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Transformations to sustainability: combining structural, systemic and enabling approaches

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The imperatives of environmental sustainability, poverty alleviation and social justice (partially codified in the Sustainable Development Goals or SDGs) call for ambitious societal transformations. As such, few aspects of actionable knowledge for sustainability are more crucial than those concerning the processes of transformation. This article offers a brief overview of different conceptualisations of transformation, and outlines a set of practical principles for effective research and action towards sustainability. We review three approaches to transformations, 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 an international set of 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 considerations that must be taken seriously for effective transformations to sustainability: diverse knowledges, plural pathways and the essentially political nature of transformation. Realizing the ambitions of the SDGs, we conclude, requires being clear about what we mean by transformation, and recognizing these basic methodological principles for action.

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Introduction: what is transformation?

Through the Sustainable Development Goals, or SDGs, the international community adopted an ambitious agenda to address the interlinked challenges of environmental sustainability (previously defined, for example, with reference to the 'planetary boundaries' [1,2]), eliminating poverty alongside fulfilling other social and economic needs [3], and promoting equity [4•]. In response, a wide literature reflects a large movement calling for transformations to sustainability. While a ubiquitous term, it is often not clear what should be transformed, by and for whom, and through what processes. As Feola argues, "high conceptual elasticity and lack of empirical grounding of the concept of transformation generate the risk of voiding the term of meaning" [5]. Others point to the risks inherent to the 'diminution or mainstreaming' [6], or the 'contortion or manipulation' of notions of transformation [7] in ways which act against genuine, radical change. In response, as argued elsewhere ([8••] chapter 1), including in this journal [9], we see a crucial need to consider reflexively how knowledge about transformation can inform efforts towards intentional change in line with social-environmental challenges and the SDGs. In order to do this, we first probe what is meant by 'transformation'.

According to Patterson, the term generally implies "fundamental changes in structural, functional, relational,

and cognitive aspects of socio-technical-ecological systems that lead to new patterns of interactions and outcomes" ([10], drawing on [11,12,5]). Other work on transformation emphasizes how system boundaries are defined, what functions and structure are recognized as determining of system states, and what dynamics are considered essential for a system's persistence [13,14]. The processes that generate transformations are also subject of debate [15]. For some, transformation arises endogenously from incremental, carefully planned interventions made by (often policy) actors [16], whilst for others, transformation is an emergent property of large-scale political-economic forces and social mobilization [17]. In other cases, transformation is not human-generated, but triggered by exogenous biophysical forces such as climate change, which, while they may be anthropogenic in nature, are outside the control of any actor or group [18].

Among those perspectives focusing specifically on the possible roles of social agency in the driving of transformation, three broadly distinguishable emphases emerge. 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 [19–21]. Others advocate acceleration of more incremental approaches for managing social, technological and ecological transitions, driven by combinations of technological innovations and progressive policy [22,23]. 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 [17]. How do we make sense of these different ways of understanding and enacting transformation?

This paper focuses particularly on human drivers of transformations — but recognises after Patterson (above) that these can be viewed equally as structural, functional, relational, or cognitive in nature. We argue that to achieve the humanitarian, ecological and technological visions encapsulated in the SDGs, transformation will be required at multiple scales and organizational levels, and with deliberate normative steering.

We suggest that contemporary debates about transformations to sustainability should draw on deep, contrasting political traditions, which reflect distinct but overlapping understandings of social processes that generate transformative change [8••,24•]. In the following sections we do this, drawing on these literatures to propose three distinct but complementary approaches to understanding and advancing transformations: 1) 'structural approaches', referring to fundamental changes in the way production and consumption is governed, organized and practiced by societies; 2) 'systemic approaches', referring to intentional change targeted at the interdependencies of specific institutions, technologies and constellations of actors in order to steer complex systems towards normative goals; and 3) 'enabling approaches' focused on fostering the human agency, values and capacities necessary to manage uncertainty, act collectively, identify and enact pathways to desired futures.

Structural approaches

Structural approaches focus on changes in perceived underlying foundations of politics, economy and society, and the need for a complete overhaul of the ideological underpinnings of social systems writ large. Exponents 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 [25]. Drawing on Marx, Lenin focused on the class tensions wrought by processes of social differentiation in society [26], while Gramsci envisaged changes overturning generally accepted social values and understandings resulting in revolutionary transformation [27,28].

