

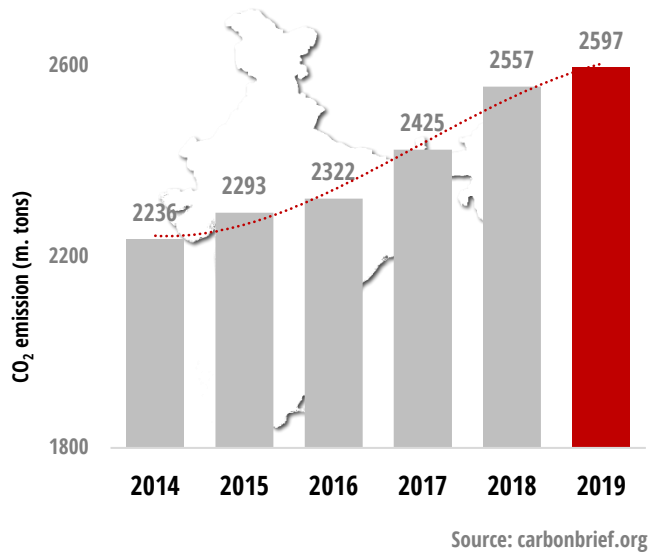


## NOVEL PLANTING GEOMETRY FOR IMPROVED CO<sub>2</sub> SEQUESTRATION

**ASHOK KULKARNI**

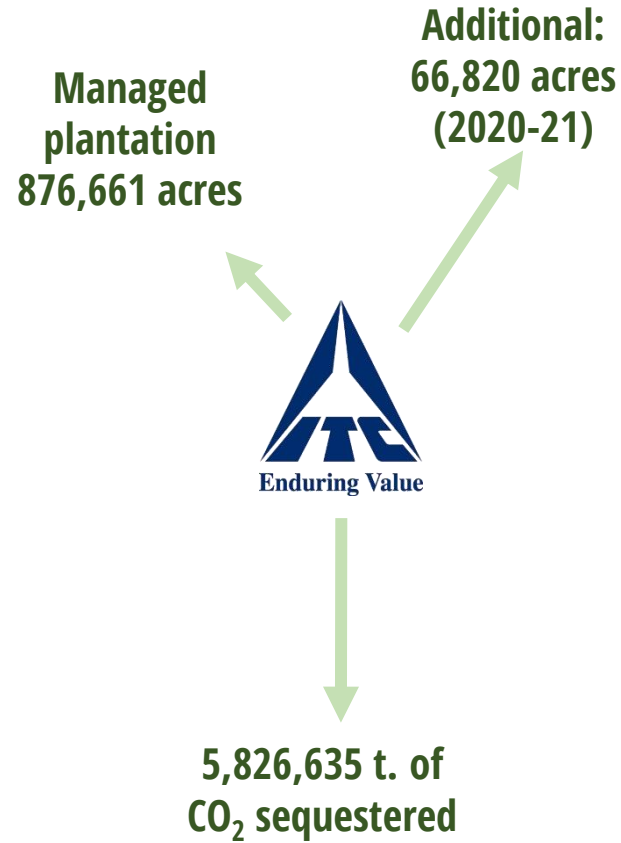
Associate Scientist

## ALARMING CO<sub>2</sub> EMISSION

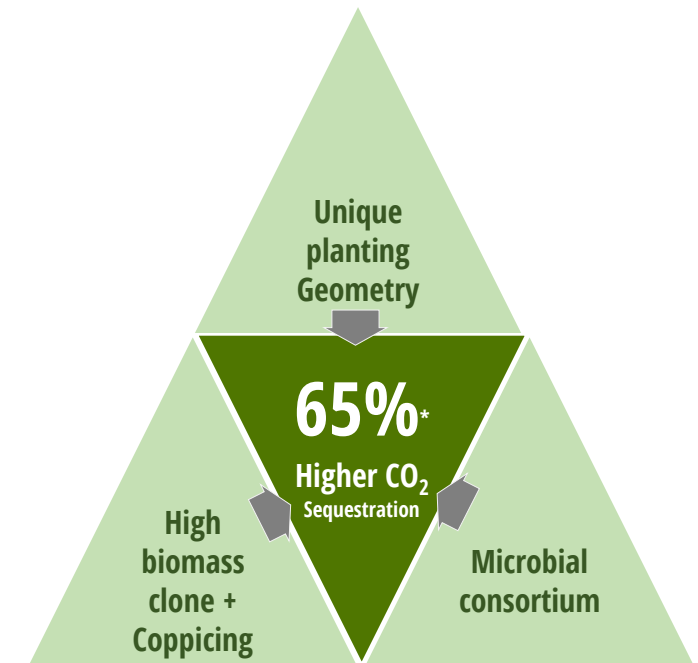


- Highest emitter of CO<sub>2</sub> next to China & USA
- CO<sub>2</sub> emission: 2-5% rise / Yr

## ITC INITIATIVES



## NEW PROPOSAL



\* Through Casuarina plantations initiatives

## UNIQUENESS

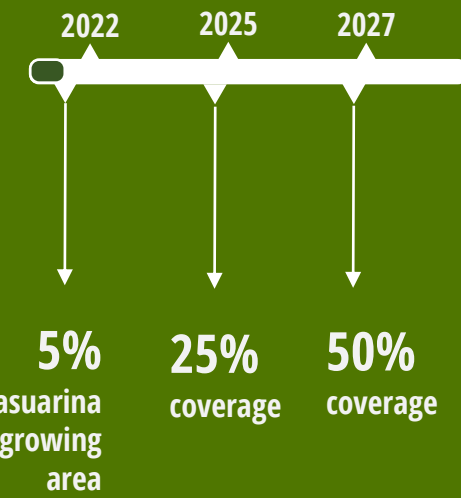
- 3 – Point strategy for Biomass improvement
- Zero cost – simple implementation
