RESEARCH ARTICLE

Everyday limits to adaptation

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ABSTRACT

Adaptation to climate change, in terms of both academic and policy debates, has been treated predominantly as a local issue. This scalar focus points towards local agency as well as the contested responsibilization of local actors and potential disconnects with higher-level dynamics. While there are growing calls for individuals to take charge of their own lives against mounting climatic forces, little is known about the day-to-day actions people take, the many hurdles, barriers, and limits they encounter in their adaptation choices, and the trade-offs they consider envisaging the future. To address this gap, this article draws on 80+ interviews with urban and rural residents in Western Australia to offer a nuanced analysis of everyday climate adaptation and its limits. Our findings demonstrate that participants are facing significant adaptation barriers and that, for many, these barriers already constitute limits to what they can do to protect what they value most. They also make visible how gender, age, and socioeconomic status shape individual preferences, choices, and impediments, revealing compounding layers of disadvantage and differential vulnerability. We argue that slow and reflexive research is needed to understand what adaptation limits matter and to whom and identify opportunities to harness and support local action. Only then will we be able to surmount preconceived neoliberal ideals of the self-sufficient, resilient subject, engage meaningfully with ontological pluralism, and contribute to the re-politicization of adaptation decision-making.

Key words: climate change; values; loss and damage; resilience; inequality; justice.

INTRODUCTION

Adaptation to climate change, both in terms of academic and policy debates, has been treated predominantly as a local issue. On the one hand, such a focus, as Nalau et al. [1] have rightly established, might obscure the shifting of responsibilities from the state and the global community to local actors, despite real constraints in terms of delivering compelling adaptation agendas. On the other hand, the promise of local agency to ‘change the world’ can indeed be empowering, even if it fails to acknowledge some of the politics of scale in adaptation [2]. An explicit emphasis on everyday adaptation makes it possible to examine nuances, tensions, barriers and limits at the local level as well as how they shape and are shaped by possible disconnects with higher-level dynamics.

Against the backdrop of the ongoing climate emergency, with extreme and devastating events such as the 2019/20 Black Summer in Australia and the 2021 record-breaking floods in Germany, citizens around the world can no longer ignore the changing environmental and climatic conditions around them,
in their immediate proximity or brought home via (social) media. The latest report from the Intergovernmental Panel on Climate Change [3] states that global temperatures will likely reach 1.5°C of warming above pre-industrial levels by 2040, with higher temperature increases in specific land regions and both slow- and rapid-onset events intensifying across the world [4]. In the Paris Agreement, climate adaptation is enshrined in Article 7 as a global public goal [5]. The question for millions of individuals and groups is when and how to act and which adaptive strategies to pursue, being increasingly aware of the immensity of the challenge and the seeming futility of personal sacrifices in their lived locales, even if aggregated.

Earlier scientific efforts drew attention to the limits of social-ecological systems in adapting to climate change, encapsulated in the notions of planetary boundaries [6] and safe and just operable ecological systems in adapting to climate change, emphasizing the challenge and the seeming futility of personal sacrifices in their lived locales, even if aggregated.

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This system perspective has also been prevalent, for at least a decade, in scientific debates around tipping points (e.g. [12]) and is enshrined in IPCC reports through the Reasons for Concern logic. It foresees tipping points or adaptation limits for ecological systems (e.g. coral reefs), specific sectors (e.g. agriculture), and entire social-ecological systems in specific world regions, particularly in the Arctic and Pacific Islands and atoll countries (see, e.g. [13]). This particular scientific lens foregrounds the likelihood of future risks in different greenhouse gas concentration scenarios and degrees of warming (e.g. 1.5°C, 2°C and 4°C), indicating that adaptation will become more challenging, limits more pronounced, and damages and losses more substantial, with every additional half degree of global temperature rise [14].

Yet, this is not the only scientific approach to understand limits to adaptation. A parallel body of literature has examined the importance of the everyday as the scale at which individuals make decisions to address climatic threats and at which constraints are encountered. This approach builds on an understanding of adaptation as attempts to keep risks to the things people value most at a tolerable level in the face of mounting climatic challenges [15]. Limits emerge as points at which adaptation fails to protect the things that stakeholders value and cannot imagine living without, now and in the future [16]. Numerous typologies for adaptation barriers and limits exist to date (see, e.g. [17–19]). Besides the common financial, technical, social, ecological, cultural and institutional constraints, these typologies also encompass obstacles along the adaptation process [20] and eroding ‘lived values’ [21, 22] such as loss of sense of community and identity that are vital to sustain people’s ways of living and well-being [23]. Barriers and limits are often cumulative and intertwined and can trigger compounding and cascading effects; and they also tend to unfold across scales. Together, these dynamics complicate assessments of trade-offs in people’s decision-making and conceal unequal outcomes in societies, with the same obstacles constituting minor or temporary barriers to some and devastating, irreversible limits to others [19, 24].

Such a people-centric rather than systems-based understanding of adaptation and limits, based on the things individuals and communities value and deem worth protecting in their lives, has resulted in a growing scholarly literature on social breaking points, for instance due to corroded dignity, and disorienting and dehumanizing experiences (e.g. [25, 26]). It has proven helpful to conceptualize these breaking points or thresholds as intersecting bundles or a ‘web of barriers’ [27] and limits as insurmountable obstacles that emerge, evolve and accumulate on the ground across space and time.

