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What is Environmental Degradation, What Are Its Causes, and How to Respond?

Ian Scoones

August 2022

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Summary

This short paper explores the question: what is environmental degradation and what are its causes? It seems an obvious question, but it is not. The paper explores definitions of environmental degradation (and restoration), challenging simplistic perspectives centred on ‘carrying capacity’. Five explanations of the root causes of environmental degradation widely applied in policy debates and promoted by different actors are identified. These are: (1) (neo-)Malthusian arguments about scarcity and environmental crisis; (2) technological and ecomodernist explanations; (3) perspectives on resource inequality, distribution, and development; (4) views that centre on human–nature caring relationships; and, finally, (5) arguments for more fundamental structural change and transforming capitalism. Each suggests a very different interpretation of causes and effects with contrasting implications for research design, policy, and practice. The paper is aimed at providing a quick overview of the debates, helping to inform discussions about environmental restoration and protection. Too often such debates do not explore underlying causes. While biophysical dynamics are important, environmental degradation – and so restoration – must take account of social, political, and cultural dimensions of environmental change.

Keywords

Environmental degradation; environmental restoration; environmental narratives; research design.

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1. Introduction

This short paper explores the question: what is environmental degradation and what are its causes? It seems an obvious question, but it is not. Five explanations of the root causes of environmental degradation widely applied in policy debates and promoted by different actors are identified. Each suggests a very different interpretation of causes and effects with contrasting implications for research design, policy, and practice. The paper is aimed at providing a quick overview of the debates, aimed at informing discussion about environmental restoration and protection. Too often such debates do not explore underlying causes, failing to recognise social, political, and cultural dimensions of environmental change. While biophysical dynamics are important, environmental degradation – and so restoration – must take account of social, political, and cultural dimensions.

2. What is environmental degradation?

Despite the assumptions of many, environmental degradation is not purely a biophysical phenomenon; we have to know against what baselines, over what timeframes, and in relation to what social, economic, and political objectives. If we can define environmental degradation for a particular setting – and for different groups of people – then we can also think about restoration, asking about restoration of what, to what, over what time period and so on. The powerful maps so popular in policy reports and media articles as well as scientific publications, which are marked red for ‘degradation’ based on, say, soil loss, deforestation or biodiversity decline, or alternatively green for ‘restoration’ potential, only tell part of a much more complex story, and can seriously mislead.

Based on work in Botswana and Zimbabwe on rangelands, over 30 years ago Nick Abel and Piers Blaikie came up with a useful definition of degradation:

By [range] degradation we mean an *effectively permanent* decline in the rate at which the land yields [livestock] products under a given system of management. ‘Effectively’ means that natural processes will not rehabilitate the land within a timescale relevant to humans, and that capital or labour invested in rehabilitation are not justified... This definition of degradation excludes *reversible* vegetation changes even if these lead to temporary declines in [outputs]... [but] it includes effectively irreversible changes in both soils and vegetation.

(Abel and Blaikie 1989: 113)

This drew on the classic arguments in *Land Degradation and Society* (Blaikie and Brookfield 1987), which showed how there were complex biophysical, social, and political ‘causal chains’ that generated degradation, and how you must not only look at one aspect. This was the early argument for political ecology: ecology was political and politics was ecological. With the current enthusiasm for large ‘land restoration’ projects, driven by conservation organisations and justified by a particular type of natural science, this important observation is often forgotten.

Following the definition offered above, degradation is not defined in terms of its biophysical symptoms (bare ground, soil erosion, biodiversity loss, etc.), but in terms of human use. This is why the definition specifies a ‘given system of management’. This may change or be contested. What is degradation will therefore look very different for different types of users, depending on what they

want from the environment. This is why when projects are designed it is important to interrogate the assumptions that lie behind them, and make sure that everyone – but perhaps especially ‘indigenous peoples and local communities’ (IPLCs in the jargon), who have been historically marginalised in these debates – has a say in both project design and implementation.

