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The 'How' of Transformation:

Principles for a Justice-Centered Response to the Climate and Biodiversity Crises

by Mark G. L. Tebboth, Rachel Carmenta, Angela Minas, Adeyemi Adelekan, Xintong Cao, Abhilasha Fullonton, Chris Kinally, Nicolás Labra Cataldo, Sarah Mander, and Clare Shelton

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The need for societal transformations to address the myriad climate and biodiversity challenges is widely recognized. However, interventions designed to promote and enable these transformations are realized within hugely inequitable global patterns of environmental integrity and human well-being. In this article, we draw on insights informed by research undertaken across low- and middle-income countries. Using the global environmental justice framework to systematize our analysis, we explore how interventions intended to support transformations in the climate, energy, transport, waste, and biodiversity spaces can result in the reproduction of multiple dimensions of harms. Through our analysis, we identify four principles to support more just transformations: (1) recognize plural perspectives, (2) address inequitable structures to support fairer distributions of costs and benefits, (3) plan for perverse outcomes, and (4) empower local people and institutions. We hope that these principles and the analysis from which they are drawn will be useful for practitioners, policymakers, and researchers interested in transformation, and will support more just responses

and outcomes to the climate and biodiversity crises.

Practitioners, policymakers, and researchers largely agree that solutions to global environmental problems such as climate change and biodiversity loss must align with efforts to secure human well-being.^{1,2,3,4} These solutions often require “broad, deep and rapid”⁵ transformations to fundamentally shift societal actions away from high-carbon patterns of development.⁶ However, these calls for transformation are often pursued through preexisting systems of global injustice.^{7,8} Interventions thereby risk reproducing, albeit in new and sometimes unexpected forms, inequality and injustice that typically land hardest on already politically, socially, and economically marginalized groups.^{9,10,11,12,13,14}

The global environmental justice (GEJ) framework, with its three related dimensions of recognition, procedure, and distribution, is useful to understand and address risks associated with interconnected global crises.¹⁵ The framework provides a systematic approach through which one can identify and analyze the connections between social and environmental issues that are at the heart of many injustices. The strength of the GEJ framework lies in the multidimensional

understanding of environmental justice that includes not only traditional concern for fairness in the distribution of environmental harms and benefits but also fair participation and representation in environmental governance and equal recognition and respect for diverse rights, cultures, and knowledge systems.^{16,17}

We turn here to the specific dimensions of environmental justice (EJ). Procedural justice addresses decision-making processes regarding environmental governance and resource use in terms of whose voices are visible, and levels of inclusion in designing interventions. Recognition is concerned with promoting the rights of plural, indigenous, or marginal worldviews, knowledge and values that can be overshadowed by dominant (often “Global North”) modes of thinking.^{16,18} Distributive justice examines how the costs and benefits of interventions and processes of environmental change are differentiated among groups, geographies, and nonhuman nature. Typically, distributive justice enables enhanced recognition of the ways in which costs and benefits accrue across multiple value domains and identifying who (or what) experiences them. It connects to procedural justice in that once distribution is recognized (recognition justice), a procedurally just model of governance can be developed to determine their allocation. Thus, all three elements of EJ are interlinked.

Crucially, and of relevance here, analysis that draws on a global environmental framing repeatedly shows us that seemingly virtuous interventions can extenuate the marginalization of already vulnerable groups and contribute to the vast inequalities visible in increasingly connected global to local patterns of development (see notes 15, 19, and 20 for further elaboration). For instance, REDD+ is thoroughly critiqued for framing forest-dependent communities as the source of solutions to deforestation, thereby also implying their central role in deforestation (despite evidence to the contrary). This framing largely exonerates the actions of distant communities and actors, thereby tacitly supporting harmful business-as-usual behaviors.²¹ With common-pool resources unevenly



Brasilia, Distrito Federal, Brazil - April, 27, 2017 - march with indigenous people holding a banner that says no less rights.

and unfairly governed, the costs of production and consumption are borne most heavily by often rural, small-scale, and traditional communities around the world, and this pattern is repeated in many facets of the global economy that are undergoing or are anticipated to experience profound changes in the coming years.^{22,23}

We take the GEJ framework and apply it to a global set of illustrative cases to explore the consequences of (attempts to incept) wide-ranging, large-scale, and rapid system change. We do so because there is clear evidence that the impacts of environmental degradation, climate change, and biodiversity loss are often dislocated from sites of production and consumption—the dominant drivers of these issues.^{24,25} A global analysis is necessary in order to understand telecoupled processes through which seemingly unconnected locations are linked through, for example, economic supply chains. In doing so, we illustrate how interventions for transformations can incur an unequal distribution of harms when pursued in an overly simplistic fashion.^{26,27}

A brief overview of the methods used to examine the case studies follows. We then present four principles that we argue

are necessary to support more equitable actions, and these are grounded in the case-study examples. While these principles are not necessarily new, they warrant highlighting as they remain underattended in responses to the global crises we are experiencing. The final section of this article concludes by highlighting how the centering of GEJ within the transformations holds potential to deliver change in our increasingly interconnected world.

