Introduction

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Biographical notes: Pradip Swarnakar is Associate Professor of Sociology at ABV-Indian Institute of Information Technology and Management Gwalior. He served as lead coordinator of the International Conference on Environment, Technology and Sustainable Development: Promises and Challenges in the 21st Century, 2–4 March, 2014, Gwalior, India. His research interests include environmental sociology, e-governance and social media. He is presently working on climate change policy networks of India.

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This issue of *International Journal of Innovation and Sustainable Development* includes revised versions of six papers initially presented at ETSD2014, the International Conference on Environment, Technology and Sustainable Development: Promises and Challenges in the 21st Century, from 2–4 March, 2014, at ABV-Indian Institute of Information Technology and Management in Gwalior, India.

Organised by ABV-IIITM Gwalior in association with the Institute of Social and Economic Change, Bangalore, India and the College of Arts & Sciences, University of San Francisco, USA, with support from the Environment and Society research committee (RC24) of the International Sociological Association and the Indian Council of Social Science Research, ETSD2014 attracted nearly 400 abstract submissions. The 96 accepted papers were organised into the following themes: science and technology, climate change, energy, water, urban ecology and environmental governance.

332 P. Swarnakar and S. Zavestoski

The conference attracted a significant number of early-career scholars, as well as a range of senior scholars from all corners of India and from different countries around the world including USA, UK, Netherlands, Germany, France, Nigeria, Bangladesh and Nepal. The conference was also unique in its bringing together of academia, industry, and even the arts.

For this special issue, we have selected six papers that speak to the mediating factors when examining the relationship between technology and environment. Rather than the simplistic notion that our technology mediates the relationship between humans and the environment, these papers reveal how perceptions, policies, institutions, and other social factors mediate the processes through which humans produce and use technologies. We have organised the papers so that they move from the most pragmatic illustrations of the mediating factors between humans and technology to the most conceptual.

The first two selections demonstrate the role of mediating factors between humans and technology by examining one of the most fundamental ways in which our technology places us into relationship with the environment: agricultural technology. In 'Environmental sustainability, sustainable livelihood and poverty reduction: the case for tribal agricultural technology', Ramya Ranjan Patel explores the potential of low-impact tribal agricultural technologies and practices to drive sustainable development in Odisha, one of India's poorest states. Unlikely to benefit from the mineral resources in their state, Patel argues that tribal people of Odisha have a better chance at sustainable development if the government intervenes to support the marketing and distribution of sustainable food. Independent of the success of their products in external markets, tribal agricultural technologies have the direct effect of improving food security, and hence levels of development, for those living well below the human development index.

Sambit Mallick, in 'The orbit of commodified technoscience: innovations in agricultural technology in India', traces the historical trajectory of agricultural technologies in India, especially those supported by the government. While Mallick acknowledges that some of these strategies have contributed to improvements in agricultural productivity, the institutional and organisational frameworks within which they were conceived and implemented have had unintended consequences like the exclusion of some regions and marginalisation of knowledges outside the realm of the government-sanctioned agricultural technologies. Consequently, contends Mallick, new technologies like agricultural biotechnologies must be situated within institutional contexts that can promote more inclusive and user-centred innovations in agriculture in all corners of India.

Introduction of biotechnology into modern agricultural practices reminds us of the evolving nature of the risk society. Thounaojam Somokanta, in 'Sociological understanding of risks: an empirical case study of Tipaimukh dam in Manipur, India', applies Beck's classic risk society perspective to the case of Tipaimukh Dam in Manipur, India. Somokanta explores the relevance of Beck's notion of sub-politics for understanding resistance to the dam and to link technology, risk perception and social movements to the human relationship to the environment.

The environmental movement is one of the most significant institutions through which technologies, and their potential and perils vis a vis sustainable development, are mediated. In 'Environmental movements and social networking sites in Bangladesh', Shudipta Sharma demonstrates how the environmental movement in Bangladesh is using the technology of social networking sites, in this case to oppose the Rampal Power Plant project in Bangladesh. Sharma illustrates through a multi-level, multi-methods approach

Introduction

the instrumental role of social networking sites in the movement's campaign against the coal-fired power plant. Most interestingly, Sharma's study also concludes that social networking sites have the potential to mobilise otherwise non-partisan people around a cause.

Ylä-Antilla and Kukkonen, in 'How arguments are justified in the media debate on climate change in the USA and France', examine the way in which communications technology mediates perceptions of the human-environment relationship, in particular with respect to the framing of media messages about climate change. Comparing media coverage in France and the USA, Ylä-Antilla and Kukkonen find that climate change is more often discussed in terms of justice, democracy and legal regulation in France, with more focus on technological and scientific arguments. Monetary value, on the other hand, proves to be a more common point of focus, especially in terms of justifying possible climate policy action, in the USA.

The final selection, 'Enhancing environmental justice research and praxis: the inclusion of human security, resilience and vulnerabilities literature', by Beth Schaefer Caniglia, Beatrice Frank, Daisha Delano and Bridget Kerner, demonstrates the importance of our conceptualisations and theories. Caniglia et al. argue that environmental justice as a scholarly field has been limited in its ability to address problems of environmental inequality and injustice. The authors highlight the clash of ideas, as well as the potential for synergy, among the fields of environmental justice, human security, coupled human and natural systems and resilience. Their conclusion is that the social dimensions of environmental risks and hazards, especially social inequality, can be better approached through the cross-fertilisation of these four fields of study.

Collectively, these papers capture an important thread present across many of the papers presented at ETSD2014: Innovation in pursuit of the goal of sustainability must occur not just in technologies themselves, but also in the perceptions, policies, institutions, and other social factors that mediate the processes through which humans produce and use technologies. We feel that this point will be appreciated by the readers of the *International Journal of Innovation and Sustainable Development* as it challenges us to think about sustainable development in multi-layered and multi-disciplinary ways.