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ESSAY

Adaptation as a catalyst for social change

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Abstract

Adaptation to climate change is currently characterised by ever-increasing costs to maintain the status quo with respect to climate hazards. This gap is worsened by the fiscal austerity that characterises the current political and economic situation in many countries. These cuts reduce societal resilience through neglected public infrastructure, services and civic spaces generating vulnerability to shocks and an everyday lack of opportunity. Here we argue that without addressing economic austerity, the viability of current approaches to adaptation are severely compromised. Thus, engaging with, and shifting, societal values, norms and objectives in decision-making will be central to a more cost-effective and orderly form of adaptation. This requires amplifying the political voice of communities who often lack the power to effect change. In this framing, adaptation goes beyond (but still includes) responding to hazard, placing greater emphasis on investment in people and advancing their wellbeing. Adaptation becomes a political force driving social change and challenging the logic of economic austerity.

Introduction

This essay advances ideas of transformational adaptation by bringing them into dialogue with national adaptation planning and dominant political economies that deprioritise investment in the public sphere. Proponents of transformational adaptation argue that adaptation should be approached not as a discrete, technical response to climate hazards, but as an opportunity to reduce vulnerability by addressing poverty and inequality. Here we argue that, in many countries around the world, this requires meaningfully resisting political austerity – understood as policies that cut public

spending to reduce public debt accrued by the government. We propose a shift in ambition of national adaptation programmes to achieve this - utilising adaptation as a driver for social good, rather than to protect current policy objectives. We argue that a transformational alternative, one that embeds equity and participation in how adaptation is defined, financed and measured, is not only more just but also more cost-effective and fit for purpose. National adaptation plans can build a cohesive vision of the benefits and outcomes of a well-adapted society, engaging with values and connecting to participatory processes.

The adaptation gap

The Adaptation Gap reports produced annually by the United Nations Environment Programme (UNEP) highlight, with increasing urgency, how global efforts on climate change adaptation are falling short [1]. The reports emphasise the funding gap for adaptation in low-income countries and how high-income countries are failing to meet their commitments under the Paris Agreement. Those least responsible for emissions continue to suffer the most from climate impacts.

However, in all countries the limits to adaptation are becoming increasingly clear [2]. Accelerating climate hazards and their impacts mean business-as-usual adaptation approaches that maintain the status quo will become increasingly costly. For example, the UK's third Climate Change Risk Assessment highlighted that, for nine significant risks, annual damages could range between £5 billion and £10 billion by the 2050s, escalating to tens of billions by the end of the century [3]. The costs of adaptation for the 27 countries of the European Union to the 2030s have been estimated at between €15 billion and €64 billion a year, [4] depending on the country estimate from which the costs are extrapolated. UNEP [5] estimates developing-country adaptation costs at around US$310 billion a year by 2035. These estimates are based largely on the costs to infrastructure and the economy and so are extremely conservative. They do not account for wider social, cultural and affective impacts of climate change, nor the interconnected nature of cascading risks across social and physical infrastructure. Neither do these costs consider the role of climate hazards in deepening vulnerability or include the degradation of nature. Environmental damage to "Earth's life supporting systems" will undermine prosperity [6].

Action on adaptation has been underwhelming [7] and far outstripped by the increase in risk. Progress against adaptation has largely focussed on discrete efforts to reduce specific risks through reporting, technical adjustments to infrastructure and the built environment and changes in behaviours. However, often resources are directed at disaster relief, a reactive response to discrete hazard events, rather than proactive, anticipatory and development-oriented interventions. Conflating adaptation with responding to extreme weather can impede more future-oriented programming and planning. Further, while mainstreaming adaptation across policies and sectors has been a longstanding goal, there is little evidence that ambition has translated into meaningful action [8]. Where action is taking place, countries have struggled to track implementation of national adaptation plans, mainly due to the lack of monitoring and evaluation processes to measure their adaptation actions, difficulties in distinguishing

adaptation from any development-related measure that reduces vulnerability or builds resilience (i.e., infrastructure, education or social protection) and issues in defining success [9,10].