Situating Global Transformations

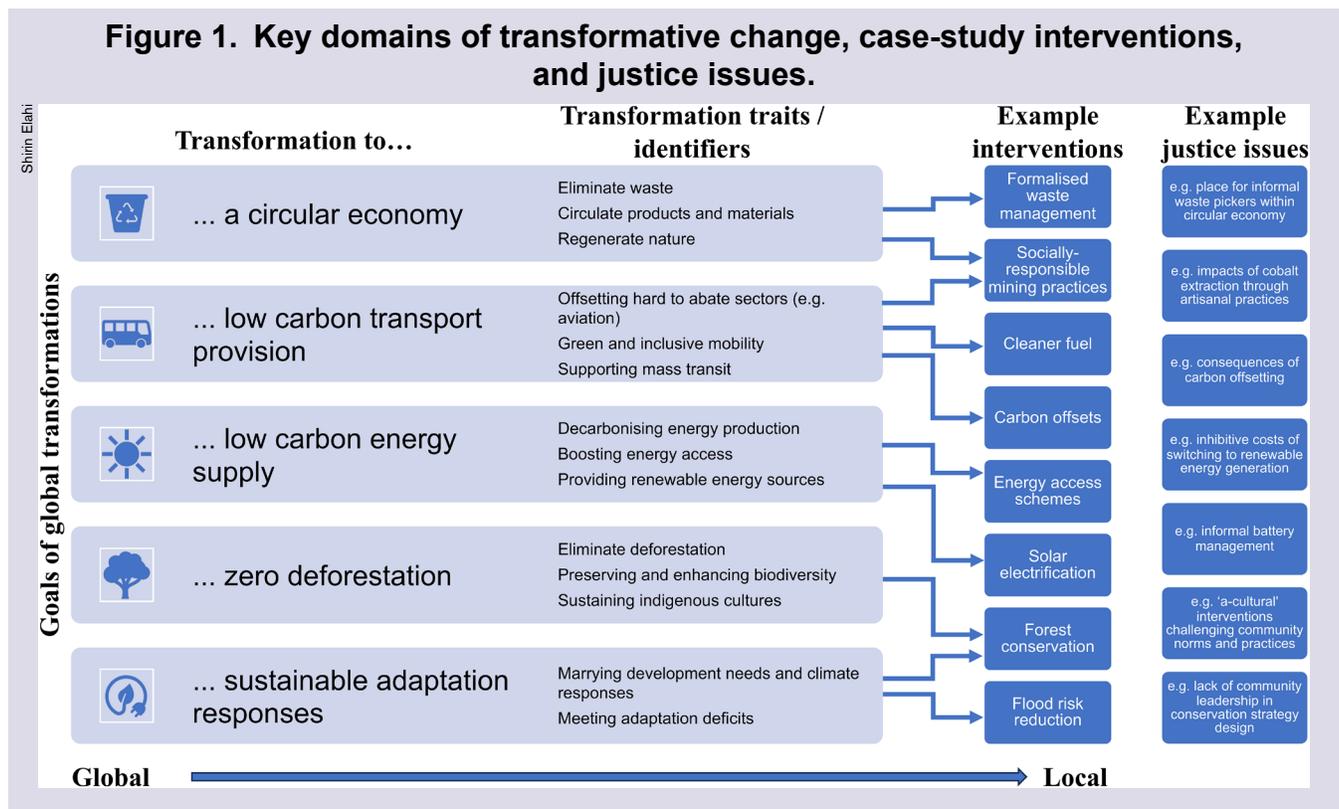
Two aims guide the article: first, to highlight the distribution of consequences on different populations and places in the Global South derived from interventions that promote transformations in waste, transport, energy, forestry, and adaptation; and second, to develop a set of principles that can guide thinking and action on transformation to engender more positive outcomes. These aims build on the arguments of Blythe and colleagues, who call for more “politicisation and pluralisation of transformation research and practice”²⁸ and direct focus on the “how” of transformation, which

has received comparatively less attention than the “what.”^{29,30}

Our analysis is based on a synthesis of outcomes from two related workshops attended by environment, climate change, and development scholars based at the Tyndall Centre for Climate Change Research in the United Kingdom. The first workshop was held in September 2022 and explored the links between the different dimensions of multidimensional well-being/poverty and potential synergies to mitigate and adapt to climate change. The second workshop, held in April 2023, focused on injustice and global crises. A consistent theme that emerged during the course of these discussions related to often unintended consequences of transformations primarily originating in the Global North and their negative impacts in discrete locations in the Global South.

Initially, a large number of transformation domains were discussed, before our focus narrowed down to waste and the circular economy, transport, energy, forestry, and adaptation (see Figure 1). The final set of domains were chosen as they illustrate a broad range of instances where similar dynamics appear to be

Figure 1. Key domains of transformative change, case-study interventions, and justice issues.



