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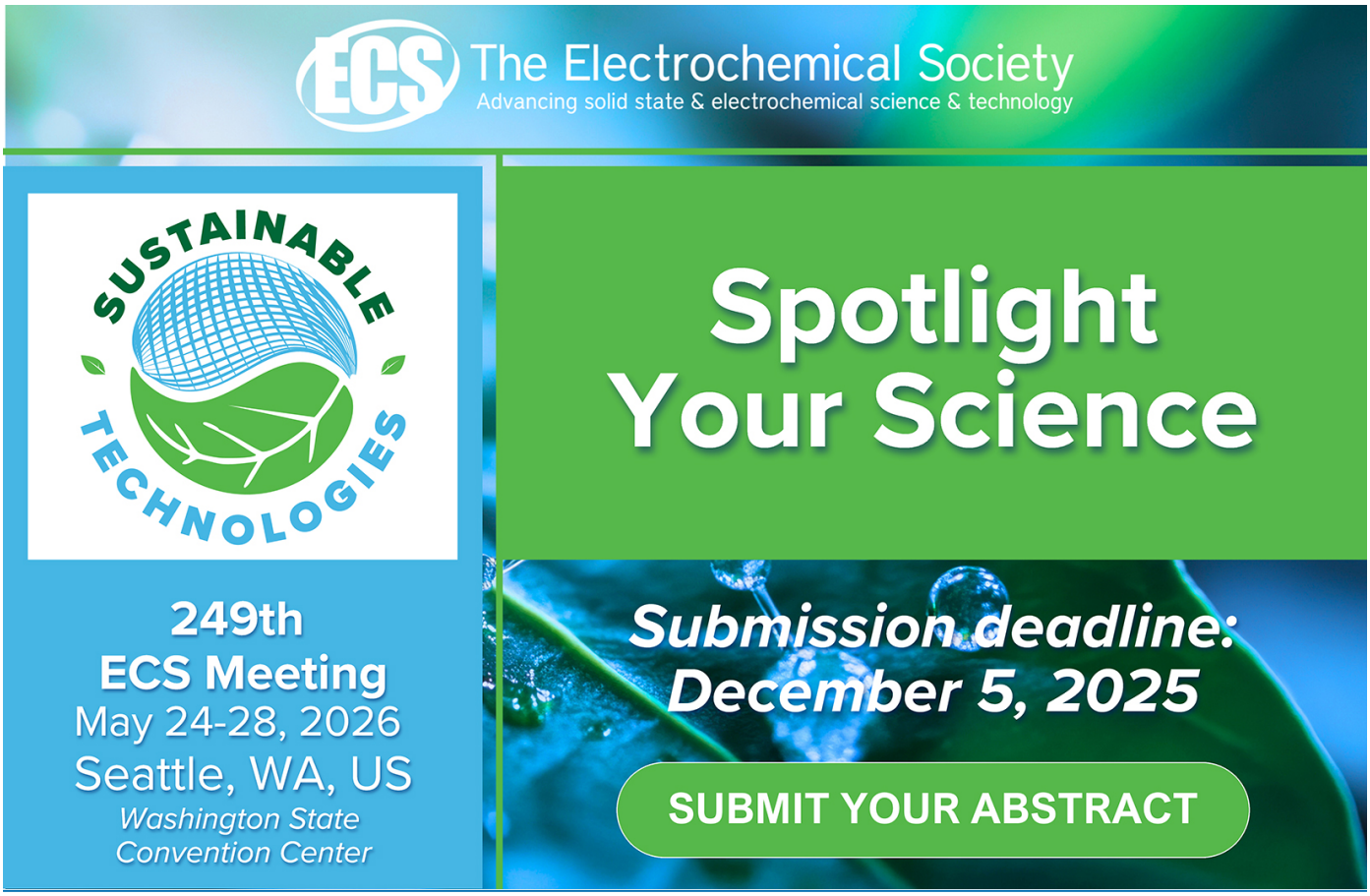

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PERSPECTIVE

Climate-induced redistribution of people is not inevitable

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The increasingly tangible impacts of climate change are fueling concerns over the future of humanity having to live in a narrowing 'human climate niche' [1]. On this basis, a recent intervention anticipates an 'inevitable global redistribution of people' from the Global South towards habitable spaces of the Global North [2]. Such a view is indicative of a wider trend in policy and academia that is increasingly interested in the study and implications of uninhabitability of certain parts of our planet [3–5].