Adaptation becomes piecemeal, incommensurate to the scale of the problem and, crucially, lacking a wholistic vision of the benefits of the process and outcome. For example, the UK's Third National Adaptation Programme attracted widespread criticism for its limited ambition and inadequate response to escalating climate risks. The Climate Change Committee (the statutory body charged with monitoring the UK's progress under its 2008 Climate Change Act) concluded that the NAP3 "falls far short of what is needed" and "lacks a coherent vision or clear priorities" for building climate resilience [11]. This is despite evidence that anticipatory adaptation delivers high returns, with benefit-cost ratios typically ranging from 2:1–10:1 [3].

Successful adaptation has often depended on how it is framed and existing priorities with which it can be aligned. Ahmedabad's Heat Action Plan, the first in South Asia, gained traction precisely because extreme heat was reframed as an urgent public health crisis rather than a climate change impact, mobilising the health sector and municipal authorities [12]. Evaluations credit the plan with averting around 1,190 deaths a year, and it has since been adopted as a template by more than 100 Indian cities [13]. In New York, the NYC CoolRoofs programme, implemented by the Mayor's Office, treated the roofs of 626 buildings with a white, reflective coating to reflect solar energy. The programme was framed around the health benefits of a reduced Urban Heat Island effect and energy savings from lower air conditioning bills, but represented a successful adaptation to increased heat under climate change [14].

An unequal society is a more vulnerable society

Climate hazards deepen the persistent problems and hardships experienced by lower-income groups, racialised communities, people with disabilities and underlying health conditions, and others already facing systemic marginalisation [15,16]. Equally problematic, climate hazards can introduce new issues by worsening poverty–through impacts on physical and mental health, food prices, insurance costs, living conditions, job security, and property, among others. However, it is not just that people are vulnerable, and the impacts of climate change are deepening that vulnerability. Rather the current political economy in many countries is actively reproducing vulnerability through economic austerity [15,17]. The challenge then is not (only) the increase in the rate and severity of climate impacts but rather that efforts to stimulate adaptation action cannot be separated from the broader political and economic context in which they are embedded. For many advanced capitalist countries, this context is characterised by a recent history of austerity, stagnant social mobility, and widening and deepening inequality.

Austerity describes policies that cut public spending to reduce public debt accrued by the government. Public debt has multiple drivers, for example, population ageing alone is projected to account for more than 40 per cent of the rise in fiscal pressure across Organisation for Economic Co-operation and Development (OECD) countries between 2024 and 2060 [18]. However, in many high-income countries, debt has also risen through discretionary decisions, including the state funded rescue of banks during the 2008 financial crisis and responses to the COVID-19 pandemic. Borrowing can also be sound when it funds productive, future-oriented investment and reduces inefficient or regressive spending. Where interest rates sit below growth rates the fiscal cost of debt may be modest [19]. For example, removal of fossil fuel subsidies, which the IMF valued at around US$7 trillion, or 7.1 per cent of global GDP, in 2022 and which accrue disproportionately to wealthier households, can be both fiscally prudent and beneficial for the climate [20]. Thus, the political ideologies that guide decisions on how fiscal consolidation takes place, and the composition of cuts, matter.

The form austerity has taken in many high-income countries has been regressive, falling hardest on those least able to bear it, even as a substantial share of the debt being addressed was incurred in response to instability in the international financial system. The political project of austerity is rooted in inequality: the poorest in society are the most reliant on the public services that are being cut [21]. Policies have eroded public services and left sectors such as local government, justice, and environmental protection underfunded, shaping the conditions in which adaptation unfolds [22,23]. Austerity

increases poverty and inequality through high inflation, stagnant wages and reduced welfare support [17]. Economic austerity has also increased vulnerability to the impacts of climate change. For example, Sou and Steele [24] explore how cuts associated with austerity have diminished existing infrastructure that helps people to keep cool during heatwaves – poor water quality means people avoid swimming in rivers, green space such as parks are not well maintained and safe so people prefer not to use them, and there are a lack of institutional buildings such as libraries to provide cool spaces.

Poverty and inequality can lead to discontent and distrust in the government, also reduces the political space in which to engage people on climate change [25]. Many communities, particularly racialised populations and people in deindustrialised and rural areas, are both materially disadvantaged and politically disillusioned. Spatial and social inequalities are deepening, and populations are increasingly distrustful of governments that have left them behind. This makes it more difficult to undertake climate action and the move to the political right has been associated with increased climate scepticism, or even denial [26].

