TEAM -AGRI BLOCK

BLOCKCHAIN TECHNOLOGY

TEAM MEMBER

- ASTHA
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Sustainable Development

Invest in Farmers for a Greener Future.

Invest in the Greener Future, buy buying NFT from farmers and , providing them resources to Invest in sustainable farming methods.

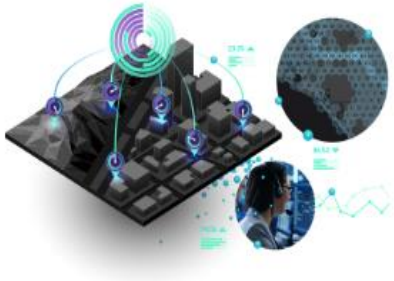
Read More →

Buy/MINT NFT

You can buy the minted NFT from Farmers, who adopted sustainable farming practices.

Real Time Data

Monitor the real time pollution data coming from IOT devices installed in farmland for verification.



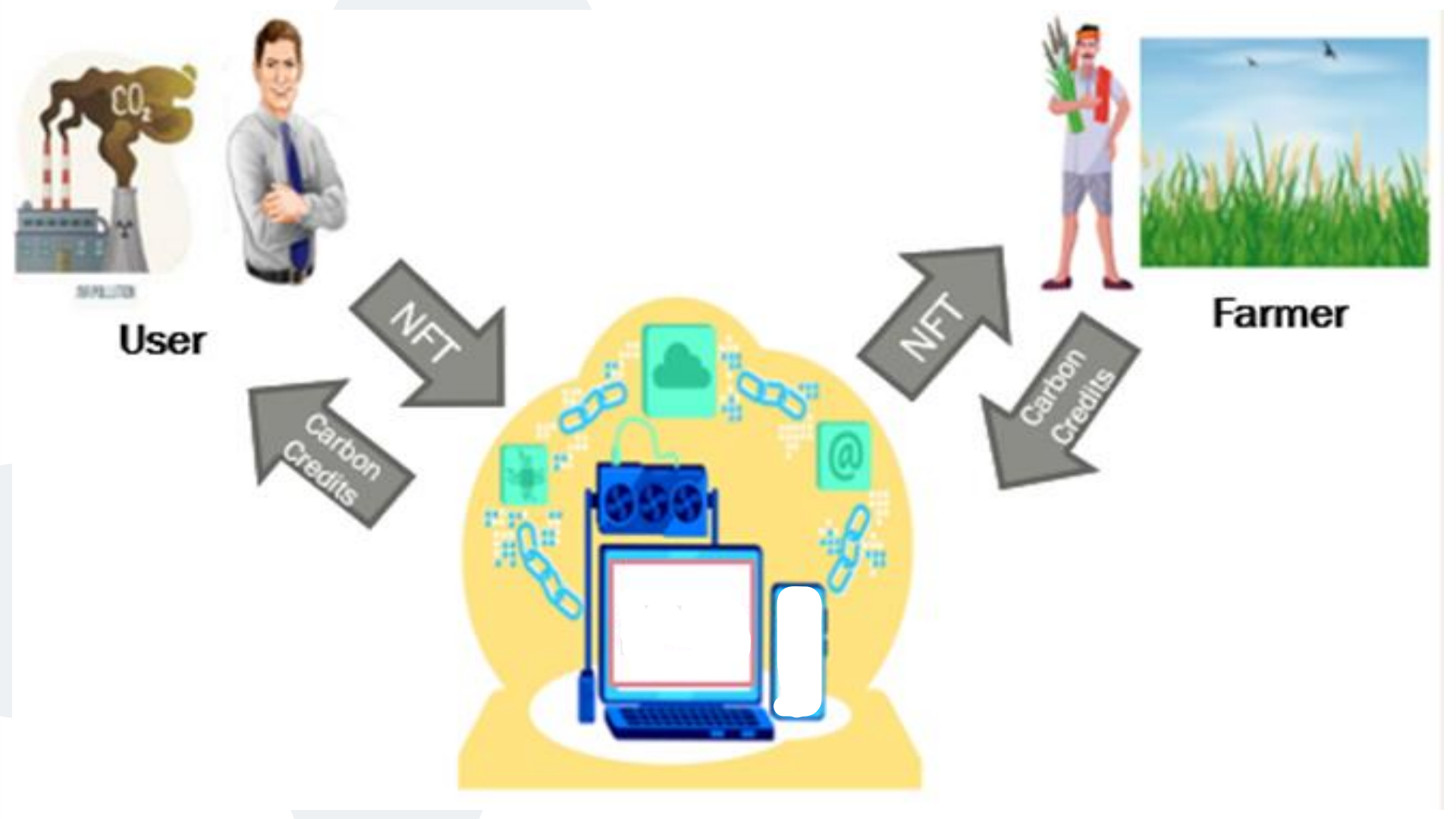
Security and Transparency

All data stored in blockchain and user can buy minted Green NFT Anonymously.