- Benefits Farmers, Industry and Environment at the same time impacting the triple bottom line of ITC

## TRIGGERS

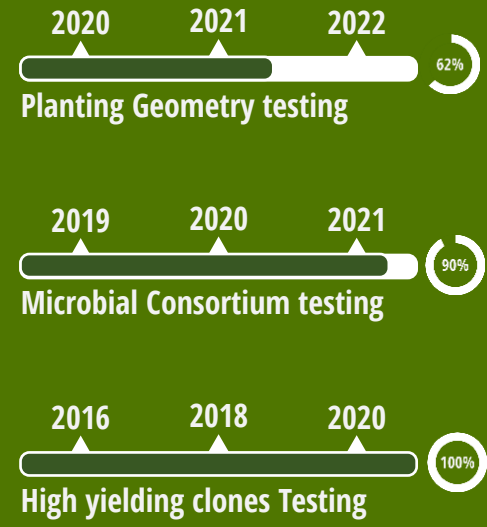
- Enhanced wood requirement from the industries.
- Development of Farm forestry and social forestry as per National Forest Policy 1988.
- High CO<sub>2</sub> emission in India

MILESTONES

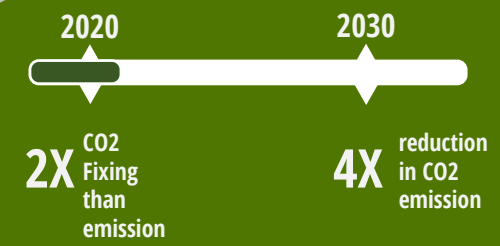
## 3 POINT STRATEGY IMPLEMENTATION



## PROJECT POC



## ITC



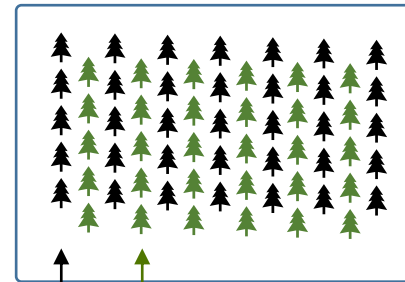
MILESTONES

## HIGH YIELDING CLONE



ITC 1761 an outstanding Clone with coppicing ability (>40% biomass)

