

# Matching biomass supply and demand cost-effectively

Optimized aggregation and supply chain efficiency in India

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# BIOMASS POTENTIAL IN INDIA

## Feedstock Supply Side



### Agriculture Waste (agro-residues)

- ✓ **683 MT** from eleven major crops and about **178 MT** is surplus quantity



### Livestock Waste (livestock residues)

- ✓ Livestock population is about **192.5 million** with potential to produce **224.8 million tons biogas generation** (assuming **50% cattle waste** is collected and used in biogas plants)



### Forestry and Plantation Waste (Bamboo, pine needles)

- ✓ High potential of harvesting forestry and plantation waste for energy application. **For e.g. Bamboo, pine needles and lantana**



### Municipal Waste (organic waste materials, fruit and vegetable waste, sewage sludge etc.)

- ✓ India generates daily **188,500 tonnes of MSW** (Municipal Solid Waste) - **68.8 million tonnes per year**

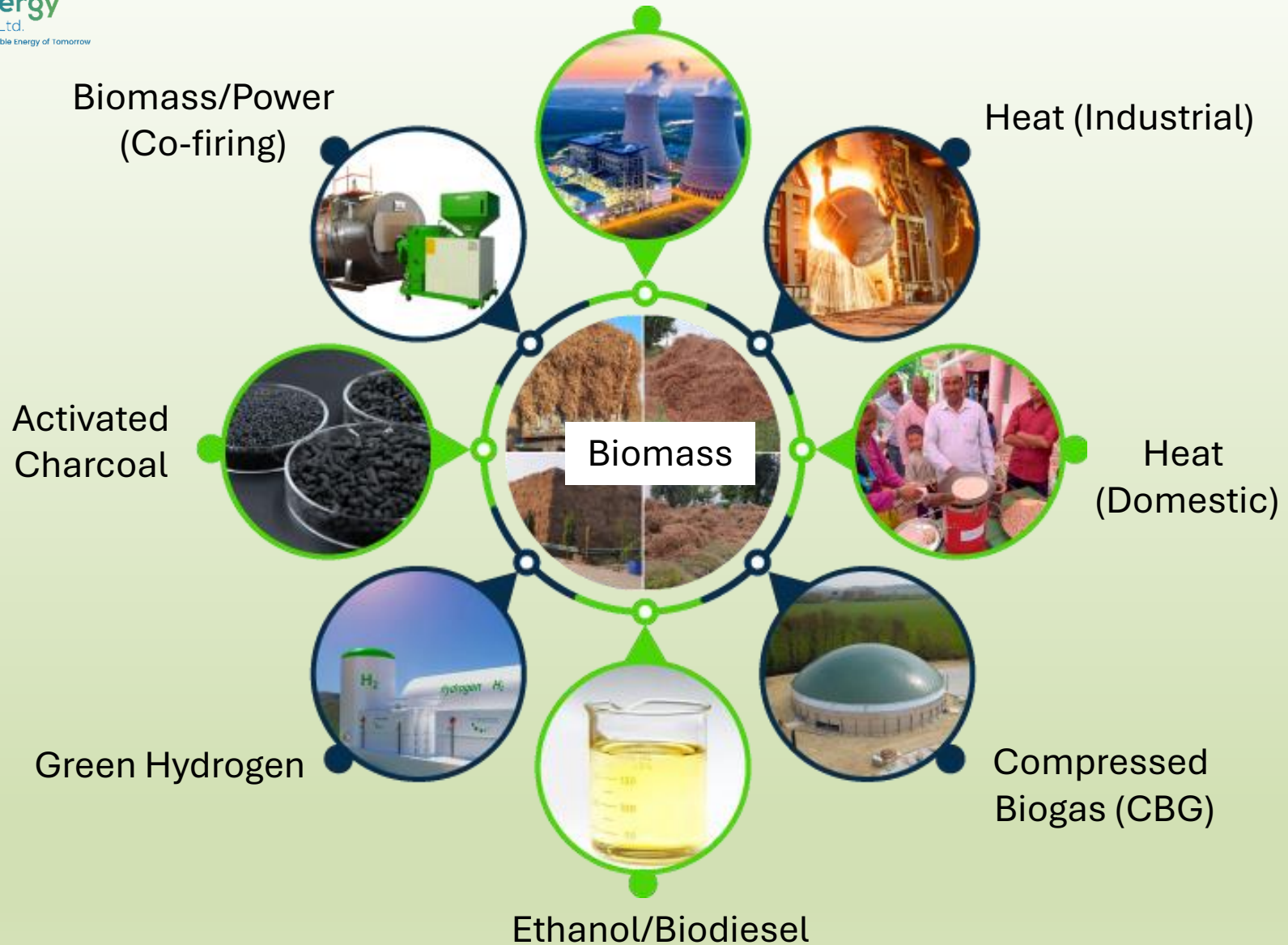
Bioenergy is important resource for success of Energy Transition and combat Climate