Circular economy: Emissions from waste contribute about 3% of global greenhouse gas (GHG) emissions and are one of the largest non-carbon dioxide sources.³⁸ While waste-related emissions are recognized as important to address for climate action, waste generation is rising in many countries.³⁹ Interest in a transformation toward a circular economy is gaining momentum as a key means to transform waste into new products and to decrease GHG emissions by reducing energy and resource use.^{40,41}

Transport: In 2022, the global transportation sector accounted for 22% of carbon dioxide emissions—making it the third highest sector emitter globally.⁴² Historically, behavioral changes and policy have achieved only a marginal decline in emissions.⁴³ Much more impactful technical, operational, and behavioral changes are needed to achieve meaningful transformations, particularly for hard-to-abate sectors (such as shipping and aviation).

Energy: The energy sector is a major contributor to global GHG emissions (73.2% in 2020), along with heat and transport.^{44,45} Key current issues include the continued reliance on fossil fuels, particularly in the context of growing industries and increasing access to energy in low- and middle-income countries.⁴⁶ Proposed solutions have called for decarbonizing production and provision of renewable energy.^{47,48,49,50}

Forest conservation: Conservation approaches to forests take many forms, but by and large tend to focus on the actions of the poor (e.g., introducing alternative livelihoods or payments in exchange for conservation), which overlooks the vital contributions made by local communities to conservation.^{51,52} Contemporary interest and efforts in forest and landscape reforestation and planting trees for carbon sequestration risk repeating many of the past failures, as they fail to address the leading drivers of deforestation.

Adaptation: While academic interest in transforming to a more sustainable form of adaptation has burgeoned in the last decade (notably since the publication of fifth Assessment Report [AR5]⁵³), key uncertainties remain about the form and nature of this transformation.^{54,55,56,57} Similarly, meaningful and widespread action in policy and practice spheres have yet to materialize, as indicated by a global review of 60 empirical transformative adaptation case studies by Fedele et al.^{58,59}

co-occurring. Furthermore, the selection draws across transformations that are already visible and more tangible, albeit not necessarily effective (energy, transport, and forests), and those for which the change is more nascent or marginal to dominant, mainstream ideas (adaptation and the circular economy). In these domains, at a global level, action and reporting on adaptation lag behind those for mitigation, and circular economy ideas have been marginal in terms of mainstream debates on development.^{31,32,33,34} Conversely, actions to reduce emissions in the energy and transport sectors have a long history and are more embedded in mainstream practice, as are efforts to support conservation and forest restoration, although they are vastly underperforming.^{35,36,37}

Principles for a More Just World?

Using the five domains outlined here as our starting points, the workshops drew on specific interventions and known cases of injustices associated with them. Our knowledge of the cases and linked issues allowed us to then explore the impacts of these interventions on people and places in the Global South (see Table 1). Data were organized using the framework developed by Gioia et al., which includes first-order (five domains), second-order (justice issues), and aggregate dimensions (principles).⁶⁰ Specifically, we utilized the GEJ framework to categorize the data into second-order themes, focusing on distributive, procedural, and recognition justice. Following the workshop, we undertook a further round of synthesis through which we analyzed these second-order themes and inductively generated a set of insights (that we call principles), which we present subsequently and that can be applied to support more equitable and just approaches.

Principle 1: Value, Recognize, and Embed Plural Perspectives

The benefits of recognizing and valuing plural perspectives are increasingly accepted as necessary to equitably and effectively address global environmental crises.^{61,62} Initially visible with

regard to indigenous knowledge and world views, the drive to incorporate plural values is promoted in biodiversity conservation at the international level and the decolonization agenda.^{63,64,65,66,67}

While widely acknowledged as necessary for more just transformations, the concrete means through which plural values and world views are given space to influence procedures (e.g., deliberations,

actions) and outcomes and even what is considered a matter of import remain underdeveloped and incomplete, with predictably negative consequences.^{68,69,70} Valuing plural perspectives is

Table 1. Summary of illustrative case.

Case	Description of key issues associated with intervention	Further references
Waste pickers in Santiago de Chile	Narratives concerning the promotion of the circular economy exclude informal waste pickers from waste management systems. This exclusion can increase their marginalization and contribute to the attrition of their valuable knowledge about urban waste management.	Gerdes and Gunsilius (2010) ⁷¹ , Velis (2017) ⁷² , Valenzuela-Levi (2020) ⁷³
Using rice husk for bioenergy to support livelihoods in Myanmar	The global agenda to increase electrification by providing access to modern and renewable energy systems tends to overlook existing challenges in local communities, especially related to how to finance these systems. Farmers and small-scale millers are often not able to access formal financing schemes, limiting their capacity to adopt better (less polluting) technologies for generating energy from renewable sources and support their livelihoods.	Cloke et al. (2017) ⁷⁴ , Minas et al. (2020) ⁷⁵ , Chipango (2021) ⁷⁶
Off-grid solar waste in Malawi	Strategies to increase access to electricity with the private market for off-grid solar technologies across Sub-Saharan Africa overlook the need for safe infrastructure to treat electronic waste resulting in public health risks from lead pollution. In Malawi, lead–acid batteries from solar energy systems are informally recycled, releasing life-threatening quantities of lead pollution with severe implications for public health.	Kinally et al. (2023) ⁷⁷ , Kinally et al. (2024) ⁷⁸
Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)	Beyond the environmental concerns associated with offsetting schemes, a significant criticism of forestry offsets (which CORSIA permits) revolves around the inherent inequality, as these projects often dispossess local and indigenous communities of their lands. Without proactive measures, CORSIA has the potential to amplify the systemic injustices ingrained in carbon offset governance.	Finley-Brook (2016) ⁷⁹ , Tupala et al. (2022) ⁸⁰
Artisanal and small-scale miners in the D.R. Congo	Due to the sustainability risks associated with artisanal and small-scale mining involved in global supply chains for the manufacturing of lithium-ion batteries, the local actors are often neglected. The exclusion of local actors from mining activities devalues the knowledge they possess and reduces livelihood opportunities significantly impacting on local well-being.	Zeuner (2018) ⁸¹ , Clifford (2022) ⁸²

