

# FARMDO INDIA PVT. LTD.

Engineering the Circular,  
Carbon-Neutral Economy



Farmdo India Pvt. Ltd. is a deep-tech climate infrastructure company focused on building integrated, future-ready energy and resource systems spanning waste, land, water, biomass, and advanced clean technologies. Incubated with its active participation in association with premier institutes like IITs and R&D entities, Farmdo is a technology-first innovator, delivering capital-efficient, scalable, and investor-grade solutions that transform waste and renewable resources into clean power, green fuels, advanced materials, and carbon-negative outcomes—supporting India's Net-Zero 2070 roadmap and global decarbonization goals.

## Climate Deep-tech Market and Impact in Numbers



Global energy demand is projected to rise by ~20% in the next decade, keeping pressure on carbon-intensive systems despite renewable growth

Converting municipal solid waste into multiple energy streams can reduce landfill dependency by ~30% and substantially cut methane emissions, one of the most potent greenhouse gases.



Circular economy strategies can unlock up to 4.5 trillion USD in global economic value by 2030 while reducing resource extraction by up to 50%.

Globally, CCUS and related carbon management capacity must scale from tens of millions of tonnes of CO<sub>2</sub> today to several gigatonnes per year by mid-century to stay aligned with Paris Agreement goals, creating a huge long-term market for capture, utilisation and storage technologies.



Farmdo's focus on indigenous technology (electrolysers, ORC, HyORC, biomass-to-biographene) positions it to serve not just Indian cities and industries but also other emerging economies with similar waste, energy and climate challenges. We work on Green Biochar, Biochar and other community led tech based solutionings.

# FARMDO'S SOLUTION PLATFORM - RESPONDING TO MACRO, CLIMATE & REGULATORY FORCES

## Sustainable Energy Technologies



Integrated  
Waste-to-Energy &  
Waste-to-Fuel plants  
(MSW, biomass, RDF)



Green hydrogen, green  
methanol & Bio-CNG  
production systems



Agrivoltaic &  
Aquavoltaic solar  
engineering



Waste heat recovery  
systems (ORC, HyORC  
engines)



Biochar, Green Biochar &  
biomass-to-biographene  
facilities



SMR-ready baseload  
clean energy integration

## Climate & Energy Consulting

### Consulting Offerings:

- Net-Zero & decarbonization roadmaps
- Waste, energy & resource efficiency audits
- Technology selection & techno-economic analysis
- Project structuring for PPP, CSR & blended finance
- Policy advisory & regulatory navigation



## Carbon Emissions, CCUS & Carbon Market Services

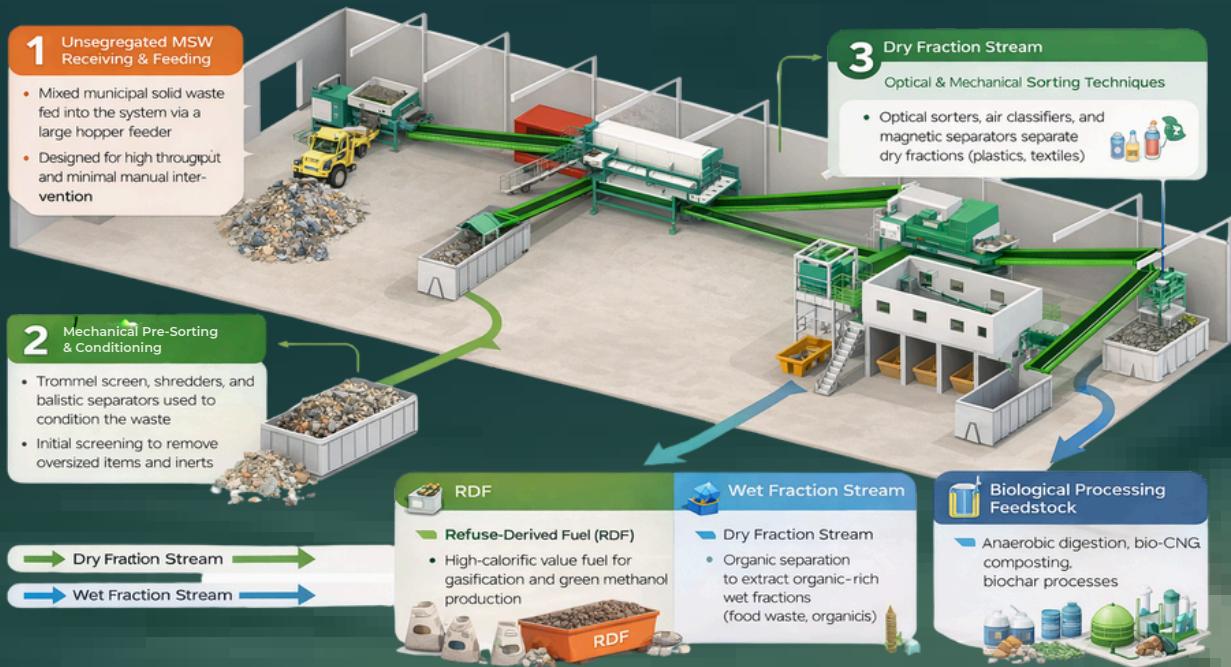
### Carbon Solutions:

- Carbon footprinting (Scope 1, 2 & 3)
- Carbon avoidance, capture & utilization (CCUS)
- Biochar-based & nature-linked carbon removal
- Carbon credit generation & monetization support
- Alignment with voluntary & compliance carbon markets



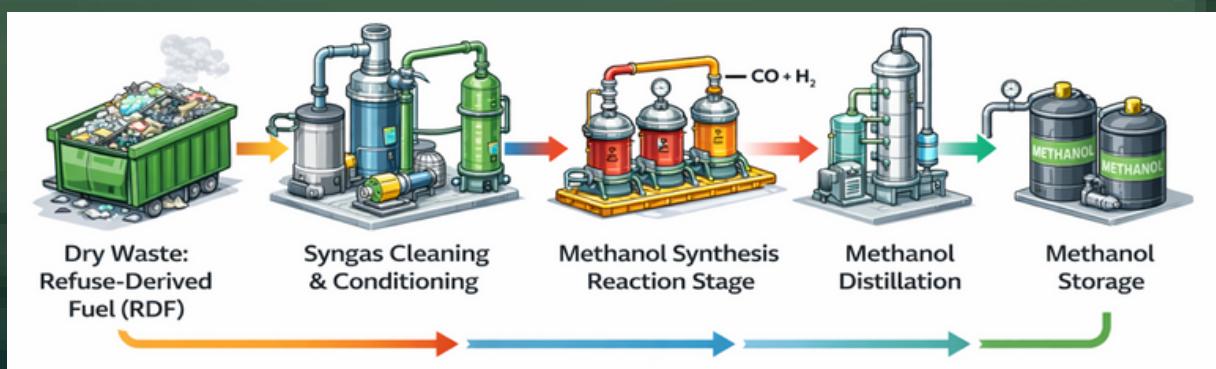
# Comprehensive Municipal Solid Waste (MSW) Pre-Treatment Process

Our technology features a sophisticated pre-treatment system designed to handle unsegregated MSW. The system efficiently separates the dry and wet fractions of waste using advanced mechanical and optical sorting techniques. Dry fractions, often composed of plastics, textiles, and other high-calorific-value materials, are transformed into Refuse-Derived Fuel (RDF).



