

**Problem Statement : Stubble Aggregation and its proper disposal**

**Theme : Waste Management**

**PSID : AN316**

**PSO : Amazon Web Services**

**Our solution : Stubble Buddy**

The banner for the Smart India Hackathon 2020 features a central logo with a brain and binary code, surrounded by the text "SMART INDIA HACKATHON 2020". Above the logo, logos for Organisers (MHRD, MIC, AICTE, Persistent, IIT Bombay) and Platinum Partner (aws) are displayed. Below the logo, logos for MIT-WPU and MIT World Peace University are shown. To the right, the names of the mentors, Mr. Rohan Mule and Mr. Abhishek Chunawale, are listed. The team name "Team - Brain\_Stormers" is prominently displayed in a large, stylized font. Below the team name, the names of the team members are listed: Purvash Patil, Devashish Bote, Devesh Bhogre, Sanchita Biswas, Saloni Oswal, and Anuj Kakade. At the bottom, logos for Partners (Cisco, DEVNET, Intel, KPIT) and Communication Partner (Suma) are shown, along with the Media Partner logo.

Organisers MHRD MIC AICTE Persistent IIT Bombay Platinum Partner aws

MIT-WPU Dr. Vishwanath Karad MIT WORLD PEACE UNIVERSITY PUNE TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

SMART INDIA HACKATHON 2020

Mentors Mr. Rohan Mule Mr. Abhishek Chunawale

**Team - Brain\_Stormers**

Purvash Patil Devashish Bote Devesh Bhogre

Sanchita Biswas Saloni Oswal Anuj Kakade

Partners Cisco DEVNET Intel KPIT Communication Partner Suma Media Partner

## PROBLEM STATEMENT

- Stubble burning is a huge problem being faced in India right now.
- Apart from causing environmental pollution and soil degradation , it's also a crime under Section 188 of the IPC and under the Air and Pollution Control Act of 1981.
- With pollution levels shooting up across India , there is a dire need of stubble collection and it's disposal in a proper way.

- However, stubble collection is an extremely tedious task and time consuming too.
- As the machinery used for stubble collection is very costly, hence the farmers cannot afford it.

**So we propose a solution where stubble is collected and disposed / reused in a proper way, benefitting both the farmers and amazon web services.**

### **Why do farmers burn the stubble?**

- In order to plant the next winter crop (Rabi crop), farmers have to move in a very short interval and if they are late, they might face considerable losses.
- If stubble is left in the field, pests like termites may attack the upcoming crop.
- Therefore, burning is the cheapest and fastest way to get rid of the stubble.

### **What can Stubble be used for?**

- High-grade organic fertilizers.
- Cattle feed.
- Compost manure.
- Roofing in rural areas.
- Biomass to generate power.
- Mushroom cultivation.
- Paper & Packing materials.
- Fuel.
- Bio-ethanol
- Industrial production, etc.

## A diagram illustrating the relationship between a farmer, AWS, and a factory. On the left is a stylized icon of a farmer wearing a hat and overalls, with a green leafy branch to his left. In the center is the AWS logo, consisting of the lowercase letters 'aws' in a dark blue font with a curved orange arrow underneath. On the right is a stylized icon of a factory with a tall smokestack emitting a green leafy branch. Double-headed orange arrows connect the farmer icon to the AWS logo, and the AWS logo to the factory icon, indicating a bidirectional relationship or flow between them.

The diagram illustrates the system architecture and the sequence of events for stubble collection:

- Participants:** FARMER, INDUSTRY, and ADMIN.
- Core AWS Services:** AWS Cloudwatch, AWS EC2, AWS SNS Client, AWS Lambda, API Gateway, and AWS RDS.
- Sequence of Events:**
  - 1. Farmer raises stubble collection request:** The Farmer uses the Farmer side-app to send a request to the AWS RDS database.
  - 2. Amazon responds to the request & collects stubble:** The request is processed by the system (represented by the top monitor icon).
  - 3. Industry raises stubble delivery request:** The Industry uses the Industry side-app to send a request to the AWS RDS database.
  - 4. Amazon responds to the request & delivers stubble:** The request is processed by the system (represented by the bottom monitor icon).
- Connections:** The Farmer side-app and Industry side-app both connect to the AWS RDS database via API Gateway and AWS Lambda. The ADMIN role is connected to the system via API Gateway and AWS Lambda.

