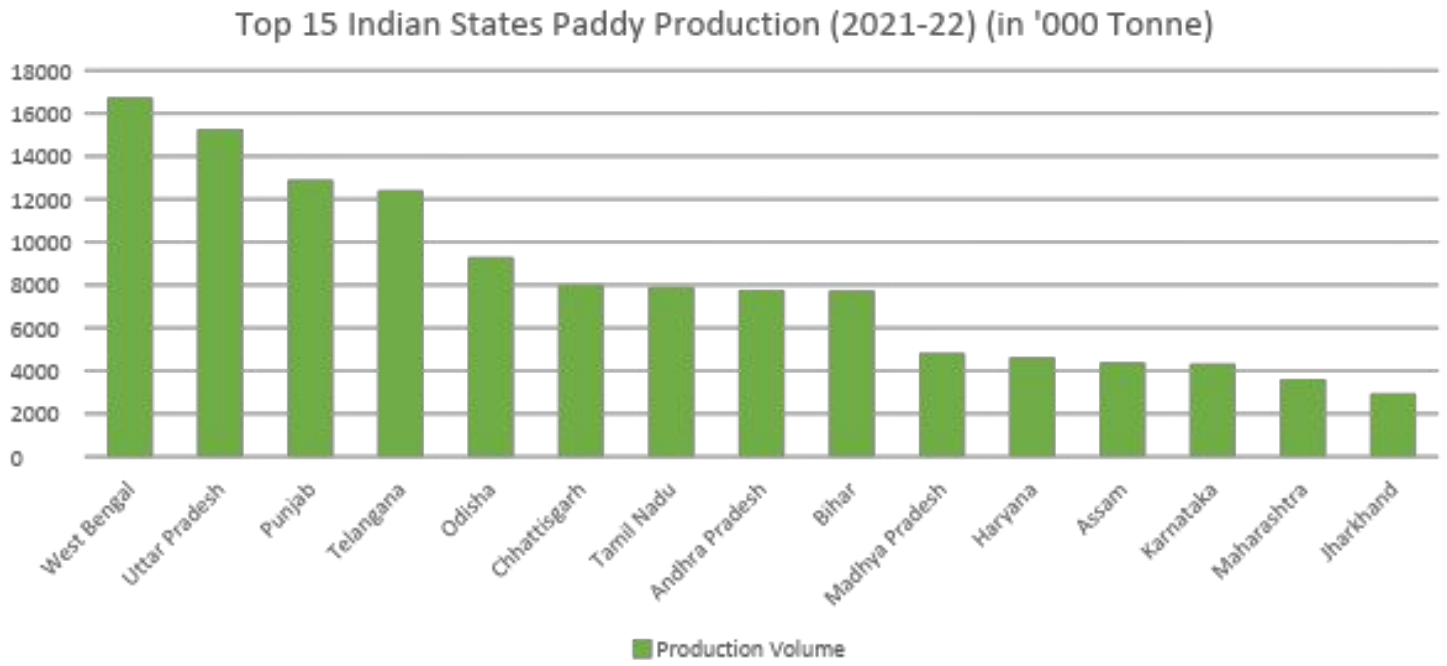
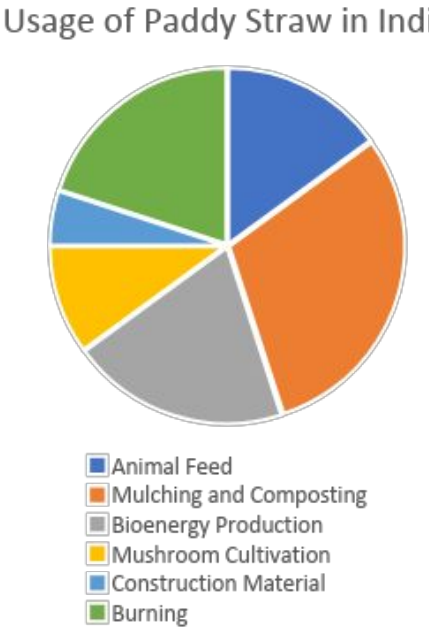
Lakshaya Arya

IIM Udaipur

GREENGROW

Problem Statement: To create the right procurement strategy to suit yearly volume demands, high GCV requirement of straw, and lowest cost for procurement.