PROBLEM STATEMENT - SUSTAINABILITY (GREEN TECH)

The United States Environmental Protection Agency (EPA) estimates that 10% of CO2 is emitted by the Agri sector. On one hand, Agri companies have sustainable products and services to offer to the growers. On the other hand, without proper economic incentives, farmers are reluctant to adopt sustainable practices.

Centralized platform business models have so far not succeeded in creating economic value for the farmers, even while the demand for a voluntary carbon market is increasing. What technologies and business models can enable financially incentivize farmers for implementing climate-smart practices? What are the ways the buyer has proof of authenticity? In what ways the participants including investors can derive economic value ?


CO_2
User
NFT
Carbon Credits
NFT
Carbon Credits
Farmer

SOLUTION

An Agricultural Supply Chain tracks a farm product from the farmer to the consumer. Agri Block is an NFT application Based on Ethereum Blockchain written in Solidity Smart Contract, and using the power of React Frontend, and ether.js to interact with the Smart Contract present in the Ethereum Blockchain, a user can register as a Framer inn the application, with all relevant information, Upload & Mint (In IPFs), buy and Sell NFT, in the Agri Block NFT marketplace. The Industries then, can buy those NFT from market place granting them carbon credits, and also investing money in farmers so that they can adopt more sustainable framing practices. and a win-win situation for all, the Air Quality verification is done using IOT devices, thus acting as a verification mechanism to ensure, that money is invested by farmers to adopt more sustainable farming methods.

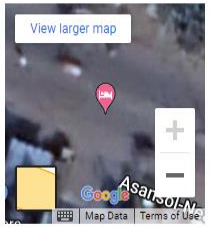
CGDPD1480N22/July/2022

Seller: 0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266

Name :	Rakathon
Contact No.:	+91789564685
Aadhar No. :	CGDPD1480N
Co-ordinates :	23.6888636 86.9660638
Total Farm Land Area:	1000 Hecters
IOT Device ID :	FGH-98TI
Description :	Saved 2 Tons of CO2 using Drop Irrigation

Carbon Credit Certificate

0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266



Rakathon

CGDPD1480N

0xf39Fd6e51aad88F6F4ce6aB8827279cffFb92266

This is to Certify that the owner of the NFT has contributed momeny to of the famers to adopt sustainable farming methods.

Saved 2 Tons of CO2 using Drop Irrigation

This certificate is issued by Agriblock

Aadhar No.: CGDPD1480N
Co-ordinates: 23.6888636 86.9660638
Farm Land: 1000 Hecters
IOT Device ID: FGH-98TI

Current Price:

2.121

Last 2.121

Confirm Buy

Make an Offer

FEATURES

1.Farmer Registration.

2.Mint NFT for Carbon Credits using Verification from IoT Data to prove sustainable farming practice is adopted.

3.IoT Device data is Directly streamed to NFT for verification using Device ID and Azure IoT Hub.

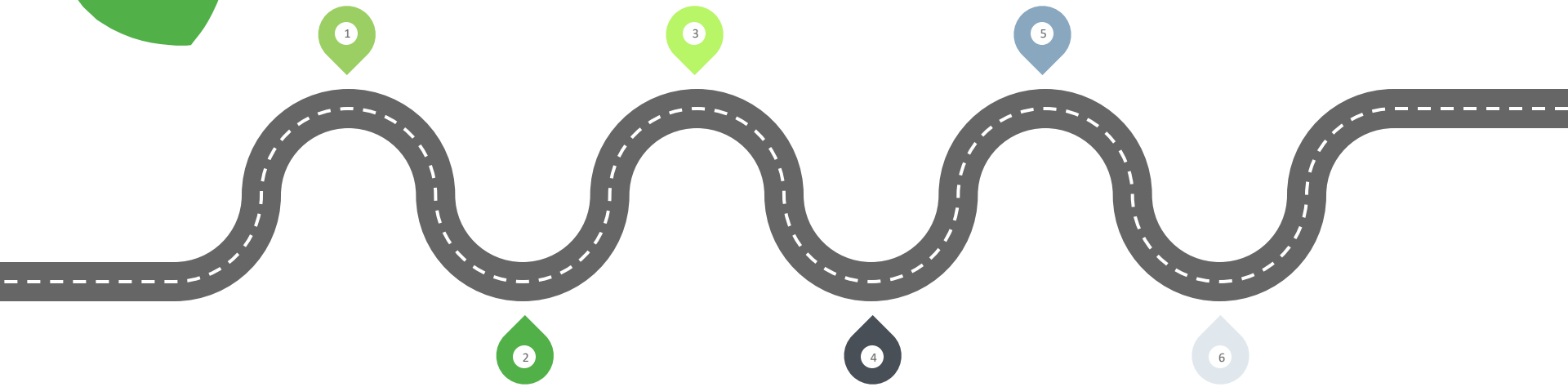
4.User Dashboard to view all the NFT Minted, sold, and Purchased.

