



# Transformations to Sustainability

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# Contents

Abstract .....	iv
1 What is Transformation? .....	5
1.1 Structural Approaches.....	5
1.2 Systemic Approaches.....	5
1.3 Enabling Approaches.....	6
2 Complementary Lenses .....	8
3 Practical, Methodological Responses .....	10
4 Towards Emancipatory Transformations to Sustainability.....	12
References.....	13

## Abstract

The Sustainable Development Goals (SDGs) highlight how transformations to sustainable economies and societies are a major global challenge. This Working Paper offers a brief overview of different conceptual approaches to transformation, and outlines a set of practical principles for effective research and action towards sustainability. We review three approaches to transformation, labelled: 'structural', 'systemic' and 'enabling'. We show how different ways of understanding what we mean by transformations can affect what actions follow. But these approaches are not mutually exclusive. We use global examples on low-carbon economy transformations, seed systems, wetland conservation and peri-urban development to show how they can be complementary and reinforcing. We describe three cross-cutting practical challenges and responses that must be taken seriously for effective transformations to sustainability: diverse knowledges, plural actors and the political nature of transformation. Realising the ambitions of the SDGs, we conclude, requires being clear about what we mean by transformation, and recognising these basic methodological principles for action.

# 1 What is Transformation?

In response to the challenge of achieving the SDGs, a wide literature is currently arguing for transformations to sustainability. But what is meant by 'transformation'? The term seems to be everywhere, but it is often not clear what is being transformed, by and for whom, and through what processes.

Reflecting a critical stance concerning the current economic interests and practices producing unsustainable outcomes, some authors point to a need for fundamental structural changes to production and consumption (Scoones *et al.* 2015; Foster *et al.* 2010; D'Alisa *et al.* 2015). Others advocate acceleration of more incremental approaches for managing social, technological and ecological transitions, driven by combinations of technological innovations and progressive policy (O'Brien 2011; Grin *et al.* 2010). Still others argue that change must emerge from below through networks of civic movements and grassroots activity that together, in often unruly ways, construct wider change (Stirling 2015). How do we make sense of these different ways of understanding and enacting transformation? We suggest that contemporary debates about sustainability should draw on deeper, contrasting political traditions, reflecting distinct but overlapping understandings of social processes that generate transformative change (Scoones 2016).

## 1.1 Structural Approaches

Structural approaches focus on changes in perceived underlying foundations of politics, economy and society. Examples include classical political economists like Marx, who argued that revolutionary change was possible at historical moments when relations of labour and capital do not match existing capabilities, techniques and technologies (Marx 1976). Drawing on Marx, Lenin focused on the class tensions wrought by processes of social differentiation in society (Lenin 2008), while Gramsci envisaged changes overturning generally accepted social values and understandings resulting in revolutionary transformation (Gramsci and Smith 1971).

Historical analyses, in turn, reveal how, for example, making the world 'cheap and safe' for capitalism creates nature-society relations that destroy the environment (Patel and Moore 2017), suggesting that major transformations in mass production and systems of consumption are required (O'Connor 1999). Or alternatively, histories highlight how key moments, or conjunctures, are important in generating transformations, as the relationships between economies and societies shift; generating crises and tensions, but also new inspirations and movements for change (Polanyi 2001). Such movements emerging across civil society – for example focusing on environment, gender rights, race – may also, some argue, come together to create a new politics for transformative structural change (Fraser 2013).

Such historical analyses of transformations have a common concern with wider structural change, occurring through radical, sometimes revolutionary, shifts in power and control at key moments. Yet many are rather generic and sweeping. Some emphasise material forces and downplay roles for deliberate human will, while others imply mechanical causal processes. The importance of localised activity, cultural practices or incremental policy action are frequently side-lined by a focus on deeper structural dynamics, driven by historical processes and shifting interests.

