

Paper Session

[G01] Endogenous and exogenous influences on the evolution of Brazilian Biogas Innovation System

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Biogas technologies in Brazil have both a huge potential and a long history of development and diffusion that dates back from the late 1970s. Since then, biogas technologies have experienced different cycles of hypes and disappointments influenced by international, national, local and sectoral factors. Surprisingly, few studies have examined biogas in Brazil as a technological field in order to understand the diffusion of biogas technologies subjected to these contexts. Accordingly, the main goal of this research is to review the evolution of biogas technological field in Brazil analysing both the characteristics of biogas activities and the contextual influences. For that purpose, this research adapted the Technological Innovation System (TIS) framework in order to examine endogenous (biogas-specific) and exogenous (context-related) conditions and their interplay. Data was collected by performing an event history analysis from 1979 to 2016 along with 24 in depth expert interviews. The main outcomes highlight two major points. First, empirically, this research identified the mechanisms that enabled or constrained the diffusion of biogas technologies. The cycle of convergence of contextual problems, triggered by exogenous pressures, led to resource allocation, experimentation and increasing legitimacy was the main positive cycle of interactions for biogas technologies. The last phase has shown the higher relevance of learning mechanisms based on the production and diffusion of knowledge about biogas technologies. Moreover, sectoral institutions and actors were the main structural links responsible to translate/align national and international events to the regional and local conditions. What is more, they are not evenly distributed throughout the biogas value chain, which created differences among upstream and downstream pressures. Second, analytically, this work identified three types of contextual influences: direct influences by structural couplings, indirect influences by external links and indirect influences by interaction of contextual structures.