There is no doubt that global warming has major implications for humanity and ecosystems [6]. At the same time, we argue in this perspective that scientists, social scientists, and other analysts should avoid defining or declaring places 'uninhabitable' without consultation with the communities living there [7]. Habitability cannot be determined through top-down models and projections only [3]. In addition to environmental and climatic factors, habitability is actively shaped by local socio-economic

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contexts, human agency, policy choices, and financial support for local adaptation; knowledge of these factors is always crucial [3, 4]. While there can be real declines in habitability—not just owing to climatic factors but also resulting from governance failures, conflicts, or lack of financial support—any premature or insufficiently contextualized declaration of uninhabitability from afar risks discouraging necessary investments in adaptation by governments and donors [8], thereby undermining the right of people to stay and adapt in place [8–11]. For example, government officials in the Marshall Islands have indicated that aid and climate finance institutions already discount the need for, and right to, bold *in situ* adaptation out of fear that their investments will be in vain if parts of the islands are later deemed uninhabitable [8]. In Costa Rica, the government has declared entire villages uninhabitable due to increasing environmental and climate risks, which prevents these communities from accessing public funding for local adaptation. Families have been requested to relocate. However, the majority have remained, exposing them to a combination of escalating climate risks and institutional abandonment [12]. In Fairbourne (United Kingdom), villagers have actively protested against a top-down declaration of future uninhabitability of their place by the government, demanding the right for their village to remain and for them to be included in any decision-making on this matter [13]. These examples demonstrate that *in-situ* adaptation must remain central to science-policy attention, and that communities must always be actively involved in decision-making on habitability.

We provide five recommendations to guide further research about habitability, seeking to overcome potentially harmful generalizations that might guide future policymaking. Each of these recommendations is rooted in commitments to the right to self-determination and to preserving human dignity as the foundation for climate justice. Their focus is on enabling locally-relevant assessments of habitability and subsequent decisions about possible *in-situ* adaptation or relocation that are based on the preferences, needs, and capabilities of local populations. We offer these recommendations as a diverse group of social and environmental science scholars, working in related fields of climate adaptation, mobilities, humanitarianism, international development, covering different geographical regions in the world.

1. Do not impose hard limits to habitability

For many climate-exposed and socially marginalized communities, top-down prescriptions of an ideal human climate niche, as well as consequent efforts to determine the changing habitability of their homes, are reminiscent of colonial times, when external science or policy actors determined their futures, denying them the right to self-determination [5, 7, 10, 14–16]. Throughout history, people have developed and employed various adaptive strategies to enable them to settle in deserts, rainforests, icy climates, and other regions that are outside what is assumed to be an 'optimal' climatic zone. If any hard limit to habitability in any place is to be defined, this should be developed only in active exchange between different sciences and local knowledge [3], with final decisions about adaptation and relocation to be led by those currently living in potentially threatened spaces [10].

2. Treat projections as possible futures, not the inevitable future

The idea of an 'inevitable global redistribution of the human population' [2] is, just as with warnings of 'future mass climate migration' [17, 18], based on the false assumption that climate change will forcibly drive hundreds of millions of people across borders or even continents [19]. This assumption in part stems from the fallacy of treating projections or future scenarios as inevitable truths. Good modeling practice always pays careful attention to uncertainties, but the representation and use of model results can easily lose sight of the fact that the future is always hard, if not impossible, to predict and control [20]. Existing projections of future population movements related to climate change vary substantially, although the most alarming ones usually receive the most attention. Some studies suggest a substantial increase in migration flows under climate change; among them are analyses that project migration numbers based solely on exposure to changing climatic factors [1]. By contrast, other studies, which take into account non-climatic as well as climatic drivers of migration, such as unequal access to available resources to move, find that massive international flows of migrants are unlikely [21, 22]. Impactful political and social factors that are well-established in more general migration research—like social network effects, place attachment, the role of borders or conflicts—remain underrepresented in climate-related migration forecasting models [23]. This means that models relying solely on climate or environmental factors are liable to overpredict the scale of future migration. Mistaking projections for unavoidable realities can reinforce narratives that large-scale climate-induced populations movements are inevitable, leading to faulty understandings of the processes of habitability and climate mobility, and hence to inappropriate policies.