## Dry Waste to Methanol

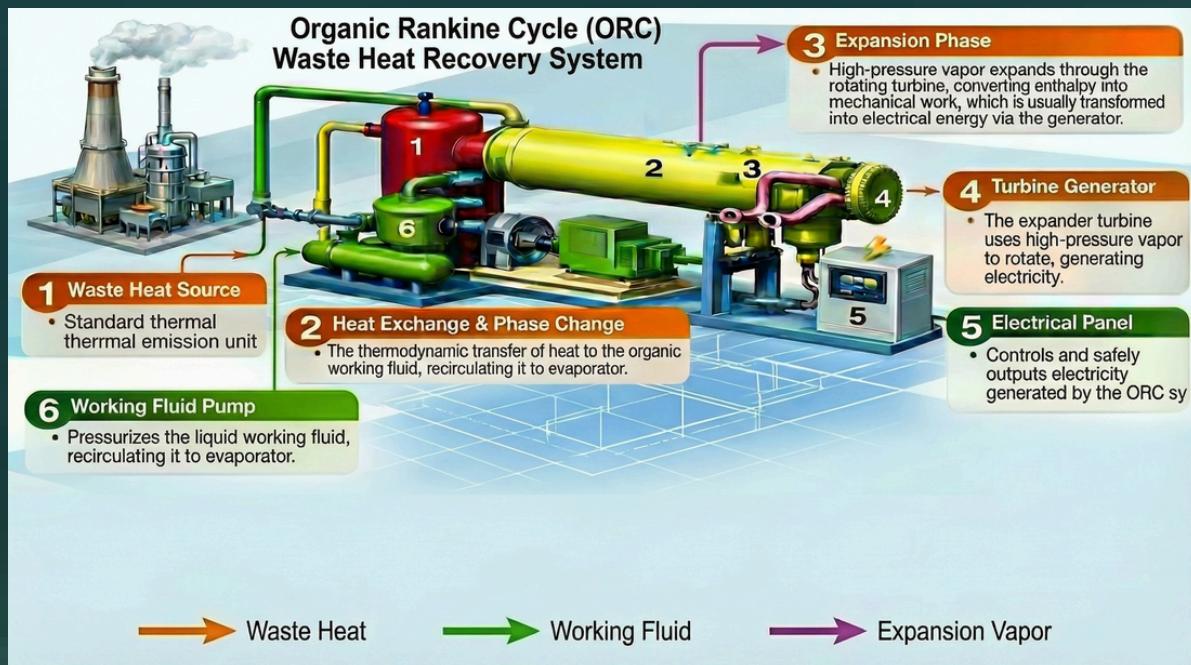
Efficiently converting Refuse-Derived Fuel (RDF) into methanol, our process involves gasification, Syngas cleaning and catalytic reactions to produce high-quality Green Methanol



**Methanol Synthesis Reaction Stage:** Refuse-Derived Fuel (RDF), produced through advanced MSW pre-treatment and segregation, is thermochemically converted into syngas, which is subsequently cleaned and conditioned to meet synthesis specifications. The conditioned syngas is converted into crude methanol in the Methanol Synthesis Reaction Stage using catalytic reactors, after which the product is purified through distillation and is stored in dedicated methanol storage tanks for downstream utilization.

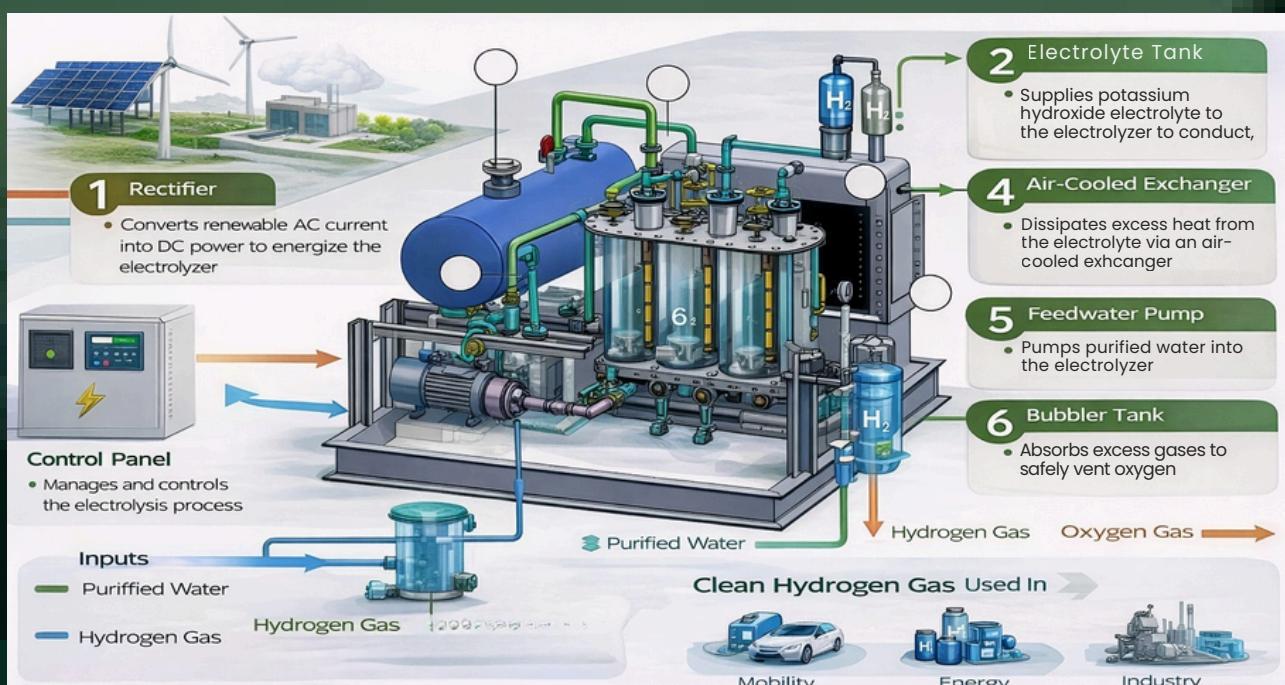
# Organic Rankine Cycle Turbine For Waste Heat Recovery