The need to anticipate and shape the transformation that climate change will inevitably bring to society

In a context of underinvestment in public services and market-oriented responses to societal problems, regulation of adaptation in the private sector has been slow [27]. Local authorities and municipalities are expected to deliver frontline adaptation while chronically under-resourced [28]. The case for adaptation is harder to make than for other areas of policy. Its benefits are largely the avoidance of future harm and are thus diffuse, deferred and often invisible to voters, while the costs of adaptation are immediate, concentrated and salient [29]. Adaptation also requires integration into other policy areas; the goal being for all decisions to consider climate risk. So, unlike other areas such as pensions or healthcare, adaptation has no natural constituency or organised lobby. In addition, its long-time horizons sit awkwardly with electoral and funding cycles. These difficulties are compounded by active opposition, particularly from the populist right, where action on climate is increasingly contested or denied [26]. As a consequence, the current adaptation solution space is dominated by efforts to build the business case for adaptation to attract private finance, justify public spending and establish the goals and metrics against which actors can measure progress (exemplified through the Global Goal on Adaptation at the multilateral level).

Although the damage reduction can be quantified, the full set of social and environmental benefits of adaptation are difficult to monetise, monitor, and have evaded consistent metrics against which to measure success [30]. As the impacts of climate change accelerate and worsen, so must the level of resources increase exponentially to preserve current levels of risk exposure and quality of life. There is already an adaptation gap and, in many cases, even maintaining current standards of adaptation services is going to require significant and increased investment, often with little opportunity for financial return.

There are instances of adaptation being financially viable, but usually with public subsidies and in isolated cases. Economic returns are not easily captured, and they materialise over long timeframes. Thus, private finance flows more readily to adaptation that protects a firm's own assets and operations, or that generates appropriable returns, than to the public-good dimensions of adaptation on which the most vulnerable depend. Even where private finance can be mobilised for shared infrastructure through blended finance and supportive policy, its realistic potential to meet the adaptation gap remains well below what is needed, and public funding alone is insufficient [5]. Further, climate change impacts are likely to undermine adaptive capacity by eroding the "monetary and institutional resources critical to adaptation" [31].

In this context, it is wise to assume that the widespread direct and indirect impacts of climate change will inevitably drive deep changes to our systems and institutions. These challenges are already being felt [32]. Thus, we need to go beyond the status quo, and doing so will require a shift in how we view and 'do' adaptation [31]. Adaptation must anticipate and shape, rather than absorb these changes. In this framing, transformation of systems and practices *is itself* adaptation, rather than a response that only occurs once some threshold or limit to adaptation has been breached [33].

Recent contributions have argued for adaptation that considers welfare and development objectives [2] and goes beyond project-based approaches to consider interventions designed to challenge poverty [34].

These authors extend efforts to operationalise transformational adaptation, understood as action to reduce the risks of climate change that attends to both the proximate and root causes of vulnerability. Transformational adaptation links incremental adaptation with broader struggles for social equity. As such, it requires concerted engagement with power and how institutions and values are configured in response to the climate crisis [35]. Implementation is grounded in adaptive management, systems thinking, social learning and participatory processes that seek to challenge the status quo and open space for plural and more just futures [36–38]. Thus, transformational adaptation is both a process and a political project—one capable of reimagining what climate resilience means, and for whom.

This framing allows adaptation actors at all scales to engage with adaptation as an opportunity—not just to manage climate risk, but to advance sustainable development goals and drive social reform. It relies on, and encourages, a fundamental shift in the way we conceptualise adaptation; from a cost and a problem to an opportunity with the potential to shape the trajectory of nations.

Progressive responses to climate change that fail to engage with power

While operationalising adaptation in line with this perspective remains challenging [39,40], it is far from utopian. There are trade-offs and residual risks, but adaptation that centres people and politics can offer pragmatic, cost-effective strategies with measurable co-benefits [41]. For instance, the mental health and well-being benefits associated with access to green space and nature-positive adaptation are well documented, demonstrating increased recreational value, enhanced local incomes, and stronger community cohesion [42,43]. However, nature-based solutions are not inherently political. Policies have engaged well with the societal co-benefits of action on climate and nature, but less with levers of change and opportunities to shift the kind of societal values that are demonstrated and prioritised in decision-making.

