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Review

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Anaerobic digestion for bioenergy production: global status, environmental and techno-economic implications, and government policies

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Abstract:

Anaerobic digestion (AD) is a mature technology that can transform organic matter into a bioenergy source - biogas (composed mainly of methane and carbon dioxide), while stabilizing waste. AD implementation around the world varies significantly, from small-scale household digesters in developing countries to large farm-scale or centralized digesters in developed countries. These differences in the implementation of AD technology are due to a complex set of conditions, including economic and environmental implications of the AD technology, and stimulus provided by a variety of policies and incentives related to agricultural systems, waste management, and renewable energy production. This review explores the current status of the AD technology worldwide and some of the environmental, economic and policy-related drivers that have shaped the implementation of this technology. The findings show that the regulations and incentives have been the primary factor influencing the steady growth of this technology, in both developing and developed countries.

Keywords: Anaerobic digestion, policy, incentives, life cycle assessment, techno-economic analysis

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