These scholarly advances have gone hand in hand with insights into loss and damage associated with climate change, particularly intangible (non-market and non-economic) harms, including a socially engaged science of loss (e.g. [28–32]). Most importantly, paying attention to how adaptation unfolds in everyday spaces provides an entry point to understanding not only ‘where, when, and how barriers and limits to adaptation arise’ but also ‘how and for whom adaptation is constrained and limited’ to devise context-relevant adaptation efforts and just trade-offs ([33], pp. 1–2). This remains vital as immediate and long-term actions to prevent climatic devastation are constrained by longstanding uneven development trajectories, past and ongoing governance failures, and systemic marginalization and inequalities, all of which produce differential effects for unevenly positioned individuals and societies (see also Refs. [34, 35]).

Nonetheless, the focus on everyday adaptation requires more scrutiny to tease out crucial nuances and put observed patterns into perspective. The literature often distinguishes everyday responses to climate change as longer-term adjustments to gradual changes (adaptation) from short-term responses to rapid-onset events (coping) (see Ref. [36]). Here, we reconcile them under the broader adaptation umbrella as both represent efforts individuals undertake to moderate harm. They have the potential to (re)shape daily practices and habits and thus lives and livelihoods in the long run.

For instance, Ferencuhoiva [37] examines ‘inconspicuous adaptation’ to changing climatic and weather conditions in everyday life in the Czech Republic. Many of these measures are rather mundane which the author defines in analogy to inconspicuous consumption and inconspicuous sustainability, emphasizing the ‘everyday, routine, hidden, habitual and reflexive’ acts of individuals and households ([37], p. 3). These actions stand in contrast to conscious behavioural or value changes, often recommended in the scientific literature and governmental adaptation plans, as well as technological fixes such as retrofitting a home in response to the climate crisis. Such ordinary and inexpensive measures include grounded ways of dealing with, for instance, extreme heat: airing bed-sheets only during early morning and night hours, sleeping on cool tiles on the floor, keeping one’s feet in a cold-water wash-tub while working, and accommodating daily schedules. Although these actions may seem trivial, the everyday, Ferencuhoiva [37] argues, is important because it makes visible the ‘social aspects of daily practices’ (p. 5). Moreover, these practices often are simultaneously political as they form creative responses outside of top-down adaptation policies, market solutions and technocratic visions. Such practices may not always be viable, suitable or even effective, as the author contends, but they constitute critical elements of the everyday politics of climate adaptation and glimpses into the willingness of residents to negotiate or contest possible alternative strategies.

Similar insights have been reported for Australia, including everyday adaptations to hot and cold spells (e.g. [38, 39]; cited in Ref. [37]). Lambert and Bellin [2] confirm adaptation as occurring in the everyday—things people do as part of their ‘taskscape’ or stewardship obligations to place; yet, the authors also expose the dangers associated with hyper-localism when efforts local
actors undertake remain nothing else than performative practices rather than effective connections to other dynamics and strategic imperatives at higher-level scales. Such an inward-looking focus acts as an obstacle to adaptation itself as it makes it exceedingly difficult for actors to ‘connect the dots’ ([2], p. 67). It also undermines their agency and sense of power to drive change, and, coupled with an inability to experience occurrences across time scales (‘temporal passivity’), diminishes the potential for creative and transformative processes to be ignited and to transcend power asymmetries.

While such recent scholarly insights, mainly from the global North, demonstrate how everyday adaption unfolds within a complex landscape of values, actions, advantages and disadvantages, the constraints and limitations of such everyday actions remain poorly understood. Insights from a broader set of literature on environmental politics and sustainability practices point towards the role of uneven domestic environmental labour in limiting adaptive capacities and effectiveness, often unpaid and unrecognized, mainly in high-income countries; such disproportionate labouring is influenced by gender, class, and spatial relations and other power dimensions beyond the boundaries of households [40, 41]. In addition to such intersectionality in everyday adaptation and its limits, little is known still about trade-offs citizens make in their adaptation choices, and the burdens associated with them, given today’s experiences with climatic hazards in their daily lives and anticipating an even worse future reality.

In this article, we aim to address this gap. We draw on 80 interviews conducted in Western Australia to examine what adaptation strategies people undertake to protect what they value from climatic hazards, the action trade-offs they envisage for the future, and the barriers and limits encountered and anticipated when implementing these actions. We first examine individual adaptation actions to safeguard what participants value most, for the present and the future. We then analyse the costs and side-effects associated with these actions and investigate how people navigate opportunities, constraints and limits to adaptation according to how they are positioned in society (i.e. in relation to gender, age and socioeconomic status). Our aims are four-fold: to make visible how barriers and limits emerge within the spaces of everyday life; to identify which limits matter and for whom; to illustrate the advantages and pitfalls of slow and reflective research on everyday adaptation; and to identify opportunities to harness and support local action against the ongoing menace of hyper-localism and the responsibilization of individuals under the disguise of the neoliberal trope of the resilient citizen.

MATERIALS AND METHODS

Data collection

This article is part of a four-year project (2018–2022), funded by the Australian Research Council, that aims to locate loss in everyday places in Western Australia. Here, we draw on face-to-face interviews conducted with 83 participants during Year 3 of the project along a ~400 km-long urban–rural transect, across eight communities with different socio-economic realities, namely: Attadale, Willagee, Darlington, Kelmscott, Toodyay, Northam, Merredin and Southern Cross. The participants had already taken part in previous project activities—surveys, participatory mapping, walking journeys and/or workshops on individual and community values and attachment to place—and agreed, by email or phone, to also engage in this phase. Table 1 details the demographic composition of our Western Australian sample, with <5% self-declared Aboriginal participants. Western Australians are already exposed to several climatic threats (i.e. droughts, heatwaves, flooding, river erosion and sea-level rise) that are expected to intensify in the future for middle-of-the-road (RCP4.5) and worst-case (RCP8.5) scenarios [42]. According to the Australian Bureau of Meteorology, maximum and minimum temperatures will continue to rise, with the number of hot days (>35°C) and very hot days (>40°C) expected to double, or nearly double for every location between 2030 and 2090 considering a business-as-usual scenario. At the same time, annual rainfall and winter rainfall will continue to decline, with the extent of future drying also determined by future greenhouse gas emissions.