These kinds of structural analyses highlight how key moments, or conjunctures, are important in generating transformations, as the relationships between economies and societies shift, generating crises and tensions (as illustrated by Polanyi's seminal analysis [14]), or alternatively pointing towards new inspirations and movements for change [29]. Such movements emerging across civil society — for example, focusing on alternative economic models including zero growth [30,31] or de-growth [32,33], race, class or gender rights [34,35] — may also, some argue, come together to create a new politics for transformative structural change [36,37].

Structural approaches offer powerful historical analyses of transformations relating to markets, commodity forms or class relations occurring through radical, sometimes revolutionary, shifts in power and control at key moments. Yet many of these studies are rather generic and sweeping. Some emphasize material forces and downplay human agency and will, while others imply mechanical causal processes. Many of them are limited in their appreciation of environmental thresholds as they often focus on past transformations, rather than future-oriented efforts. The importance of localized activity, cultural practices or incremental policy action is frequently side-lined by a focus on deeper structural dynamics, driven by historical processes and shifting interests [38].

Systemic approaches

Systemic approaches, by contrast, follow the resurgence of growth in systems thinking in the 1980s [39,40] to identify particular features of systems (such as system elements, drivers, levels) as targets for focused change, typically modulated by policy, while recognizing the significant uncertainty, propensity for non-linear response

and inherent complexity of system interactions. On the one hand, perspectives from social-ecological systems thinking (developed from ecology [41]), highlight the interplay of innovation, learning, and adaptability in creating system properties such as resilience [42], acknowledging the potential for dynamic change across scales [43]. Over the past few decades, social-ecological systems approaches have taken many forms, and have increasingly paid attention to power, politics, institutions, social dimensions and local contexts [44,45]. Many sophisticated case studies have followed, with major implications for understanding system sustainability and transformative change [46]. 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 return to a new state following various kinds of perturbation [47].

On the other hand, socio-technical systems approaches focus on different system components such as technology, infrastructure, financial rules, industry and distribution networks markets and user practices, regulations and policies [48]. Traditionally, these emphasise more controlled '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) [49]. In this perspective 'niche' innovations are able to reform wider 'regimes' and so generate socio-technical transitions [50]. Knowledge about system properties is seen to offer chances for transitions to be managed in ways directed by policy [51]. 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 [52,53], 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, variously addressing the roles of socio-political diversity [54•] and traditional ecological knowledge [31], and how these combine in movements [55,52,56•]. 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 [57,58].

Regardless of the degree of control over change processes and system outcomes, these system-focused approaches emphasize the need for knowledge on system dynamics: the interdependency of social, ecological, institutional and technological elements that together mark thresholds in system states. In focusing on the system as a whole, system approaches have tended to diminish the role of individual agency, downplay the complexity of politics, power and asymmetries in human-environment dynamics [59,44]. Originating in the experience of social-technological change in the Global North or through the analysis of relatively bounded systems of natural resource management, these approaches have often implicitly presumed the embrace of Western ideals of deliberative democracy, pre-existing capacities for collective action, and general support for change that will result in enhanced equity, environmental integrity and improved public welfare [61]. Needless to say, it is not clear how well these assumptions hold even in places of established democratic institutions, and they may not hold true in many other parts of the world where progress in the SDGs is desperately needed [62,63].

Enabling approaches

Enabling approaches draw on both these traditions to highlight the agency and uncertainties inherent in choosing aims and directions for transformative change [64]. Enabling approaches focus less on specific desired configurations of the system state than structural approaches, and less on the management of system dynamics than system approaches. Instead, these approaches emphasize creating the social attributes — capacities — that empower individuals and communities to take action on their own behalf. By 'agency', we refer to the deliberate exercise of individual or collective will [65,66], with enabling approaches focusing especially on the most excluded interests. For example, many forms of low carbon transitions have been proposed, each presupposing different values, interests and actions. How can a policy-maker decide, in merely technical ways, which policy is most appropriate? What groups and individuals are able to mobilize the capacities to participate, make their interests heard and organize to implement change? How can conditions be created that support the formation of alliances and social networks through which the burden and benefits of transformational processes can be negotiated? Resilience raises similar queries, with system change following shocks and stress affecting different people in different ways, and marginalized groups typically the most vulnerable [13].

Enabling approaches take a more optimistic and directly activist stance than some structural or systems approaches, focusing on processes and capacities rather than just outcomes [67••]. Beyond major, historically-driven structural reconfigurations or system changes, opportunities for transformation are seen in terms of individually smaller actions that collectively, over time, shift system states in ways which may be unexpected but which reflect the values and visions of mobilized agents [17]. 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 [68].