## RELAY PLANTING



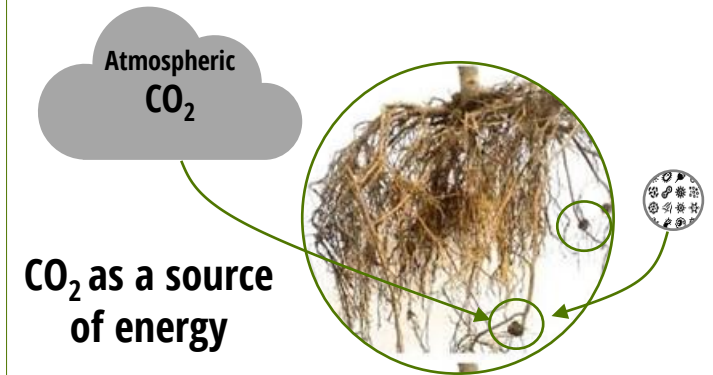
Relay planting

Previous crop

Spacing  
1<sup>st</sup> rotation: 2.5 x 1.3m  
2<sup>nd</sup> rotation: 1.25 x 1.3m

Increased plant population  
in same unit area

## MICROBIAL TREATMENT



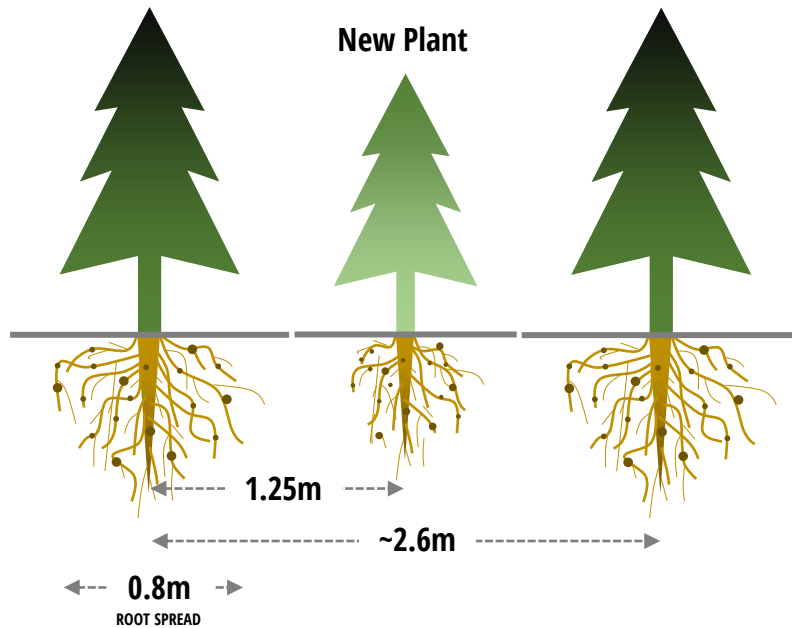
CO<sub>2</sub> as a source of energy

Soil Organic matter improvement

Enhanced biomass and CO<sub>2</sub> sequestration

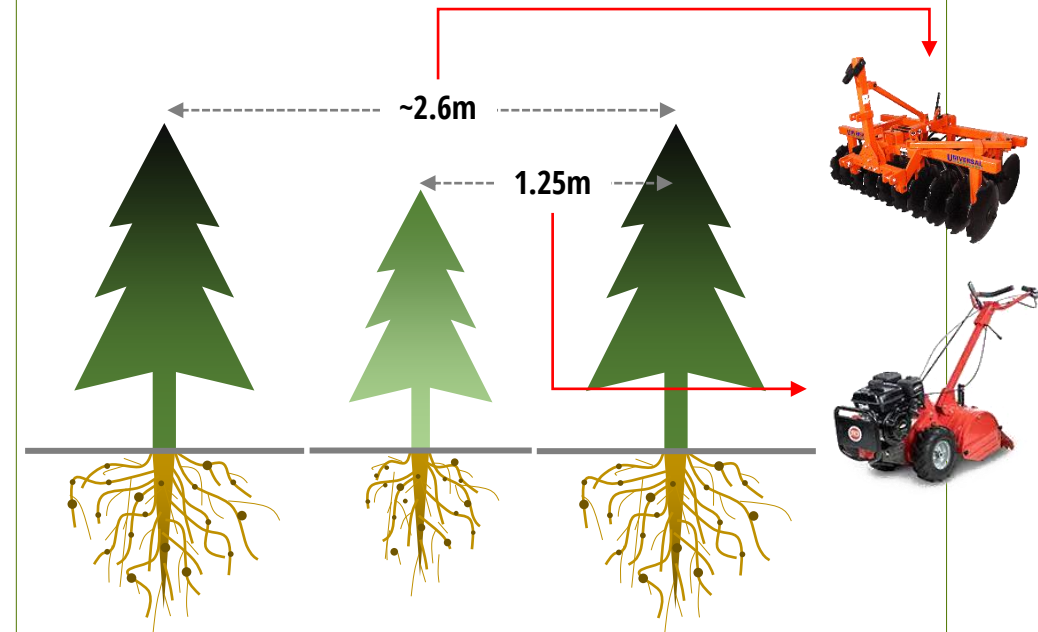