5.Customer/ Industries can buy NFT carbon credits to meet their ESG Goals, and remain Carbon neutral companies.

6.Money in form of Cryptocurrency is directly transferred to farmers without commission and middlemen, so they can invest the money in adopting more sustainable farming methods.

ROADMAP

1. Farmer Registration.
2. Create NFT Using Given Data
3. Carbon Credits using Verification from IoT Data
4. IoT Device data is Directly streamed to NFT
5. Device ID verification using Azure IoT Hub.
6. Money in form of Cryptocurrency is directly transferred to farmers without commission



IMPLEMENTATION

Agri Block is an NFT platform where farmers can register and sell carbon credits in the form of cryptocurrencies.

Agri Block will provide authenticity to the information collected by farmers using IOT device which will check the carbon emission caused due to agricultural process.

An organisation/company will be able to visit the details provided by farmers and buy carbon credits to compensate the carbon emission.

User Registration

User registration.

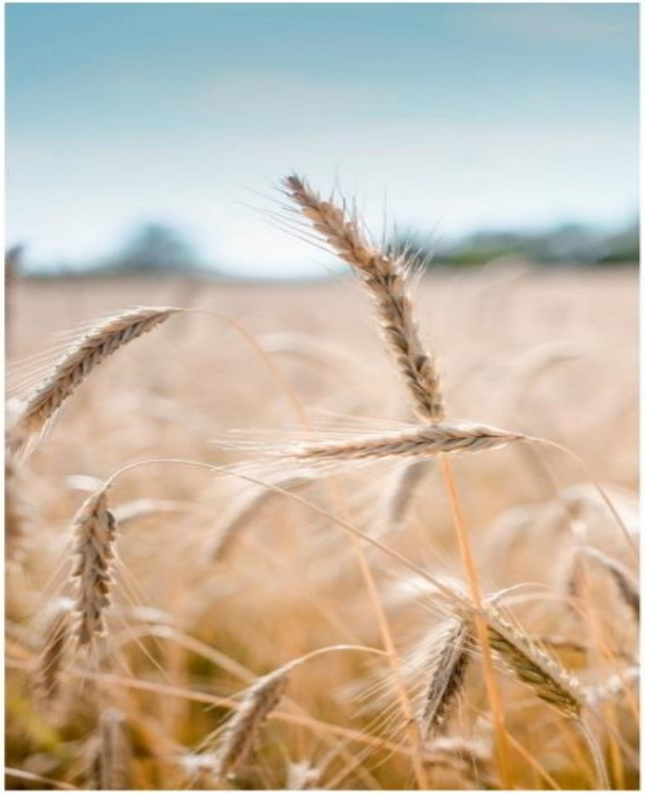
The personas supported are the

a. farmers
b. buyers of voluntary carbon credit

During registration,

- Farmers give their full details (name, address, and other KYC details to register).

The buyers connect to their Web 3.0 wallet (such as Metamask). They do not need to register or give their personal details.



Register the Account

If You already have a account then install and Connect Metamask Wallet.

