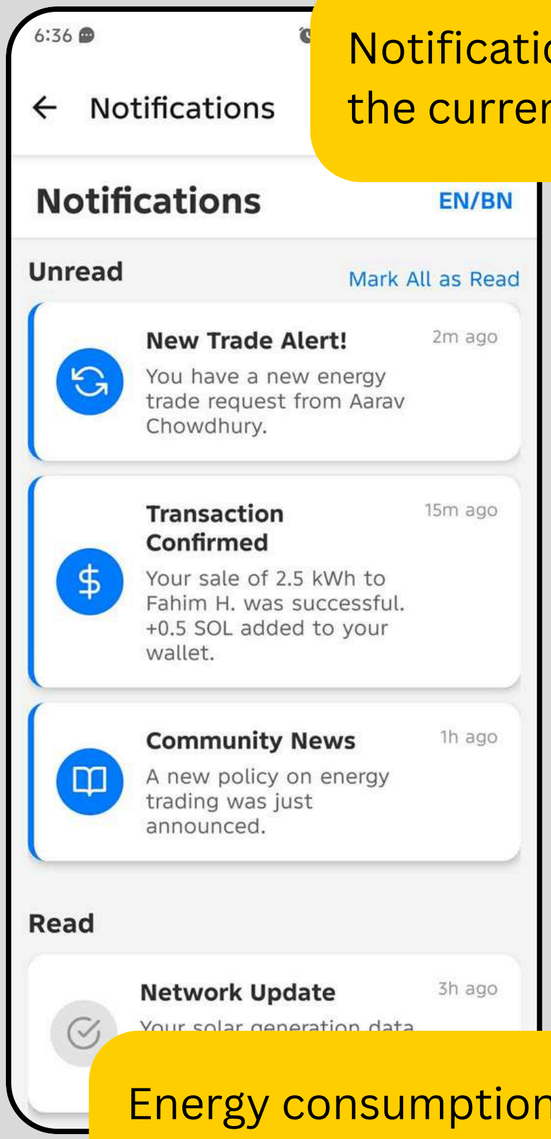


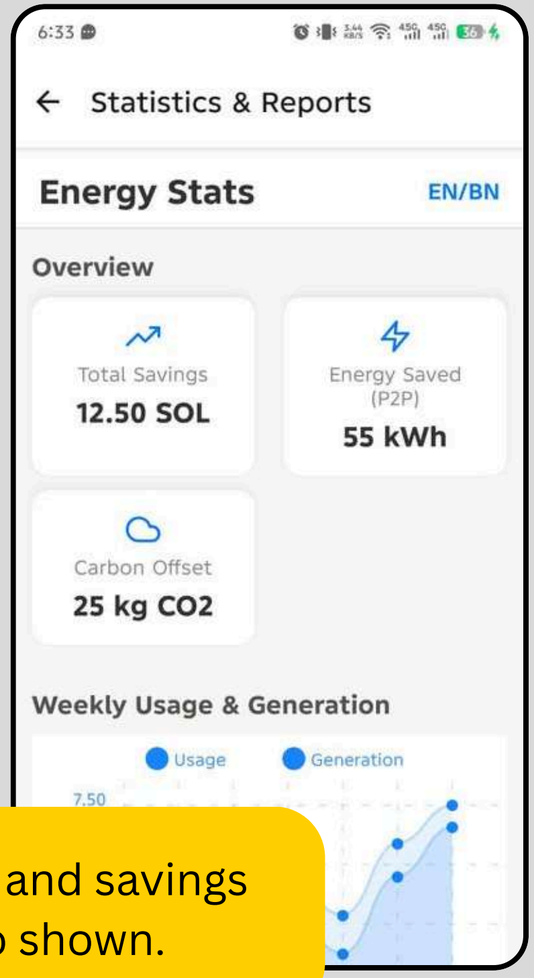


The users can view their stats in the app and take the right decisions accordingly.