# Key Challenges

- Dispersed resource
- Seasonal availability
- Narrow Window between harvesting and sowing of next crop
- Variability in biomass availability (weather conditions, physio-chemical properties)
- Majority of agriculture land holding is small size
- Technical complexity (low density, fire hazards, degradation etc..)
- Local infrastructure/machinery for collection and storage

Reliable and efficient Biomass supply chains is essential for increased bioenergy use and market success

## Combined Heat & Power



Biomass is most versatile renewable energy resource that can meet all forms of energy

# Introducing **BTE** - Role in **bioenergy**

## Opportunity

- Our business models integrate within the bioenergy sector through strategic planning and collaboration with various stakeholders including farmers, communities, academic, industries, equipment suppliers and others.
- Capitalize on the growing demand for diverse feedstocks for bio- based energy industries across States

## Role

- Functions as an aggregator, storage, loading, processing facility and supplier to TPSs and Industries.
- Technical and management skills in business value chain

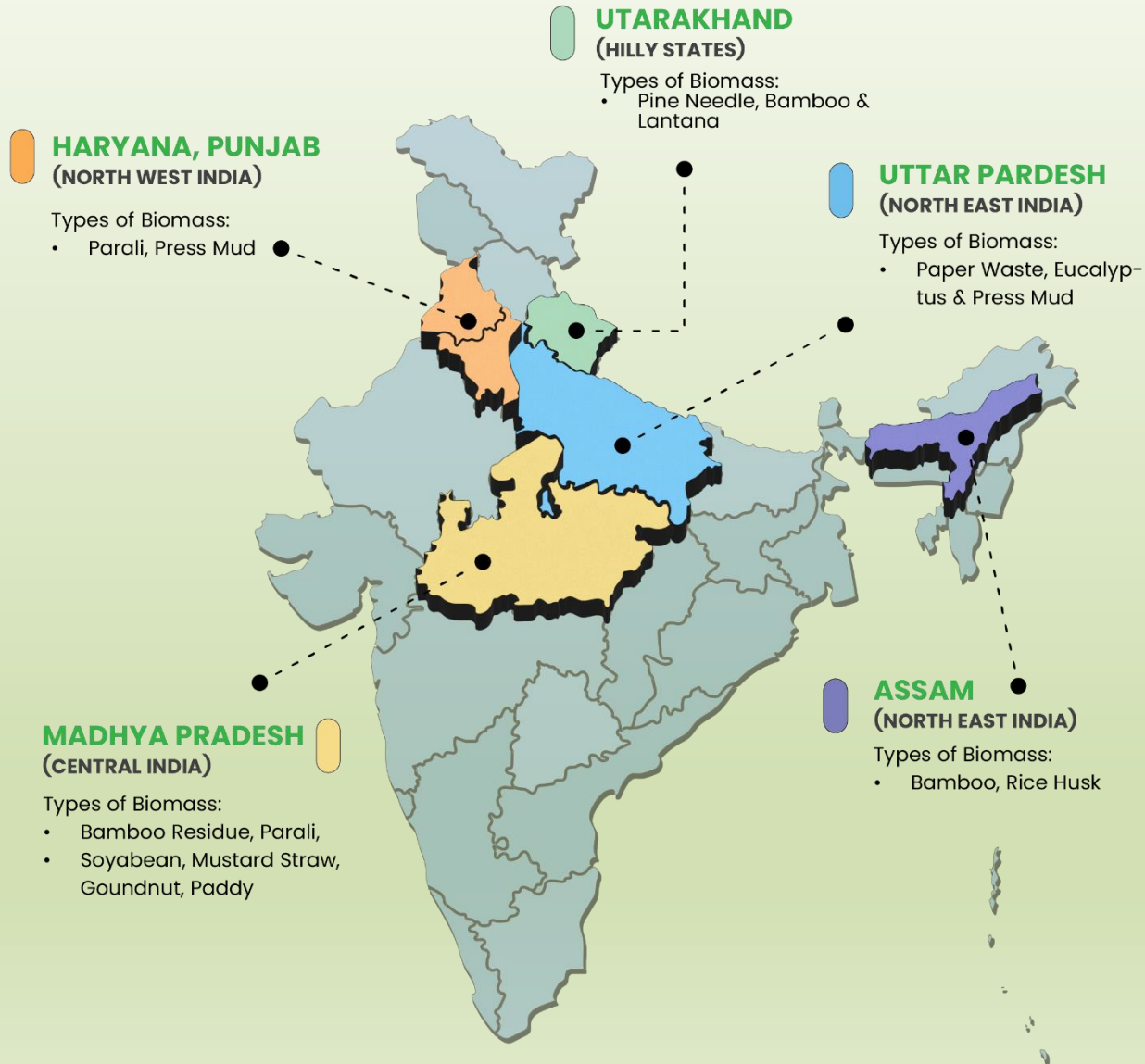


Creating technical/economics of biomass collection database of all major crop types grown in India



# Biomass Aggregation & Collection Models

In Various states of India



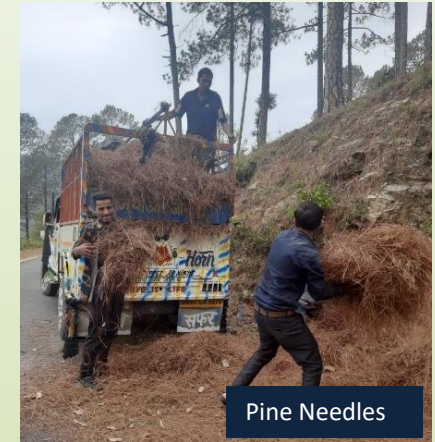
Type: Bamboo Residue, Parali, Soyabean, Mustard Straw, Groundnut, Paddy