Utilising the Organic Rankine Cycle (ORC) to convert waste heat into clean energy, our system efficiently recovers heat from industrial process to generate sustainable electricity



## Green Hydrogen Production via Electrolysis

Harnessing renewable energy resources, our Alkaline Electrolyzer efficiently splits water into hydrogen and oxygen through the electrolysis process, enabling the production of clean, renewable hydrogen fuel



# Green Hydrogen From Municipal Solid Waste

Another innovative aspect of our technology is the capability to produce low-carbon hydrogen (Blue Hydrogen) from syngas.



## HyORC Engine

The HyOrc engine represents a breakthrough in zero-emission heavy goods vehicle (HGV) propulsion technology by combining hydrogen fuel with Organic Rankine Cycle (ORC) technology. The engine uses pure hydrogen and oxygen as fuel, combusted in 4 precisely engineered pulse combustion chambers at up to 32 pulses per second. This controlled process produces only water vapor, making the system completely emission-free.

### HyORC ENGINE

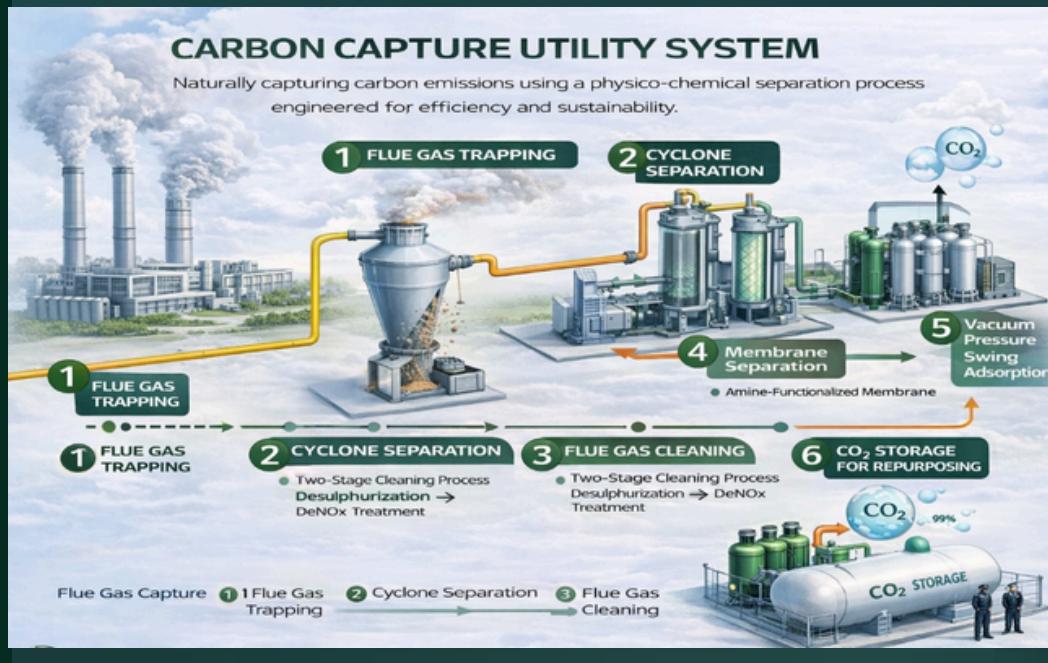
The HyOrc engine represents a breakthrough in zero-emission heavy goods vehicle (HGV) propulsion technology by combining **hydrogen fuel** with **Organic Rankine Cycle (ORC)** technology. The engine uses **pure hydrogen** and **oxygen** as fuel, combusted in four precisely engineered pulse combustion chambers at up to 32 pulses per second. This controlled process produces only water vapor, making the system completely emission-free.