## 1.2 Systemic Approaches

Systemic approaches, by contrast, identify particular features of 'systems' (like 'levels' or 'actors') as targets for focused instrumental change, usually initiated by policy. For example, perspectives from social-ecological systems thinking (developed from ecology) (Holling 1973), highlight complex systems properties like resilience (Folke *et al.* 2010), and the potential for dynamic change across scales (Berks

et al. 2003). Socio-technical systems approaches emphasise 'transitions', involving interlinked processes at levels of the 'niche' (localised settings where novelties emerge), the 'regime' (the rules and institutions ordering wider practice) and 'the landscape' (the deeper patterns shaping social and technological change) (Rip and Kemp 1998).

Over the past few decades, the social-ecological systems approach has taken many forms, with attention recently moving towards politics, institutions, social dimensions and local contexts (Brown 2013; Westley *et al.* 2011). Many sophisticated case studies have followed with major implications for understanding system sustainability and transformative change (Olsson *et al.* 2014). These follow broadly similar patterns, in which multiple biophysical and social features are defined for a notionally bounded social-ecological system, with strategic interventions then designed to improve system resilience: the ability to bounce back to a new state following various kinds of perturbation (Folke 2006). Building on this tradition, the concept of 'planetary boundaries' defines global sustainability in relation to nine thresholds (Steffen *et al.* 2015; Rockström *et al.* 2009). Extending this, Raworth introduces a complementary 'social floor', with sustainability seen as the challenge of navigating between planetary boundaries and basic social and economic needs (Raworth 2017).

Socio-technical systems thinking has many similarities, with 'niche' innovations able to reform wider 'regimes', so generating socio-technical transitions (Geels 2005). Knowledge about system properties is seen to offer chances for transitions to be managed in ways directed by policy (Loorbach and Rotmans 2010). Examples include transformations of transport systems, renewable energy innovations and agricultural practices. Over time, this approach has been extended to focus more on the social and political dimensions of change (Keen 2013; Geels 2014), as well as tackling how change is resisted. Explorations of 'niches' as sites for innovation have also been extended beyond technology to social and cultural innovations, and how these combine in movements (Seyfang 2008; Keen 2013). But a focus on particular system categories – like 'actors' and 'levels' – is retained, as is a commitment to policy change through incentives, investments and policy initiatives, usually led by the state, but often in alliance with others, across the private sector and civic groups (Schmitz 2015).

### **1.3 Enabling Approaches**

Enabling approaches draw on both these traditions to highlight the agency and uncertainties inherent in choosing aims and directions for transformative change (O'Brien 2015). By 'agency', we refer to the deliberate exercise of individual or collective will, with enabling approaches focusing especially on the most excluded interests. For example, there are many forms of low-carbon transition proposed, each entailing different values, interests and actions. So how can a policymaker decide, in merely technical ways, which policy is appropriate? Resilience is similarly contested, with system change following shocks and stress affecting different people in different ways, and marginalised groups are typically most vulnerable (Leach *et al.* 2010).

Enabling approaches take a more optimistic and activist stance than some structural or systems approaches, focusing on processes and capacities rather than just outcomes. Beyond major, historically driven structural reconfigurations or system changes, opportunities for transformation are seen in 'murmurations', in ostensibly smaller actions (Stirling 2015). Placing less emphasis on grand theoretical frameworks or pre-decided categories of phenomena, enabling approaches focus on the values, agency, relations and processes that underlie both structures and systems (Hulme 2009). Multiple forms of power are exercised, with power emerging both in structural forces and in collective action (Stirling 2014). Focusing on the scope for political mobilisation and cultural change, an enabling approach envisions a more hopeful, caring, emancipatory stance on transformation; one that is less controlling, violent or fearful. Enabling change will inevitably take different forms in different settings, and requires a wider, unruly and often adversarial politics of citizen mobilisation at its heart (Mouffe 1993; Fraser 2014); a process that is less open to manipulation or management by privileged interests.



A number of perspectives are central to an enabling approach. Network understandings may help address more messy power dynamics, linking emerging new actors, structures and processes that challenge incumbent positions and cultivate new pathways to sustainability. A focus on practice and agency affords more scope for action by citizens, enabling more emancipatory change, whatever the direction (Arora 2017). The politics of knowledge is also stressed, including how future transformations are imagined.