# Uttarakhand (Hilly State)

Type: Pine needles & Lantana





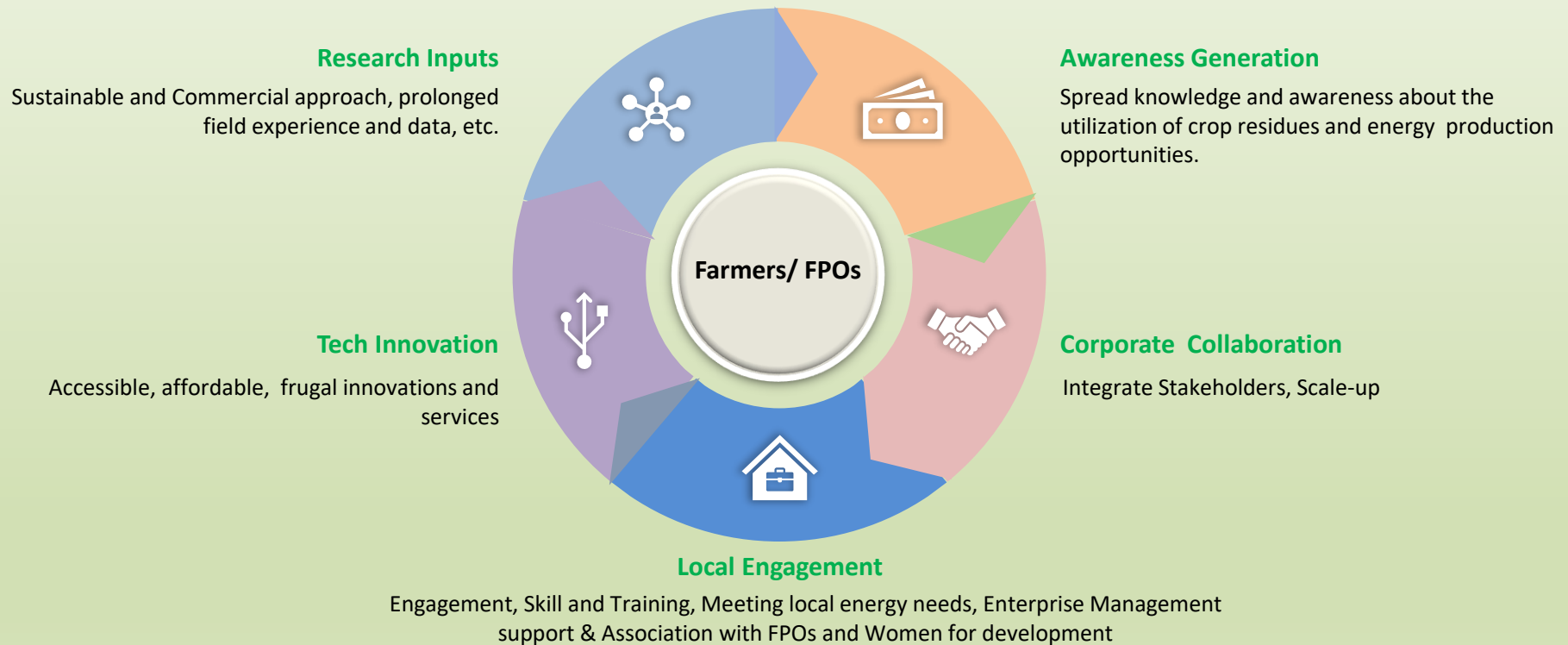
# Farmer's Training on Agri-residue Aggregator and Biomass Depot operator