## COMPETITION IN ROOT ZONE

- Competition for natural resources
- Competition in the rhizosphere for water and nutrients



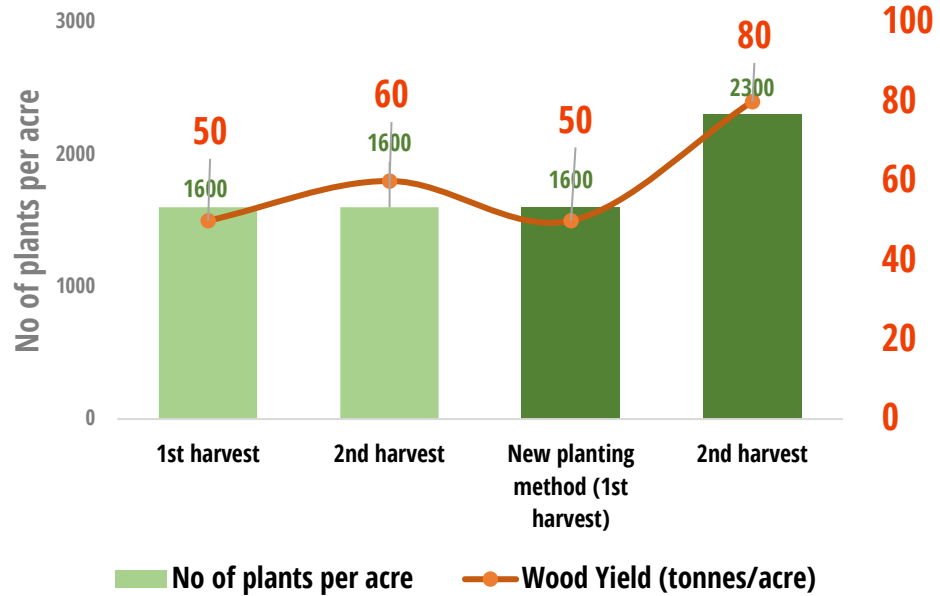
- Choosing fast growing and narrow root pattern plant
- Inter cultivation operations before relay planting

## CAN TILLING BE A CHALLENGE ?



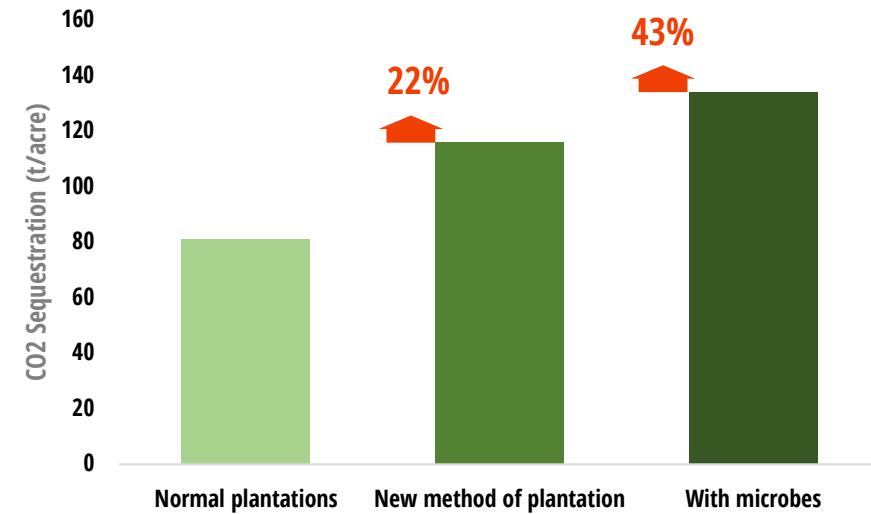
- First rotation: Regular tractor to be used
- Second rotation: Hand tiller to be used