Table 1. Continued.

Case	Description of key issues associated with intervention	Further references
Climate change adaptation and flood risk management in Fiji	How climate risks are evaluated as threats at the household and community scale differ, and much of that difference is related to distinct worldviews. Therefore, climate change adaptation initiatives that focus on the village or household level can ignore the dynamics between the two scales, which can lead to tensions that erode household participation in community activities contributing toward reduced well-being, as well as lower levels of support for more marginalized groups that rely more heavily on communal resources and efforts.	Shelton (2017) ⁸³
Forest conservation through fire prohibition and control	Leading narratives of nefarious (i.e., “bad”) fire combined with conservation agendas, diverse histories of colonial control, and aggressive accumulation by dispossession have prohibited (or heavily impacted) local uses of fire in many contexts . These restrictions on the use of fire have been extremely damaging for many local rural communities for whom fire is central to subsistence agriculture, cultural reproduction, and autonomy. Further, antifire narratives have created contexts in which fire use may become more illicit, with more chance of escaping intended agricultural plots, invading surrounding forests, with negative impacts on conservation and forest communities that are heavily integrated with forest environments.	German et al. (2010) ⁸⁴ , Carmenta et al. (2019) ⁸⁵ , Carmenta et al. (2021) ⁸⁶



Matacawalevu, Fiji - December 18, 2016: An indigenous Fijian girl (Miriam Bulivono age 8) walks in her village on flooded land in Fiji. On Feb 2016 Severe Tropical Cyclone Winston was the strongest tropical cyclone in Fiji in recorded history.

not only about recognizing or understanding contextual differences that fatally undermine cookie-cutter approaches to interventions,⁸⁷ but also about recognizing and valuing other knowledges and ways of being, while explicitly connecting these considerations to the pursuit of justice.⁸¹

In Fiji, local climate change adaptation initiatives often focus on village-level actions, without due recognition of the trade-offs for individual households. Underpinning these distributional and recognitional issues are contrasting worldviews. The *iTaukei* (indigenous Fijian) worldview shapes dynamics between households and the village, including rules governing behavior, such as exchanges of resources and time, and ownership of goods, and places a “floor” on how far into poverty or need a household can fall



Global demand for air transportation continues to grow.

before assistance is provided. The *iTaukei* worldview mediates how well-being is understood. In the Rewa River delta, lower income or marginally located households rely more heavily on village-level preparation and responses to flooding. Adaptation interventions, which typically prioritize the household for flood preparedness (rather than the village), inadvertently encourage more affluent households to prioritize their own preparatory activities and responses over and above village-level efforts that are crucial in maintaining a minimum collective social floor. In this example, the blindness of the intervention to local worldviews creates or exacerbates tensions within communities, further eroding the participation of individual households, with deleterious impacts on social and relational well-being.⁷³

Across the forested tropics, including the Brazilian Amazon, attempts to achieve forest conservation and reduced deforestation have taken many forms, from area protection, through payments and rewards-based approaches, to intensified agriculture and integrated sustainable-use reserves.^{88,89} Despite the growing interest in assessing the outcomes of these interventions for nature (e.g., biodiversity impacts, reductions in deforestation rates) and increasingly also for people, there is a heavy bias toward the natural sciences.^{90,91,92,93,94}

Relatedly, where people are included, the focus of outcome assessment tends toward the objective (material) elements of people's lives.^{95,96} However, forest climate-conservation interventions recast the use, access, and rights to forests by local communities and inevitably impact all dimensions of human well-being, through the relational, subjective, and material dimensions.^{93,97,98} The focus of interventions, predominantly on material elements of people's lives enacted

through a mode of development that is foreign and ill-suited to indigenous practice and culture, exacerbates inequalities for already marginalized and disempowered communities.