3. Do not assume the Global North is harm-free and homogenous

Claims about mass climate migration, and narratives that imply large-scale redistribution of populations in light of increasing uninhabitability, are often paired with the suggestion that climate change will primarily

worsen conditions in the Global South, while improving large parts of the North [2, 17, 18]. This is misleading: while some areas of the North may experience some short-term benefits from climate change, the broader picture is far more complex. The Global North is also facing significant risks, including more extreme weather events, sea level rise, ecosystem disruption, and permafrost melting [4]. In addition, populations in both the Global North and South are heterogenous, and there is a high level of inequality in how people both within and between regions are affected by climate impacts. A simplistic two-block world geography obscures the complexity of climate impacts, as well as the multi-scalar inequalities in vulnerability and resilience, which scientists need to consider when making claims about habitability.

4. Enable people's right to stay

Framing population movements as an object of global management [2] is likely to overlook the fact that many climate-impacted communities do not want to move [9]. In fact, there is strong evidence that even in climatically stressed areas, local residents generally want to remain in place [24]. Communities around the globe, ranging from the Pacific to the Sahel, emphasize that much stronger mitigation action and adaptation interventions are needed to secure a future where they already are, and that pre-emptively assuming inevitable relocation is unjust [9, 10]. The notion that climate-induced population redistribution is 'inevitable' risks diverting attention and resources away from much needed investments in *in-situ* adaptation for those who are most vulnerable yet opt for the right to stay [8, 10]. In that context, climate change discussions and decision-making should be centered around self-determination, which includes rights to stay and to move [9, 16, 25].

5. Invest in *in-situ* adaptation and social equity

The IPCC [4] highlights that many present-day restrictions on climate adaptation result from lack of finance, and institutional and policy constraints, which are surmountable if there is political will that translates to inclusive and responsible action. Adaptation *in-situ* is shaped by the capability and aspiration to adapt, which depends on economic and social justice as much as climate justice [9]. Climate change compounds existing social, political, and economic shortfalls: for example, where infrastructure investments, poverty alleviation, or inclusive governance are lagging, *in-situ* adaptation becomes much harder to achieve, and climate hazards likely result in more severe impacts on livelihoods and well-being. Outer atoll communities in the Federated States of Micronesia, for example, face saltwater intrusion, erosion, and freshwater scarcity. In combination with limited livelihood options, weak institutional support, and low access to basic services, this has led to such severe declines in livelihoods that migration to the main island has increased [26]. In Kutubdia, an island in South-East Bangladesh, sea-level rise and coastal erosion intersect with poverty and inadequate government support, undermining local livelihoods for low-income coastal households. These households are left with limited options—to stay in risky situations or move to equally flood-prone informal settlements in nearby cities [27]. In such cases, the capacity to adapt is severely constrained, underscoring the urgent need to invest in locally anchored adaptation solutions that address underlying vulnerabilities and enable people to build resilience where they are [28]—or where they end up [29]. Enabling justice, therefore, requires recognizing socio-economic inequities, political marginalization, and (neo)colonialism, and addressing the unequal political economic structures shaping people's aspirations and especially their capabilities to adapt [16, 30, 31]. This is necessary to prevent the real possibility that climate change may otherwise worsen the forms of dispossession, and subsequent forced mobility or immobility, that already affect many of those who are politically, socially and economically disadvantaged [32].

6. Climate science to foster the dignity of people

Instead of approaching the future by relying on top-down, global predictions of a narrowly defined human climate niche, assessments of habitability—and, related, of human mobility—must be centered in the lived experiences and priorities of affected populations. While it is challenging to bring local, bottom-up epistemologies together with top-down approaches [4], there are successful examples, including the formulation of determinants for global level planetary health, led by indigenous groups [33], and the integration of local ecological knowledge into Earth System Models [34]. We emphasize that exploring future scenarios of habitability under climate change—including tail-end risks—is a necessary part of anticipatory science. However, such modeling should always be accompanied by explicit and careful reflection on underlying assumptions, as well as on the potential consequences of how findings are interpreted, communicated, and taken up by media and policymakers. Without this, even well-intended scientific work may inadvertently reinforce reductive narratives or support maladaptive responses, undermining climate justice.

Data availability statement

No new data were created or analysed in this study.

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