Public Crypto Id (Create a Crypto Account using MetaMask) *

0x8626f6940e2eb28930efb4cef49b2d1f2c9c1199

User Name *

Rakathon

AADHAR NUMBER/ PAN CARD *

CGDPD1480N

Farm Location *

India

Farm Location : (Latitude : 0, Longitude: 0)*

Total Farm Land Area (In Hectare)*

1000

Contact *

+91789564685

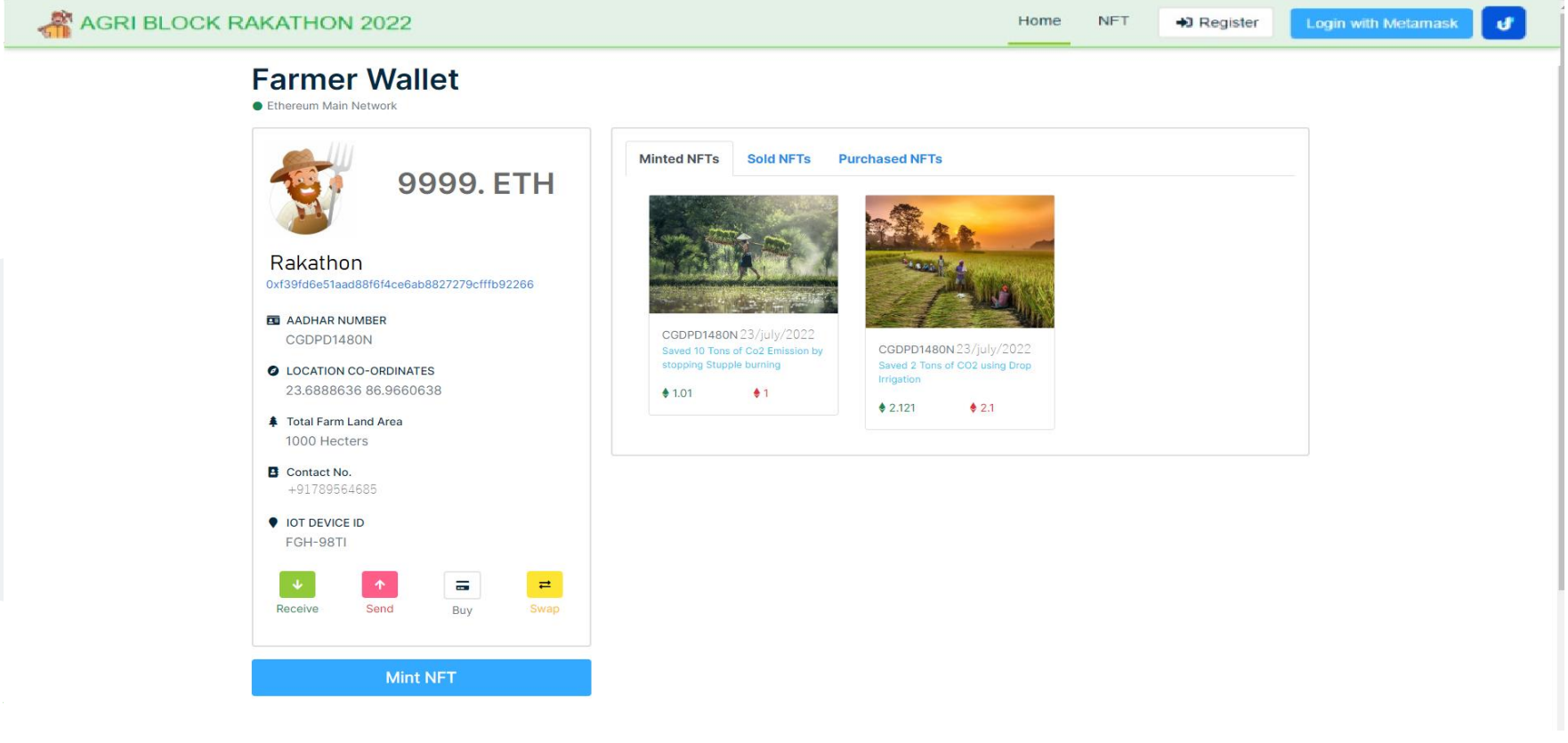
IOT DEVICE ID *

FGH-98TI

By clicking on the 'Update Account' button below, you agree that you have read, understand, and accepted our TERMS OF SERVICE.

Create Account

User Dashboard



Selling

Farmers can post their verified "farming carbon credits" in the voluntary carbon marketplace for a price.

When the farmer posts their details, the system "mints" a unique NFT with details of farm image, the farmers property geocoded, amount of carbon emissions reduced displayed in it.

To ensure the farmer cannot submit the same data twice for sale? Who verifies if their reduction in carbon emissions? Including a human-in-the loop is always prone to corruption.

O This is where a IoT based solution will be augmented in real-life.