The interviews were based on an innovative methodology (see Ref. [28]) to elicit individual experiences and thoughts on present and future climate change and decision-making choices. Each interview involved two researchers: one interviewer and one note-taker who recorded detailed participant accounts and took pictures to capture the four stages of the interview process undertaken on a large white board. We provided participants with 25 value cards representing place-based value aspects, with 11 site-specific values identified by participants in previous project activities (Years 1 and 2) and complemented by 14 values commonly cited in the literature (Table 2; [29]).

Using the board (Fig. 1), we asked participants to distribute the 25 cards according to both their importance (horizontally) and the perceived impact of climatic threats on them (vertically). Once all cards had been positioned, we asked which

| Table 1: Participant demographics (n = 83) |
|-----------------------------------------|
| Demographic group                      | (n) | (%)  |
|-----------------------------------------|
| Socio-economic statusa                 |     |      |
| Higher                                  | 53  | 64   |
| Lower                                   | 30  | 36   |
| Genderb                                 |     |      |
| Female                                  | 47  | 57   |
| Male                                    | 27  | 33   |
| Agec                                    |     |      |
| >55                                     | 54  | 65   |
| ≤55                                     | 29  | 35   |

aBased on the Index of Relative Socioeconomic Disadvantage [43].
bOur sample included nine couples, excluded from the gender analysis due to uneven contributions.
cDue to size and composition, we divided our sample into working age (<55) and near-retirement (>55) participants.

| Table 2: Values shared across our eight study communities |
|---------------------------------------------------------|
| Value-card                                              |
| 1. Ability to go to places/move freely                 |
| 2. Aboriginal sites, history and knowledge             |
| 3. Agency (making my own decisions and influencing others) |
| 4. Being mentally and emotionally healthy               |
| 5. Being physically healthy                             |
| 6. Benefitting economically from the land               |
| 7. Enjoying local history and heritage                  |
| 8. Enjoying protected areas and green spaces            |
| 9. Feeling attached to this place                       |
| 10. Living a dignified life (being valued and respected)|
| 11. Maintaining my own identity                         |
| 12. My family                                           |
| 13. Plants and animals around me                        |
| 14. Sense of community (knowing/helping each other)    |

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Figure 1: Interview steps. Present: (a) Participants distribute cards representing the things they value along a horizontal axis, from less (left) to most valued (right) and a vertical axis, from low (bottom) to high climate impact (top); (b) they then indicate adaptive actions (lime-green sticky notes) and their side effects/costs (pink sticky notes). Future: (c) participants move the cards if they think their values and/or climate impacts will increase/decrease in the future (blue magnets) and (d) indicate adaptive actions they foresee taking (turquoise sticky notes) together with anticipated side-effects/costs (orange sticky notes). In this case, as depicted, the participant moved all value cards between the present and the future; other participants left some or several value cards in their initial position (with their white magnets), particularly those in the lower left quadrant (less valued, less affected by climatic hazards) and/or in the 'none space' (no impact, bottom line).
Table 3: Adaptive actions our participants take to protect what they value (present) and/or foresee adopting (future).

| Main actions                      | Details                                                                                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Caring for animals                | Putting out water and food for animals; cultivating bees; taking care of pets and other animals (including native and endangered species such as bandicoots, quendas and birds) |
| Caring for plants                 | Cultivating private gardens and community green spaces; planting native species; using more water and watering plants more frequently; providing shade for plants |
| Supporting groups and actions     | Donating and supporting community and environmental groups; volunteering                                                                               |
| Engaging with community           | Being part of community projects, including preparation plans (e.g. bushfire plans); connecting with and helping neighbours and other community members; talking with family and friends about climate-related issues; listening and providing emotional support |
| Seeking information               | Learning about climate-related issues                                                                                                                                 |
| Raising awareness                 | Educating other residents and raising awareness about climate-related issues                                                                                       |
| Being politically engaged         | Voting; partaking in activism; being part of local councils; running for office; taking on leadership positions                                                                 |
| Being prepared                    | Managing fire risk (e.g. controlled burning); being alert and prepared (e.g. by having a plan in the case of bushfires)                                                                 |
| Visiting places                   | Going out for walks and visiting favourite places within and outside local communities                                                                 |
| Ensuring psychological health     | Going to counselling; distancing oneself from negative things (e.g. avoiding the news); meditating and turning to spirituality                                                                 |
| Exercising and ensuring bodily safety | Investing in physical health (e.g. exercising); going out for walks or other exercise at different times of the day, or staying put; staying hydrated; dressing appropriately for the temperature; using the pool more |
| Adopting sustainable measures     | Living more sustainably; reducing the use of plastic, water, energy; flying less; using alternative energy sources (e.g. solar panels); recycling; composting; collecting water; having an electric car |
| Adopting unsustainable measures   | Turning the aircon on when it is hot outside; using more water (e.g. to keep the garden)                                                                 |
| Relocating*                       | Moving elsewhere                                                                                                                                              |
| Other action                      | Participating in studies; consuming more alcohol; feeling and being angry; valuing things more; relying on others                                                                 |

Note: *‘Relocating’ is the only action restricted to the future.

adaptive actions participants were already undertaking to protect their many values against climatic threats specific to the region. We invited participants to focus first on those in the upper-right of the board (most valued and highly impacted) and then explain other actions elsewhere on the board, if important to them. We then asked them to consider how the positions of their value cards might change in the future (from 2030 onwards), under more severe climatic scenarios, and which actions they could foresee pursuing, given their stage in life at that point.