Recent activities and current market situations are to be highlighted in the app

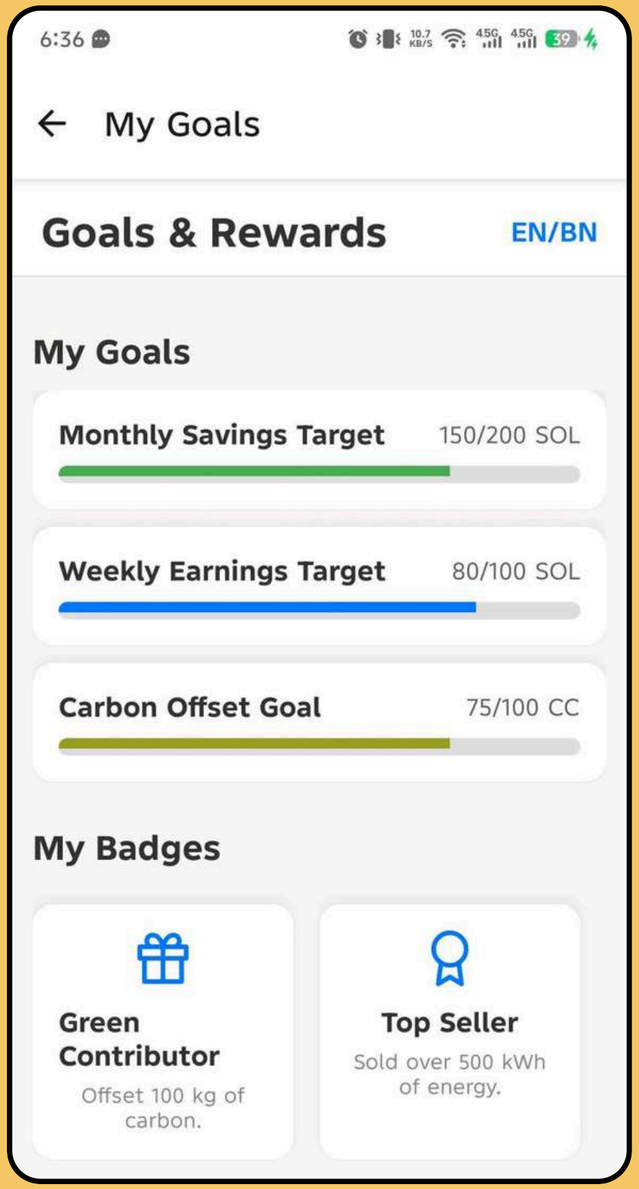
Notifications are going to be sent about the current market situations.