Multiple forms of power are exercised, with power emerging both in structural forces and in collective action [69]. Focusing on the scope for political mobilization and cultural change, an enabling approach takes a hopeful, caring, emancipatory stance on transformation; one that de-emphasizes controlling, violent or fearful futures [70•]. Enabling change will inevitably take different forms in different settings, and requires a wider, unruly and often adversarial politics of citizen mobilization at its heart [71–74]; in ways that it might be hoped are more protected from manipulation or management by privileged interests.

A number of perspectives are central to an enabling approach [75•,76•,77]. Network understandings may help address more messy power dynamics than are envisaged in structural or systemic approaches, linking emerging new actors, structures and processes that challenge incumbent positions and cultivate new pathways to sustainability [62,63,78•]. A focus on practice and agency affords more scope for action by citizens, enabling more emancipatory change, whatever the direction [79]. The politics of knowledge is also stressed, including how future transformations are imagined [75•,80•]. Enabling approaches may be critiqued for a bias towards privileging local perspectives in an inherently globalized world [81,82], or a lack of sufficient attention to how 'enabled' communities can induce needed structural changes to escape traps of poverty or oppression [83,84].

Complementary lenses

Structural, systemic and enabling approaches are not mutually exclusive: they offer complementary analytical lenses on transformative change, as well as complementary approaches to understanding and trying to bring about real-world change (Table 1). There is no necessary sequence or logic to conditions that favour structural, systemic or enabling transformation. While in some cases, change can be triggered by larger-scale ideological shifts and movements of capital, leading in turn to enhanced opportunity and agency for previously marginalized actors, in other cases, change may be more dispersed and grassroots in nature, cascading up from local innovations that disrupt system dynamics to create structural change. Nevertheless, we would argue that for socially just and equitable transformations (in line with the ambitions of the SDGs) to occur, necessary structural and systemic changes will demand enabling and emancipatory change as well. 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 recognized across many governments, businesses and civil society organizations across the world. With such transformations central to a number of SDGs, most recognize that climate change requires deep structural shifts away from fossil fuels [85]. A structural approach argues for the reconfiguring of global markets and infrastructures, radically shifting forms of production and consumption [86]. Requiring support for alternatives, this fundamentally challenges incumbent interests and implies asymmetrical costs for transitioning populations. Across Europe,

Table 1

Complementary lenses

Approach	Definition/emphasis	Pros	Cons	Example
Structural	Fundamental changes in the way production and consumption is governed, organized and practiced by societies	Highlights the prevalent economic and political processes and associated interests that serve to perpetuate current conditions	Lack of emphasis on environmental triggers and processes, individual agency and the possibilities of incremental change; historical studies may downplay the role of complexity and serendipity	Emergent discourses on decarbonization or zero- or degrowth economic structures Mass social mobilization around climate change and economic inequity
Systemic	Intentional change targeted at the interdependencies of specific institutions, technologies and constellations of actors in order to steer complex systems towards normative goals	Highlights interdependencies, connectivity across scale and geography, and the potential for non-linear shifts in system dynamics across scales. Emphasizes the role of ecological dynamics in social change and vice versa.	Critiqued for de-emphasis of individual agency, power and politics and/or overly managerial approach, glossing over differences in capacities, governance structure and politics	Low carbon energy transitions, focusing on technology-centred developments, modulated by incentives and disincentives enacted in policy mixes
Enabling	Fostering the human agency, values and capacities necessary to manage uncertainty, act collectively, identify and enact pathways to desired futures	Recognizes potential of human agents for collective action; explicitly addresses asymmetries in power and circumstances of social injustice	May neglect significant structural, political obstacles to social transformation; burdens those with greatest vulnerability with task of transformation	Community led environmental action; hacker/maker spaces for grassroots innovation; commoning approaches to sustainable local economies

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. Change may also result from new political and institutional commitments — with structural shifts away from conventional energy infrastructures, as currently pursued in Germany [87].

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 [88]. 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 [89]. Recent work in Kenya has investigated the potential for systemic change associated with the pay-as-you go solar photovoltaic niche and examined its transformative potential in terms of *inter alia* the national context for innovation and technology uptake [90].

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 mobilization of grassroots movements and alliances driven by a new ethics of sustainability [91]. 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 [92••]. Here, directions of transformation are deliberated upon more politically, articulating diverse definitions of sustainability and wider social priorities [93,94•].