While most nations now have adaptation frameworks in place, provisions for adaptation investment and for the more transformational, development-oriented measures remain the clearest gap [44]. There are examples of more progressive sustainable development and adaptation policies with equity and justice as the central focus. For example, the third Scottish National Adaptation Plan (SNAP) articulates a vision for a “well-adapted Scotland”, where climate resilience is embedded across public services, infrastructure, and community development, and where adaptation is guided by principles of justice, inclusion, and place-based action. The SNAP also recognises the need for global social justice and contributes loss and damage funding to low income countries for economic recovery and non-economic losses. The Wellbeing of Future Generations (Wales) Act 2015 is transformational in both its objectives—prioritising sustainable development—) and its process, which emphasises long-term thinking, integration, involvement, collaboration, and prevention. Similarly, Finland has a sustainable development strategy, launched in 2022 and running to 2030, that centres health, education and social cohesion, and a well-being centred economy; alongside objectives for protecting nature, the food system and reducing emissions [45]. The Philippines’ 2009 Climate Change Act establishes state policy to “incorporate a gender-sensitive, pro-children and pro-poor perspective in all climate change and renewable energy efforts, plans and programs” and, to that end, commits to mainstreaming adaptation into poverty reduction efforts. At a regional level, cities and local authorities around the world are experimenting with new economic models – for example, trialling Doughnut economic approaches that centre regenerative and distributive dynamics required to live within planetary boundaries [46].

These acts and plans have been limited in their success, mainly because of factors that include a lack of firm legal enforcement, lack of engagement outside of the climate and environment spheres, lack of meaningful engagement with the general public) and the secondary nature of these objectives (and the values they represent) to economic growth [47–49]. Furthermore, some progressive policies have been rolled back due to shifts in global geopolitics and economy (e.g., Russia’s invasion of Ukraine shifting priorities towards defence within Finland) or a move to more climate sceptic (or at least, climate change response-sceptic) right wing politics [49]. Aotearoa New Zealand’s Living Standard’s Framework

was established in 2019 to centre intergenerational wellbeing, including Māori-informed thinking (through companion guidance He Ara Waiora), into budgetary decisions. In 2025, a different government removed requirements for Treasury to explain how wellbeing objectives informed budget decisions.

However, the presence of these acts does influence decision-making and has opened space for hope-based, futures-oriented governance [48]. For example, in Aotearoa New Zealand these frameworks still inform Treasury thinking. Often these initiatives work through other government policies, providing a series of sustainability or justice principles against which other government policies are stress tested. Thus, while they have not consistently been able to influence key actors and departments, these acts and policies have had material positive impacts and began to contest assumed values.

Pro-poor, welfare-oriented interventions implemented by some more developmental governments could also be considered transformational in the way they reduce poverty on a large scale. Social protection programmes—such as employment schemes, insurance, cash transfers, and access to essential services like water and education—have yielded measurable wellbeing outcomes and are increasingly recognised as key adaptation strategies [34,50]. For example, Bolsa Família (Family Grant) and Benefício de Prestação Continuada (Continuous Cash Benefit) are conditional cash transfer programmes in Brazil. The programmes have effectively reduced poverty and inequality, without significantly impacting work incentives or contributions to the pension system [51]. Improvements in school attendance suggest progress in reducing the intergenerational transfer of poverty, while the programmes have also fostered greater public awareness of citizenship rights and responsibilities [52,53]. In South Africa, the Free Basic Water policy has provided affordable services to the poorest households by providing 6000 litres of the water free of charge, and by building infrastructure to expand access [54].

However, the reach and effectiveness of such welfare-oriented interventions, as with the sustainable development and adaptation policies highlighted above, is constrained by growth-driven, market-focused economies. For example, in the South African context, the government has been unable to deliver water to many inhabitants due to insufficient infrastructure funding. After the initial free water allocation, payments for water were intended to fund further development but, in practice, this was difficult due to socio-economic diversity between different local governments [55]. Key to advancing adaptation in a meaningful way, then, is a shift in the values that shape societal objectives, and the trade-offs people are willing to make towards that end.

