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WORLD BIOGAS ASSOCIATION

This factsheet is part of a series being produced by the **World Biogas Association (WBA)** on the value of biogas production and use globally. You can find the full series on our website, **www.worldbiogasassociation.org**.

HOW TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS THROUGH BIOGAS

FACTSHEET 3

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What are the SDGs?

On September 25th 2015, the United Nations adopted 17 aspirational Sustainable Development Goals (SDGs) and 169 targets as part of a global partnership to end poverty and hunger in all its forms, mitigate the effects of climate change, and ensure prosperous, fulfilling, and peaceful lives for all. The SDGs are targets to be met by 2030 – this gives governments and businesses less than 13 years to make the urgent and necessary changes required to bring about and deliver a step change in sustainable development.

Who has committed to achieve them?

All government members of the United Nations have agreed to meet the goals alongside industries, businesses, NGOs, cities, and civil-society groups across the globe. The need to act involves us all, and we all have the ability to act whether as a government or as a business. Massive positive cooperation can change the world - the solutions and innovations required to resolve these challenges are already available. What we now need is the determination and ingenuity to implement them.

Whilst high-income countries will focus some resources on assisting low-income countries to achieve their goals, the SDGs should be part of governments' policies regardless of national wealth and level of development. Some goals, such as Goal 13 (climate action), are global challenges whilst others such as Goal 1 (poverty eradication) are clearly more focused on low-income countries.

Who should be acting upon these commitments?

Policy makers in governments and major cities globally should be acting to meet these commitments, but achieving the SDGs will require the support of all community sectors and all industries. Leadership should come from governments because sustainable development concerns wider society and economy, but all of us will need to buy into these policies in order to contribute our share to promoting sustainable development.

Why is biogas relevant to this challenge?

The biogas industry is uniquely positioned to help achieve nine of the SDGs – perhaps more than any other sector.

Anaerobic digestion (AD) is a natural process in which microbes digest organic material in sealed containers, producing biogas which can be used for cooking, heating, cooling, and electricity production or upgraded and used for vehicle fuel or gas-grid injection. This can be done on a micro scale (for buildings or small communities) and on a macro scale (for cities). Biogas can also be naturally occuring, rather than produced in digesters, such as in Lake Kivu in Africa and in mines.

How biogas is involved in many different parts of the economy/environment

Biodegradable wastes are ubiquitous: they derive from multitudes of human social and economic activities. Such wastes can be found in: food waste from homes, restaurants, shops, and caterers; industrial production; agricultural wastes from animal husbandry, crop cultivation, and food production (such as dairy); and sewage sludge from wastewater treatment, both at city and local community level. All of these wastes emit methane but can be collected and taken to AD plants to produce renewable heat and energy, either for local use or for distribution into wider grids.

WHICH SDG CHALLENGES CAN BIOGAS HELP SOLVE?

We estimate that biogas can help solve challenges related to nine of the 17 SDGs. These are :

Sustainable Development Goal	Contribution of AD
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	• Restoring soils through the recycling of nutrients, organic matter, and carbon • Increasing crop yields through use of nutrient-rich digestate biofertiliser • Recirculating phosphorus, which is essential for the growth of plants but limited in supply
Goal 3: Ensure healthy lives and promote well-being for all at all ages	• Reducing indoor air pollution by substituting solid biomass-based domestic fuels with biogas • Treating and recycling sewage and organic wastes to reduce odours and the spread of diseases
Goal 5: Achieve gender equality and empower all women and girls	• Reducing the burden of collecting firewood to improve the quality of women's and children's lives, reducing household labour in cooking
Goal 6: Ensure availability and sustainable management of water and sanitation for all	• Providing decentralised, local treatment of bio-solids in remote and rural communities to reduce odours and the spread of disease • Stabilising and recycling biosolids through AD to allow them to be applied back to land • Reducing the carbon loading of wastewater to reduce impact on water bodies
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all	• Reducing dependence on fossil-fuel-based energy sources by replacing with biogas • Capturing waste heat from co-generating units linked to biogas plants • Utilising locally produced wastes and crops to generate energy for rural and remote communities • Storing biogas to produce energy when required
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	• Improving the self-sufficiency and sustainability of industries by extracting the energy from their own effluents and using it for the self-generation of electricity and/or heat • Collaboration between industries and agriculture for mutual benefit • Generating short-term construction employment and long-term equipment manufacturing and maintenance employment • Encouraging growth of micro-enterprises by providing reliable electricity that can be stored and used when needed, i.e. baseload energy
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable	• Preventing spread of diseases through collection and proper management of organic waste • Improving sanitation and hygiene through decentralised and local treatment of biosolids • Stabilising the sludge from wastewater treatment to protect the marine environment and urban air quality • Improving urban air quality by susbtituting fossil fuel with biomethane in vehicles • Improving urban air quality by substituting solid fuel for domestic cooking and heating with biogas • Reducing greenhouse gas emissions by using biogas-based renewable energy in buildings, homes and industry
Goal 13: Take urgent action to combat climate change and its impacts	• Reducing carbon dioxide emissions by replacing fossil-fuel-based energy sources with biogas and commercial fertilisers with digestate biofertiliser • Reduction of methane and nitrous oxide emissions from livestock manures • Reduction of methane and generation of renewable energy from food and other organic wastes • Capturing emissions from landfills • Reducing deforestation by replacing solid-biomass-based domestic fuels with biogas
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	• Recirculating nutrients and organic matter in organic wastes through AD and returning them to the soil in the form of digestate biofertiliser • Substituting firewood with biogas as a domestic fuel, reducing deforestation

