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## Sustainability transitions in developing countries: Stocktaking, new contributions and a research agenda

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### ABSTRACT

An increasing number of studies have analysed the scope for, and the barriers to, transitions toward sustainability in the context of developing countries building on analytical perspectives from the sustainability transitions literature. This paper introduces a special issue on sustainability transitions in developing countries, which takes stock of this emerging field of research and presents new empirical research that contributes to further advancement of our understanding of the conditions in which sustainability transitions are likely to take place in developing countries and what is involved in these transformative processes. This introductory paper presents the five papers contained in the special issue. The first paper comprises a review of the existing literature on the subject, and the other four papers present new empirical research. The key findings of the papers are discussed in relation to previous research in the field specifically related to four crosscutting themes: (i) global-local linkages and external dependencies; (ii) stability and non-stability of regimes; (iii) undemocratic and non-egalitarian nature of regimes; and (iv) nurturing the development of niches versus the execution of individual projects. The introductory paper concludes by presenting a research agenda, which aims to provide promising avenues for future research on sustainability transitions in developing countries.

### 1. Introduction

The idea for this special issue originated at the International Sustainability Transitions Conference in 2015 at SPRU, Sussex University, where the guest editors of the special issue convened a special session on sustainability transitions in developing countries. This session attracted much interest from participants at the conference and it became clear that within the sustainability transitions community a number of researchers were engaged in research activities in developing countries with a basis in theories from the sustainability transitions literature. This interest has continued to increase since then with the emergence of various fora in the transitions community dedicated to research on sustainability transitions in developing countries and special sessions at subsequent IST conferences.

With this special issue we aim to provide some consolidation of this emerging field of research, by taking stock of key findings from previous studies, presenting new empirical research that contributes to further advancement of our understanding of sustainability transitions in developing countries, and stimulating interest and critical discussion among researchers engaged in research projects on sustainability transitions in the developing world. The findings presented in the papers contained in this special issue are also of high practical relevance for stakeholders involved in the practicalities and problem-solving aspects of sustainability transitions in developing countries, including policy makers, government agencies, planners, donors, private businesses and industry and NGOs.

In this introductory paper, we start by highlighting some of the main structural differences between developed countries and developing countries, which may influence the manner in which transitions toward sustainability unfold in the latter as opposed to the former. Subsequently, the key findings of the individual papers compiled in this special issue are presented and discussed in relation to previous studies in this field. Finally, we present a research agenda for the field of transition studies in the context of developing countries.

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## 2. Sustainability transitions in developing countries

While the notion of “developing countries” is contested both theoretically and politically, not least due to its implicit normative assumption of these countries being in a state of under-development, the existence of a pre-determined trajectory of progress, and a definite meaning of progress itself (Escobar, 1995), we use the concept here to emphasise that in spite of large differences across this broad category, there are some common social, cultural, economic and political conditions in these countries, which differentiate them from so-called “developed countries”.<sup>1</sup> These similar conditions include for example a weaker state apparatus, less efficient bureaucracies, higher levels of political and economic instability, less transparency in legal proceedings and enforcement of legal frameworks and relatively high levels of economic and social inequality (Lachman, 2012; Ramos-Mejía, 2018). Furthermore, developing countries typically rely on foreign sources of technology, knowledge and financial resources to a greater extent than developed countries – with external donor interventions playing a role especially in the least developed ones – and they are typically characterised by less advanced industrial processes, a dominance of low-tech (primary) sectors, reliance on extended family ties and clientelism, and employment in the informal sector (Viotti, 2002; Bell, 2007).

Given these cultural and structural differences between developing and developed countries, the ways in which transitions toward sustainability take place in the context of low-income developing countries are likely to differ from those in their western high-income, industrialized counterparts (Lundvall et al., 2009). Accordingly, the study of transition issues in a developing-country context is unlikely to entail a straightforward task of transferring theoretical and conceptual frameworks from their place of origin to a significantly different empirical context (Verbong et al., 2010; Lachman, 2012). For example, the key concept of ‘innovation’, which features so prominently in the sustainability transitions literature, may need to be understood differently from the conventional western view, which revolves around the development of radically new technologies mainly based on R&D. Indeed, in the context of developing countries, innovation may often include less formalised ‘shop-floor’ based activities as has been expressed in concepts such as ‘frugal innovation’, ‘grassroots innovation’ and ‘inclusive innovation’, which utilize local assets and involve indigenous knowledge systems located outside R&D laboratories (Arocena and Sutz, 2010; Foster and Heeks, 2013; Fressoli et al., 2014; Knorringer et al., 2016; Pansera and Sarkar, 2016; Swaans et al., 2014; Hermans et al., 2016). Consequently, sustainability transitions in developing countries need to be analysed, managed and supported with a greater level of critical reflectiveness than has been the case hitherto. This special issue contributes to providing such reflections by presenting analyses on how specific conditions in developing country contexts influence the pathways of sustainability transitions in developing countries.