The share of Paddy Straw burnt is the quantity available for Greengrow's use

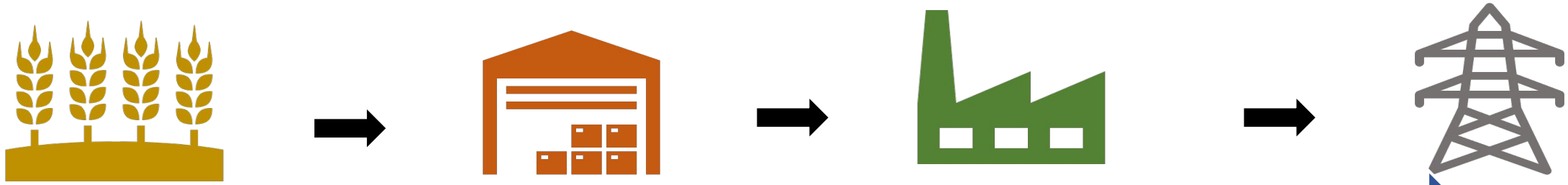
Total Active Fire Counts (Kharif Season) in Punjab, Haryana, NCR-UP, NCR- Rajasthan and NCT of Delhi for 2021 and 2022

Sl. No.	State/UT	2021	2022	Reduction (in %)
1	Punjab	71304	49922	29.99
2	Haryana	6987	3661	47.60
3	NCR – UP	252	198	21.43
4	NCR – Rajasthan	3	1	66.67
5	NCT of Delhi	4	10	No reduction
Total		78,550	53,792	31.51

Government Initiatives to Prevent Paddy Burning

1. Subsidies for Machinery
2. Awareness Campaigns
3. Promotion of Alternatives
4. Penalties and Fines
5. Mechanized Solutions

Value Chain of Companies producing RNG using Paddy Straw



Harvesting

Paddy sown in fields harvested in month of October or November.

The field is cleared off paddy straw manually or using balers (the majority portion being burnt by farmers in the field itself) to prepare field for next crop.

Procurement

Paddy straw is procured as biomass by RNG-producing companies during months of October-November.