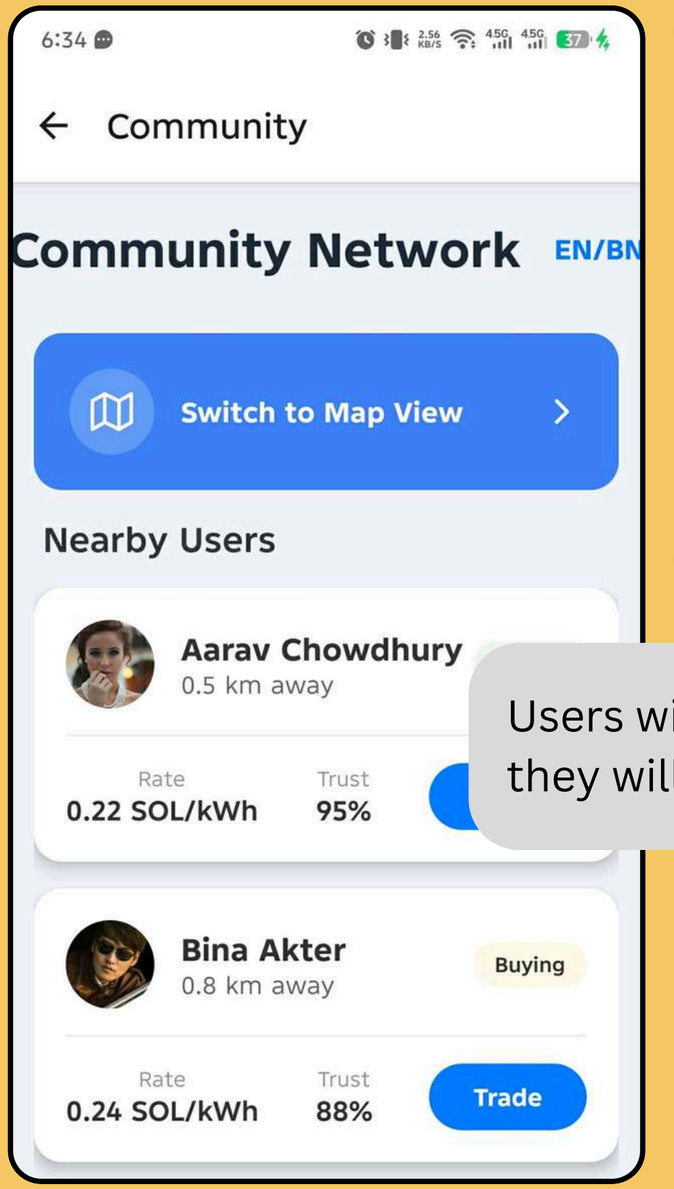


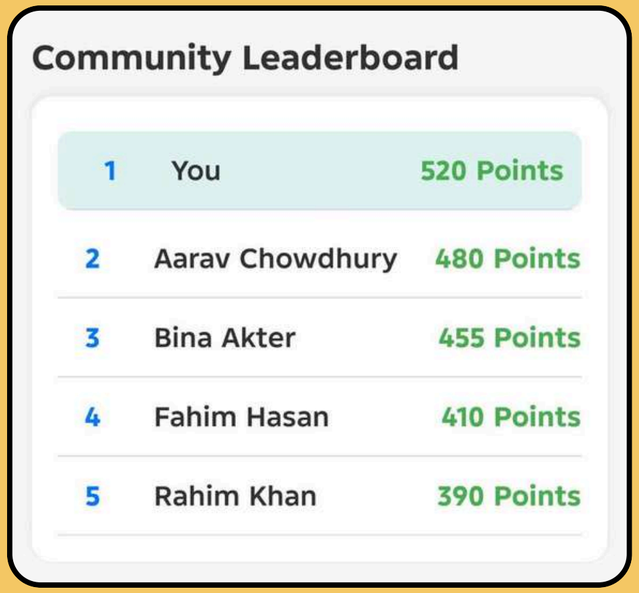


Energy consumption and savings statistics are going to shown.

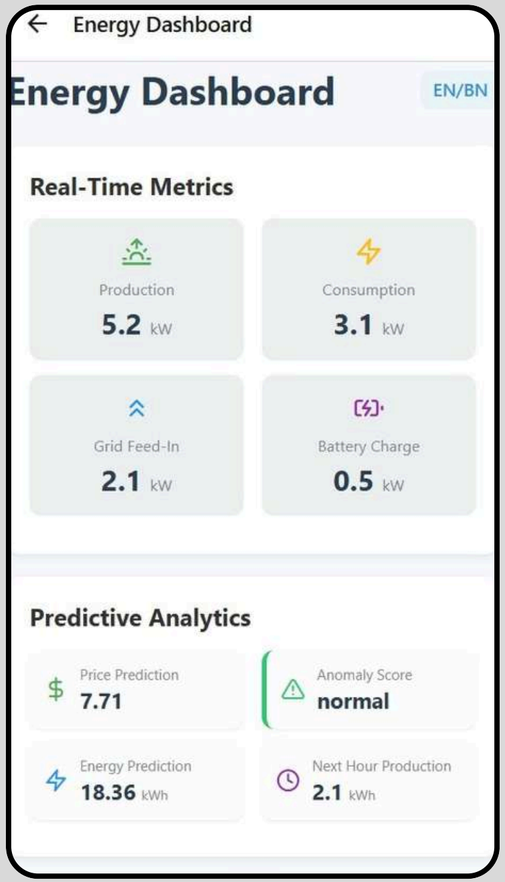
```
function stake(uint256 _amount, string calldata _metadata)
    external
    whenNotPaused
    nonReentrant
    updateReward(msg.sender)
{
    if (_amount < minimumStake) revert InsufficientStake(_amount, minimumStake);
    if (validators[msg.sender].isActive) revert ValidatorAlreadyExists(msg.sender);
    if (validatorList.length >= maximumValidators) {
        revert MaxValidatorsReached(validatorList.length, maximumValidators);
    }

    // Transfer tokens
    solarToken.safeTransferFrom(msg.sender, address(this), _amount);

    // Create validator
    validators[msg.sender] = Validator({
        stakedAmount: _amount,
        rewardsEarned: 0,
        lastRewardTime: block.timestamp,
        stakingStartTime: block.timestamp,
        unstakeRequestTime: 0,
        isActive: true,
        isSlashed: false,
        slashedAmount: 0,
        metadata: _metadata
    });
```