Data analysis

Our data analysis focused on the 14 value-cards that were common across our eight study communities (Table 2). This allowed us to compare adaptation choices and limits across the sample size and draw linkages for coordinated action across communities. This deliberate focus on common values here comes at the point.

Everyday limits to adaptation

We then examined how actions and costs are distributed along gender, age and socio-economic status to shed light on how barriers and limits may emerge along multiple axes of inequality. Our aim was also to make visible the opportunities and constraints experienced by unevenly positioned groups within society and discuss their implications for fair and just climate adaptation.
RESULTS AND DISCUSSION

Our findings show that participants see climate-related hazards predominantly threaten their surrounding ecosystems (the plants and animals around them and protected areas, including green spaces, parks and natural reserves), their mental, emotional and physical health, their sense of community and their families (Fig. 2). To counteract or minimize these present impacts and future risks, they take several actions that protect many of the things they cherish within their everyday lives and communities (Table 3).

Given the prominent position of plants and animals, mental and emotional health, physical health and sense of community in the upper-right quadrant of our board (i.e. highly valued and highly impacted), it is not surprising that most participants focus on these values in their adaptive efforts, both now and in the future (Fig. 2). Many, however, see their current actions as insufficient, particularly in relation to their efforts to protect natural environments, as relayed by one participant: ‘[My actions to protect plants and animals] might make a little bit of difference but, overall, this is not enough’ (K14). Such perceived insufficiency is often identified with and compounded by failures at higher levels of governance as well as the uneven distribution of resources among communities, as captured in the following quote: ‘The Shire is not doing enough. There are inequalities between Toodyay and Perth; support is not coming’ (T5).

Interestingly, our participants’ actions do not always correspond to the importance and level of risk they ascribe to a given value. This is evident, for example, in the case of protected areas such as parks and state forests that, albeit often described as highly valued and affected by climatic hazards, received less attention in everyday adaptation efforts. This suggests that individual action is perhaps more closely aligned with perceived individual spheres of influence—that is, an actor’s ability to do something within their means and direct control and to make a difference—as well as everyday adaptation costs and side effects, priorities, and trade-offs. We explore these aspects in detail below.

Adaptive action

Participants are strongly invested in protecting plants and animals within their properties and neighbourhoods, with most (80.7%) already taking on new responsibilities to care for their natural surroundings (Fig. 2). This involves helping plants and animals cope with extreme conditions, particularly heat above 35°C or 40°C, and drought. Several describe how they are becoming more attentive to the needs of both animals and native species, often reflected in the act of making water available for them (32.5%).

![Figure 2: Values, impacts and action. The size of the bars indicates the percentage of participants.](https://academic.oup.com/oocc/article/2/1/kgab013/6500302)
I rescue animals, walk my dogs at different times, put water out for birds, soak the trees so birds can have a cool place, hold water fountain for birds. I have seen crows sticking their beaks in the ground for moisture and to keep cool. (K12)

We give water to the animals and provide bird baths twice a day. (T17)

Others water their gardens more copiously and frequently (13.3%), spend more time nourishing green areas (26.5%) and are replacing existing vegetation with natives and water-resistant plants (21.7%).

Efforts to protect plants and animals to warming and drying conditions are seldom practiced in isolation and many participants undertake both actions simultaneously:

I am proactive in the parkland and have native, bird-friendly, water-smart plants in my garden. I do see a fair amount of birds and put water out for them. I am also watering the lawn more although that is more of a subconscious action. (K2)

I put out water for the bees and fruit for the bumblebees but refrain from feeding the kangaroos. I’ve tried making my garden safe and attractive, don’t use poison and keep fallen wood in place. I own a cat which I keep inside to protect native animals. (T16)

Concerted action is also taken to protect one’s mental and emotional health, by more than half of all participants (61.4%). While some seek counselling, meditate or turn to spirituality (16%), others nurture connections with family and friends and find some respite by voicing their concerns over climate-related issues (11%). Others still focus on improving their physical health (12%), with several insisting that mental and physical health cannot be disassociated.

Yet, it is important to highlight that people’s efforts to maintain their mental and emotional health are not limited to ensuring their psychological well-being. In fact, most participants experiment with strategies to remain mentally and emotionally healthy in the face of real and potentially intensifying climate challenges through actions directed at other valued objectives (Fig. 3). These include, for example, actions to defend plants and animals (such as those described above) as well as visiting protected areas to guarantee they are cared for, donating and supporting environmental groups and actions, and adopting more sustainable measures to curtail emissions and global warming:

We are doing our bit, using the right recycling bin, having solar panels, collecting water, donating, supporting groups. We also try not to have the aircon on all the time and conserving things. We talk about it during family dinners, but we are not watching the news every night because we are aware that kids are vulnerable (but they get them anyway). We have also donated to the bushfire appeal. This is connected to our mental and emotional health. (A3)