Different views of ‘degradation’ and ‘restoration’ for the same area co-exist. So, for example, in the context of rangeland use in southern Africa, maximising livestock numbers for multiple uses by small-scale farmers is very different to maximising beef production per animal or, again, different to enhancing biodiversity or ensuring large, ‘charismatic’ wildlife populations for tourism. Each of these users will have different views of what is an ideal environment (‘under a given system of management’), with different amounts of, say, perennial or annual grasses, different levels of tree cover and so on. There is no one ideal type which interventions should aim to ‘restore’. Virtually all environments are shaped by human use over long periods, and so what is ‘natural’ or ‘wild’ is very much in the eye of the beholder.

This is why there are no simple indicators of environmental degradation. They have to emerge out of inevitably power-laden, often conflictual social, economic, and political conversations about priorities. This includes debates about ‘carrying capacity’, another concept that is often bandied around without much thought. There is an important distinction between economic and ecological carrying capacity, where the former depends on what flows of goods users want from the system, while the latter is the more classic understanding, being the maximum number of animals or other users of the environment that can be held without causing long-term declines in productivity (Scoones 1993).

Too often, these two concepts are confounded. In southern Africa, African farmers were told to destock by colonial authorities as they thought that there were too many animals. ‘Too many’ for them was based on their assumptions about what ‘good’ rangeland use was, and was based on European cattle ranching and beef production, and the suite of grasses that benefited such production systems. Destocking to an imposed ‘carrying capacity’ was widely resisted, and justifiably so. Smallholder systems of livestock production are aimed at different things, maximising livestock numbers for multiple uses. Droughts and other events such as diseases would frequently decrease overall numbers, and overall livestock numbers were kept below a number that would reduce production potentials in the long term (Scoones 1989, 1996).

This is what the new ecology of rangelands (and indeed other environments) calls a ‘non-equilibrium’ environment, where ecological carrying capacities are rarely reached and so populations are not regulated by population density but through density-independent events (droughts, diseases and so on). This very basic insight has profound implications for how we understand environmental

degradation and the management of many environments (Behnke, Scoones and Kerven 1993; Scoones 1999).

The colonial gaze that influenced stocking policies in southern Africa was echoed across Africa and Asia, from forests to water, soils and more (Leach and Mearns 1996; Agrawal 2005). It has a much wider and deeper influence too, with resonances today in conservation policies, rewilding efforts, and restoration programmes. These frequently assume a stable, 'balanced' nature that can be both destroyed (often by what are assumed to be destructive environmental practices of local people) and restored to a pristine, wild and natural state through scientific interventions. Ideas of 'stability' and 'balance' project the idea of human control of the environment, wrapped up today in the popular notions of 'resilience' and 'restoration'. Yet, we must recognise how such ideas are deeply cultural; and in the complex, messy world of non-equilibrium environments may be inappropriate.

Environmental interventions are thus always framed by particular scientific understandings emerging from specific cultural perspectives. As with the livestock carrying capacity debate in southern Africa, these are not purely 'scientific' efforts; they are always, inevitably deeply political. And they carry moral and sometimes racist overtones, as certain groups are denigrated for disrupting a presumed pre-existing harmony of people and nature. The large-scale conservation efforts and the mass tree planting efforts being proposed under the banners of such initiatives as the 30x30 programme led by France, the UK, and Costa Rica or the trillion tree initiative proposed by the World Economic Forum, must be understood in this light as some interpretations derive from the same assumptions and with the same flaws.¹

¹ See, for example, [Campaign for Nature, 30x30](#) and [World Economic Forum, one trillion trees](#).

3. Understanding dynamic environments

Questioning the assumptions so embedded in (largely) Western constructions of nature and environment and looking in more detail at what local people actually do and their logics of environmental care suggests a very different perspective. For sure, local production practices can irreversibly destroy environments. This is not a romantic vision where all that is local and 'indigenous' is good. But, when researchers have reconstructed patterns of environmental change in areas that are assumed to be degraded (according to Western scientific assumptions) then often a different story emerges.

Take the forest fringes of West Africa where, again since the colonial era, there has been a long-running narrative that people have deforested the area over a timescale of a few decades. A more forensic look both falsifies the assumed baseline of intact forest and shows again that forests and savannah (grassland) areas are in flux, affected by climate as well as people's uses. Over centuries there is no one stable state. Indeed, the areas where forests have expanded have been associated with human use, near villages where seedlings have prospered and soil fertility has been enhanced (Fairhead and Leach 1996, 1998, 2003).