Water Vapor Only

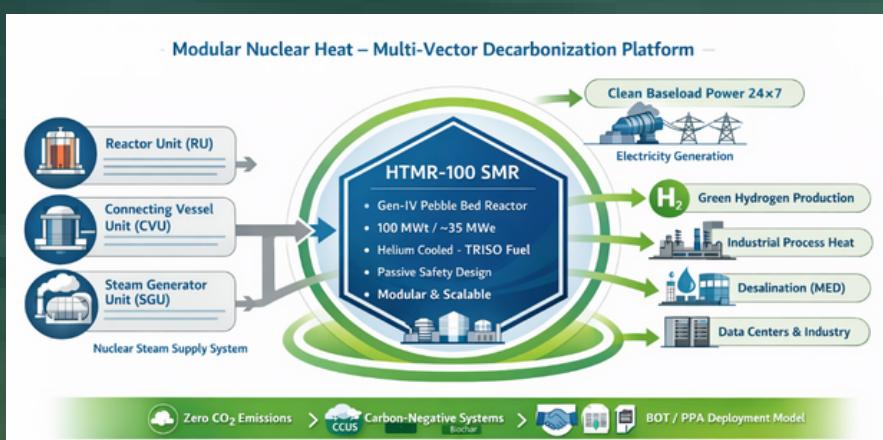


# CARBON CAPTURE AND UTILIZATION & SEQUESTRATION (CCUS)



Farmdo's CCUS technology captures CO<sub>2</sub> from industrial flue gases through integrated membrane and absorption systems, coupled with waste-heat recovery via ORC for enhanced energy efficiency. The purified CO<sub>2</sub> is either biologically sequestered in microalgae photobioreactors or utilized for value-added applications, enabling a circular carbon economy while supporting net-zero and ESG compliance.

## Farmdo's Deep-Tech Climate Vision with SMRs



### Why SMRs Fit Farmdo's Climate Strategy

- Inherent Safety & Gen-IV Design with passive "walk-away" safety systems
- Small Footprint & Modular Scale-Up, ideal for industrial clusters and smart cities
- Capital-Efficient & Bankable, aligned with long-term PPAs and BOT models
- Policy-Aligned, supporting India's Net-Zero 2070 and global ESG goals

Farmdo leverages SMRs as a foundational climate infrastructure layer, enabling the conversion of clean nuclear heat into multiple decarbonized outputs. By integrating SMRs with waste, biomass, hydrogen, water, and carbon-negative systems, Farmdo transforms nuclear energy from a single-use power asset into a multi-vector climate solution platform.

## Circularity in Practice

Pre-processing ensures maximum recovery of recyclables and optimal feedstock for conversion processes.



## End-to-End Integration

Offering SDG alignment Clean water (digestate management), affordable energy (renewables, hydrogen, Bio-CNG), responsible consumption (resource recovery), and climate action (CCUS).

Aiming Zero Landfill Goal by Maximum repurposing reduces landfill dependency.

# Let's Go from Climate Goal to Climate Action!

Farmdo is structured as an infrastructure-plus-technology platform, offering:



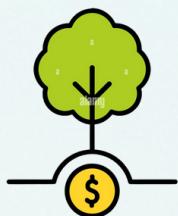
Multi-asset revenue stacking (energy, fuels, carbon, materials)



Long-term annuity-style cash flows



ESG-linked and green finance eligibility



Carbon market upside



Scalable replication across geographies

## Our Technical Partners



Fuel One  
Fuelling the future

KIS Group®  
SUSTAINABILITY<sup>2</sup>

KNE KOYA  
Nuclear Energy



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