Figure 3 depicts how a single action can have positive ripple effects and simultaneously protect several valued aspects at once. In other words, an adaptive strategy should not be compartmentalized into just one effort, with one single purpose. For example, engagement with family, friends and neighbours allows residents to not only invest in their sense of community (which is something highly valued across all eight study areas) but also strengthen their mental and emotional health, assert their agency, and shield others (both human and non-human) from the adverse effects of a changing climate, as captured in the following quotes:

Community engagement helps me dealing with anxiety. … Talking/conversations help me to sustain my identity, dignity, and agency. (A1)

I established the community garden. It is about meeting people in the community and educating people about the environment. (K16)

I try to know people and make sure they are ok. We must keep an eye on each other. I also make sure my neighbours’ dogs have water and watch their plants. (A12)

Costs and limits

For a small number of participants, adaptive efforts have no financial or other costs. Yet, for many others, they come at a price. The relationship between present actions and costs is depicted in Fig. 4. Unsurprisingly, several initiatives are associated with high financial burdens. For example, increasing water usage to protect the garden leads to higher monthly expenses: ‘I’m watering my plants and vegetables more. It costs money’ (W14).

Efforts to engage with family and community also come with predictable costs: ‘We are becoming more engaged in community projects. It takes time and energy’ (D18).

More interestingly and less well understood are additional layers of side effects. For instance, attending to cherished yet deteriorating places, sometimes to no avail, can also be distressing and met with disbelief and ridicule from other community members:

I strategically water the plants, provide water for animals, plant to provide future shade protection. This takes time and causes emotional stress; it breaks my heart. (T5)

I can’t do a lot, but I take injured animals to the vet and I water my plants with cold water that is not used while I wait for the water to heat up in the shower. I am ridiculed for my water management. [It is] sheer nastiness. (N6)

The same is true for sharing climate concerns with friends and family to safeguard mental and emotional health, which can sometimes lead to a slippery downward trajectory:

By talking about it, I feel temporarily better. I feel angry and depressed about government inaction, and the community feels similarly. It can make you unpopular. People think you are trying to be better than everyone else. You become a bore. The costs are pushed back from family, tension, nagging, not being heard, being mocked, feeling angry, depressed. (N13)

Equally noteworthy is the mental toll associated with actions to maintain one’s physical health, which often involves avoiding the outdoors during extremely hot days:

My mental health has been impacted more than my physical health. If it gets a bit hot, you can still exercise the same way. But being inside with the aircon on makes me feel like I am back in the office, it affects my mental health. (A1)

Similarly, adopting sustainable measures can also be a source of stress fuelled by one’s awareness of environmental challenges, anxiety about making the ‘right choice’, and frustration over others’ resistance to adopt more environmentally conscious lifestyles:

We installed solar panels; we did that for the environment. We upgraded the stove for one of wood combustion, which is sufficient to warm the house. We have changed what we grow in the garden (e.g., succulents). Solar panels might not be so good as you think (their manufacturing isn’t very green). You think you are making the right decision, but it might not be the right one. (D13)
I practice self-sufficiency. I grow my own food, I go to op shops, I recycle, and I try to get better informed. It is all consuming, overwhelming. How can I scream it out to others? (W12)

Without any doubt, many individual adaptive actions come with equal costs, several actions are considered insufficient (Fig. 2), and some harbour new challenges and undesirable future consequences (Fig. 5). Nevertheless, participants conveyed that they would expand several current strategies to preserve the many things they value in the face of further harm (Fig. 2). Besides anticipated financial costs, additional mental and emotional strain, and time commitments, many described how their ability to act in the future would also be conditioned by regulations (e.g. providing water for plants and animals will be contingent on government-imposed limits on water usage). This signals the importance of coordinated state action to enhance residents’ capacities to protect what matters most to them. Still, some can imagine a future where they will not be able to protect what they care about in place and already contemplate the possibility of relocating. As conveyed by one participant: ‘Things will be much harder. I will most likely move and will be sad to leave the area’ (M5).

![Figure 3: Current actions’ multiple benefits for what people value most. The size of the squares indicates the number of participants who described that action in relation to one or more values.](https://example.com/figure3.png)
The costs identified for the different actions point to certain barriers and potential limits to adaptation, now and in the future. This is in line with existing literature on adaptation constraints. If an action becomes too costly or comes at the expense of something else, individuals might drop it and focus their limited resources to protect another value they consider equally or more important. In the next section, we discuss how these barriers and barriers-turned-limits materialize differently for key population groups.

Navigating climate adaptation across difference

Our analysis reveals that different adaptation choices and methods are undeniably linked to gender, age and socio-economic status, signalling not only a diversity of preferences but also the range of options available (or not) across difference (Fig. 6).