The invisibility of the relational and subjective dimensions of impact is often most salient in contexts where people live closely to the land.⁹⁸ In these places, interventions can add to the pressures already being experienced by people who are highly marginalized and vulnerable.^{75,99} When the more intangible elements of lives and livelihoods are valued, we see that single-sector style approaches to achieving conservation (e.g., through protected areas, or agricultural intensification) tend to incur harms, while integrated approaches tend to result in positive impacts across multiple dimensions of well-being.⁹³ This suggests that recognition of plural values is an important consideration in designing interventions that deliver across multiple facets of well-being.

As the preceding examples show, non-Western scientific values, knowledges, and perspectives are frequently discounted or ignored.^{8,100} Moreover, interventions tend toward a singular scale of implementation without considering the wider dynamics and worldviews—ignorance of the influence of



A cargo bike rolling through the town of Nanortalik, Greenland.



Macaws in the Amazon Rainforest, state of Acre, Brazil.

these dynamics reproduces or exacerbates power imbalances.¹⁰¹ Creating spaces where plural values, perspectives, and knowledges can work together has been shown to successfully create more sustainability and equitable outcomes in a variety of contexts.^{102,103} However further work is needed, as argued by Bentz et al., to focus on the process or “manner” within which a solution is implemented (incorporating co-creation, meaning-making, learning, etc.).³⁰

Principle 2: Address Inequitable Social Structures to Promote the Fairer Distribution of Costs and Benefits

Addressing the multiple and intersecting environmental crises and widening social and economic inequalities requires a firm yet delicate balance between many competing priorities, particularly as solutions need to be concurrently both urgent and just.^{11,104} The possibility (even if this is

increasingly unlikely) remains that rapid climate action can help limit warming as close to 1.5 °C as possible (aligning with the Paris Agreement) and that we can achieve the goals of the Kunming–Montreal Global Biodiversity Framework.^{105,106} However, and even assuming the necessary political will, the extent to which these global goals can be achieved while addressing key development priorities and given underlying structural inequalities is questionable.^{21,26,107,108,109,110,111} In this context, structural inequalities refer to systemic and entrenched disparities in access to resources, opportunities, and rights, which are embedded in the social, economic, political, and cultural frameworks of a society. These inequalities, the roots of which often lie in historical processes such as colonization or imperialism, are not the result of individual choices or actions but rather arise from the design and functioning of institutions, policies, and social norms that advantage certain groups while disadvantaging others.^{112,113,114}

The challenge of balancing competing priorities and ensuring better distributive justice is evident whether solutions seek to achieve one or multiple agendas and regardless of scale. We see this in global interventions, such as carbon offsetting, where actions are necessary as a result of emissions and behaviors in higher income economies, but the consequences are felt in communities in the Global South. The international offsetting program [CORSA](#)¹¹⁵ is the only mitigation measure that currently addresses global, nondomestic aviation emissions.¹¹⁶ The program includes forestry projects, which have been shown (from predecessor programs such as the Clean Development Mechanism, Verified Carbon Standard, and REDD+) to perpetuate land grabbing, fueling local territorial disputes and income equality.^{117,118,119,120} But even if we put to one side question marks over the efficacy of offset schemes to reduce carbon emissions, we assert that offset programs implicitly sanction unsustainable



Forests support many different livelihoods and are incredibly bio-cultural diverse

carbon-intensive lifestyle activities.^{121,122} In effect, these programs act to shift the focus away from the unsustainable structures and high-emitting practices, perpetuating preexisting inequalities and injustices.³⁰

Managing deep-rooted structural inequalities is important not just at the international scale. Local-level interventions such as renewable energy projects can exacerbate poverty and inequality when underlying power asymmetries that reproduce vulnerability and marginalization are not addressed. In Myanmar, for example, efforts to improve energy access through the generation of biogas from rice husk (an agricultural residue after rice milling) created financial and technical challenges for smallholder farmers and millers, the target beneficiaries.¹²³ The nuanced power relations that exist between smallholders and informal lenders create “poverty traps,” with locals forced to use their income to pay off high-interest and unregulated debt. The consequence of these poor implementation procedures is that much-needed financial capital is diverted away from improving farming and milling resources toward less carbon-intensive energy

generation.^{65,124} As this example shows, where meeting basic needs and minimum levels of well-being is the priority, it appears inappropriate to introduce unaffordable low-carbon energy sources without first addressing more urgent developmental priorities. This strengthens evidence that market-based solutions for electricity access reproduce existing inequalities as the expected economic and welfare benefits are unequally distributed within populations.¹²⁵

There are clear risks in implementing solutions that ineffectively engage with the core tenets of EJ, thus perpetuating the status quo. The distributional impacts and superficial engagement with local sociopolitical configurations (spotlighting issues of recognition) underpin inappropriate procedural processes and entrench existing inequalities (as we see in the case in Myanmar). Similarly, offset schemes fail to challenge the structures that support unsustainable behaviors and shift the focus onto the dislocated consequences of unsustainable actions. Lessons from energy research and community development suggest that the goals of the project or programmatic

outcomes must be more clearly aligned with the interest, needs, and capacities of the “beneficiaries,” which both lends legitimacy and supports greater engagement with underlying sociopolitical relations.^{126,127,128} Applying this lesson more broadly shows that more work is needed to challenge the power and political structures that perpetuate failures of policy to protect the marginalized and vulnerable.

