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"Dynamic Sustainabilities: Technology, Environment, Social Justice" by Melissa Leach, Ian Scoones and Andy Stirling, 2010, Earthscan Books. ISBN 9781849710930

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Credits

This briefing was written by Melissa Leach and edited by Nathan Oxley.

About the STEPS Centre

The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub uniting development studies with science and technology studies. We aim to develop a new approach to understanding, action and communication on sustainability and development in an era of unprecedented dynamic change. The STEPS Centre is based at the Institute of Development Studies and SPRU Science and Technology Policy Research at the University of Sussex with a network of partners in Asia, Africa and Latin America and is funded by the Economic and Social Research Council. Find out more: www.steps-centre.org

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The Pathways Approach of the STEPS Centre

From *Dynamic Sustainabilities: Technology, Environment, Social Justice* part of the *Pathways to Sustainability* book series

STEPS briefing

Rapid environmental and social changes – such as climate change, population explosion, urbanisation and globalised economics – are posing urgent practical, moral and political challenges across the globe. Consequently the core development challenges of alleviating poverty and inequity are increasingly complex.

How might pathways to sustainability – linking environmental integrity with social justice – be built in today's complex, dynamic world? How might African farmers meet their needs in the context of climate change, for instance? How can we understand and address emergent epidemic diseases? And how might poor people access water in the expanding fringes of Asia's megacities?



Growing vegetables in the shadow of Jakarta's central business district. Photo: Chris Stowers / Panos

Responding to sustainability challenges

These are some of the core questions STEPS Centre members and partners in Africa, Asia and Latin America have addressed through research and policy engagements across food and agriculture, health and disease, and water and sanitation. Throughout, we have developed and applied a novel 'pathways approach' as a guide to thinking and action around emerging sustainability challenges.

Current policy prescriptions often prove environmentally ineffective, politically infeasible or impact negatively on the poor. Contradictions exist between the dynamism of the real world and policies based on greater stability and certainty; between people's diverse perspectives and priorities, and singular views of progress; and between the diverse contexts of people's lives and livelihoods, and the roll-out of standardised solutions.

Our pathways approach seeks to overcome these contradictions. It draws together perspectives in science and technology studies, development studies and a variety of other fields – from complexity and ecological resilience studies to anthropology, politics and governance. It integrates positivist and constructivist understandings of social, technological and ecological dynamics, identifying how governance processes and appraisal designs can steer these towards pathways to sustainability.

Sustainability debates often involve managerial, bureaucratic attempts to 'solve' complex problems. The STEPS Centre's pathways approach re-casts 'sustainability' in far more normative and overtly political terms. What exactly is to be sustained and for whom? How does sustainability link to human well-being, social equity and environmental integrity?

Our particular concern is reducing poverty and social injustice – as defined by and for particular people, contexts and settings. Thus there are multiple, contested "sustainabilities" to be defined and deliberated for particular issues and groups.

"Our particular concern is reducing poverty and social injustice"

Systems, framing and narratives

In a complex world it is practically and analytically useful to think in terms of systems, describing how changing, interacting social, technological and environmental elements are configured around a given issue. Pathways are the particular directions in which such systems change over time.

Central to the pathways approach is a recognition of more than one way of 'framing' – understanding and representing – a system, whether by international or national policy actors and networks, different advocacy groups, different researchers or local people. Framing involves choices about which elements of the system to highlight, where its boundaries are and at what scale to view it, as well as subjective and value judgments about it.

Particular system-framings often become part of narratives about a problem or issue: simple stories that suggest how systems should develop to bring about particular outcomes or goals. Paying attention to multiple framings and narratives allows vital opportunities to advance sustainability debates and connect them more firmly with social justice.

Incomplete knowledge and dynamic properties

How is the incomplete knowledge surrounding environment-society issues addressed? Four types of incomplete knowledge occur in varying degrees in different narratives, with very different implications for practical and policy responses:

- risk (where probabilities amongst possible outcomes are known)
- uncertainty (where probabilities cannot be assigned)
- ambiguity (where there are different, incommensurable views of outcomes)
- ignorance (where we don't know what we don't know).

Narratives also prioritise different aspects of systems dynamics and propose different strategies to deal with them. One example is the design of intervention strategies to deal with shocks to a system:

- if a system is assumed to move along an unchanging path, the strategy may be designed to exercise control (**stability**)
- If limits to control are acknowledged, the strategy might be to resist shocks in a more responsive way (**resilience**)
- the system may be subject to stresses and shifts over time. Interventions attempt to control the potential changes (**durability**)
- strategies embrace both the limits to control and an openness to enduring shifts (**robustness**).

For any issue we might therefore identify an array of narratives of which we might ask: Who are the actors? How are the system and goals for change framed? How is incomplete knowledge dealt with? And which dynamic properties and strategies for dealing with them are prioritised?

Challenging dominant pathways

For any given issue it is possible to identify multiple narratives, each suggesting different pathways to different sustainabilities. Some exist, some are hidden and some are only, currently, imagined. Processes of governance mean some narratives and pathways dominate, while others remain marginalised. In many issues, from epidemic outbreaks to water scarcities or food problems, 'lock-in' to a particular powerful narrative and associated pathway can exclude others.

Governance pressures often lead powerful actors and institutions to 'close down' around stability-focused strategies and narratives that emphasise narrow, risk-based notions of incomplete knowledge. They thus commit to pathways that emphasize maintaining stability and control. These become the motorways that channel policies, governance and interventions. Yet they often overrun valuable by-ways and bush paths that respond

better to poorer people's own goals, knowledge and values, and to more dynamic contexts.

We need to 'open up' and make space for more plural and dynamic sustainabilities, challenging dominant narratives and pathways, and highlighting alternatives, including those reflecting the perspectives and priorities of poor and marginalised people in particular settings. But negotiating pathways to sustainability is not just about opening up a plurality of options: it is also about the political process of building pathways which are currently hidden, obscured or suppressed.

Steps towards a new politics for sustainability

Various practical approaches and methods can assist this "opening up". The STEPS Centre's work has elaborated and applied these in relation to a variety of issues and contexts including governance, appraisal methods, political engagement, communications and reflexivity. No single approach is a panacea, and different combinations will be appropriate to different contexts. Given deeply entrenched power and interests, building pathways to sustainability involves formidable challenges. Yet they are vital ones if the pressing problems associated with climate change, energy, pandemic disease, water scarcity, hunger, poverty and inequality are genuinely to be addressed.

Seeds in Africa

The global food crisis has sparked debates which see technology-driven solutions – new seeds, genetic modification and inputs like fertilizer – as the solution to food production problems and hunger. However others suggest pathways based on low external inputs are more ecologically and socially appropriate in complex, diverse and uncertain settings. Yet another narrative focuses on farmers driving research and innovation. Given the dynamics of environmental change, markets and politics, what pathways of innovation and mixes of technology make sense for poorer farmers in diverse African settings?