For example, while the men in our sample were more likely to exercise and ensure bodily safety (63%), our female participants appear to more frequently attend to their psychological health (23.4%), implement sustainable measures (51.1%), tend to plants (53.2%) and animals (59.6%), and engage with family and neighbours (70.2%) (Fig. 6). In fact, women’s commitment to nurturing their sense of community stands in rather stark contrast to that of their male counterparts (48.2%). Interestingly, sometimes the women we talked to drew on their professions and past work experiences to engage with those around them:

- I provide a space and service to the community to alleviate their climate stress through massages. I am encountering loss and grief in the community due to local climatic changes as well as global climate change commentary... I am a sounding block for the community. (D2)

- We try to get people locally to be aware of the neighbours. We are also members of clubs like Save Toodyay. I was previously a nurse with a wide area to cover and therefore got to know the community better. (T17)

| ACTIONS                        | Effort & energy | Environmental costs | Financial costs | Having to adjust plans | Impact on relationships | Mental and emotional toll | Physical toll | Time | Other |
|--------------------------------|----------------|---------------------|----------------|------------------------|------------------------|-------------------------|---------------|------|-------|
| Caring for animals             | 0              | 2                   | 11             | 1                      | 0                      | 8                       | 0             | 10   | 0     |
| Caring for plants              | 1              | 2                   | 15             | 0                      | 0                      | 6                       | 1             | 9    | 3     |
| Supporting groups and actions  | 1              | 0                   | 7              | 0                      | 3                      | 7                       | 0             | 10   | 1     |
| Engaging with community        | 4              | 1                   | 12             | 0                      | 9                      | 7                       | 0             | 16   | 0     |
| Raising awareness              | 2              | 0                   | 3              | 0                      | 3                      | 6                       | 0             | 3    | 0     |
| Being politically engaged      | 2              | 0                   | 2              | 1                      | 7                      | 9                       | 0             | 7    | 0     |
| Being prepared                 | 1              | 0                   | 5              | 0                      | 4                      | 1                       | 2             | 1    | 1     |
| Visiting places                | 0              | 0                   | 2              | 1                      | 0                      | 1                       | 0             | 1    | 0     |
| Ensuring psychological health  | 0              | 0                   | 3              | 0                      | 1                      | 5                       | 1             | 2    | 0     |
| Exercising and ensuring bodily safety | 0          | 0                  | 10             | 4                      | 6                      | 14                      | 8             | 1    | 1     |
| Adopting sustainable measures  | 2              | 0                   | 11             | 0                      | 4                      | 14                      | 0             | 12   | 2     |
| Adopting unsustainables measures | 0        | 0                   | 13             | 0                      | 2                      | 2                       | 0             | 1    | 0     |
| Other action                   | 0              | 2                   | 4              | 0                      | 1                      | 3                       | 0             | 2    | 0     |

Figure 4: Present adaptive actions and associated costs. Darker shades indicate a higher number of participants who linked an action to a specific cost. The size of the bars indicates the percentage of participants who described a specific action (horizontal) and cost (vertical).
These and other actions, however, often engender mental and emotional distress and demand time, both costs disproportionately borne by women in our study (38.3% and 40.4%, respectively). As a result, many are acutely aware of the need to negotiate priorities and consider difficult present and future trade-offs:

You need to spread the load; you need to be smart about it. If you take on too many issues, you lose your family. (D13)

I will have my degree and then can influence community projects at a higher level, through realistic awareness raising, not radical unrealistic solutions. I will have less time for family. Family will become less important than local involvement. (W12)

I will focus more on my family, on providing for them. I will donate less. (A17)

With respect to age, such difficult trade-offs are also already a reality for our older participants for whom adaptation is increasingly delineated by their own physical limitations. Such inability to act, in turn, might trigger cascading effects, as evidenced in this account from an older participant in a low-income community: ‘I closed my fishpond because of my health. I miss my fish and the sound of water’ (W1).

Moreover, both younger (<55 years of age) and older (>55) residents described similar adaptive actions, with the younger group slightly more involved in engaging with community (Fig. 6). The differential costs they face in relation to these actions, however, are noteworthy. For younger community members, adaptation takes time (58.6%) and energy (20.7%) and leads to significant mental and emotional strain (44.8%). At the same time, older men and women relayed how climate action adversely affected their relationship with family and community (24%). Even so, older citizens do not shy away from potentially divisive actions, such as being politically engaged through lobbying and participating in local councils, which many take on amid dwindling work and family commitments.

Socioeconomic gradients of privilege and disadvantage are also at play. Nuanced accounts of people’s efforts and associated costs shed light on differential power and ability to adapt...
Figure 6: Current actions and costs according to gender, age and socio-economic status (SES). The size of the bars indicates the percentage of participants from that demographic group who described an action and cost.
within individual decision-making spaces and across communities. For instance, being prepared (26.4%) and exercising and ensuring bodily safety (56.6%) are actions more often undertaken by higher socioeconomic groups. Although participants across all demographics described how these and other actions were associated with monetary costs, these are likely to be more significant for lower-income residents whose decisions are constrained by several other, intersecting forces, as described by one destitute white Australian:

I am working on my physical and mental health. I am changing my diet… trying to be healthier, looking to go back to work and study. Changing my diet will cost more in financial and mental terms (mental cost of picking the right foods at the store). I will spend more money to drive to places and do things (e.g., membership of the pool). I have changed bedrooms to stay away from the sun and the ceiling is starting to come down and that will cost money. I will also spend money when I go back to study. (M5)

Nonetheless, as the results in Fig. 6 suggest, participants with lower socioeconomic status do undertake actions frequently associated with financial costs (e.g. using more water to protect plants and animals around them), just as the rest of the sample, and caring for plants and animals which also takes time. For some, this may come at the expense of other income-earning activities while others are not or only partially employed. Yet, less affluent citizens still take action because it is imperative to them, as a personification of life itself:

There was a financial impact… when I moved from full to part-time employment to build community power and maintain my health… Building collective power has a positive impact on things [I value], but it has a time cost. I hear from people ‘You choose to do this.’ I don’t choose to do it. I choose to live. (K12)

Attention to how people navigate adaptation in their everyday lives and across difference not only conveys often concealed layers of vulnerability and disadvantage but also entry points for building or reinforcing communal action. A close reading of the many actions the three core demographic groups adopt or refrain from reveals opportunities for webs or bundles of actions that build upon potentially synergistic interests and capacities that might amount to broader trajectories of change at the local level. Yet, care is needed when developing these bundles to avoid reproducing, exacerbating or creating new forms of disadvantage that trap particular groups and communities within a downward maladaptation spiral.

