

Analysis of Socio-economic Effects Induced by Local Resources Utilization: A Case of Utilization of Sugarcane Residue in Tanegashima, Japan

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Abstract – Description in 250-300 words in one paragraph

Exploitation and utilization of renewable energy resources should improve the sustainability of the community which employs the system. Here, the “sustainability” requires considerations not only on the environment, but also on socio-economy, for example increase of local employment, the progress of regional economic circulation, reduction of capital outflows. Many local communities have been incentivized to introduce renewable energy because of the limitation of their power grids and logistics of fuels, and abundant natural resources. However, the existing analyses of socio-economic effects induced by renewable energy utilization have rarely been supporting decisions on adoption of the regional energy system, because of lack of comprehensive information on those key indices. This study examines socio-economic effects induced by introduction of renewable energy utilization systems to a local community, by applying input-output analysis supported by existing simulation models on their energy technology options. Tanegashima, the focal region studied, is a remote and southwest island of Japan with 30,000 residents, sugarcane cultivation and raw sugar extraction. In this study, the regional Input-Output table is constructed and tailored to reflect economic activities and renewable energy on Tanegashima. We analyze the effects of renewable energy; electricity, ethanol, light oil, derived from sugar mill residues, wooden-chip and waste cooking oil. From the results, introduction of the system has significant benefit on Tanegashima in terms of increase in the internal production and progress of economic circulation. Capital outflows by the purchase of fossil resources are noticeably decreased, while those by the purchase of raw materials for renewable energy production are increased. With the developed tool, it is now possible to describe and diagnose the balance of socioeconomic and environmental aspects of the proposed systems. Using this tool, we aim to study in the future, the methods to generate prescriptions for sustainability of local communities.

Keywords: 4-8 words

local energy and economic sustainability; circular economy; sugarcane; wooden-chip; regional input-output analysis