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## Assessing the Impact of Land Use Policy on Urban-rural Sustainability Using the Fopia Approach in Yogyakarta, Indonesia

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### Abstract

This study presents the results of a sustainability impact assessment (SIA) of policy induced land use changes in Yogyakarta, Indonesia. The regional problems at place are mainly the rapid expansions of urban areas due to high population pressure and the conversion of paddy fields and forests into settlements. The objective of this study was to assess, in an integrated way, the impacts of two alternative land use policies on social, economic and environmental Land Use Functions (LUFs) in Yogyakarta. For this purpose, the following scenarios were developed for the SIA: a forest protection scenario (S1), a paddy field conservation scenario (S2) and a counterfactual (no policy) scenario of ‘Business as Usual’ (BAU). The framework for Participatory Impact Assessment (FoPIA) was applied to conduct an expert-based impact assessment. For the specification of the regional sustainability context, a set of nine regional LUFs and associated indicators were identified and developed including three social (provision of work, food security, quality of life), three economic (land-based production, non-land-based production, infrastructure), and three environmental (provision of biotic resources, provision of abiotic resources, maintenance of ecosystem processes) sustainability criteria. The resulting scenario impacts of the assessment differed considerably with mainly positive impacts of the S1 and S2 scenarios on seven of nine LUFs and negative impacts of the BAU scenario on six LUFs. The overall perception of the participation-based FoPIA method by the regional stakeholders was positive. We therefore conclude that this method contributes to an enhanced regional understanding of policy effects and sustainability, particularly in data-poor environments.

**Keywords:** Land use change, land use functions, stakeholder participation, sustainability impact assessment