## 2 Complementary Lenses

These are not mutually exclusive approaches: each can offer complementary lenses on transformative change. Two illustrations show how transformations may emerge in different ways.

First, there are *transformations to low-carbon energy systems* that are essential for tackling climate change. These are recognised across many governments, businesses and civil-society organisations across the world. With such transformations central to a number of SDGs, most recognise that climate change requires deep structural shifts away from fossil fuels (Mitchell 2011). A structural approach argues for the reconfiguring of global markets and infrastructures, radically shifting forms of production (Bulkeley *et al.* 2012). Requiring support for alternatives, this fundamentally challenges incumbent interests. Across Europe, structural transformations have emerged through radical shifts in economic conditions, such as dramatic reductions in costs of renewable energy, shifting options in the energy sector. Or, change may result from new political and institutional commitments, with structural shifts away from conventional energy infrastructures, such as is currently being pursued in Germany (Kuzemko *et al.* 2017).

A socio-technical systems approach, by contrast, examines how an incumbent fossil fuel 'regime' can be transformed through substitution by new low-carbon innovations emerging in 'niches' (like wind and solar power), and how these can be nurtured and protected (Smith and Raven 2012). This approach, now evident in many European countries, advocates incremental responses to adapt to changes in an existing energy regime, including shifts in production patterns, consumption behaviour and motivating expectations that allow new, more resilient systems to develop (Folke *et al.* 2005).

An enabling approach to low-carbon transformation, by contrast, focuses on supporting novel pathways for more emergent social, political and cultural changes, often involving the mobilising of grassroots movements and alliances driven by a new ethics of sustainability (Smith *et al.* 2016). Examples can be found in many contributions made by civil society in areas like community-owned wind power, socially useful production or ecological agricultural practices (Smith and Stirling 2018). Here, directions of transformation are deliberated upon more politically, articulating diverse definitions of sustainability and wider social priorities (STEPS Centre 2010).

More control-oriented approaches, aiming at structural and systemic changes, may not engage in this broad politics of deliberation. 'Eco-modernist' visions, for example, highlight rapid technological 'solutions' for climate change, including focusing on nuclear or geo-engineering technologies (Asafu-Adjaye *et al.* 2015). But this technical, control focus can neglect wider implications around uncertainty, justice or cultural fit. By contrast, an enabling approach highlights complementarities between social and environmental aims, with an openness to contestation, dissent and deliberation. This helps to shape actively sustainability transformations that advance social justice as well as ecological integrity.

A second example highlights the importance of *open-source approaches to sustainable food and farming systems*. Transformations in food and farming systems away from input-intensive polluting industrial farming towards more diverse sustainable systems are immensely challenging. This is especially so in settings like Argentina where monolithic systems of intensive commodity crop and animal production are expanding rapidly, destroying existing agricultural system diversity. A pre-condition for agricultural transformation is to protect what remains of agricultural diversity and expand it further, to retain a range of alternative working practices that experiment with less input-intensive and more socially inclusive and productive agricultural systems. Here enabling approaches, such as shifts towards open-source legal rules for seed innovation, or co-operative business models and fair trade regulations, provide ways to protect and foster agricultural diversity. This is because they help open up space for emergent opportunities, enabling new actors to engage and novel practices to develop.

For example, institutional innovations like open-source seed licenses can help to reconfigure the wider political economic structures of food and farming that drive unsustainability. Such licenses are more accessible to economically marginal interests and avoid the exclusions of patent-based rules for governing seed innovation. In Argentina, such new institutional arrangements have helped form bridges between those concerned with adverse effects of strict intellectual property on domestic industries and technological capabilities and those committed to changing seed systems in favour of more marginalised producers (van Zwanenberg forthcoming 2018). In turn, through involving new people, ideas and practices, such change builds awareness of the constraints and opportunities imposed by wider political-economic structures, and makes possible a novel politics of transformation around seed production and associated farming systems.

