LANKA BIOGAS

POLICY BRIEF

A production of Lanka Biogas Association

Biogas in Livestock: Policy for Progress

The livestock sector makes a significant contribution to food security & nutrition of the Sri Lankan populace. It also is a key driver of national economic growth while providing rural livelihoods. This sector made a contribution of 1.4% to the country's GDP in 2023, with the strength of over 427,500 livestock farms spread across the country.

Animal population & registered livestock farms in 2023

Animal	Population	No. of Farms
Cattle	1,586,383	266,847
Buffalo	468,696	34,586
Goat & Sheep	754,518	92,237
Poultry	31.47 mil	28,743*
Swine	170,409	5,169

*Poultry in backyards: 242,606 households
Source: Dept. of Animal Production & Health

Despite numerous benefits of the livestock sector, it posses some challenges to environment, people & livestock themselves. They include solid waste & waste water & greenhouse gas emissions (including enteric emissions) into the environment. Livestock sector has to comply with relevant health & environmental laws & regulations (how manure & slurry are disposed, prevent ground water contamination, meet air quality standards, animal welfare & health etc.,). A multifaceted & proven sustainable technology solution this sector has is the anaerobic digestion (AD) technology & biogas systems.

Anaerobic Digestion (AD) Technology & Biogas Systems

Biogas systems are so designed to convert organic matter (animal manure, garbage, crop residues, municipal organic wastes, waste water & food processing by-products etc) into useful energy & agricultural input products. In a biogas system, organic matter breaks down by biochemical decomposition under oxygen-free (anaerobic) conditions in the presence of some bacteria. This process is called anaerobic digestion (AD) which usually occurs in a specialized tank or vessel called the anaerobic digester. Landfills gas generated at landfills are also generated due to the AD process.

Livestock & Biogas Systems

Livestock industry produces different forms of manure, livestock bedding & organic food waste decompose etc. These can be treated through AD process, where macromolecular compounds in them generate biogas, a mix of methane (CH_4) dominant gaseous fuel which is a source of clean renewable energy, while leaving a digestate, which is a bio-fertilizer, a key agricultural input. Therefore, AD is a transformative technology converting livestock waste, preventing spread of livestock diseases while providing an environmental solution. Biogas systems also boost farms' resilience & adds value by demonstrating viable models of circular economy & industrial symbiosis.

Benefits of Biogas Systems for Livestock Farms

- Waste & waste water management - Convert livestock waste into useful energy & bio-fertilizer; reduce odour / smells, destroy harmful pathogens, parasites & bacteria while enhancing bio-security protecting the livestock.
- Biogas (methane) can be used as a renewable energy source, for cooking, safer swill feeding, lighting, heating & power generation; reduce reliance on external fossil fuels, lowering energy costs & ensure energy security.
- Economic cost savings & income generation - Lower energy bills by substituting use of diesel to power generators or use of LPG; organic fertilizer (digestate), replacing or supplementing chemical fertilizers & receive carbon credits; engage in productive use of biogas systems enhancing income from production & sale of value added products (ex. yogurt, curd, ice cream, milk toffees & flavoured milk from the dairies, as well as organic fruits & vegetable)
- Environmental Protection & Climate Change Mitigation - Minimize nutrient leaching & runoff into water bodies, enhance soil health & reduce chemical use, capture methane which has a Global Warming Potential (GWP) of ≈ 84–87 over 20 years that would otherwise escape into atmosphere & contribute to climate targets (Ex. NDCs).
- Community & Social Benefits - Improved hygiene by reduced disease vectors like flies & mosquitoes; job & livelihoods opportunities in system installation, maintenance & engaging in value added products; reduced household burden, especially for women & girls, who would otherwise spend time collecting firewood for cooking.

Policy Recommendations

- Include deployment of biogas systems in national livestock & dairy development policies & programmes,
- Provide grants & concessionary loans for biogas systems & ensure good prices for milk & livestock products. This may help farmers & youth remain or attract into the sector, who otherwise may deviate from engaging in livestock
- Promote AD in agriculture & livestock integrated farming systems, specially in high livestock dense areas (Ex. Dairy Villages), help domesticate small livestock farms, addressing public health safeguards & not making public nuisance.
- Introduce high-rate efficient AD technologies & (specially medium to larger scale) biogas systems, with incentive & capital subsidies, tax reliefs on import of related machinery, equipment, & appliances & concessionary financing.
- Establish performance & safety standards for biogas systems & certification schemes for bio-fertilizer.
- Create awareness among livestock farmers & train livestock extension officers & technicians on installation, operations & maintenance of biogas systems.

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