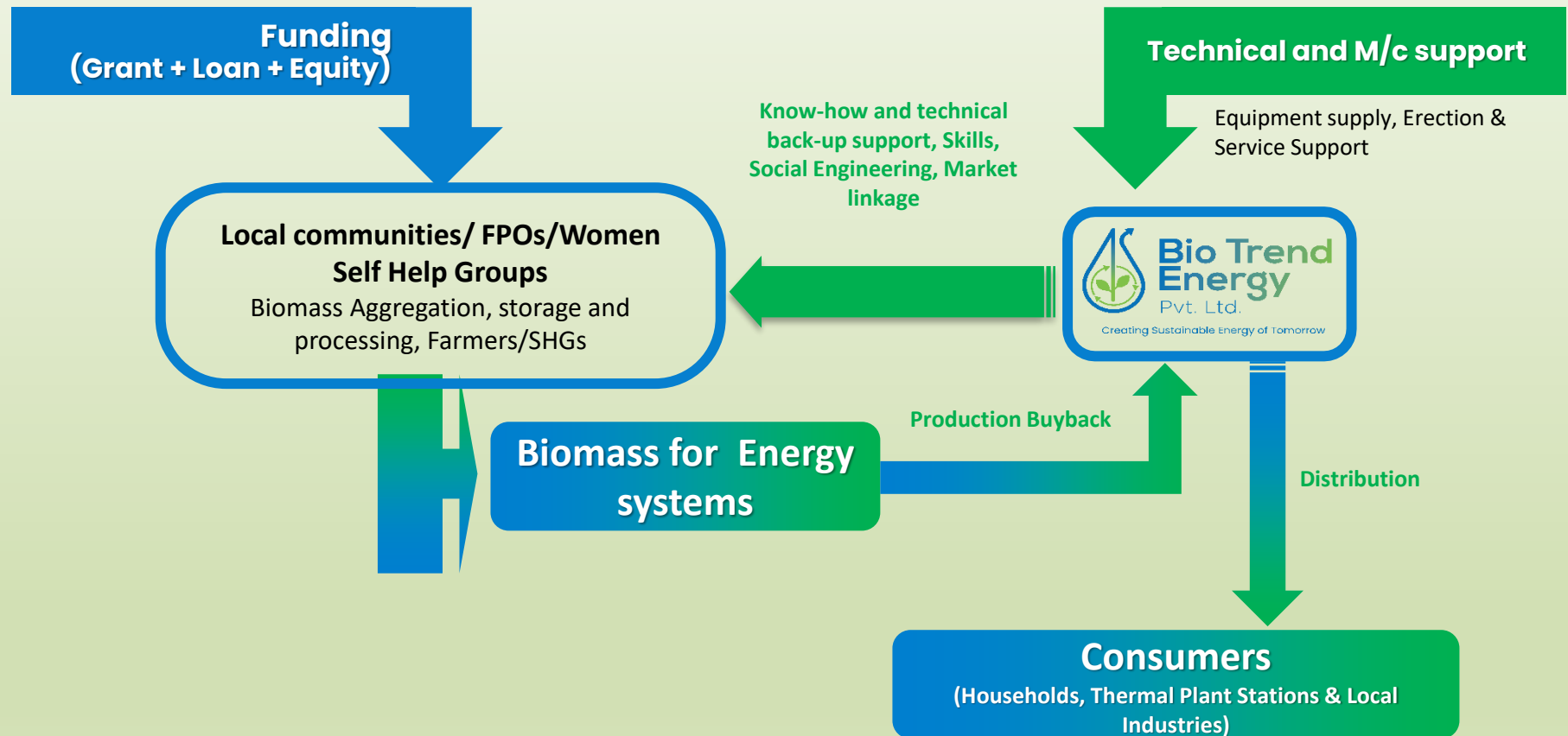


- More than 1000 Farmers/Aggregator were given training on biomass supply chain and linked to market.
- Target in 5 districts viz. Bareilly, Budaun, Pilibhit, Shahjahanpur and Hardoi



# Integrating Sustainable Biomass Technology Involving Farmers & Elimination of Air Pollution







# THREE PILLARS OF OUR BUSINESS MODEL

## MARKET

### PELLET/CBG



Pellet /CBG Production from  
Agri-waste  
Sales to Industries, HHs, TPSs etc.

## SKILLS

### Technical and Management skills in Business



Sharing knowhow and  
provide technical skills to  
local community

## COLLABORATION

### SCALE UP PRODUCTION



Partnerships with organizations  
and Cooperation with FPOs and  
manufacturers etc.

*A transition to clean energy is about making an investment in our future*



## SUSTAINABLE MODEL

- ✓ Development of model involving community participation in **planning, implementation & management of biomass resources**



## WOMEN

- ✓ **Managing the local resources traditionally**, they can be provided a unique opportunity to get involved in biomass collection, manage or even own the enterprise, **significantly improving quality of life in the region.**



## TRAINING

- ✓ **Extensive capacity building and training activities** will be carried out to enhance women's skills that can play a major role in the management of the biomass-based enterprises.



## SUSTAINABLE JOBS and INCOME

- ✓ Creating **direct and indirect sustainable jobs** in villages through biomass supply chain, in addition to income from supplemental activities.



**Bio Trend  
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Creating Sustainable Energy of Tomorrow

# CONTACT US

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