Structural, systemic and enabling approaches are, thus, complementary. Instrumental systemic change in policies and institutions can be enabling of social movements and novel alliances seeking to address sustainability challenges in diverse ways, and at the same time lay the ground for a reconfiguration of broader structures.

### 3 Practical, Methodological Responses

These examples highlight how transformations to sustainability may draw on complementary approaches – but must be embedded in an open, plural, democratic politics, with central roles not just for policy, but also for mobilisation, critique and political challenge. How, then, to respond practically? What methodologies can help facilitate transformative change? What principles can best realise the complementarities? We suggest three.

The first is '*taking diverse knowledges seriously*'. Different perspectives compete in processes of transformation, rooted in different worldviews, positions and knowledges. It is crucial to appreciate this diversity and not homogenise it into a singular view of progress driven by circumscribed, expert sustainability science. This is not just about respecting 'indigenous' or 'lay' knowledges, but exploring how new hybrid knowledge systems – combining diverse sources of knowledge – can emerge through productive interactions in which research priorities, problem definitions and options are negotiated (Vogel *et al.* 2007).

This is the essence of transdisciplinarity, where multiple forms of expertise co-construct new knowledges that are both broader in what they consider and more open in their implications for change (Marshall 2016). Such processes of co-construction are intensely political, as new ways of thinking about problems and solutions are created together with new ways of tackling problems and acting on the world (Jasanoff 2004). This is more than 'getting people around a table' and engineering consensus in managerial forms of participation. Required, instead, are more equal processes of collaboration and exchange, exploring diverse visions from different standpoints (Pereira *et al.* 2015).

For example, 'transformation-labs' have been used as spaces for dialogue around transformation (Westley *et al.* 2015). These processes help mobilise people and action around a problem, giving opportunities for learning and reflexivity in exploring divergent values and interests (Ely and Marin 2016; Sharpe *et al.* 2016). In addressing the sustainability challenges of the Xochimilco wetland in Mexico City, for instance, a culture of exchange was created that enabled participants to reframe basic challenges. Through participatory activities, the transformation lab embraced an enabling approach, building space for participants to step back from the contentious land use and water quality issues that divided the community, to focus on the values and meanings they collectively wanted to conserve (Charli-Joseph forthcoming 2018). Rather than an exhausting task of fighting forces that the participants felt were beyond participants' control, the problem was recast as one of maintaining the identity and meanings they attached to 'Xochimilco'. By focusing on capacities and agency, both of individual people and different social groups, the process illuminated where power is held and how it can be mobilised to achieve more just and sustainable development pathways.

Beyond appreciation of diverse knowledges, there is a need to '*take plural pathways seriously*'. Different ideas and values of sustainability imply multiple (very material) institutional and infrastructural transformations. No matter how specific the context, there is never only one relevant, viable path. The many indicators and targets of the SDGs usefully delimit a target space. But how to realise the plurality of ways to get there? This will require demanding new forms of deliberation among contending actors. Especially crucial is engagement not just with diverse ideas, but also with the contrasting norms, interests and practices of different actors. In areas like agricultural strategies, energy policy or public health, approaches like multi-criteria mapping and participatory scenario workshops can help collaborative efforts to navigate the implications of different pathways and the contrasting ways to develop any one (Eames and McDowall 2010).

For example, progress in addressing the sustainability challenges of Xochimilco has been stymied by disagreement over the best strategies to pursue. Those who consider themselves native to the

communities that have practised agriculture within this wetland argue that the persistent degradation and urbanisation of this environment, and the decline of traditional farming techniques, the commodification of the ecosystem, suits the interests of the urban elite. They are suspicious of formal development plans and interventions by the city, and advocate local sovereignty and control in the face of external power: in other words, a structural transformation. Alternatively, some focus on technological interventions, arguing that transformation is needed in the ways people live within the system, rather than with the system itself. Thus, they demand institutional and policy support for eco-friendly sanitation technologies and rainwater harvesting, as mechanisms through which the human relationship to the ecosystem can be fundamentally changed. The transformation lab created a space to confront and discuss assumptions about which pathway – of many possibilities – will be most successful for whom, and why.