## BIOMASS ENHANCEMENT



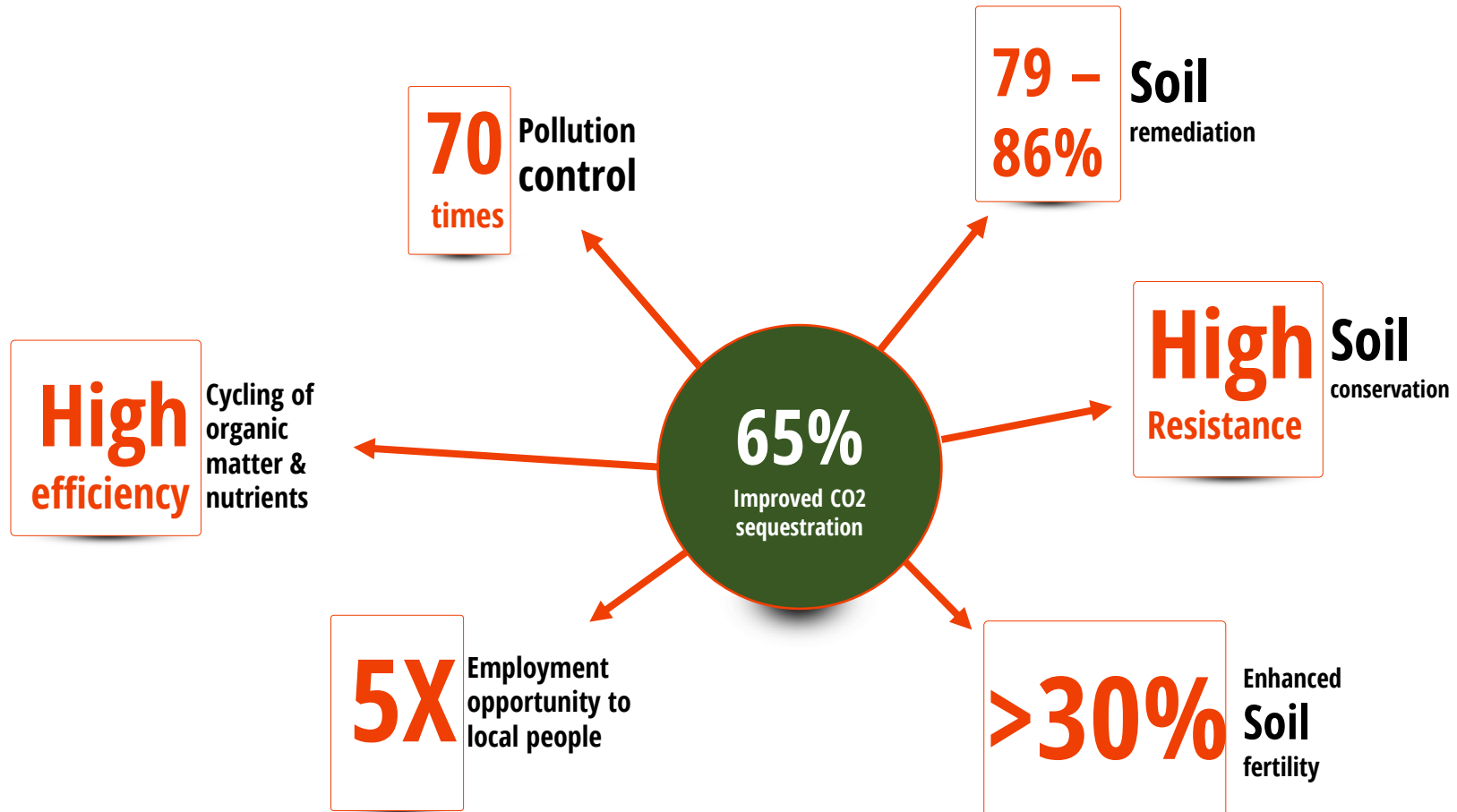
- Wood Yield advantage: 20% enhancement
- Additional farm income: Rs 40,000 per acre

## CO<sub>2</sub> SEQUESTRATION



**65% enhancement in CO<sub>2</sub> sequestration**

# INTANGIBLE BENEFITS



## ESTABLISHED DEMONSTRATION PLOTS



## STEPS TOWARDS SPREADING



- Established demonstration plot: helps farmer's to appreciate the power of new planting method.