The same applies to the supposedly 'desertified' Sahelian region. Ever since the colonial era, scientists and administrators assumed that desert was expanding, the result of environmental misuses, including overgrazing by mobile pastoralists (Swift 1996; Behnke and Mortimore 2016). This assumption is still alive and well as aid agencies invest billions in 'combatting' desertification through soil conservation projects, tree planting and, yes, the control of stocking rates. But, in fact, long-term analysis of land use using satellite imagery and geological analysis shows that the desert has expanded and contracted over time, again in a non-linear, non-equilibrium dynamic (Dahlberg 1994). And it is human use that harvests water, contains soil erosion, and manages grazing that can offset this (Reij, Scoones and Toulmin 1996). Interpretations depend on the baselines used and the willingness to shed the vision of stability and control so central to colonial policy and resonating in conservation and development efforts today.

Similarly, studies of land use by indigenous populations across the world have shown how fire is a vital land management tool for what are termed open ecosystems – savannahs, parklands, and other mixed tree–grass ecosystems (e.g. Rodríguez 2007; Smith, Neale and Weir 2021). Yet, again, the colonial gaze, today reinforced by 'environmental' programmes, often sees such areas as degraded forests in need of restoration. Interventions – for example, tree planting

or other restoration schemes – restrict fires, attempting to control them. The result is often catastrophic. ‘Protected’ landscapes, where people and livestock are removed and managed burning prevented, can build up huge amounts of combustible material, which can quickly go up in flames. The costs are huge – not only to human life and property, but to biodiversity and ecosystem integrity. Such wildfires, now increasing due to climate change, but also due to inappropriate management regimes, also result in massive losses of carbon, contributing to climate change.²

All these examples (and there are of course many more) show why, first, environmental–human dynamics must be analysed more carefully, using multiple methods including the historical, and eschewing simplistic assumptions about degradation from assumed pristine states. And, second, different users must debate what they want from land within and between themselves, and so define what degradation is under different systems of management. Degradation will look different for women and men, richer and poorer users, and across those using land for different purposes. These are social, economic, and political choices and require open deliberation, rather than an imposition from outside. As I will return to at the end of this paper, this has important implications for designing research efforts and development interventions.

² See *Spreading like Wildfire – The Rising Threat of Extraordinary Landscape Fires. A UNEP Rapid Response Assessment*.

4. Explaining the root causes of environmental degradation: five narratives

If environmental degradation and, in turn, restoration is dependent on how you see and use the environment, then explanations of the 'root causes' of assumed problems are equally based on where you come from and what your views are about what the world should be like and how change comes about. These views are deeply embedded, culturally and politically. Again, it means that searching out root causes is not simply an 'objective' scientific task (although biophysical science of course remains vital), but also must take account of different positions and standpoints as 'causes' are wrapped up in social and political orders and with accusations of blame, forms of liability, and patterns of accountability and responsibility (Ribot 2014).

This section identifies five narratives – stories we tell about the world, with beginnings (that define 'the problem'), middles (that elaborate the justification for this stance), and ends (that propose 'solutions') (cf. Roe 1991; Keeley and Scoones 2003). The narratives discussed below of course simplify (as narratives necessarily do) and they are not exclusive, as there is much blending and blurring in reality. However, hopefully, they offer a way of thinking about where different positions are coming from – often assertively presented as the 'truth' – and what assumptions lie behind them. Uncovering these framing assumptions will in turn help encourage a debate about what land degradation is and what to do about it.

4.1 Narrative 1: Malthusian scarcity and crisis

This is perhaps the most common of all the narratives and is well known to any observer of environmental debates, from Paul Ehrlich's (1968) *Population Bomb* onwards. The narrative argues that 'environmental degradation is caused by high population densities, which cause a scarcity of resources, and this in turn drives increasing poverty and so crisis'. This classic (neo-)Malthusian narrative centred on (global and local) resource scarcity is repeated endlessly. Perceptions are centred on an assumed rising crisis (sometimes parsed as an 'emergency'), with resulting competition and conflict (think 'climate refugees' and so on). Solutions in turn are centred on control-oriented management through restrictive regulations and policies, involving various forms of efforts at rehabilitation, settlement, exclusionary conservation, and top-down ecosystem restoration.