## Farmer's Side

- Our solution comes with a mobile application which farmers can use , to register and create an account.
- Farmers can then upload the paper works (insurance papers, farm related documents, etc) validating their farm land.
- Whenever farmers want to get rid of the stubble in their farms, they just have to raise a request for stubble collection on the app through their account.

## AWS

- The request raised by the farmers for stubble collection will be addressed by amazon on their admin page.
- They will dispatch a collection unit and machinery to the specified locations as soon as possible.
- Amazon agents will validate the documents onsite while collection of the stubble.
- Amazon will collect the stubble and transport it to the warehouses free of cost where it will be stored for the further process.
- Farmers can track the status of the stubble transportation and delivery through their account on the app and they will also get the notifications through text messages on important events.

## Company's Side

- Now this stubble can be reused in numerous ways in multiple industries Ex- In manure industry, as Combustion Material, Making Pellets, Bio Thermal Power Plant , To Make Paper and Card Board, Packing Materials, Paper Production, etc
  - Whenever they need a huge amount of stubble they can raise a demand through their side of the interface which will also be addressed by AWS.
  - Farmers will receive their share of the stubble purchase by companies.
  - AWS will receive commission for every kilogram of stubble sold.
- Thus , the solution benefits both farmers and AWS.

## Why StubbleBuddy?

- The problem statement revolves around how it can make the process for farmers easier and profitable and so does our solution. Currently, farmers are paying a fine of approx. Rs. 2500 for burning stubble but our solution will allow farmers to gain profit.
- Not only farmers but even for the Industries , the whole process will be hassle free and thus, the stubble can be used eventually easily !
- Amazon will act as the sole middleman connecting the farmers and Industries for better handling of stubble and disposal. One time investments on machinery has to be made.
- To attract farmers in the initial stages, various incentives can be offered like gift cards/ credits. The app will also be available in various regional languages and will be user friendly too!



# BUSINESS MODEL

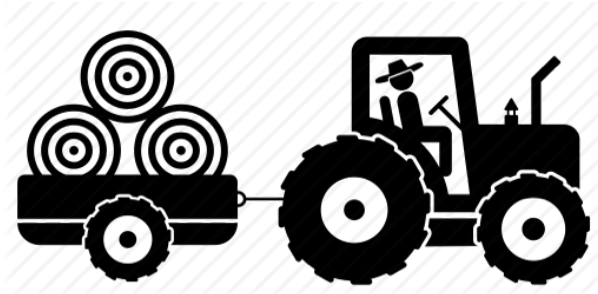
- The average Indian farmer owns approx 2.5 acres of land.



- When farmers collect stubble using machinery, they incur expenses of ₹ 6000-7000 per acre.



- With Amazon dealing with the collection process however, the process cost can be reduced to ₹ 5000 per acre.



- The market value for 1 kg of stubble = ₹ 18.



OVERALL :



- According to government agencies **30 quintals of stubble** is collected from **1 acre of land**.

$$30 \text{ Quintal} = 30 * 100 = 3000 \text{ Kg}$$

- So the amount for **3000 Kg** of stubble =  $\text{Rs.}18 * 3000 = \text{₹ } 54,000$
- Therefore, **Profit per acre** =  $54,000 - 5,000 = 49,000 \text{ ₹/acre}$
- On an **average profit from every piece of land** =  $49,000 * 2.5 = \text{₹ } 1,22,500$

## Future Scope

- ❖ App availability in regional languages.
- ❖ Blockchain integration for transactions.
- ❖ Voice Operated Admin Dashboard.

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