More control-oriented approaches, aiming at structural and systemic changes, may not engage in this broad politics of deliberation [70•]. 'Eco-modernist' visions, for example, highlight rapid technological 'solutions' for climate change, including focusing on nuclear or geo-engineering technologies [95,96••]. 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 certifications, provide ways to preserve 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 [97••]. In Argentina, such new institutional arrangements have helped form bridges between those concerned with adverse effects of strict intellectual property regimes on domestic industries and technological capabilities and those committed to changing seed systems in favour of more marginalized producers [98]. 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 enables 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, to lay the ground for a reconfiguration of broader structures.

Principles for pursuing complementarities in transformative change

These examples highlight how efforts to advance transformations to sustainability may draw on complementary approaches. Nevertheless, achieving such complementarity implies open, plural and democratic politics, with central roles not just for policy, but also for mobilization, critique and political challenge [92••]. Such aspirational conditions are clearly not equally available across the globe, and, given the diversity of contexts in which transformation is urgently needed, processes of change are likely to be contested, in some cases, violently. How, then, can the science and policy communities vested in the realization of the SDGs respond practically and ethically? What specific approaches can help facilitate transformative change? What principles can best help realize 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 for scientists and practitioners to appreciate this diversity — and not homogenize it into a singular view of progress driven by circumscribed, expert sustainability science [99••]. 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 [100,101].

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 [102]. 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 [103]. 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 [104]. The process through which such collaboration and exchange is realized will necessarily differ, and needs to be acutely sensitive to the political opportunities and costs, social-cultural context and the current state of a particular system [105]. For scientists and practitioners, enabling approaches often require a transformation in roles, embracing positions that emphasize facilitation, 'brokering', convening and steering rather than solely knowledge production or policy implementation [106].

For example, 'transformation labs' have been used in a number of recent initiatives as spaces for dialogue around transformation [67••,97••,107••,108]. These processes help mobilize people and action around a problem, giving opportunities for learning and reflexivity in exploring divergent values and interests [109••,110]. What constitutes the structure and process for a transformation lab in the United Kingdom, however, will be quite different to what such a process looks like in China [106,111], given existing political circumstances and governance structures that place different costs on the recognition of plural knowledges. In addressing the sustainability challenges of the Xochimilco wetland in Mexico City, for instance, a culture of exchange was created that enabled participants to re-frame 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 [107••]. 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 the 'Xochimilco wetland'. 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 mobilized to achieve more just and sustainable development pathways [112].

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 realize the plurality of ways to get there? This will require demanding new forms of deliberation amongst 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 [113].

For example, progress in addressing the sustainability challenges of the Xochimilco wetland 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 urbanization of this environment, the decline of traditional farming techniques, and the commodification of the ecosystem suit 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, '*taking politics seriously*', 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 [114•]. 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.

Both in the Xochimilco wetland and in the city of Gurgaon in India, different perspectives on sustainability again play a key role. In the case of Gurgaon, participatory practices around the Gurgaon Water Forum have been able to make a significant impact on the imaginations, values and interests of public administrators, resident welfare associations and citizen groups working to transform urban planning and governance [115••]. In the Xochimilco wetland, 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 [57]. Strategic alignments between activist interventions and some within the state or business are challenging established pathways and opening up opportunities for change [59]. A focus on social innovation helps move the emphasis away from technological fixes or instrumental policy intervention and towards the realizing 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 mobilizations are required to challenge incumbent interests and constraining structures. Alongside more conventional 'academic rigour', then, taking politics seriously also emphasises 'political 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 [60]. Political rigour of course entails significant risks and costs, and such risks can be debilitating for transformative action. Nevertheless, attention to how and when such mobilization is occurring and what such movements imply for the meaning, process and direction of transformative change is fundamental to achieving the aspirations articulated in the SDGs.

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 for the most marginalised people, then approaches are required that are at once structural, systemic and enabling. Structural or systemic approaches may underpin analysis and offer strategic responses, whether through informing social movements or guiding policy interventions that aim to elevate small-scale niche experiments beyond the local. Complementary enabling approaches may also draw upon these analyses whilst focusing on fostering agency, values and capacities for emancipatory change. This requires embedding the three principles proposed here: taking seriously diverse knowledges, plural pathways and the inherently political nature of transformations. This 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, contestation and democratic debate. These qualities are each individually essential — as well as collectively necessary — for achieving both the SDGs and the wider ambitions of sustainability.

Conflict of interest statement

Nothing declared.

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This paper recounts experience of a key case mentioned in the present article, arising from many years of activist research in the northern Indian city of Gurgaon. The Gurgaon Water Forum offers a model for engaging the imaginations, values and interests of public administrators, resident welfare associations and citizen groups in transformative urban planning.