Principle 3: Recognize (and Plan for) the Certainty of Perverse Outcomes

Well-intentioned initiatives and actions can have unintentional and perverse outcomes in complex systems, often due to the lack of recognition of the local context, distributional issues in terms of spatial and temporal spillovers, and the processes of implementation.^{129,130,131,132} Interventions (the genesis of which is frequently derived from transformational narratives originating in the Global North) often “land” and reshape local dynamics in unplanned ways to disrupt existing sociopolitical and cultural structures, reproducing marginalization and social inequality,



Waste picker, an urban worker who collects recyclable solid waste, such as cardboard, aluminum, glass, and others, São José dos Campos-SP.

which limits the efficacy of the intervention itself.¹⁰¹

Circular economy policies intending to increase recycling rates in the Global South have been found to exclude the local informal waste collectors that underpin the existing waste management system. For example, in Santiago de Chile, an Extended Producer Responsibility (EPR) law aiming to increase the national recycling goals has been recently passed.¹³³ This law restricts waste pickers' access to waste in favor of larger and more recognized management systems, established by producers and authorities, despite the existence of more than 6,000 waste pickers or *recicladores de base* and the presence of a well-established informal waste market network that represents the most important alternative to landfills and open dumps.¹³⁴ Analysis shows that recycling practices that exclude the informal sector tend to perform more poorly than approaches that seek to engage and co-produce waste management policies. For instance, the exclusion of waste pickers from waste management devalues their skills and abilities to collect high-value products (such as electronic waste) and further marginalizes a group that is already vulnerable.¹³⁵ Where more inclusive policy approaches have been implemented,

evidence points toward better working conditions and improved performance of waste pickers with regard to collection rates and levels of recycling.¹³⁶

In another example, we see initiatives to increase access to electricity in Sub-Saharan Africa (by delivering household-scale solar electrification technologies to off-grid communities) fail to address the absence of local, safe waste management infrastructure.^{137,138} Consequently, informal waste

management practices for off-grid solar products that have been found to release life-threatening quantities of lead pollution into densely populated communities have flourished.^{67,68} In this case, an initiative for low-carbon energy provision has unintentionally caused a public health risk as the whole life cost of off-grid solar products (including recycling and disposal) interacts in unexpected ways with the local (often informal) economy.

To minimize the risk of perverse outcomes, initiatives should recognize and be designed for the context in which they are being applied, where the manner of implementation is integrated with the means of delivery.³⁰ This requires developing a greater understanding of intragroup differences across the lifespan of the intervention and more effectively analyzing roles of the actors across relevant systems and processes to support fairer distributions of costs and benefits.¹³⁹ This “due diligence” can help to mitigate potential risks (for informal waste pickers, for example) and to ensure the feasibility, efficacy, and equitability of initiatives by better understanding and positively addressing social differences.¹⁴⁰

However, it is important to recognize that even with enhanced understanding, perverse outcomes are a certainty. Given



Artisanal cobalt miners in the Democratic Republic of Congo.

this knowledge, ensuring that suitable processes are in place (such as enhanced levels of reflexivity or monitoring, reporting, and verification processes) to manage unintended and negative outcomes is essential to maintain equitable outcomes and ongoing support for interventions.^{141,142,143,144} An example of a more reflexive approach is seen in the recognition and integration of informal recyclers into the recycling value chain in Londrina, Brazil. In response to the national EPR law (which has typically resulted in the exclusion of informal recyclers from waste management services), the administration of Londrina actively recognized and engaged with informal recyclers and established recycling cooperatives. The establishment and integration of these cooperatives