Discussion

Close attention to the effects of climate change in everyday spaces reveals a complex adaptation landscape as well as a multifaceted ‘taskscape’. Individual lived values, risks, actions and costs interact with socioeconomic dis/advantage to produce everyday adaptation opportunities and barriers. They also create limits beyond which people may well be unable to sustain desirable lives and livelihoods, as defined by local communities themselves. A better understanding of constraints in everyday adaptation is paramount for the co-production of top-down and bottom-up adaptation pathways and planning processes that take seriously the rhetoric on just and equitable adaptation.

Our findings demonstrate that, in Western Australian—a region purposefully chosen over arguably more iconic climate change hotspots such as Pacific atolls or the Arctic—urban and rural residents too are already facing numerous challenges and obstacles that impinge on what they can do to protect the many things they value and simultaneously equip themselves with practical tools for the unfolding climate crisis. These blockages and hurdles mirror the shrinking action spaces people consider available to them as well as negative side effects tied to chosen adaptive strategies, both of which compel residents to make difficult choices, today and into the future.

Such difficult choices and trade-offs are consistent with insights about making sacrifices and ‘giving things up’, as revealed through adaptation practitioners on Australia’s East Coast, suggesting that ‘no-regret’, ‘win-win’ or ‘pain-free’ adaptive actions are a myth [44]. Sacrifices, then, become unavoidable as not everything can be saved; this is because individuals will set priorities between protecting a specific object or objective that seems more urgent in the present while accepting to let go off another valued aspect of their lives, or because this valued aspect becomes more important to them over time, in a progressively worse climatic reality, or both. Understanding the nuances of everyday adaptation, and the associated sacrifices and struggles, allows us to question the seemingly clinical distinction between ‘soft’ and ‘hard’ limits as a rather incongruous divide considering that lines between what is desirable, feasible and endurable can shift quickly.

A slow and reflective research approach as the one used here over three years of sustained engagement with participant communities, taking seriously values and attachment to place, brings to the fore both current and anticipated future impacts and risks, and a suite of actions that citizens employ or are unable to mobilize. This approach has two key advantages. First, it helps participants overcome the potential trap of succumbing to what Lamberti and Bellin [2] describe as ‘temporal passivity’, the ‘disconnection between future or past events’ that tend to trick people into believing ‘that things will just go on’ following familiar, incremental and manageable patterns of change (p. 66). Our innovative approach with the whiteboard, the moveable magnets, and the coloured sticky notes also makes it visually and viscerally tangible that both risks and values are likely to shift when stepping into approaching futures.

Second, and contrary to methods that frame adaptation limits predominantly as a future inevitability, our approach reveals that, for many people, limits are already a reality. Many participants, out of the sample of 83, relay their inability to sustain actions they perceive as necessary, often because they come at the expense of something else—above all, their families—or because of unsurmountable costs. Some of the limits identified here might not lead to the immediate or direct decimation of a given value—for example if residents stop putting water out for cockatoos and quendas, it does not mean that these species will automatically become extinct. Yet, everyday limits to adaptation undoubtedly affect people’s sense of purpose and control over the things that matter to them, and consequently their well-being (see Ref. [28]). As such, becoming more aware of these obstacles creates temporary spaces in which residents experience how otherwise empowering notions that come with values-based adaptation clash with the limits of their own agency. Many of our participants become cognizant of this dilemma yet continue in their quest, as found elsewhere, holding on to the importance of ‘at least doing something’ [44] and ‘just daily routines’ that may not even be consciously linked to climate change [37].

Moreover, our findings make clear that adaptation barriers and limits are not the same for everyone, even in a seemingly homogeneous population of predominantly white Australians. Adaptation brings differential side effects that become limits at different stages for unequally positioned actors. For some of our
participants, these limits are already manifesting. For instance, older residents are pressed to give up physically demanding activities that bring them joy (e.g. taking care of their gardens), and socio-economically disadvantaged denizens face multifarious obstacles that prevent them from making healthier life choices. At the same time, other participants who are better off seem to accept adaptation limits only as a future possibility, if at all. Besides age and class differences, it is the evidence regarding gendered patterns of doing environmental and social labour, and the dissolving lines between the two of them, that is most noteworthy. As Westman and Castán Broto [45], drawing upon MacGregor [41], remind us, the psychological and affective toll of simultaneously caring for human and non-human beings and family around them is often distinctly higher on women than on men. The fact that such emotional labour is both insufficiently recognized and, at times, also ridiculed unnecessarily curtails crucial everyday adaptive actions. Both younger and older women in our sample disclosed their struggles and anxieties around navigating this persistent hardship. More worrisome still, this impasse may stifle transformative actions needed beyond the scale of households and close-knit communities.

Although Aboriginal Australians have remained underrepresented in our study, we underscore the additional disproportionate burdens born by Indigenous individuals and communities due to legacies of colonialism, oppression and disenfranchisement (e.g. [46]), with ramifications for their daily experiences with climate change, adaptation options, limits and blockages.