- Farmers voice
- Through ITC developed Apps
- Spread through Nodal Agency (IFGTB)

## EVIDENCE-BEFORE / AFTER



Traditional planting method



New planting method

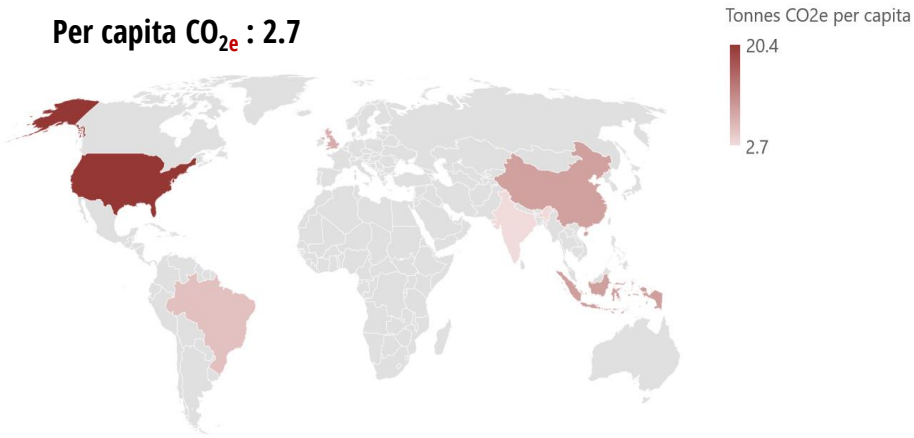
## REPLICATION POTENTIAL DEPENDS ON

- ITC - SOP needs to be followed.
- Choice of clone is important



## INDIA: CURRENT CO<sub>2</sub> STATUS

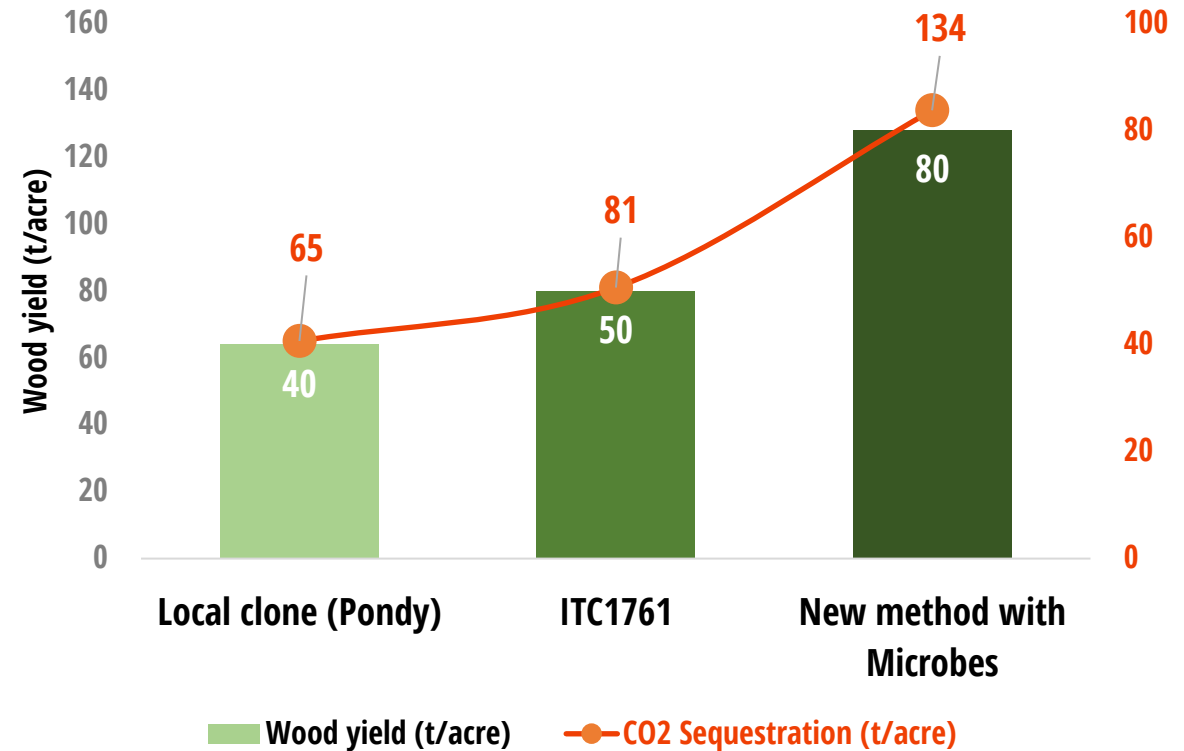
Per capita CO<sub>2e</sub> : 2.7



The country has pledged a **33-35% reduction** in the “emissions intensity” of its economy by **2030**, compared to 2005 levels.

