

# Environmental Change & Maize Innovation in Kenya: Exploring pathways in and out of maize

The STEPS Centre, University of Sussex, UK and ACTS, CABI and Tegemeo, Kenya [www.steps-centre.org](http://www.steps-centre.org)

## 2 The STEPS Pathways Approach

**The term 'pathways', in the STEPS project, is used to refer to the particular directions in which interacting social, technological and environmental systems co-evolve over time.**

A 'pathways' approach recognises that social systems, technologies and their diffusion, as well as environmental conditions, change in interactive dynamic ways. These interactions can be complex, uncertain and non-linear, and create multiple pathways – some threatening poor people's livelihoods, while others create new opportunities for sustainability.

A pathways approach challenges conventional theories that often treat environmental change, socio-economic development and technology separately, and so do not fully address interactions, local specificities or contested values. Consequently, they often lead to policy recommendations that prove technically ineffective, politically infeasible or have adverse impacts on poor people or the environment, or both. In contrast, a pathways approach recognises that there are numerous possible pathways and outcomes, which various groups prioritise in different ways. What actually happens in practice will depend on the socio-economic and institutional arrangements and governance regimes that prevail in particular contexts. It is the interaction of dynamic pathways with institutional, policy and governance arrangements that affect whether sustainable and pro-poor outcomes are achieved or not.

A pathways approach can be explicitly normative. It can focus on reductions in poverty, improved access to water/natural resources and enhanced social justice as defined by/for particular people in diverse settings. Specific narratives are produced by particular actors, and co-construct particular pathways of response. Some are dominant, shaped by powerful institutions and substantial financial backing; these are the 'motorways' that channel

current mainstream environmental and development efforts. These may, however, obscure and overrun alternatives; the smaller by-ways and 'bush paths' that define and respond to different goals, values and forms of knowledge. These pathways may in turn envisage different strategies to deal with dynamics – to control or respond to shocks or stresses. They entail different ways of dealing with incomplete knowledge, highlighting and responding to the different aspects of risk, uncertainty, ambiguity and ignorance in radically different ways.

### WHY IS A PATHWAYS APPROACH USEFUL?

There are four main reasons why a pathways approach is useful for understanding alternative food and agriculture futures in Kenya:

- 1 Dynamics have often been ignored in conventional policy approaches to agricultural science and policy. Those approaches have often been rooted in orthodox equilibrium thinking, underlain by traditional notions of a 'balance' in nature. This tends to centre analyses – and recommendations – on what are assumed to be aggregative, equilibrium patterns and on attempts to control variability, rather than adapt and respond to it. Moreover, conventional methods often assume that models developed for one setting – usually the more controlled, managed contexts favoured by privileged interests – will work in others. By contrast, the pathways approach that we employ recognises the limits to uniform interventions and argues for a more located, context-specific approach.
- 2 Governments and institutions are increasingly preoccupied with risks, and with the insecurities that real and perceived threats seem to pose, such as the threat of climate change and growing water scarcity. Dominant approaches to food and agricultural development in Kenya, however, frequently involve a narrow focus on a particular (highly incomplete) notion of risk. They assume

that complex challenges can be reliably calculated, controlled and managed, and so discount other challenges for which understandings of possible outcomes are more intractable. Some of those involve uncertainty, where the possible outcomes are known but there is no basis for assigning probabilities, and judgement must prevail. Other situations involve ambiguity, where there is disagreement over the nature of the outcomes, or different groups prioritize concerns that are incommensurable. Finally, some social, technological and ecological dynamics involve ignorance, where 'we don't know what we don't know', and the possibility of surprise cannot be discounted. Whereas conventional, expert-led approaches to analysis and policy are well-attuned to handling risk, they are inadequate in the increasingly common situations in which other kinds of incomplete knowledge can occur. A wider appreciation of the dimensions of uncertainty is essential if we are to avoid the dangers of creating illusory, control-based approaches to complex and dynamic water worlds.

- 3 Underlying orthodox approaches are often wider assumptions about what constitutes the goals of 'development' or 'sustainability' in agriculture, often assuming a singular path to 'progress', and a singular, 'objective' view of what the problem might be. Yet different people and groups often understand and evaluate system functions and dynamics in very different ways. They bring diverse kinds of knowledge and experiences to bear – often combining informal and more experiential ways of knowing with the disciplines and procedures associated with formal science. People also value particular goals and outcomes in very different ways. Rather than singular notions of 'progress' in relation to environment, technology or development, we can increasingly recognise situations in which there is a multiplicity of possible goals, which are often contested – a point often obscured by ideas of 'integration', which suggest some consensus or common agreement. Agri-food systems, and their goals and properties, are open to multiple 'framings' – i.e. the particular contextual assumptions, methods, forms of interpretation and values that different groups might bring to a problem, shaping how it is bounded and understood. In many situations, such understandings take the form of diverse narratives or storylines about a given problem: how it has arisen, why it matters and what to do about it. Paying serious attention to multiple, diverse

framings and narratives, creates opportunities to advance debates about sustainability and connect them more firmly with questions of social justice.

- 4 While concepts like 'sustainability' and 'resilience' in agriculture have become mainstream over the last two decades, they have also given rise to a great deal of confusion and fuzziness, in which casual rhetorical usage masks the lack of real change and commitment. In addition, ideas of sustainability and resilience have become co-opted into inappropriately managerial and bureaucratic attempts to 'solve' problems which are actually far more complex and political than often supposed. This has led some to suggest abandoning the terms altogether. However in this study we are seeking to re-cast these notions as more explicitly normative concepts. Rather than treat them in a general, colloquial sense, implying combining parts so that they work together or form a whole (integration) or the maintenance of unspecified features of systems over time (sustainability), we are concerned with their specific political implications. Thus integration relates to a context in which differently empowered actors negotiate and renegotiate roles and rights to resources to achieve effective, equitable and efficient agricultural development refers to explicit qualities of human well-being, social equity and environmental integrity, and the particular system qualities that can sustain these. All these goals are context-specific and inevitably contested. This makes it essential to recognise the roles of public deliberation and negotiation – both of the definition of what is to be sustained and of how to get there – in what must be seen as a highly political (rather than technocratic) process.

In short, our project is a response to the pervasive tendency – supported by professional, institutional and political pressures – for powerful actors and institutions to try to 'close down' around particular 'framings', committing to particular pathways that emphasise maintaining stability and control, which often appears to create universalising and generalising approaches. These in turn can obscure or deny the e.g. water and natural resource management. Yet addressing the full implications of dynamics and incomplete knowledge requires 'opening up' to methods and practices that involve flexibility, diversity, adaptation, learning and reflexivity, and an alternative politics of integration and sustainability that highlights and supports those pathways.

#### Get in touch:

STEPS Centre, University of Sussex, Brighton, BN1 9RE, UK  
T +44 (0)1273 915673  
E [steps-centre@qids.ac.uk](mailto:steps-centre@qids.ac.uk) W [www.steps-centre.org](http://www.steps-centre.org)

  
University of Sussex  
SPRU – Science & Technology Policy Research

 IDS Institute of  
Development Studies