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The sustainability of Anaerobic Digestion plants: a win-win strategy for public and private bodies

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Abstract: Energy production from the anaerobic digestion of organic waste is widely recognized as a social and environmental opportunity, since it allows reducing waste disposal and making waste management economically profitable. However, profitability of these plants is strongly affected by the quantity and the quality of wastes, as well as by the availability of local subsidies. The key role of incentive policies in the economic success of investments in biomass to energy plants is highly recognised and has led EU governments to promote the deployment of these plants. Incentive policies adopted in EU countries differ significantly. In this paper, an evaluation model based on cost-benefit analysis is developed in order to identify the production-based incentive rates making investments in anaerobic digestion plant economically feasible without reducing social and environmental positive impacts. The model has been applied to the case of energy production plants from anaerobic digestion of cattle manure. In order to investigate the influence of the plant size on the investment profitability, different waste collection areas have been considered. Environmental performances of the plants have been evaluated by adopting a life cycle assessment approach. Results obtained confirm the environmental benefits achievable through the energy production from the anaerobic digestion of cattle manure. However, the current production-based incentive rates provided in most EU Countries revealed an inadequate balance between private and public interest, since they make profitable the investments only in case of small plants.

Keywords: Anaerobic digestion, cattle manure, LCA, incentive policy.

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