We want to offer two broader reflections regarding everyday adaptation and the associated limits. First, taking us back to the beginning of the article, an explicit focus on the everyday does carry the risk of reinforcing what Nalau et al. [44] have exposed as a dangerous heuristic, namely that adaptation is predominantly a local issue. While it is vital to recognize that citizens are taking actions within their own spheres of influence, the snare of ‘hyper-localism’ [2] is undeniable. Very few of our participants were able to draw linkages between their individual actions and adaptation initiatives undertaken by the Shire or the State, or non-governmental organizations and lobbying groups in their areas. Without spaces that allow individual residents to explore these differential obstacles and incorporate them in locally grounded, desirable adaptation pathways, the consequence would be that crucial opportunities for multi-stakeholder expertise and transboundary thinking [44] are missed. This, in turn, would further segregate local practices while undermining the potential for creative, transformative actions across scales of mattering [2].

Second, everyday adaptation inevitably foregrounds everyday actors, what they value in their lives and the activities they undertake to preserve what they cherish most. Such a focus, admitted, means directly into the neoliberal logic of the resilient subject. Much has been written to critique neoliberal discourse and policy frameworks that bolster the imaginary of the resilient, responsible, self-sufficient, competitive and entrepreneurial citizen, able to continuously reinvent herself in the face of environmental crises, disruptions and surprises [47–53]. Yet, resilience, as a concept and domain of interest to both scholars and policy makers, is enjoying unprecedented popularity. As Nalau and Verrall [54] illustrate, resilience is now the top-ranked keyword in literature on climate change adaptation, with related and newly emergent critical concepts trailing far behind, including climate justice and equity, limits to adaptation, loss and damage, and adaptation pathways.

The peril of this trend is—and we agree here with Lambert and Beilin [2]—that the unjust and pernicious imperative of the neoliberal resilience discourse becomes further amplified, coercing individuals to be liable for their own welfare while higher-level adaptive governance is aborted, even if they find themselves trapped in performative tasks rather than driving transformative dynamics. The growing popularity of the ‘neoliberal resilient subject’ makes it distinctly more difficult to translate existing alternatives such as resourcefulness [53], situated resilience [55] or deliberated resilience [56] into everyday adaptation. As Eriksen et al. [57] argue, the real danger is not only that such apolitical ideals and practices of resilience, also in the everyday, are ill suited to overcome structural vulnerabilities. They also fail to provide the urgently needed space for courageous and concerned citizens to reclaim their right to contest the crises they face, negotiate priorities and trade-offs, best across scale, and take part in designing socially just visions for their own and their children’s futures. Within this dominant logic, particularly if not actively countered, limits to everyday adaptation risk becoming the proverbial straw that broke the neck of the most vulnerable. Breaking free from these discursive and material shackles requires that adaptation scholars and practitioners actively oppose entrenched vulnerabilities, by supporting people’s priorities and abilities to enact change [58].

CONCLUSION

What then is the way forward for everyday adaptation in the climate crisis? We underscore the significance of everyday actions citizens undertake to protect what they value most and navigate their spheres of influence to overcome the slippery slope towards social breaking points. Making visible these actions, with the struggles and limits wrapped up in them, is vital, not only because the Paris Agreement and its global stocktake require nations to assess and document progress on climate adaptation. It is also urgently needed to populate otherwise often disconnected higher-level adaptation plans and provide the needed substance of what can, should and should not happen when envisioning, co-designing and implementing trajectories for just and resilient communities.

Moreover, on a more practical level, for our research, having brought to the fore individual actions, struggles and impediments, across demographic groups, we feel well positioned to contribute to building just resilience in place by tackling the next and final stage of our four-year-long project with residents in Western Australia. It will aim to design normative adaptation pathways, backcasting from the future our participants have laid out as desirable and dignified, despite barriers, loss and grief along the way, and with location-specific climate scenarios, mitigation options and community resilience skills superimposed on them. This entails drawing on women’s community involvement and care for the environment, the elderly’s political engagement, and awareness raising advanced by the youth. This is not to say that these groups should bear the brunt of adaptation choices but rather to highlight how their remarkable commitment can provide lessons for activities across the eight communities and inspire others. To surmount the menace of hyper-localism, we intend to tap into regional stakeholder expertise and actively address transboundary challenges, in the hope of merging the resultant community trajectories into Shire and City plans under the recent Western Australia Climate Policy [60] and the newly announced $750 million State Climate Action Fund.
In order for this and other efforts on locally driven and just adaptation to succeed, we offer one final insight. We are acutely aware that, even though explicit attention to everyday adaptation and limits exposes the micro-nuances of differential vulnerabilities and capacities, it cannot address their causes. Numerous social, economic, cultural and political forces are at play that prevent individuals and groups from escaping structural inequalities. Following Eriksen and colleagues [57], we argue that we need to remain vigilant to avoid reproducing uneven power structures in our academic-activist work by exacerbating, even unconsciously, the very inequalities that we observe. Rather than chasing the archetypical resilient citizen and buying into the responsibility of the weakest, our endeavours are most meaningful and effective when they re-politicize adaptation and ensure abundant space for ontological pluralism—that is a diversity of ways of understanding and being in the world [57, 59]—when they facilitate diverse stewardship and ownership, and when they comprehend social and environmental well-being as one and the same.

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CONFLICT OF INTEREST

None

AUTHORS’ CONTRIBUTIONS

K.P.H. and P.T.: conceptualization, data curation, investigation, methodology and writing—original draft and review and editing. P.T.: funding acquisition; project administration; resources; supervision and validation. K.P.H.: visualization.

DATA AVAILABILITY

The data underlying this article cannot be shared publicly to protect the privacy of individuals that participated in the study.

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