O For instance, take the stubble burning. There will be field sensors in the farm that will measure CO2 and other air quality periodically in the farm. The air quality data collected so collected in the farm will be pushed with a timestamp. This data becomes the foundation for computing the reduction in emissions.

Where will you store this data? This source of truth data also needs to be immutable. For this purpose, you could store this data in IPFS or other scalable ledgers.

Name: *

CGDPD1480N

Link to asset:*

Choose file | K8IsUZHGGK2ewq...VRFjqc2R5_boXE.jpg

Link your Farm Image to external link so that person can view.

Description: *

Saved 5 Tons Of Co2 emission by stopping Crop Burning

Describe how have you adopted sustainable farming practice to reduce carbon emissions.

Price (ETH): *

2

Enter the Price in USDC for selling the Carbon credits.

Close | Mint

MetaMask Notification

Hardhat Node

Account 3 → 0x5Fb...0aa3

New address detected! Click here to add to your address book.

http://localhost:3000

0x5Fb...0aa3 : MINT

DETAILS | DATA | HEX

Market >

Gas (estimated) 0.00029511

0.00029511 ETH

Likely in < 30 seconds | Max fee: 0.00030428 ETH

Total 0.00029511

0.00029511 ETH

Amount + gas fee | Max amount: 0.00030428 ETH

Reject | Confirm

Buying

Buyer can view and buy “farming carbon credits” from the marketplace.

- **·Designed a simple marketplace that lets the buyer view and filter (price etc.) what the farmers have posted.**
- **·To buy “farming carbon credits” they use a crypto currency native to the public blockchain i.e. Ethereum.**
- **·Upon buying the farmer’s Carbon Certificate, the NFT (digital asset) is transferred to the buyer using logic in smart contract.**

After a purchase, the “farming carbon credit” is automatically removed from the marketplace.

NFTs

Your favourite NFTs are here

Search Product...

0xf39fd6e51a...279cfffb92266

9999.9 USDC

Invest in the Greener Future, but buying NFT from farmers, and providing them resources to invest in sustainable farming methods

PRICE SORTING

- Low to High
- High to Low

CGDPD1480N 11/June/2022

Saved 2 Tons of CO2 using Drop Irrigation

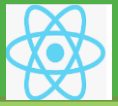
2.121 USDC

Buy Now

Agri Block

Invest in the Greener Future, but buying NFT from farmers, and providing them resources to invest in sustainable farming methods.

Made with ♥ in India.