A transformational approach to national adaptation

Thus, meaningful adaptation requires moving away from market-based governance focused on private sector-driven responses, towards investing in social benefits—reversing the trajectory of austerity of the last nearly 20 years. Adaptation without addressing a lack of investment in the public sphere will continue to come up against finance gaps, poor returns on private investment, and deepening vulnerability. But how does one challenge the status quo? Adaptation could be the catalyst that can make such a change in direction start to make sense.

National adaptation programmes could serve to catalyse not only hazard-driven incremental adaptation actions (e.g., more greenspace for cooling, increased flood defences, new building standards), but also progressive social change that meets the needs of all members of society. Further, rather than adaptation programmes focussing on protecting current policy priorities from the negative impacts of climate change, they could shape the country's development trajectory identifying low risk, low vulnerability, high co-benefit options for the future. This helps to overcome longstanding issues of adaptation policies underdelivering because they are siloed away from planning and other key agendas [56]. Local and regional authorities, already implementing progressive and integrative policies, are well placed to drive this change.

Calls for change are not new, but they often stop short of challenging the political and economic agenda that drives inequality or of proposing genuine alternatives – with some notable exceptions such as Doughnut Economics [57,58]. Responding to these calls for change in a meaningful way requires engaging with values, deliberative politics, systems thinking, responsive

and participatory approaches, and a renewed public capacity to imagine and demand different futures. And making such processes more accessible. It means embedding procedural justice, responsiveness to a changing risk landscape, and supporting a shared sense of agency—enabling people not just to cope with change, but to question the purpose of the current system and shape desirable futures in a changing climate. Key to this will be reversing the decline in civic engagement and trust in institutions that has occurred across advanced industrial economies [59]. Under this framing, successful adaptation will manifest as procedural justice, deliberative politics, and the redistribution of power and wealth, alongside a renewed focus on civic engagement and deliberation around our aspirations of what societies could look like under climate change [60].

Thus, adaptation requires a dialogue on the kind of society we want to live in. As others have observed, there is often appetite for change of the status quo, yet little agreement—or even space—for articulating what alternatives might look like [61]. We lack fora to collectively explore what aspects of our current systems we want to preserve, and what losses we might be willing to accept in pursuit of deeper change. Some examples, such as the Wales We Want process, do exist and deliberative approaches have been used to inform adaptation planning [62]. The UK's Climate Change Committee has called for a "public dialogue about the level of resilience people expect and their willingness to pay for it" [63]. However, this particular framing may constrain the outcome of such discussions as it does not include the possibility for adaptation to create new, and potentially better, conditions with diverse co-benefits.

Measurement is key to progressing adaptation. Alternative approaches can create the enabling conditions for, and prioritise the processes that drive, social change, in addition to hazard reduction or outcome-based targets. Here, adaptation success is measured against principles of equity and justice [64] and the capability of households to access a range of adaptation pathways [65] using existing indices that measure inequality, community resilience, or levels of civic engagement [66]. The third Scottish National Plan already includes community action and wellbeing as indicators within its adaptation monitoring and evaluation framework.

For the adaptation needs that remain, and for the loss and damage that is unavoidable, there are concrete revenue generating options that align with a more redistributive logic. Redirecting the roughly US$7 trillion in annual fossil fuel subsidies [20], earmarking environmental and carbon tax revenues for social and resilience spending, and international solidarity levies on aviation, shipping, fossil fuel extraction and extreme wealth (e.g. those being developed by the Global Solidarity Levies Task Force) each shift the burden toward high emitters and accumulated wealth. Levies on shipping and aviation alone have been estimated to raise US$100–150 billion a year [67].

Across many nations, climate adaptation remains framed around risk management and institutional continuity, rather than as an opportunity to reshape society–even while the sustainability and wellbeing benefits of the current growth model are increasingly in doubt [68]. In using adaptation to catalyse social change, leaders can move from adaptation being a resource problem to adaptation as an opportunity to reshape society, the economy, norms and values, ready for a climate changing future. This is the challenge to which national adaptation programmes must rise, and in doing so, provide governments with strategies and priorities for spending more effectively on adaptation and social services.

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