AT A GLANCE: THE BIOGAS INDUSTRY CAN HELP ACHIEVE NINE OF THE SDGS INCLUDING GENERATING CLEAN ENERGY, MITIGATING THE EFFECTS OF CLIMATE CHANGE, REDUCING POVERTY AND DELIVERING SOCIAL JUSTICE.

How biogas reduces climate changing emissions (see also the WBA factsheet on biogas and climate change)

UNFCCC COP21 commitments: The greenhouse gas (GHG) emission reduction benefits of anaerobic digestion can play a role in achieving the Paris Accord targets by abating emissions related to energy production, agriculture, and waste management.

Fossil fuel substitution and CO_2 emissions reduction: Renewable energy derived from biogas produced from organic wastes and agricultural by-products not only substitutes fossil fuels but also reduces carbon dioxide emissions by completing the carbon cycle.

Methane and nitrous oxide from livestock manures: Treating livestock manures through anaerobic digestion reduces the formation of nitrous oxide and captures the methane as biogas, which can be used for energy generation. This has the multiple benefits of reduced GHG emissions from farms and energy generation, the substitution of fossil fuels, and production of nutrient-rich digestate biofertiliser.

Emissions from landfills: Landfills globally still account for 799 million tonnes CO_2e emissions annually (US EPA: 2012). Extraction of landfill gas from operating and closed landfills and diversion of additional organic waste to anaerobic digestion will lead to reduced emissions. Biogas from decomposing food and other organic wastes can be captured and harnessed to provide renewable energy.

What policies are needed to create a biogas industry?

There are several policies which have been adopted in countries where biogas production has developed. These can be adapted to local conditions.

- Promote the prevention and then the separate collection of food wastes from businesses and households and their delivery to anaerobic digestion treatment plants. This may require statutory obligations on households and businesses.
- Make landfills progressively more costly in order to drive waste to be recycled instead. Use the landfill taxes to promote separate collection of waste and to build treatment plants.
- Enable sale of renewable energy into national grids by obliging power companies to purchase renewable energy produced from biogas (whether as gas or electricity).
- Provide farmers with financial and technical assistance to enable investment into treating animal and farm wastes on site, using the energy for farm requirements. Subsidies will only be required until there is a sufficiently high carbon price.
- Promote the installation of on-site anaerobic digesters where sewage is treated and use of the energy produced for the sewage facility or local community.

WBA can assist governments and cities in the development of these policies and assist with the drafting of funding proposals to support policies.

What can you do now to make a difference?

a. As a policy maker you can *initiate a discussion with stakeholders* on implementing the five policy priorities listed above. Comprehensive support from wide sectors of the economy and society will be needed to implement policy changes. WBA can facilitate the discussion around changes to energy and waste-management policies.

b. Analyse *which policies are achievable in what time frame* in your specific context. Small steps forward are better if they are all you can achieve, rather than attempting a major reform that is widely opposed. WBA can help you understand and implement policies.

c. *Encourage understanding* of how other countries and cities have succeeded in adopting policies. WBA can help you with arranging site visits, meeting officials from other countries, and exchanging experiences.

d. As a business, *sustainable practices should be made a core value.* Biogas adoption may help reduce GHG emissions in your operations, reduce the treatment costs of biodegradable wastes, and create energy and heat for your plant needs.

For more information on the SDGs and biogas, please read our comprehensive report available for free at **www.worldbiogasassociation.org/wba-report/**.

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