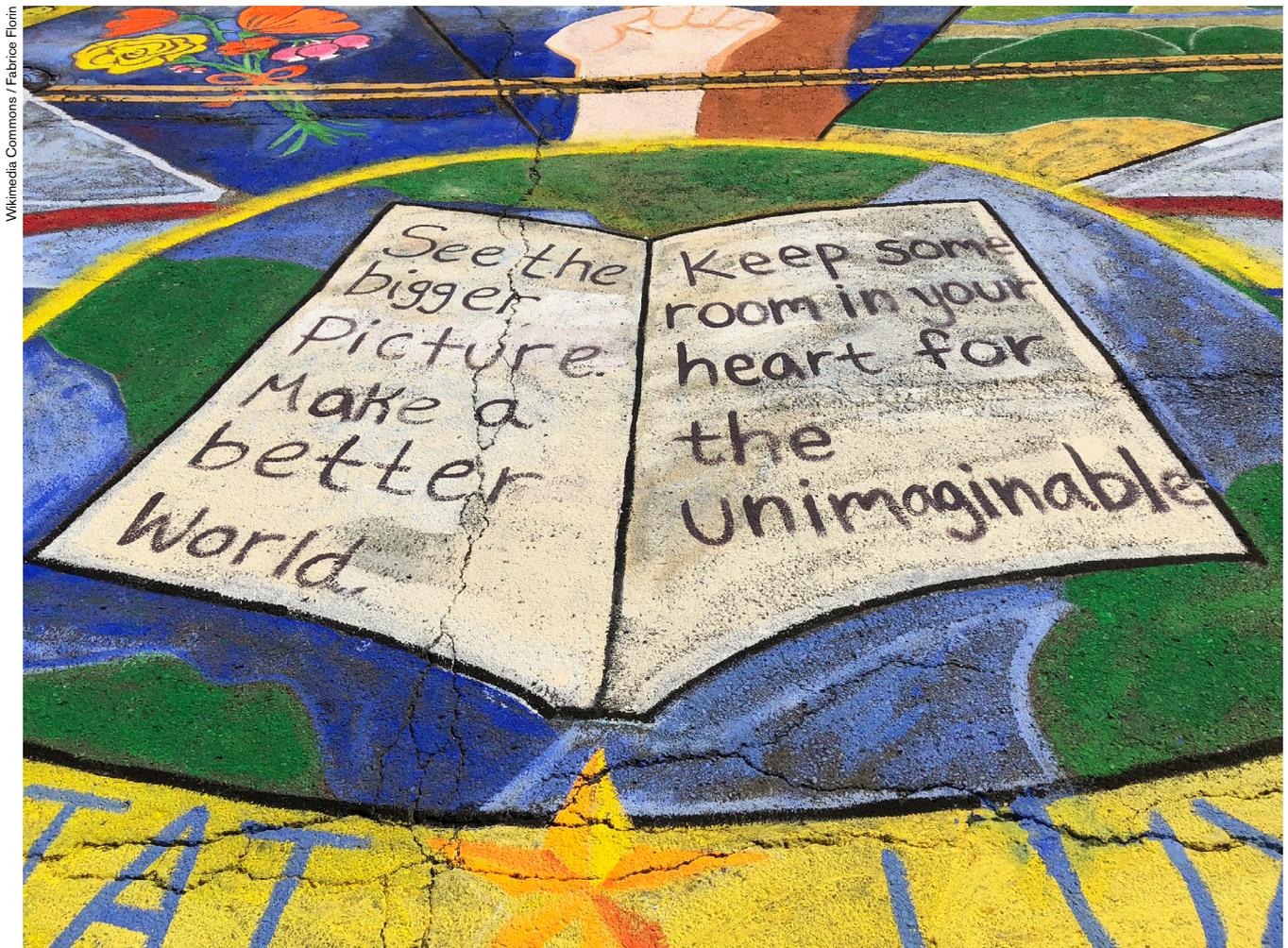
into formal waste management practices contributed to an increase in recycling rates and improvements in the quality of life for cooperative members.¹⁴⁵

Principle 4: Empower Local People and Their Institutions

There is a need to empower local people and institutions to underpin just and equitable transformations. Existing studies show how interventions to achieve sustainability, such as adaptation, the circular economy, or REDD+, risk neglecting marginalized and disempowered population groups or trivializing local actors and knowledge, particularly in the Global South.^{50,146,147} Eriksen et al. reviewed 34 empirical studies of adaptation and concluded

that unfavorable terms of engagement with vulnerable populations serve to reinforce inequitable power relations, a conclusion also reached by Karlsson et al. in relation to climate-smart agriculture.^{101,148} In both examples, the grounding of transformational global narratives acts to reduce agency at sites of implementation. We see similar issues manifest in other settings.

In D.R. Congo, artisanal and small-scale miners are often bypassed and actively sidelined by international companies' decisions to replace or reduce D.R. Congo-derived cobalt with substitutes due to concerns about how it is sourced.^{131,149} Yet cobalt mining is an important livelihood for the indigenous Congolese population, and a leading contributor to the development of local



A quarter million people joined the Climate Action March around the world on Sep. 8, 2018, in San Francisco, thousands of activists created one of the largest street murals ever made, covering five blocks of city streets.



communities' and D.R. Congo's economy.¹⁵⁰ While the environmental and social costs of artisanal and small-scale mining (ASM) are well known, the (potential) benefits are less well discussed, especially if differences within the ASM sector are acknowledged. For instance, by recognizing and rewarding ASM cooperatives or associations with better practices, governments and multinational mining companies can use their influence to promote more sustainability within the mining sector and ensure much-needed livelihood opportunities. Such an approach sits in contrast to the current situation whereby multinational mining companies and governments work around rather than with ASM groups and expose already-marginalized populations to greater risks of unemployment, social unrest, and diminishing living standards.¹⁵¹

Recognizing and empowering local people and institutions is vital to ensure they have an active stake and participate in defining and realizing much-needed development outcomes. Such involvement not only increases the likelihood of

sustainable outcomes but also enhances the legitimacy of the process by which those outcomes are derived and ensures that benefits are more fairly distributed. Supporting and empowering local people and institutions requires a deep understanding of local contexts and their associated social complexities or dynamics, as well as a greater diversity and pluralism in how we see the world and consider what is valued.¹⁵² As demonstrated by McGaughey et al. in their Great Lakes remediation and restoration study, locally embedded and locally driven approaches resulted in the successful environmental revitalization of the Great River and increased agency for local people and community groups.¹⁵³ The study highlighted that local actors derive multiple benefits from the recognition of their lived experience and knowledge when working in collaboration with other people and institutions.¹⁵⁴

