

JORP: JUST ORGANICS RENEWABLE PROGRAM

Advancing Decentralized Waste-to-Energy with Micro Modular Anaerobic Digestion in Southern Vietnam: Pilot Program in Ho Chi Minh City Educational Institutions.



01 CONTEXT IN VIETNAM

Vietnam's National Commitments & Strategic Vision

- NET ZERO** Vietnam targets by 2050
- PDP8** prioritizes decentralized renewable energy
- Source-based segregation law for organic waste

HOWEVER

HCMC – The Biggest City's Waste: A Daily Challenge

- 13,000 tons of domestic solid waste per day
- 60% of the waste is organic
- 69% of waste is treated through landfilling

02 RESEARCH METHODS

- 1** Review the current Vietnamese legal framework on waste separation and biomass energy, including enforcement status and financial mechanisms
Identify policy gaps and regulatory bottlenecks
- 2** Conduct structured surveys and semi-structured interviews with stakeholders (40 universities, 10 local energy firms, law regulators)
Assess institutional readiness and waste flow
- 3** Evaluate MMAD adaptability through engagement with local and international WTE tech providers
Refine technical roadmap and cost models for MMAD

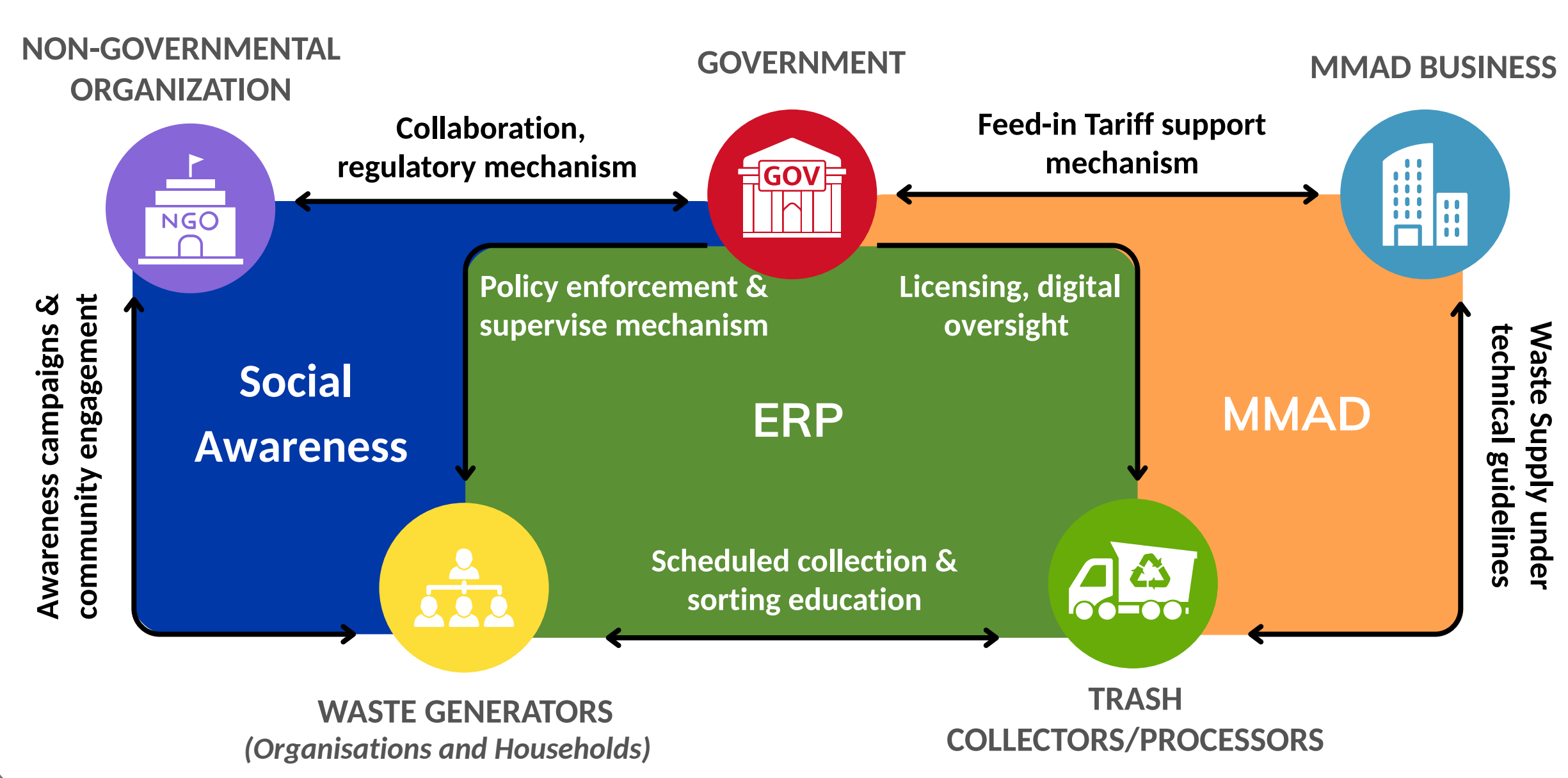
03 PROBLEM ANALYSIS

Diagnosis	Legal Basis / Current Solution	Issue
Waste Management Inefficiency	Article 75 and 82 of the Law on Environmental Protection 2020	Lack of mechanisms to monitor and enforce waste segregation and awareness
Lack of Scalable Solutions for Urban Areas	15 Waste-to-Energy plants for solid waste treatment are located far from urban centers	Require large land & mainly use incineration, increasing GHG emissions
Limited Investment Incentives	Decision 08/2020/QĐ-TTg The biomass energy FIT is 8.47 US cents/kWh	Unattractive FIT policy mechanism for biomass power businesses

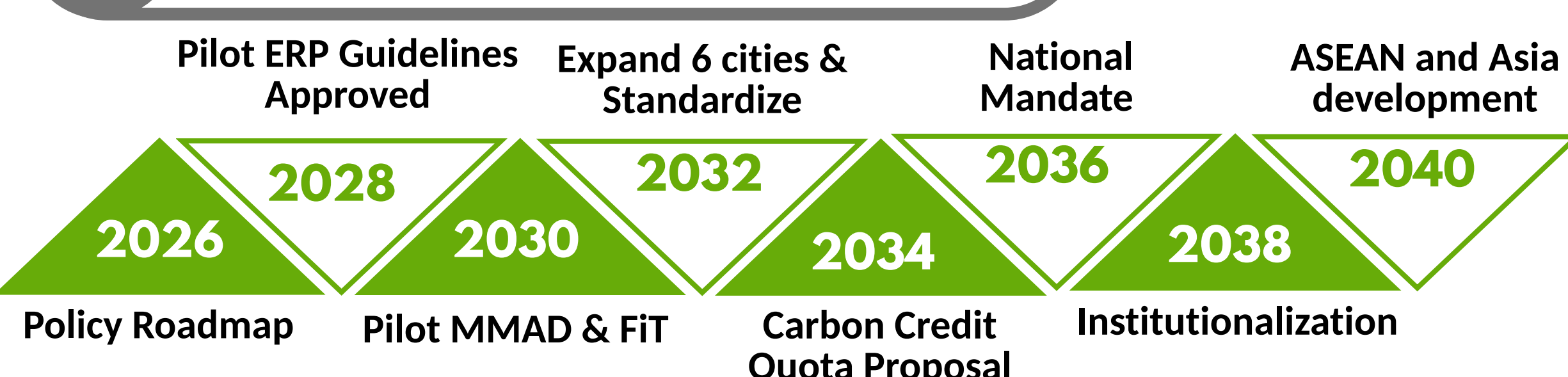
PROBLEM STATEMENT

The inadequacy of financial and regulatory support mechanisms to complement the existing waste management law has significantly constrained the development of the biomass energy sector, leading to missed opportunities for both effective organic waste treatment and renewable energy generation.