Malthusian arguments are very often focused on resource depletion. For example, discussions of soil degradation frequently start from large-scale, sometimes global, assessments of soil loss or fertility decline, extrapolated from particular cases. The resulting maps show large areas where rehabilitation is required, with fingers of blame pointed to inappropriate land use, often deemed to be due to excessive population pressure. Yet, digging deeper into these assessments suggests a more disaggregated approach. Soil erosion and fertility decline is without question a big problem, but not everywhere. At a farm scale for example, soils may accumulate in some areas, while being lost in others, while fertility is enhanced through particular agronomic practices in some patches, but not in others. Taking measurements only from sites where loss or decline happens distorts the picture (Fairhead and Scoones 2005; Scoones 2001). Rather than seeing inexorable decline due to population pressures, a patchwork is evident and land users' agency, both in respect of soil damage, but also improving soil health is recognised, even in areas where population density is high (Scoones 2015). Indeed, as famously shown for Machakos County in Kenya, more people can result in less erosion through local investments (Tiffen, Mortimore and Gichuki 1994; also, Boyd and Slaymaker 2000).

Who are the actors involved in promoting a Malthusian scarcity and crisis narrative? This narrative is central to much environmental campaigning, as well as at the core of most media commentary and the framing of many global and national policies as well as research programmes and donor interventions (e.g. on land, Scoones *et al.* 2019). With the spectre of climate change rising up the agenda, this narrative has revived in recent years, and wider debates about 'planetary boundaries' feed into discussions around the limits of human activity across a range of environmental dimensions (Rockström *et al.* 2009).

There are of course many assumptions embedded in this framing, not least the understanding of 'scarcity' (Mehta 2013) and 'limits' (Kallis 2020). Is scarcity generated only through population pressure, or are there other explanations for why some people gain access to resources and others cannot, and why some people are forced to (over)exploit such resources, while others live with surplus? Can 'limits' and 'boundaries' be tackled in other ways, either through 'degrowth' (cf. D'Alisa, Demaria and Kallis 2015) or through technological innovation? Some of the other narratives about environmental degradation respond to these questions.

4.2 Narrative 2: Technological (eco)modernism

One counter to the doomsday scenarios of the (neo-)Malthusians is the argument that scarcities can be overcome through technology. This is the positive vision of David Ricardo, who disputed Thomas Malthus' predictions, and

which was echoed in the classic wager in 1980 between Julian Simon and Paul Ehrlich on the long-run price of particular commodities over the following decade.

The narrative focused on technological solutions to environmental degradation runs as follows: 'environmental challenges exist and degradation is real and widespread, but these challenges can be solved through modern technology that can radically transform how we use the planet'.

This 'ecomodernist' stance accepts the imperative of acting to address perceived environmental degradation but asserts that issues of scarcity or overpopulation can be dealt with intensifying the use of 'smart', 'sustainable' technologies. Climate change, for example, can be dealt with by geoengineering or with large mirrors in space or iron filings in the sea, although with many uncertainties around potential risks attached. More prosaically, a focus on scientific interventions in ecosystem rehabilitation can result in significant environmental improvements through, for example, focused rehabilitation and restoration efforts or 'climate-smart' agriculture for instance. Satellite-based technologies, artificial intelligence, and big data machine learning are especially popular these days in the environmental field, offering visions of improved efficiency of resource use. Sometimes these are presented as part of wider 'nature-based solutions' (Cohen-Shacham *et al.* 2016), which has emerged as the latest buzzword for a long line of technocratic, solution-oriented 'fixes' to environmental problems.