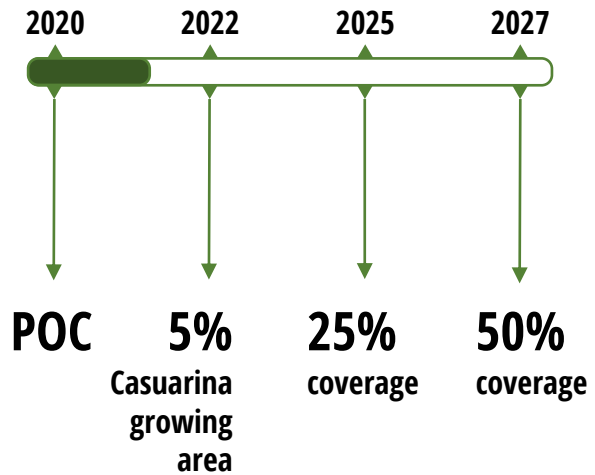
Source: caborbrief.org

## PROVEN IMPROVEMENT IN CO<sub>2</sub> SEQUESTRATION

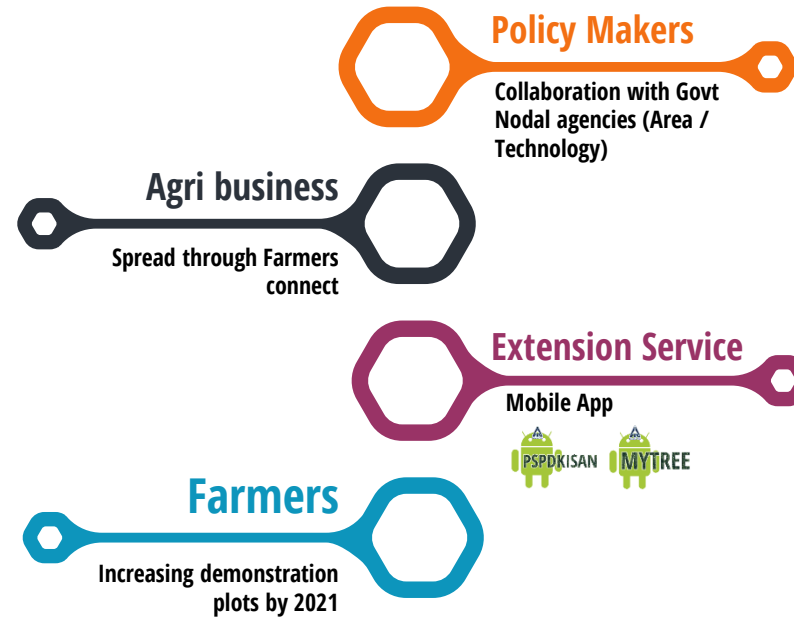


**>90% enhancement in CO<sub>2</sub> sequestration in new planting method + with microbial consortium**

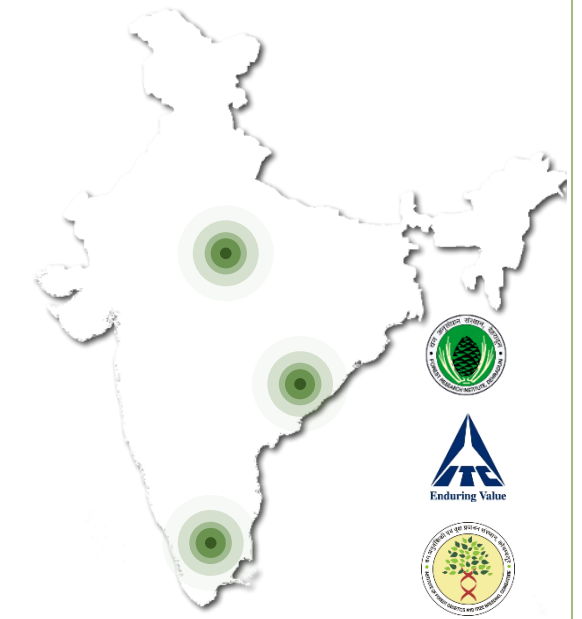
## 3 POINT IMPLMENTATION



## MULTI STRATEGY



## ITC & GOVT. NODAL

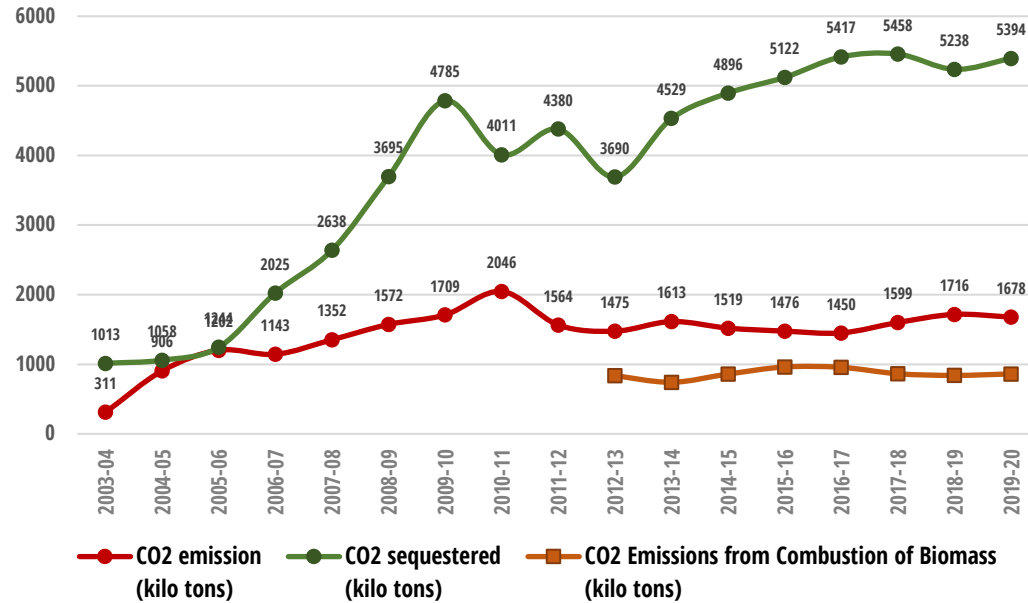


Collaboration through Govt. nodal agencies for fast tracking



1. **Soil fertility** improvement.
2. **Balanced utilization** of natural resources and soil nutrients.
3. **Complementary effect** (crop residues / space / interactions) between previous crop and newly planted crop.
4. **Farm machinery** usage-different approach required.
5. **Reduced weeds** in the field.
6. **Quick adaptation** from neighboring farmers-farm returns

## OPERATIONAL PERFORMANCE INDICATOR



ITC demonstrates **more than 2x CO<sub>2</sub> sequestration** than its emission

## ITC'S BUDGET IN SUSTAINABILITY

Details	Amount (in Cr)
Net Profits of the company (2020)	17,641.9
Sustainability (2% of the net profits – CSR Activities)	352.8

## PROJECT COST

#	Cost area	Amount (in Lakhs)
1	New clone development	50
2	Microbial consortium development	15
3	New planting method development	0.8
4	App development	10
5	Collaboration (Nodal Agency) for extension	4
<b>Total</b>		<b>75.8</b>



**THANK YOU**

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