LANKA BIOGAS

POLICY BRIEF

A production of Lanka Biogas Association

Biogas for Climate Action:
Powering Sri Lanka's Low-Carbon Future

Climate Change & Sri Lanka: Sri Lanka is vulnerable to climate change due to its geographic location & dependence on climate-sensitive sectors like energy, agriculture, livestock, industries, waste & transport. It experiences frequent extreme weather events (erratic rainfall patterns, prolonged droughts, flash floods, rising temperatures) threatening food security, livelihoods & biodiversity, disrupting farming cycles, damaging infrastructure & intensifying vector-borne diseases affecting public health. Coastal erosion, sea level rise & saltwater intrusion affect freshwater & arable land. Sri Lanka commits to transitioning to a low-carbon, net zero & climate-resilient development via sustainable practices.

Anaerobic Digestion (AD) Technology & Biogas Systems: Biogas systems are so designed to convert organic matter (municipal garbage, animal manure, crop residues, wastewater & 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, called anaerobic digestion (AD), generate biogas, a mix of methane (CH_4) dominant gaseous fuel which is a renewable energy source, while leaving a digestate, which is a bio-fertilizer, a key agricultural input. This process usually occurs in a specialized tank or vessel called the anaerobic digesters. Landfills gas generated at landfills are also generated due to the AD process.

Climate Change Mitigation & Adaptation, & Biogas Systems: Biogas systems help mitigate greenhouse gas emissions & enhance adaptation to vulnerabilities. Biogas Systems capture methane, a potent greenhouse gas from organic waste & generate renewable energy reducing emissions that would otherwise escape into the atmosphere. Using biogas replaces fossil fuels, leading to a lower carbon footprint contributing to net zero transition. Bio-fertilizer, a by-product, improves soil fertility & water retention & make farms resilient to droughts & erratic weather patterns. Biogas systems support circular economy & industrial symbiosis & reduce reliance on chemical fertilizer, aligning with climate targets in waste, energy, agriculture, livestock & socio-economic development sectors including food security.

Biogas Systems Challenging Climate Change

- Capture methane, which has a Global Warming Potential (GWP) of ≈ 84–87 over 20 years (IPCC 5th Assessment) from organic waste, reducing potent greenhouse gas emissions into the atmosphere;
- Replace fossil fuels like LPG, kerosene & diesel with clean, renewable energy for cooking, heating & power generation, contributing to net zero transition; reduce deforestation due to improper harvesting of firewood.
- Lower carbon footprint from agriculture & livestock by using produced bio-fertilizer, minimizing chemical fertilizer use & related emissions; improve soil health, water retention, overall ecosystem functioning & enhance climate resilience.
- Support achieve national climate targets & global commitments.

Alignment of AD Technology & Biogas Systems with Sri Lanka's National Climate Change Policy (2023)

Climate Change Policy Area	Policy Strategies Text (summarised)	AD & Biogas Sector's Contribution
Waste to Energy (Ch.8.6.8,9)	Circular economy & waste management systems	Converts organic waste to renewable energy & bio-fertilizer
Renewable Energy (Ch.8.6.2)	Enhance the usage of green, renewable & sustainable energy sources	Provides household, farm & institutional scale energy through biogas systems
Sustainable Agriculture& livestock (Ch.8.9.2)	Promote Climate-Smart Good Agricultural & Animal Husbandry Practices enhancing sustainability & productivity	Uses digestate as organic fertilizer, enhancing soil health & reducing synthetic fertilizer use
Methane Mitigation (Ch.8.7.1)	Promote instruments appropriate to reduce GHG emissions & improve adaptation measures	Captures methane from livestock, municipal waste & agro-industrial sources via anaerobic digestion
Climate Finance & Technology Transfer (Ch.8.12.4 & 8.14.3)	Collaborate with global climate financing & multilateral donors & technology transfer from other countries	Eligible for climate finance & innovation grants through national & global mechanisms
Institutional Coordination (Ch.8.2.4)	Strengthen institutional & regulatory frameworks for low-emission development planning & implementation	Requires coordinated policy framework, training programs, & local government involvement

Policy Recommendations

- Integrate biogas systems in strategies & programmes on climate change, environment, waste, energy, agriculture & livestock sectors etc., in climate resilient, drought-prone, livestock-dense & waste-affected communities in particular.
- Strengthen multi-sectoral institutional coordination among relevant lead agencies & implement biogas systems.
- Establish technical standards & certification schemes for biogas systems & bio-fertilizer ensuring quality & safety.
- Promote awareness, training & capacity-building programmes for planners, government officers, technicians etc.,
- Incentivize adoption of biogas systems through grants, tax reliefs & concessionary loans where possible.
- Access climate funds, research grants, CSR & PPPs & promote higher level research & scale-up biogas initiatives.

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