Processing

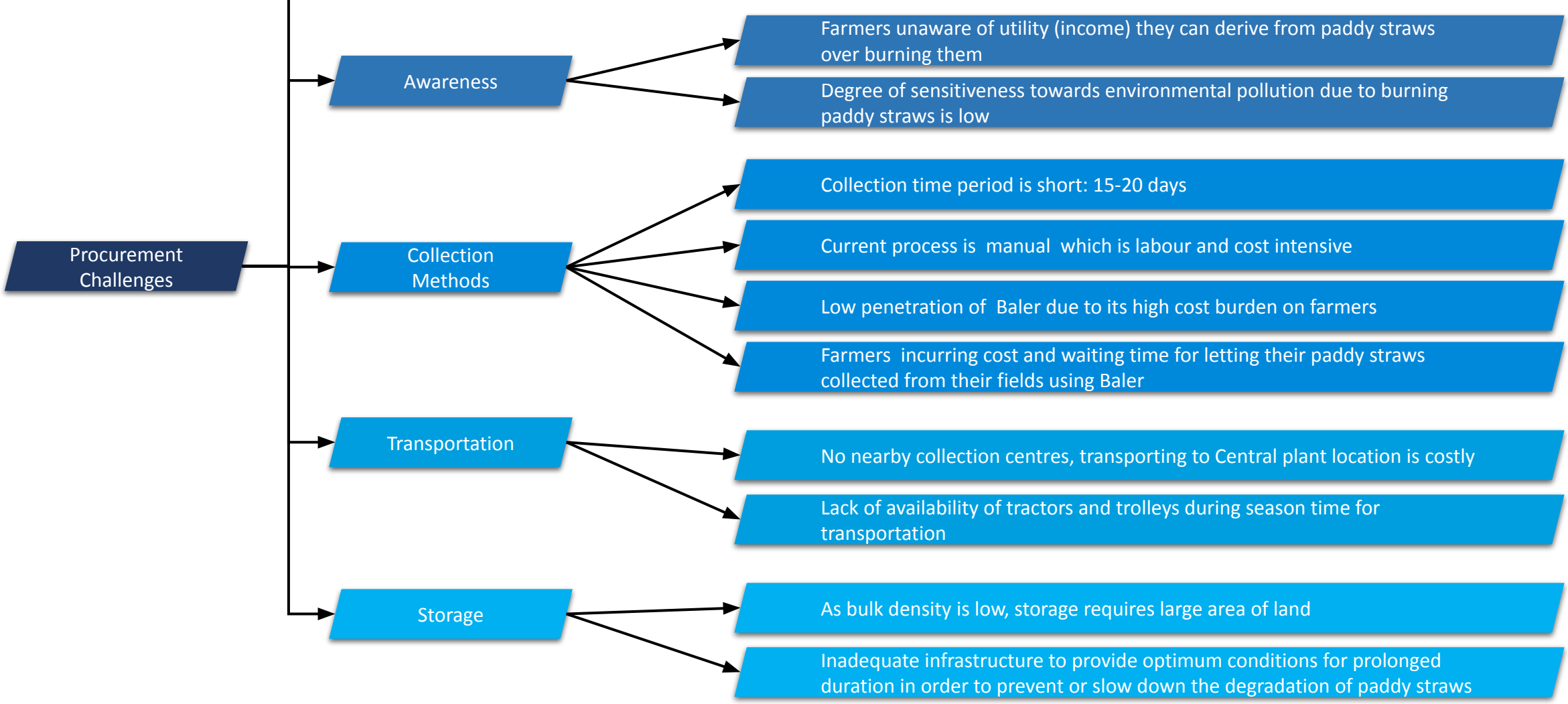
Biomass is broken down under anaerobic conditions by bacterial action in processing plants to produce biogas.