The California-based Breakthrough Institute has been a strong advocate of an 'ecomodernist' perspective, advocating among other things nuclear power as a solution to climate change, GM crops as a solution to food insecurity, and digital technology to address environmental degradation. A major debate around the *Ecomodernist Manifesto* (Asafu-Adjaye *et al.* 2015) emerged a few years ago, with very different positions adopted around technology, growth, and limits (e.g. Robbins 2020; Gómez-Baggethun 2020). In some ways, this had parallels with an earlier debate around the launch of the famous *Limits to Growth* report from the Club of Rome in 1972 (Meadows, Randers and Meadows 1972). This report offered in many people's interpretation a rather dismal, Malthusian perspective, but alternative modelling offered a different view, arguing that through innovation the efficiencies of resource use will increase and the 'limits' will not necessarily be hit.³

There are many who believe that innovation can provide positive benefits when addressing scarcities, as is evident in many resource-dependent communities who continuously seek ways of managing resources that allow livelihoods to persist, making use of 'indigenous technical knowledge' and local resource management practices (Brokensha, Warren and Werner 1980). These emphasise socially and ecologically appropriate and 'convivial' technologies,

³ See '**Thousands of Models': Planetary Boundaries, Values and Power** by Adrian Smith.

often developed through citizen innovation (Leach and Scoones 2006). Other radical utopians also envisage a future that shifts resource use assisted by technology in ways that result in major transformations, through for example what has been termed ‘fully-automated luxury communism’ (Bastani 2019).

However, the most commonly articulated version of the technical, ecomodernist perspective is often backed by those with business interests in technological innovation and ‘solutions’ from which profits can be derived, with support from foundations and donor governments eager to find quick fix technological solutions to pressing problems without addressing underlying causes and the status quo.

4.3 Narrative 3: Inequality, access, and development

A standard riposte to the Malthusian notions of absolute scarcity is to point to how resources are distributed unequally. The narrative goes, ‘it is not the availability of resources that causes the problems, it is the way they are distributed unequally’. This narrative focuses on inequality, access, and questions of environmental justice. Poverty emerges not because of lack of resources but lack of access, and this may be distributed unevenly by geography, class, gender, race, or age. All these dimensions of difference intersect in order to create specific scarcities for particular people in particular places. Environmental degradation is therefore a social issue, linked to questions of distribution and justice.

This argument draws on the concept of ‘entitlements’ developed by Amartya Sen in the context of famine (Sen 1982). He argued that famines are rarely caused because there is not enough food, but because of its poor distribution. The same applies to environmental resources. Developing Sen’s argument, the idea of ‘environmental entitlements’ focuses on distribution of resources not total availability and points to the way institutions (the ‘rules of the game’) are important in mediating who gets what (Leach, Mearns and Scoones 1999). In the same way, the ‘sustainable livelihoods’ approach points to the mediating role of institutions and policy in influencing who gets what and what they are able to do with different livelihood resources (Scoones 1998). Sustainability (or not) therefore emerges out of such social, institutional, and policy negotiations around access (cf. Ribot and Peluso 2003), as different pathways to sustainability emerge (Leach, Scoones and Stirling 2010).

Wider questions of environmental justice are also suggested. Extending beyond access to resources to wider questions of voice and rights, questions of justice are central to thinking about environmental degradation and links to development (Mohai, Pellow and Roberts 2009). Those suffering most from environmental

degradation (whether deforestation, air or water pollution, climate change and so on) are most often the historically marginalised, with the intersections of race and gender very often implicated (Cutter 1995). Such marginalisation is of course not recent, and understanding processes of degradation and its effects must dig into the longer-term structural determinants of such vulnerability (Ribot 2014; Nixon 2011; Watts and Bohle 1993). Deeper historical analysis of differential patterns of vulnerability is therefore an essential part of any assessment of environmental degradation from this perspective.

A focus on lack of access and injustice as root causes of environmental degradation is central to a liberal view of development that sees environmental degradation as arising out of unequal processes of development, globally and locally. Those supporting this narrative include many in the wider liberal 'development' community, including many non-governmental organisations, campaign groups, and some (but not all) donor agencies.