06 MULTI-STAKEHOLDERS MODEL



09 KEY MILESTONES

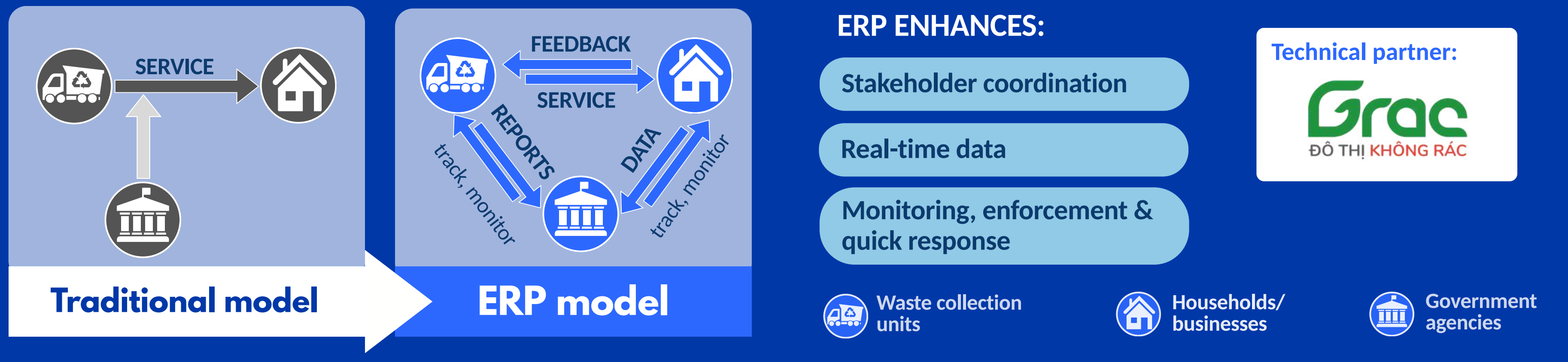


10 PROGRAM LIMITATION

- Institutional Readiness**: Educational waste sorting is inadequate for ERP installation
- Technology Adaptation**: Australian MMAD tech may require localization for Vietnam

04 JUST ORGANICS RENEWABLE PROGRAM (JORP)

ENTERPRISE RESOURCE PLANNING IN WASTE SORTING PLANNING



DECENTRALIZED MICRO MODULAR ANAEROBIC DIGESTION DEPLOYMENT

MADD systems

- Localized, low-emission, space-saving waste treatment
- Ideal for urban and peri-urban areas

Technology adoption: (Australia flag)

FINANCIAL INCENTIVE MECHANISM

Introduce higher FIT tier for small-scale systems (<1MW, PPA <10 years) via MMAD

18,5 USDcents/kWh

BIOMASS LCOE > **CURRENT FIT** (8.47 US cents/kWh) in Vietnam

THAILAND BIOMASS FIT: 15.7-19.8 US cents/kWh (for >3MW and <1MW systems)

05 PILOT PROJECT

Objectives

- Test MMAD in urban areas
- Set up ERP & organic waste collection from canteens to MMAD

Applicability Interviews

36 out of 40 surveyed universities agreed to participate in JORP

Key Activities

- Partner with HCMC Department of Education & 36 universities/colleges
- Deploy 10 MMAD systems in urban & peri-urban zones
- Implement ERP model for city-level Department of Natural Resources and Environment
- Design organic waste routes for university canteens
- Monitor and report on the project monthly to ensure effectiveness

Pilot Roadmap

- Phase 1**: Pilot MMAD system and ERP at University Village in HCMC
- Phase 2**: Expand MMAD & waste network to urban areas & citywide universities
- Phase 3**: Expand pilot to supermarkets, wet markets, and corporate campuses

07 FEASIBILITY ASSESSMENT

Technical Feasibility	Policy Feasibility	Economic Feasibility
<ul style="list-style-type: none"> MMAD: Proven modular technology for space-limited urban areas On-site waste-to-energy conversion ERP: Efficient monitoring and MMAD input control 	<ul style="list-style-type: none"> Backed by Law on Environmental Protection (2020) & PDP8 FIT for MMAD proven via regional models ERP enables policy implementation 	<ul style="list-style-type: none"> MMAD cuts costs & produces biogas/fertilizer 18.5¢/kWh FIT offsets high LCOE, attracts investment

08 SCALABILITY

NATIONAL

INTERNATIONAL

	Food waste volume	Waste separation	Legal Framework/ Support mechanism for biomass sector
Indonesia	40,356 tons/day	Compulsory (nationwide)	- Republic Act No. 9003 - MRFs at barangay level
Philippines	8,000 tons/day	Compulsory (nationwide)	Law No. 18/2008 on Waste Management
Thailand	46,575 tons/day	Compulsory (selected cities)	Bangkok municipal regulation on source separation (mandatory from 2024)

11 JORP'S IMPACT

BEFORE	IMPACT
<ul style="list-style-type: none"> Economic: Inefficient logistics and landfill dependency Social: Locals opposition to landfills Government: Fragmented data and low transparency 	<ul style="list-style-type: none"> Economic: Revenue from biogas, fertilizer, carbon credit Social: Community engagement via decentralized waste units Government: Stronger compliance via incentive alignment