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## Water-energy-food nexus: Biogas background and perspectives for Brazil and the United States by 2050

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Increasing population and industrialization are augmenting the demand for water, energy and food, especially in developing countries. In this context, the analysis of these three elements has gained increasing attention globally in research, business and policy spheres. This article will provide an analysis of this nexus for Brazil and the United States, using current and predicted scenario for 2050. Contemplating the relevance of renewable sources of energy to overcome these challenges and diversify the energy matrix in both countries, the study will also present the biogas potential for these countries, including best practices and case studies implemented in this area. Both countries have similar scenarios regarding the opportunities for use of this energy source are among the five countries with the largest population and territorial extent, leaders in food production, large energy consumers and are among the countries with greater availability of water in the world. It will be concluded that biogas can provide multiple economic, environmental and social benefits, such as electrical, thermal and vehicular energy, high-quality biofertilizer, reduction of odor and pathogenic vectors in the farms, decrease of ground and surface water pollution, promotion of new income for the farmers, reduction the greenhouse gases emissions, among others.

### Biography

Janaina Camile Pasqual has completed her Masters in Urban Management and Biogas Issues and currently pursuing PhD at the Pontifical Catholic University of Parana, in partnership with the University of Arizona, USA. She is a Consultant of the International Center of Renewable Energies/Biogas and International Center of Hydroinformatics, Brazil. She has published more than 10 papers in reputed journals and has participated international committees related to water-energy-nexus and biogas.

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