4.4 Narrative 4: Human–nature caring relations

The narratives discussed so far tend to separate humans and nature in a classic Cartesian split. However, other, mostly non-Western, traditions of thought reject such human–nature binaries and see human action and nature very much entangled, and humans as part of nature – all part of a whole. As a result, the problem of environmental degradation is framed very differently. The narrative therefore runs, 'the problem is a particular style of modernity and a lack of respect for positive interactions between human and non-human aspects of nature'. The solutions in turn lie in encouraging an ethics of care and respect for nature, rejecting patriarchal and colonial domination of nature, breaking down human–nature divisions, and relying on embedded indigenous knowledges and approaches to local land use and resource sovereignty.

A focus on intimate connections between humans and non-human aspects of nature suggests a focus on 'care', rather than control, intervention, or management, as in most standard approaches to environmental questions. An emphasis on 'matters of care' means resisting objectification and relying on affective, ethical, situated engagements within entangled contexts of often other (non-human) worlds. Care as an ethical and political practice in turn urges attention to the marginalised and neglected, suggesting how things could be different (de la Bellacasa 2017). By relying on embedded, plural, partial and experiential knowledges, often tacit and uncodified, means engaging with a very different set of understandings about the world, outside the standard orbit of environmental science (cf. Haraway 1988). This requires a reversal in processes of knowledge-making and understanding, drawing from local perspectives with often quite different framings. Such 'decolonised' knowledge relations challenge standard modalities of intervention (Quijano 2007; Mignolo 2007) and raise

questions about who controls knowledge and practice in development processes; themes long raised by feminist scholars (Harcourt and Nelson 2015).

This narrative is one central to non-Western environmental philosophies (Descola 2013) and supported by indigenous groups, some religious leaders, and followers of (for example) perspectives on 'Mother Earth', 'Gaia', and other holistic and feminist perspectives on environmental care. Such conceptions of human–nature relations are central to some political movements and the concept of *pachamama* has become acknowledged in national legislation in Bolivia (Tola 2018). Meanwhile, other movements – for example the Zapatistas in southern Mexico – have argued for environmental justice in the context of autonomous development (Otto 2017). In global debates – for example around biodiversity through the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) process – non-Western framings are becoming increasingly heard as part of debates (Borie and Hulme 2015; Tengö *et al.* 2017).

Represented most obviously in a wide range of 'indigenous' perspectives, but arguably also present in everyday experiences everywhere, this narrative contrasts starkly with standard 'modernist' ways of doing development and tackling environmental degradation, making confrontations between these worldviews on the ground especially challenging during research and project work.

4.5 Narrative 5: Transforming capitalism

The final narrative takes a more fundamental stance, arguing that exploitative capitalist relations and logics are the root cause of environmental degradation (and related problems of poverty and inequality) and that only through tackling these can environmental challenges – whether climate chaos, biodiversity loss, or pollution – be addressed. The narrative runs, 'it is capitalism that is at the root cause of environmental degradation, as the extractive and exploitative logics of capitalism inevitably lead to environmental collapse'. Thus, without a transformation of capitalism towards a post-capitalist society, urgent environmental challenges will not be met. And, of course, much the same applies to forms of state socialism too, which with different underlying logics results in similar forms of environmental exploitation.

As Erik Olin Wright (2019) argued, there are diverse ways of seeking an anti-capitalist society. While revolutionary overthrow of capitalism may be unlikely, other strategies may have more effect. These include dismantling, taming, resisting, and escaping capitalism. Combining these through a strategy of 'eroding capitalism', he argues, is the only route to tackling environmental degradation, including climate change, in the long term. This means investing in the social movements and alterative experiments that might foster a new way of living sustainably (cf. Borrás *et al.* 2022).

This narrative is promoted by eco-socialists and others in more radical environmental movements, allied with some in the labour movement and in (some) green parties internationally. In identifying exploitative (capitalist) relations as the root cause of environmental degradation, they promote a radical new 'green deal' (Ajl 2021). This rejects simplistic technocratic interventions (such as 'nature-based solutions') alongside simple market or regulatory fixes (of prices and incentives) that simply sustain exploitative relations, even if ameliorated. Instead, the focus is on alternative social and political relations that help to prefigure an alternative politics for the environment, with the structural causes of degradation eliminated.