## 3. Crosscutting themes addressed in this special issue

The papers contained in this special issue focus on attempts to foster transitions toward sustainability across a variety of empirical contexts, ranging from water harvesting in Jordan to *Jatropha*-based biofuel in Ghana and urban sanitation in Kenya. The papers use different theoretical lenses applied in the sustainability transitions literature, such as the multi-level perspective on socio-technical transitions (MLP), the strategic niche management perspective (SNM), the transition management perspective (TM) and the technological innovation systems perspective (TIS) (see Markard et al., 2012), but also make use of literatures on institutional theory (Wood and Gough, 2006), participation and community development (Uphoff et al., 1998), and global value chains (GVC) (Gereffi et al., 2005). Key characteristics of the papers are presented in Table 1, and these will be discussed in relation to how they build on and contribute to advancement of the existing understanding of how transitions toward sustainability are likely to take place in developing countries, and conditions that promote and constrain them. The following discussion is organised around four themes addressed in the papers: (1) global-local linkages and external dependencies, (2) stability and non-stability of regimes, (3) undemocratic and non-egalitarian nature of regimes, and (4) nurturing the development of niches versus the execution of individual projects.

### 3.1. Global-local linkages and external dependencies

The conventional approach in using the MLP in a developing country context involves depicting regimes with national features, landscape dynamics with global features, and niches with sub-national or local features (see e.g. Hansen and Nygaard, 2014). However, as has been pointed out previously, regimes do not necessarily remain confined within national boundaries, but can span local, regional and global spatial scales through actor relations and institutions that may either enforce or destabilise them (Raven et al., 2012). Similarly, the development of niches is not necessarily confined to unfolding exclusively at the local or sub-national level, but can also reach a global scale (Rock et al., 2009; Coenen and Truffer, 2012; Fontes et al., 2016).

The realisation of this international ‘embeddedness’ of regimes and niches has been pointed out in studies undertaken in developing countries, such as Berkhout et al. (2011:378), who found that “*sustainability experiments and niches are often set within global flows of knowledge and technology*”. Similarly, Verbong et al. (2010:280) stressed that in India, “*the development of the gasification niche has taken place within a more international context*”, in which “*Indian companies created links not only to local or national networks but also to more global networks*”. Further, Wieczorek et al. (2015) mapped the presence of transnational linkages in niche-level experiments in the solar PV technology sector in India while Sengers and Raven (2015) showed the significance of international linkages in mobility policies in shaping the development and diffusion of bus rapid transfer systems from Brazil to the rest of the world. Finally, Manning and Reinecke (2016) highlight the importance of transnational standard setters in influencing local transitions. While it is evident from these studies that niches and regimes are structurally situated within various kinds of external dependencies and transnational linkages, it is less clear how these linkages operate and function with regard to influencing key niche and regime-level processes locally. A number of papers in this special issue contribute to shedding new light on this issue.

Firstly, Nygaard and Bolwig (2018) show the significance of foreign investors and multinational companies in the development of a local niche for biofuel in Ghana based on the utilisation of *Jatropha*. Making use of the global value chain perspective, they draw attention to how and why

<sup>1</sup> Some authors use the notion ‘Global South’ or ‘low income countries’ instead of ‘developing countries’, but in this editorial we decided to use the term developing countries because of its more widespread use. Like the category Global South, the category of developing countries has never been clearly defined, and changes over time. The World Bank uses the term developing countries to refer to low and medium income countries, with reference to per capita GNI, and the OECD uses a similar but slightly different categorization. A subcategory is the Least Developed Countries, which are defined by the United Nations as the countries with the lowest levels of per capita income and socio-economic development (<http://www.oecd.org/dac/stats/historyofdaclistsofrecipientcountries.htm>). From the above it is evident that there are large differences across developing countries and across developed countries, which means that the categorization should be understood as a continuum.

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