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Grounded reality meets machine learning: A deep-narrative analysis framework for energy policy research

EPRG Working Paper 2019

Cambridge Working Paper in Economics 2062

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This paper forwards a novel textual data analysis framework for improving the robustness of narrative-driven results in energy policymaking. The framework has three core components that uses public narratives or stories as the primary data corpus. The second layer is the use of text mining tools like AI-based topic modelling to generate a probability distribution function of the primary dataset into word-word, word-topic and topic-topic categories. The third layer is the reconstruction of the derived topics into meaning arguments or evidences that can support decision-making using grounded theory. The proposed deep-narrative analysis framework is presented in a nested arrangement to improve the synergy between each method. We verify the theoretical and epistemological fit of the proposed nested methodology through a meta-analysis of a state-of-the-art bibliographic database on energy policy and computational social science. A proof-of-concept is also presented by investigating narratives in poverty and energy services in slum rehabilitation housing in Mumbai, India. These narratives were then used to derive policy focus points for energy sustainability in the study area. We find that the nested application contributes to the literature gap on the need for multidisciplinary polyvalence methodologies that can systematically include qualitative evidence into energy policymaking.

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Publication July 2020
Financial Support Bill and Melinda Gates Foundation, OPP1144