Clearly each of these narratives is an 'ideal type' – to some extent a caricature for the purposes of presentation – and there are of course many variations within and overlaps between them. However, each narrative is centred on a particular social, political, and economic framing of environmental change, and so understandings about the causes of environmental degradation and the potential solutions. Each narrative has identifiable literatures associated with it, along with key actors who are part of both academic debate and wider policy advocacy, each with different interests, power, and influence in discussions about research and development. Acknowledging these different framings and the power associated with each is therefore crucial in thinking about research and action in tackling environmental degradation and envisioning sustainable development as part of any intervention. Questions inevitably arise: what assumptions are being made, how have they emerged, through what politics, and what perspectives have been missed out?

Of course, not all narratives have equal power in contemporary debates. The networks associated with some narratives are powerful, with considerable resources. Narratives that become embedded in mainstream institutions – of governments, international agencies, or donors – and become associated with particular professional practice, often carry more weight. Frequently they have a long history behind them, with years of training and professionalisation reinforcing their status. However, this does not mean that they are 'right', but it does mean recognising their power and dominance in any process of deliberation, allowing alternative perspectives to have space for challenge and debate.

5. How to respond? Implications for research design and policy practice

What then are the implications of thinking about framings, narratives, and power in defining research and action agendas, implementing research-action processes, and imagining policy and practice to tackle environmental degradation?

A number of important principles follow from this discussion, leading to some suggestions for programme design and practice. Key principles include:

- Be clear on your definition of ‘environmental degradation’ and ‘environmental restoration’, avoid jumping to a simplistic biophysical definition, look forensically at dynamics beyond standard assumptions, and think about how different users see the problems (and solutions).
- Examine what narratives (explicit or implicit) about environmental change, causes, and consequences are being promoted by different actors (local and external), what assumptions are embedded, and how different narratives compete with each other.
- Be aware of the power relations between different actors (and associated narratives) and be sure to listen to and include more marginalised voices, always disaggregating perspectives from different standpoints.

In practice, this will mean interrogating the starting point of any intervention (whether a research call or a policy framework or a proposed methodology) and looking at what framings (of problems and solutions) are implied. Interrogating what different actors understand as underlying causes of degradation (or even if degradation exists) is the first step. Following the narratives laid out above, is it because there are too many people, a lack of technology, unequal distribution of resources, lack of care in human–nature relations, or the structural features of capitalism? Or maybe a combination of these? A thorough deliberation on the causal framings, and the politics behind these will reveal a lot, and will suggest quite different solutions.

This will inevitably raise issues of power relations. A powerful actor – maybe a funder with a vested interest in a particular solution, someone with particular expertise assertively sure that their perspective is right, or someone directly profiting from the status quo – may dominate and try to impose their views. But shedding prior assumptions and opening up to diverse options is essential, and

this requires listening to hidden voices and alternative knowledges. Defining how pathways to sustainability (and so solutions to environmental degradation) are constructed is always a social and political process, as much as it is a technical one. The T-lab ('transformation lab', see Box 1) process is one useful framework for convening such dialogues (Pereira *et al.* 2021), and builds on a long tradition of 'deliberative inclusive processes' around environmental issues (Holmes and Scoones 2000).

Box 1 Transformation labs

A T-lab involves gathering key actors together and encouraging an open discussion of how problems are understood and solutions defined (Pereira *et al.* 2021). This is necessarily a transdisciplinary exploration – involving accredited experts, policymakers, and also local actors. The use of participatory techniques such as role-play, network visualisation, PhotoVoice, and inclusive mapping provides the basis for opening up debate (e.g. Charli-Joseph *et al.* 2018). Inputs from technical experts are valuable but have to be presented and communicated in ways that others can deliberate on, providing a new challenge for conventional science. These inputs can be complemented by 'citizen science' data collection approaches that investigate questions with inputs from local communities.

Facilitating cross-disciplinary, let alone transdisciplinary, engagement, where researchers work together with field practitioners and policymakers generating action, inevitably takes time. Box 2 draws from the experience of the ESPA (Ecosystem Services for Poverty Alleviation)-funded project, Dynamic Drivers of Disease in Africa,⁴ to highlight the importance of building the capacity of a project to 'perform'.