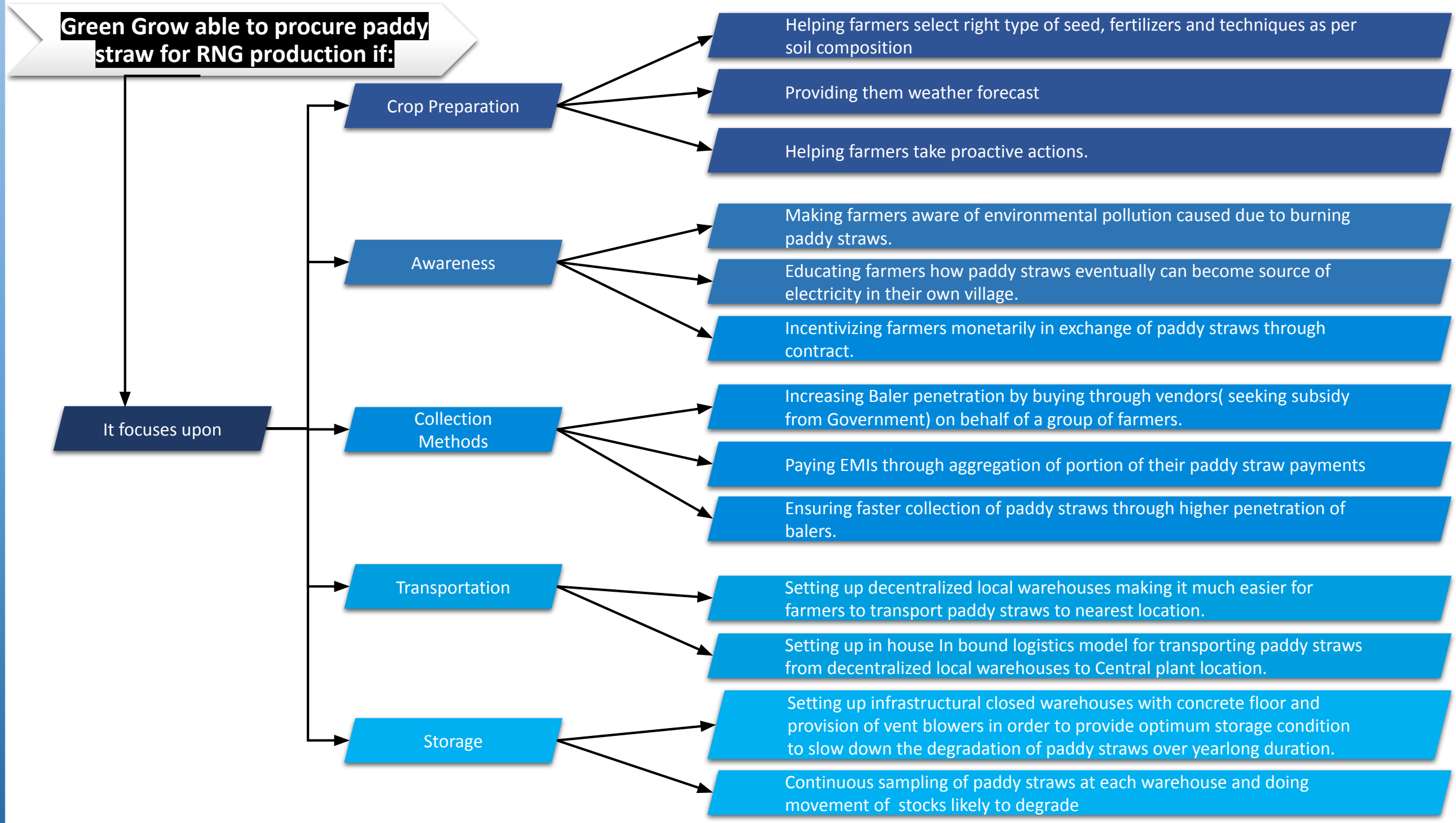
Distribution

Biogas is then treated and combusted by Biogas Engine to generate green electricity which is sent to the substation and then distributed to the nearest national grid.

Potential Problem areas in Paddy Straw Procurement

-Issue Tree




Green Grow able to procure paddy straw for RNG production if:
It focuses upon
Crop Preparation
Helping farmers select right type of seed, fertilizers and techniques as per soil composition
Providing them weather forecast
Helping farmers take proactive actions.
Awareness
Making farmers aware of environmental pollution caused due to burning paddy straws.
Educating farmers how paddy straws eventually can become source of electricity in their own village.
Incentivizing farmers monetarily in exchange of paddy straws through contract.
Collection Methods
Increasing Baler penetration by buying through vendors(seeking subsidy from Government) on behalf of a group of farmers.
Paying EMIs through aggregation of portion of their paddy straw payments
Ensuring faster collection of paddy straws through higher penetration of balers.
Transportation
Setting up decentralized local warehouses making it much easier for farmers to transport paddy straws to nearest location.
Setting up in house In bound logistics model for transporting paddy straws from decentralized local warehouses to Central plant location.
Storage
Setting up infrastructural closed warehouses with concrete floor and provision of vent blowers in order to provide optimum storage condition to slow down the degradation of paddy straws over yearlong duration.
Continuous sampling of paddy straws at each warehouse and doing movement of stocks likely to degrade