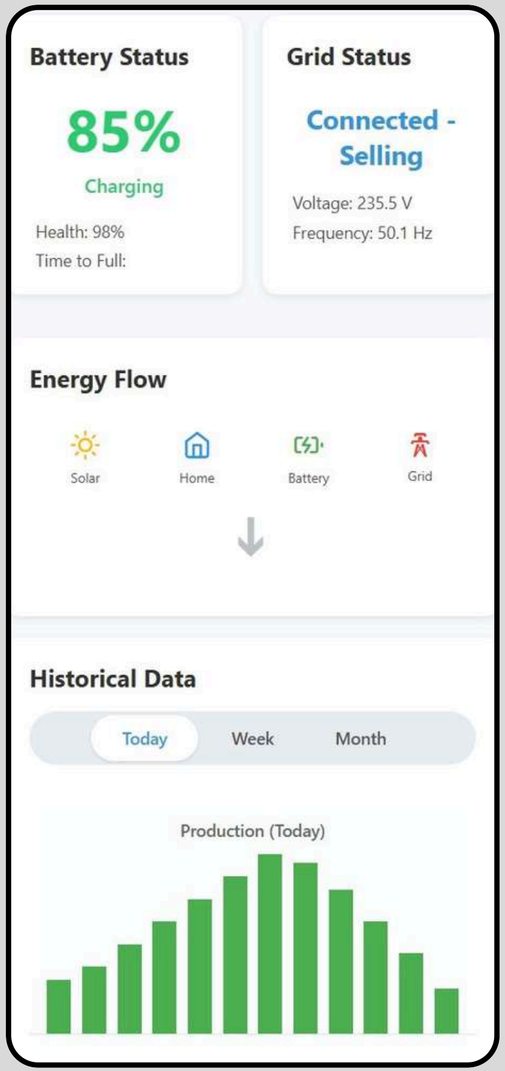


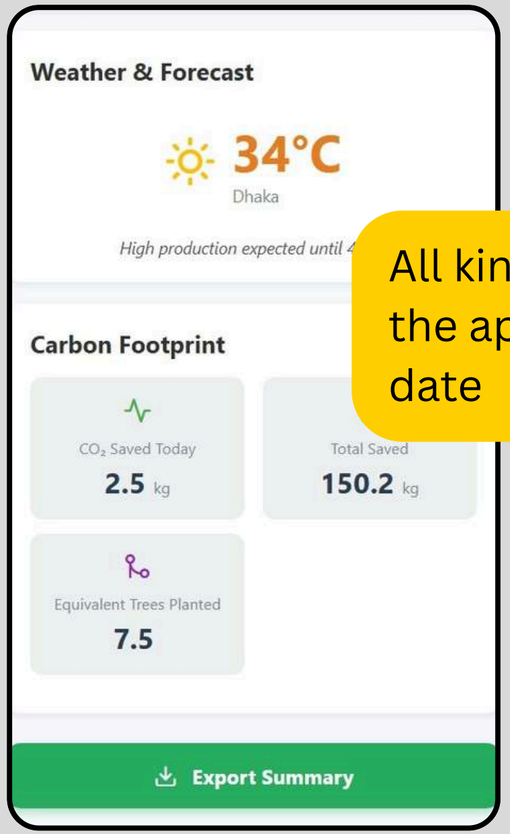




Users will be a part of Solchain community and they will get to share their goals with each other