⁴ [Dynamic Drivers of Disease in Africa](#).

Box 2 Forming, storming, norming, and performing: the project process⁵

The ESPA Dynamic Drivers of Disease in Africa project involved around 20 researchers from across natural and social science disciplines. We were all interested in zoonoses – diseases that move from animals to humans – and were convinced that this was a big ‘development’ issue in Africa, but we approached the issue from very different angles. Our proposal had a neat framework, but how to make use of it? Would it generate genuinely interdisciplinary outputs, or would everyone retreat into their ‘work package’ siloes? The first phase involved ‘forming’ the Consortium. We did not know each other; there was a nervousness, and not a little scepticism. The next was the ‘storming’ phase. Here we had to negotiate our roles and define our methodologies and research plan. There were a few arguments – and some storming, mostly around misunderstandings about terms – like ‘narratives’! We got through this, and got on with the work, but it took us a while to reach the ‘norming’ phase. There was a key moment at a workshop in Kenya towards the end of the project. We had found a way of working and had started generating interesting data, making use of diverse methods and three different types of ‘modelling’ – process, pattern, and participatory⁶ – that linked together in really interesting ways, throwing up novel insights about disease dynamics. But in practice, we were only just beginning to build the relationships that really deliver interdisciplinary work. By the end of the project, the groups were genuinely working together, but after five years it came too late as the money had run out. The final outputs were impressive (see Cunningham, Scoones and Wood 2017), but the relationships that delivered them were only starting to fulfil their potential.

For the design of any research-action project, therefore, it will mean using multiple methods to open up debate and pursue this in settings that avoid a closing down towards standard, predefined approaches and assumptions. If the aim is ‘transformation’ – making a difference for sustainability – then structural, systemic, and enabling approaches may have to be combined, but in all cases this requires taking diverse knowledges, plural pathways, and political differences seriously (Scoones *et al.* 2020). Negotiating transformations to sustainability will therefore undoubtedly result in epistemic conflicts (around knowledge frames), as well as political contentions (around competing interests). ‘Co-construction’ – a term often used in debates about research these days – is

⁵ See [Research Collaboration for Global Challenges: Why It's Really Hard](#).

⁶ See Scoones *et al.* (2017).

tough; it is not just getting people in the same room to discuss. It means challenging both the way knowledge is constructed, and simultaneously the social and political orders through which knowledge claims are made (Jasanoff 2004).

All this has some practical implications for research design and implementation. Three principles stand out.

- **Take time.** Any process committed to genuine co-construction leading to action must build common understanding, foster trust, and provide the basis for genuine transdisciplinary engagement. Failure is fine, as long as learning occurs. In the design of research-action programmes, there may be points where the effort is abandoned, or revamped, requiring a series of breakpoints, where project collaborators reshape and redefine objectives.
- **Use diverse methods.** These may combine quantitative, qualitative, participatory or other methods, but the key requirement is for them to ‘open up’ debate about framings as well as solutions. Diverse methods help to challenge established narratives and create space for transformation (Scoones *et al.* 2020; Stirling 2005),⁷ potentially uncovering challenging structural features of power and politics that a narrower frame may ignore. Integrating methods in sequence is essential. In investigating environmental degradation, the starting questions are always social (what is the problem, how is environmental change understood, how are resources used by which actors?) and answering these questions may lead to more natural science questions (how has the resource changed?). Early involvement of social science expertise, including participatory engagement with potential research users, is essential.
- **Facilitation is key.** Such programmes cannot work through isolated ‘work packages’, where different people do their own thing and occasionally come together to discuss. Collaborative co-construction must be the starting point, and this requires effective research leadership and facilitation by those with the capacity to look across disciplinary siloes and be able to connect methods and results in new ways, while including diverse actors. This goes beyond the standard qualifications of research leaders to other skills and capacities frequently not recognised in research commissioning.

In sum, if environmental degradation is a social as well as a biophysical phenomenon, and is framed in different ways by different actors and so is deeply political, then collaborative and transdisciplinary social science must be a primary input into any process of research and action.

⁷ **STEPS Centre methods.**

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