Assessing the impact of large-scale community investments in Developing Countries: application of a Multi-regional Input-Output model to a case study in Congo

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The interest of the international community for sustainable development and the multiple interconnections among energy, environment and society has widely increased. As highlighted by interlinkagies of the 17 SDGâ€™s of the 2030 Agenda, energy has started to be considered as a key means for assuring sustainable and equitable access to basic needs and for supporting local enterprises and creating new jobs opportunities. Within this framework, the private sector may initiate effective actions of technological cooperation with an impact on the different dimensions of development: environmental, social and economic. This calls for a proper evaluation approach able to capture the complexity of current challenges.
In this paper, the application of a Multi-Regional Input-Output (MRIO) model coupled with an econometric production function is proposed to assess the prospected economic and environmental impact caused by community investments in the energy field. This approach provides a multi-dimensional complexity of results: economic and environmental impact can be distinguished by country, sector and type. More specifically, Open and Closed Multi-Regional Input-Output models have been jointly adopted to distinguish between direct, indirect and induced impact.
The model is applied to a case study in Congo, consisting in the deployment and operation of a large-scale power plant, which contributes to the generation of about 70% of the electricity production in the country. Macroeconomic and environmental data are retrieved from the EORA Multi Regional Input-Output database, while data required to calibrate the econometric production function are retrieved from World Bank database. Results shows that almost 50% of the economic impact is generated in Congo of which 28% is directly and 72% is indirectly caused by the energy project. The induced impact in Congo is negligible while counts for the 85% of the impact generated abroad. Same kind of results but different in magnitude are obtained for environmental indicators.