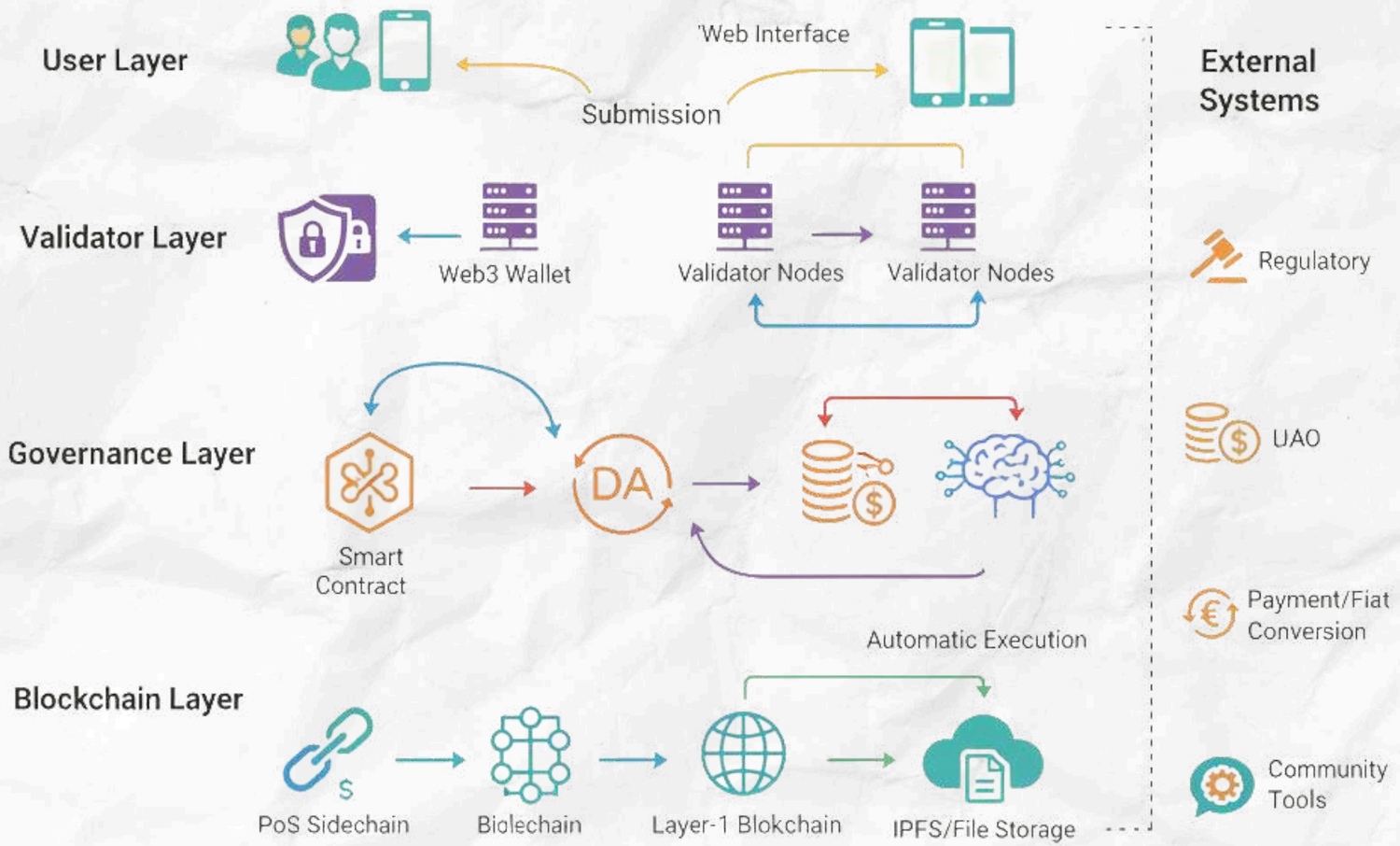




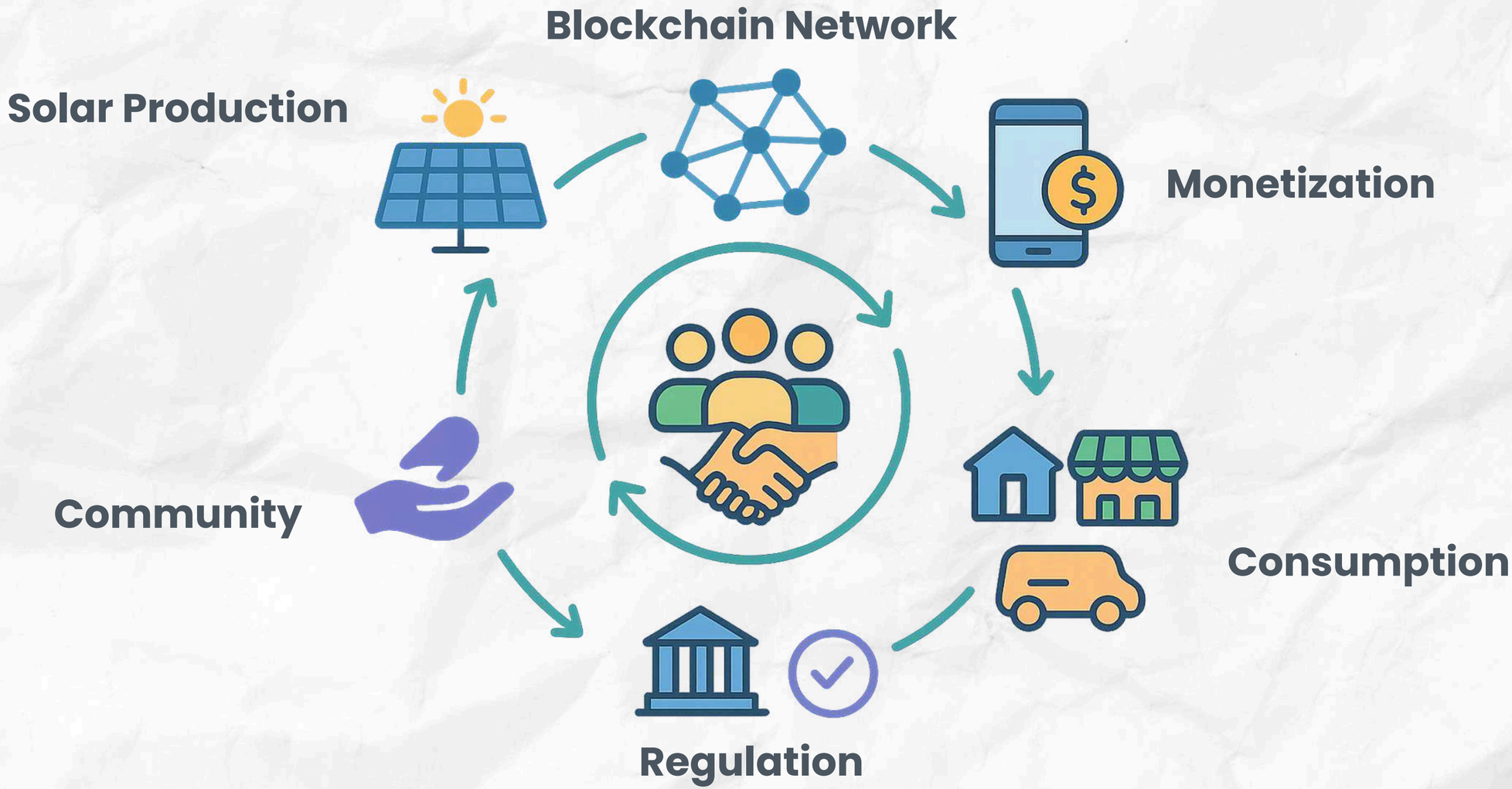
All kinds of statistics will be available on the app so that the users can stay up to date

predictive analysis is being used here on historic data using machine learning

GOVERNANCE


User Layer
Web Interface
Submission
Validator Layer
Web3 Wallet
Validator Nodes
Validator Nodes
Governance Layer
DA
Smart
Contract
Automatic Execution
Blockchain Layer
PoS Sidechain
Biolechain
Layer-1 Blokchain
IPFS/File Storage
External
Systems
Regulatory
UAO
Payment/Fiat
Conversion
Community
Tools

DISTRIBUTION



REVENUE MODEL

8%

per transaction

Transaction Fee
We will take a small percentage of each energy transaction.