Using
React Frontend
Web
Web3 Application

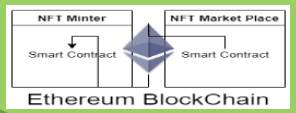
Storing to image Data

Storing image
metadata and URL to
blockchain

Using ether.js
to Communicate with the
smart contracts,using met
a-mask

IPFS peer to peer
Network

Use Hardat to deploy
smart contracts to
mainnet,or testnet



NFT Verification Using IOT

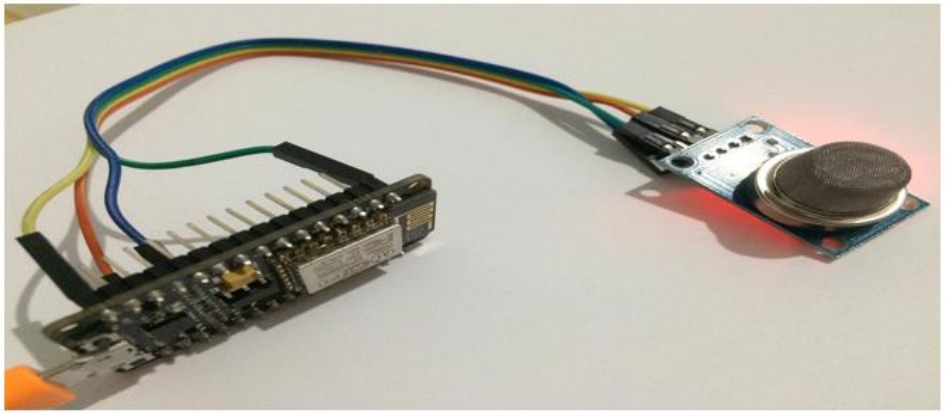
Monitor Carbon Emission from field

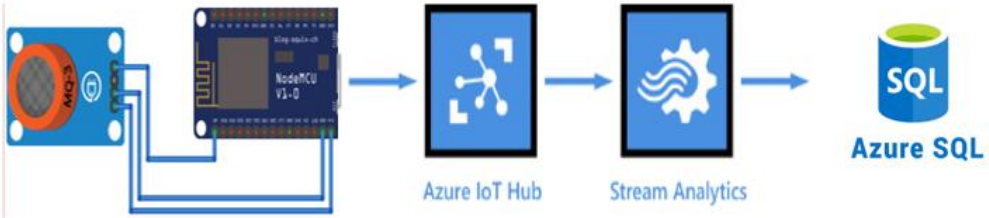
Hardware Used

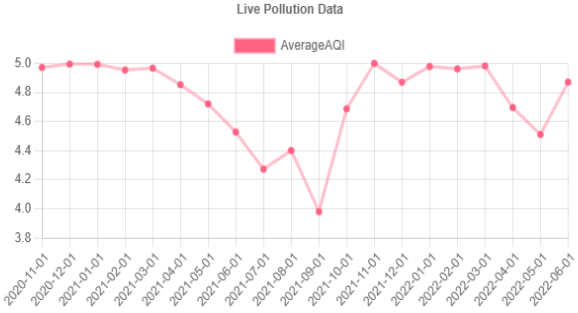
- Node MCU ESP8266
- MQ135 Sensor

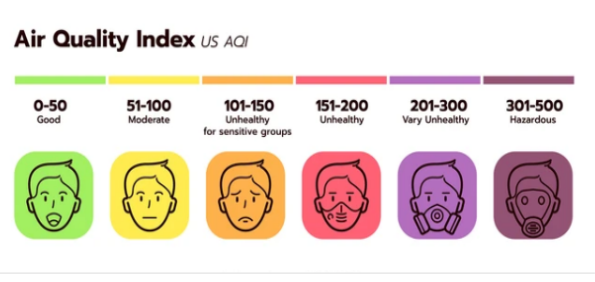
Software Used

- Arduino IDE
- Azure IOT Hub
- Stream Analytics Job
- SQL Database

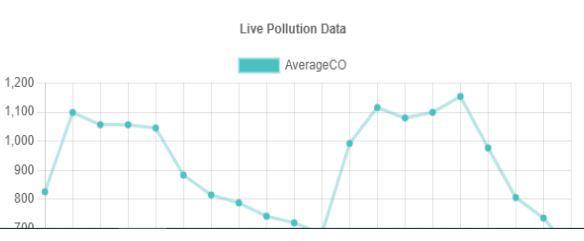


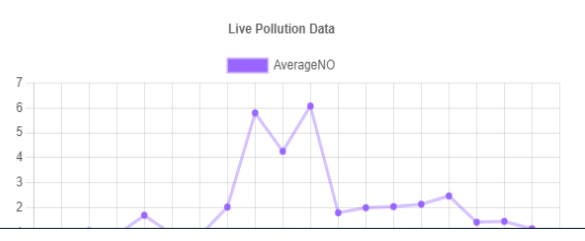






NO_2 hourly µg/m³	O_3 hourly µg/m³	PM_{10} hourly µg/m³	$PM_{2.5}$ hourly µg/m³	aircheckr hourly AQI # of classes 101	11	4
0-10	0-15	0-10	0-10	100-91	10 Excellent	3 Good
10-20	15-30	10-20	10-15	90-81	9 Good	
20-30	30-40	20-30	15-20	80-71	8 Quite good	
30-45	40-60	30-45	20-30	70-61	7 Acceptable	2 Moderate
45-60	60-80	45-60	30-40	60-51	6 Moderate	
60-75	80-100	60-75	40-50	50-41	5 Insufficient	
75-100	100-140	75-100	50-70	40-31	4 Rather poor	1 Bad
100-125	140-180	100-125	70-90	30-21	3 Poor	
125-150	180-200	125-150	90-100	20-11	2 Bad	
150-200	200-240	150-200	100-140	10-1	1 Very bad	0 Very bad
>200	>240	>200	>140	0	0 Extremely bad	





IOT Usage Explanation

- ✓ First, we need to write code based on our requirements & flash into Nodemcu memory.
- ✓ MQ135 sensor read Co2 level from atmosphere and send it to Nodemcu device.
- ✓ Nodemcu send Co2 value to Azure IOT hub.
- ✓ By using Stream Analytics Job, we are sending our data to SQL database.
- ✓ Using Restful API, we are fetching Co2 data to our webpage

TECH STACK

- React JS
- IPFS
- Solidity smart Contract
- Ethereum
- ESPB266 Arduino kit
- Azure IOT hub
- Meta Mask
- Ether.js

THANK YOU