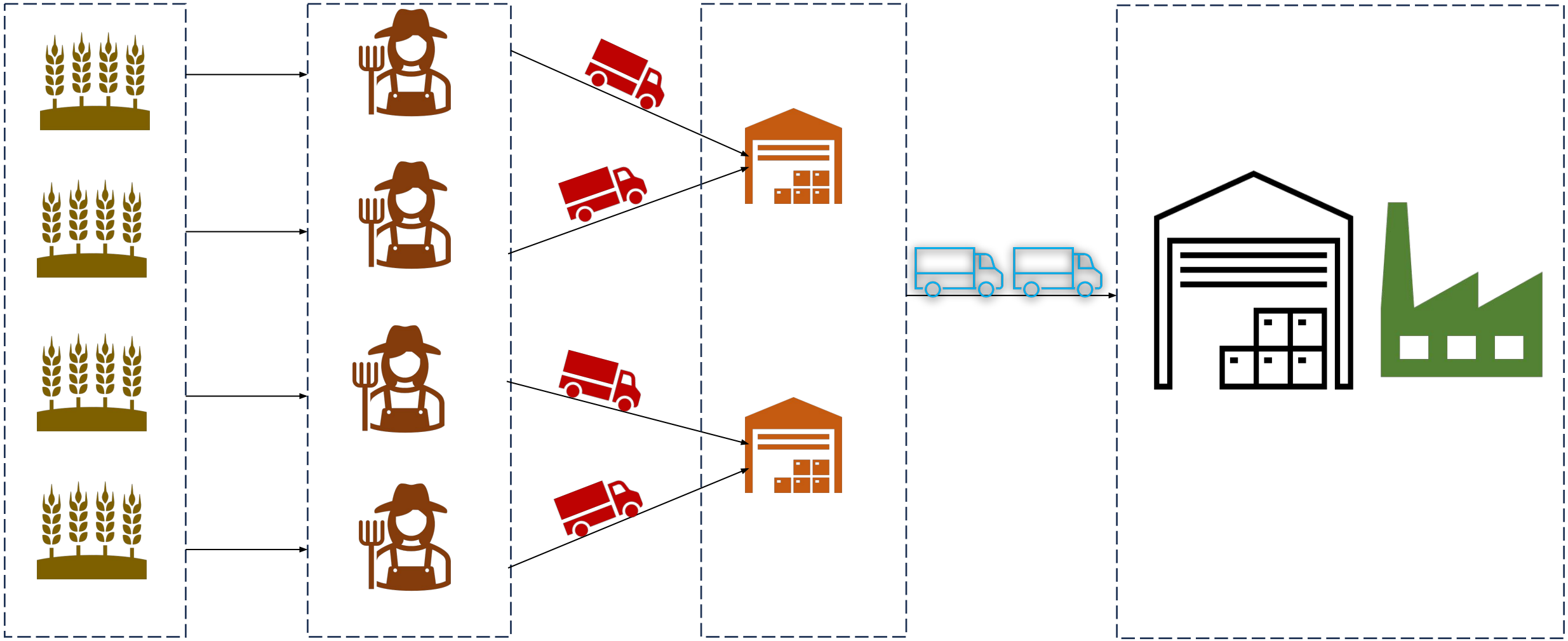
Proposed Procurement Model of paddy straws for Green Grow

Paddy straws are to be harvested in months of October-November

Paddy straws harvested using balers provided by company in available time

Paddy straws transported to decentralized warehouses

Paddy straws are transported from decentralized local warehouses to central plant locations, depending upon quality checks at each of the warehouses



Required Clarifications

What is the production capacity of the current plants?

Are all plants having the same capacity or various as per the location of the plant?

What is the location of the current six plants?

Where are the next plants going to come? Are there locations that have already been decided or, are we going to decide based on the highest paddy production areas?

Are current plants upgradable to use other agricultural waste like wheat straws?

Do we have a defined budget/outlay for the setting up supply chain, marketing, and constructing storage facilities?