BDT 6K

per installation

Installation Fees
Revenue from the sale and installation of our Solar Systems.

Data Monetization

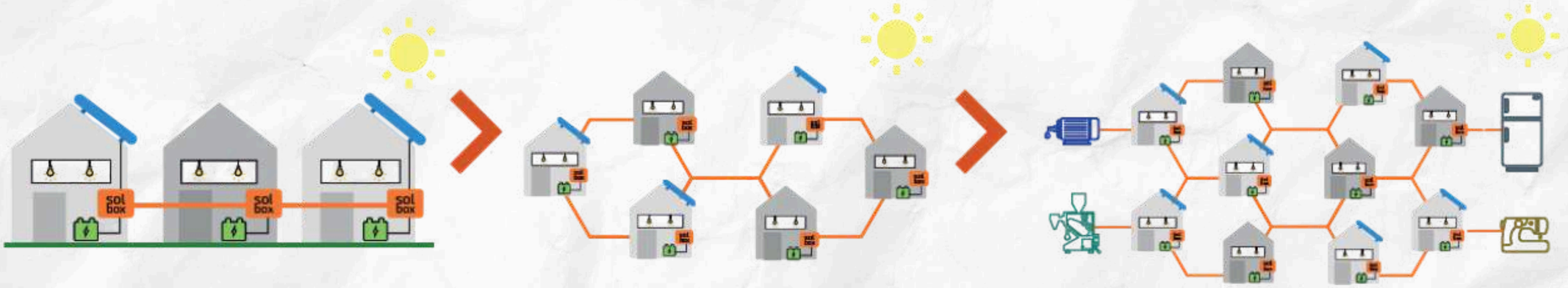
Energy data can be sold to research institutions and agencies for grid planning and policy-making.

5 YEAR PROJECTION

Metric	Year 1	Year 2	Year 3	Year 4	Year 5
Active Users	500	2000	5000	20000	50000
New Installations	250	1500	3000	15000	30000
Installation revenue (BDT)	1500000	9000000	18000000	90000000	180000000
Total Energy traded (kWh)	4500	18000	45000	180000	450000
Total Transaction (BDT)	45000	180000	450000	1800000	4500000
Transaction Fee (8%)	3600	14400	36000	144000	360000
Total Revenue (BDT)	1503600	9014400	18036000	90144000	180360000

BUILD AND GROW FAST

Exponentially expand to neighbouring sites



Pilot Microgrid

Network Exapansion

Grid Integration

FUTURE PLANS

Unlocking urban potential

- Intelligent Urban Grids
- Smart City Integration
- High-Tech Parks

RISK MITIGATION

Uncertain blockchain policy

We will engage with regulators to help shape clear and supportive policies for decentralized energy trading.

Token volatility

Our platform will use a stablecoin pegged to the BDT to eliminate price fluctuations.

Cybersecurity threats

We will implement robust cryptographic protocols and conduct regular audits to secure the network.

Technological adobption

Our go-to-market strategy will include strong partnerships with NGOs and microfinance institutions to drive community trust and adoption.

WHAT HAPPENED TO FATEMA BEGUM?

With Solchain, Fatema's problem vanished. She became grid-independent, turning her small shop into a thriving business. Customers now flock to her, transforming her from a struggling vendor into a successful entrepreneur.

MEET OUR TEAM

Abu Russel
CSE, BUET

Frontend/Backend
Developer

AHM Fuad
CSE, BUET

AI/ML
Developer

Md. Abu Sufian
CSE, KUET

Lead
Strategist

Ghagra Debnath
CSE, BUET

Blockchain
Developer

LET US DECENTRALIZE ENERGY TOGETHER