Our third principle is '*taking politics seriously*', and builds directly on the previous two. It reminds us that, however well assisted by technical expertise, engaging with a diversity of contexts or a plurality of perspectives is always deeply political. Negotiations among contending knowledges and divergent interests across multiple actors inevitably involves politics: confronting disparate views, interests and forms of incumbent power. Wider political institutions, economic systems and technical infrastructures inevitably shape what happens and what might be possible. But taking an enabling approach means a focus on agency and the capacities of actors to open up opportunities, often in surprising alliances.

In the Xochimilco wetland, different perspectives on sustainability again play a key role. Local farmers see degradation of the wetland ecosystem as a result of decline in traditional systems of land use and commodification of the area by urban elites. For them, transformation is about resistance in the face of the power of development plans and elite control. However, an expected change in political leadership and new opportunities presented by Mexico City's embrace of planning for resilience are now providing new platforms for action. The case underscores not only the interlinked nature of sustainability goals, but also that the pathways to these goals will require negotiation, contestation and alliance-building. Taking diverse knowledges – including values and moral positions – seriously helps reframe dominant policy narratives in formal political arenas. This broadens out what is taken into account and opens up possibilities for change: challenging discursive closures that exclude alternative pathways.

Likewise in peri-urban Delhi, India, alliances of citizen environmentalists are addressing toxic pollution using a range of strategies from legal activism to citizen-science monitoring (Priya *et al.* 2017). Strategic alignments between activist interventions and some within the state or business are challenging established pathways and opening up opportunities for change (Marshall *et al.* forthcoming). A focus on social innovation helps move the emphasis away from technological fixes or instrumental policy intervention and towards the realising of entirely new possibilities. This requires thinking deliberately about where the chinks lie in the armour of power, and what the opportunities might be for tactical alliances. It means looking for political openings, in who has the capacity to act and what mobilisations are required to challenge incumbent interests and constraining structures. Alongside more conventional 'academic rigour', then, taking politics seriously also emphasises 'activist rigour', where diverse people and knowledges challenge prevailing power in collective political interventions. Many examples can be found in environmental justice struggles around the world; for instance in the hundreds of cases documented in the global '*EJ-Atlas*' or Latin American '*Grupo Confluencias*' initiatives (Temper *et al.* 2018).

## **4 Towards Emancipatory Transformations to Sustainability**

Achieving the SDGs by 2030 will require massive transformations in economies, societies and politics. If such transformations are to be not only ecologically beneficial, but emancipatory of the most marginalised people, then approaches are required that are at once structural, systemic and enabling. This requires embedding our three principles within SDG implementation, taking seriously diverse knowledges, plural actors and the inherently political nature of transformations. This Working Paper offers some pointers for thinking more deeply about these challenges, and for translating results into action-oriented practice, as illustrated by the examples discussed. Combining recognition for deep structural realities as well as vibrant social possibilities, these three principles help open up space for new social and technical innovations, as well as deliberation, contest and democratic debate: all of which are essential for achieving sustainability, and so the wider ambitions of the SDGs, both individually and together.

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# Transformations to Sustainability

## STEPS Working Paper 104

The Sustainable Development Goals (SDGs) highlight how transformations to sustainable economies and societies are a major global challenge. This Working Paper offers a brief overview of different conceptual approaches to transformation, and outlines a set of practical principles for effective research and action towards sustainability. We review three approaches to transformation, labelled: 'structural', 'systemic' and 'enabling'. We show how different ways of understanding what we mean by transformations can affect what actions follow. But these approaches are not mutually exclusive. We use global examples on low-carbon economy transformations, seed systems, wetland conservation and peri-urban development to show how they can be complementary and reinforcing. We describe three cross-cutting practical challenges and responses that must be taken seriously for effective transformations to sustainability: diverse knowledges, plural actors and the political nature of transformation. Realising the ambitions of the SDGs, we conclude, requires being clear about what we mean by transformation, and recognising these basic methodological principles for action.