Similarly, ASM formalization projects to address social sustainability issues such as child labor and human rights violations in D.R. Congo show the potential to engage populations in

ways to enhance rather than undermine livelihood opportunities and well-being.^{155,156} Underpinning the belief in the benefits of formalization projects is a recognition that more value must be placed on recognizing the practices and sentiments of communities to ensure they have a greater agency over and stake in decisions that significantly impact their lives and livelihoods.

Centering Environmental Justice Within Global Transformation Agendas

Newell and colleagues highlight that a critical gap persists in climate justice scholarship concerning the issue of scale.²⁷ Global concerns and discourses are often enacted and implemented in ways that can vary from the original intent through processes of reinterpretation and difficulties in staying true to the original principles, leading to unforeseen or unintended harms,^{8,29,101,157,158} Our analysis speaks, in part, to this gap. We show how the

transformational forces evident in different sectors (from mitigation actions in hard-to-abate transport sectors and national energy transitions to local level adaptation and conservation interventions) act in and on dislocated places around the globe. It follows therefore, that if we are to achieve just transformations then we must elaborate potential solutions that not only address the proximate causes of harms but challenge the drivers of these harms, which often reflect the uneven distribution of and access to power at political, cultural, and historical levels. We stress that solutions must challenge inequitable and unjust global power imbalances, which are often rooted in the legacies of colonialism and imperialism, rather than merely continue the status quo.^{29,157,159}

We accept that the principles we outline here may not seem “new” or even that radical. However, they warrant foregrounding within discussions and efforts to promote transformative change, given the persistence of repeating existing injustices or creating new distributional harms for people and nature. Rodriguez and Inturias show how approaches to conflict transformation that value plural perspectives (principle 1) and empower local people and institutions (principle 4) contributed to the success of *campesino* and indigenous peoples of Cochabamba in resisting the implementation of a law in Bolivia on the privatization of water and sewerage.¹⁶⁰ Similarly, in the field of conservation, Mahajan et al. highlight how complex systems thinking can not only help elucidate and plan for potential perverse outcomes (principle 3) but also help develop shared understanding of the key dynamics within systems supporting more collaborative planning and implementation to enable stakeholders to better manage competing priorities (principle 2).¹⁶¹ These two examples, by focusing on how we do transformation, draw attention to some of the more invisible and easy-to-ignore issues that are frequently sidelined but necessary to realize socially just practices and to achieve better outcomes.

While the overarching goals of transformations are indisputable and ostensibly desirable (“a low-carbon future,” “a circular

economy,” “zero deforestation”), the process of how we get there is at least equal to or even more important than the end goal, certainly in the shorter term.³⁰ Moreover, the calls for transformations that frequently have their genesis in thinking and worldviews associated with the Global North (e.g., ideas of individual rights, libertarian worldviews and universalistic assumptions, separation of people and nature) inadequately reflect decolonial and plural knowledge sources and forms.¹⁶² The outworkings of these transformations “land” with often fatal momentum in seemingly disconnected locations around the world and create sets of avoidable and unwanted injustices that further disempower already marginalized and disadvantaged people and places to which the interventions are superficially there to support.¹⁶³ So, while the need and demand for urgent transformation is growing,^{78,79,164} a legitimate question to ask is, if the current situation has arisen precisely because of issues linked to specific ways of thinking, why should we expect to find solutions that are embedded in the same underlying logic?¹⁰⁸

A crucial insight provided by GEJ theory is that environmental sustainability and social justice are intertwined, rather than parallel objectives, with synergies and trade-offs that must be managed for better environmental and social justice outcomes.^{1,20,107} As the climate and biodiversity crises continue to worsen, the imperative to ensure that people, places, and the nonhuman world are adequately recognized and addressed fairly, equitably, and justly grows ever more important. Progress will only be sustained if, as a global population, we can maintain a broad coalition of willing actors—inequality and perceived injustices undermine this likelihood and even threaten to undo areas where significant progress has been made. A justice-centered approach can help to forge alliances, networks, and a shared vision among key stakeholders, transform environmental conflicts into positive agency for change, empower marginalized groups to act for sustainability, and enhance acceptability of pro-environmental interventions.^{165,166,167,168} The four principles outlined here can support efforts to minimize the reproduction and generation of injustices, and in so doing contribute to a

Additional Resources

Bentz, J., K. O'Brien, K., and M. Scoville-Simonds. “Beyond “Blah Blah Blah”: Exploring the “How” of Transformation.” *Sustainability Science* 17 (2022): 497–506. <https://doi.org/10.1007/s11625-022-01123-0>.

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fairer allocation of costs and benefits and go some way to support the broader goal of more just and equitable transformations.

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