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The case of sustainable development and the surfers paradox : Breaking through a counter reflexivity

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The case of sustainable development and the surfers paradox : Breaking through a counter reflexivity

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Abstract

This paper advances debates on sustainable development by extending a theoretical framework centered on counter reflexivity and applying it to an empirical case study of ocean surfing. It explores how immersion in nature mediates the relationship between environmental risk, awareness, and action, addressing persistent tensions in translating sustainability discourse into behavioural change. Surfing is examined as a paradoxical practice in which heightened environmental awareness coexists with individualistic traits, offering a novel lens through which to explore these dynamics. The research is theoretically positioned within, and contributes to, debates on risk society and reflexive modernity, drawing on survey-based empirical evidence to examine surfers' perceptions of risk, responsibility, and environmental behaviour. The findings indicate that surfing can foster increased environmental awareness and action, suggesting that nature-based activities may play a valuable role in overcoming counter-reflexive responses and supporting progress towards the Sustainable Development Goals.

Keywords: sustainable development; surfing; environmental behaviour; risk society; reflexive modernity; counter reflexivity

Introduction

The establishment of the United Nations Sustainable Development Goals (SDGs) in 2015 established sustainable development as a central guiding concept for global action to 2030. With that said, despite political commitment, financial investment, and policy innovation, progress towards the goals has been uneven and slow, highlighting persistent challenges in translating sustainability discourse into meaningful behavioural and societal change. These observations are underpinned by recognizing that sustainable development remains a contested and negotiated concept, shaped by competing priorities and interpretations across environmental, social, and economic domains (Borne, 2010). So whilst the often quoted Brundtland definition continues to provide a widely cited point of reference (Brundtland & Khalid, 1987), it offers limited guidance on how heightened awareness of environmental risk is converted into sustained action.

This paper addresses this gap by examining the relationship between environmental risk, awareness, and action through the lens of risk society theory and the concept of counter reflexivity. It explores how engagement with nature-based activities may mediate these dynamics, focusing empirically on ocean surfing as a case in which heightened environmental awareness operates in parallel with strongly individualised practices. Surfing therefore provides a distinctive context for examining the conditions under which risk perception contributes to reflexive and counter-reflexive responses to sustainability challenges.

The paper advances debates on sustainable development in three ways. First, it empirically examines how contemporary environmental risk is perceived and acted upon within a nature-based community. Second, it extends theoretical discussions on the relationship between sustainable development and reflexive modernity by developing the concept of counter reflexivity. Third, it considers the implications of these findings for understanding how nature-based practices may support pro-environmental behaviour and contribute to progress towards the SDGs.

The paper proceeds in the following way. Initially, the theoretical framework, establishing the relationship between sustainable development, risk society, and reflexive modernity is explored. And the concept of counter reflexivity is introduced. Surfing is then discussed as a

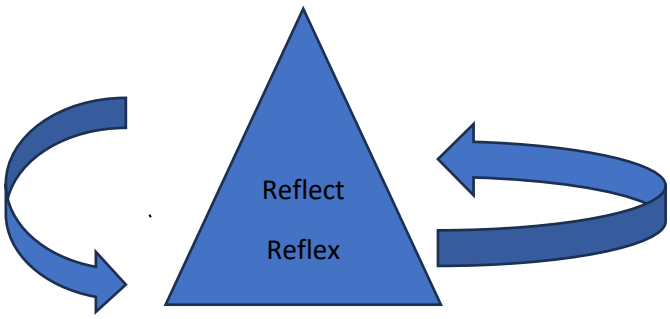
nature-based activity with particular relevance for environmental engagement, leading to an examination of the surfer environment paradox. The methodology section outlines the research design and survey approach. The results and discussion examine surfers' perceptions of risk, responsibility, and environmental action. Conclusions reflect on the theoretical and policy implications of the findings.

Theoretical Framework

This research builds on a long-standing research agenda examining the relationship between sustainable development and the emergence of a reflexive modernity (Beck, 1992; Borne, 2010; 2018; 2023; 2026). Central to this agenda is the risk society thesis, which proposes that contemporary social organisation is increasingly structured around the distribution of risks and 'bads', rather than the distribution of material goods characteristic in earlier phases of modernity. Within this context, reflexive modernity represents an epoch in which the narratives of progress, rationality, and scientific certainty associated with industrial modernity are increasingly called into question.

Central to a risk society is the notion of reflexivity which operates across multiple scales, from international institutions to communities and individual behaviour. Importantly, it extends beyond conscious reflection on global risks, such as climate change, to include the often-unintended and unconscious ways in which social structures, governance arrangements, and everyday practices are reorganised in response to perceived threats.

Figure 1: Reflex and Reflect

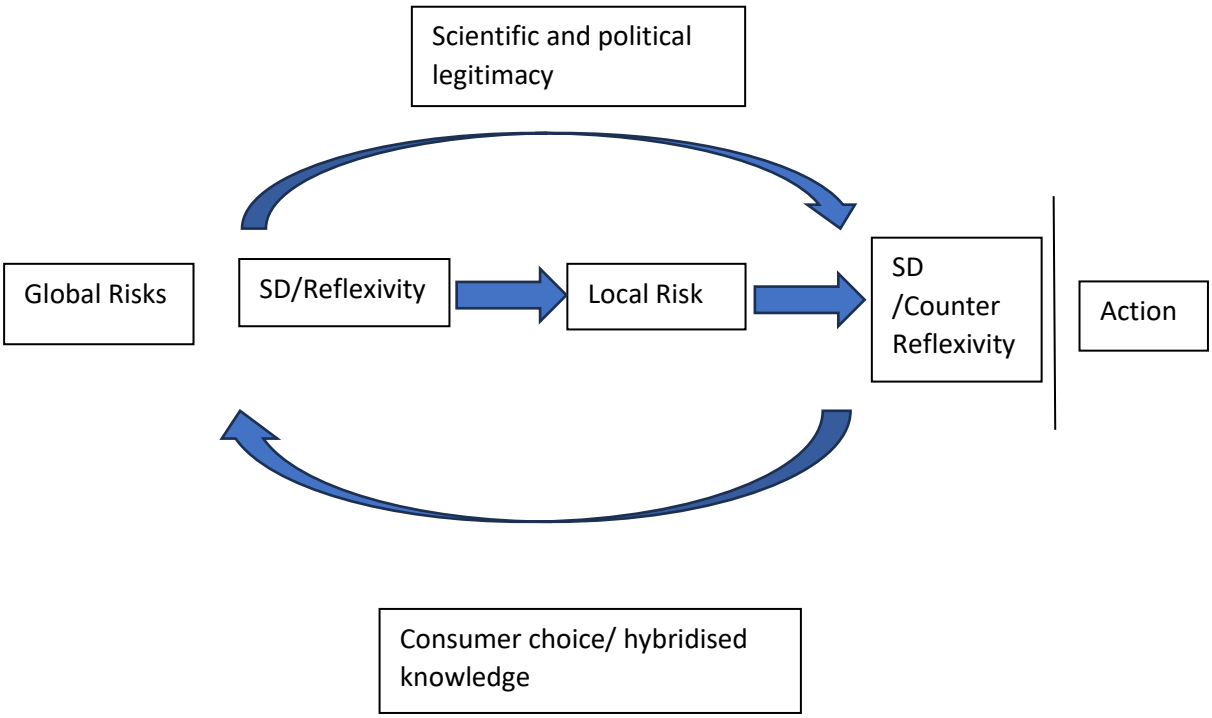


(Source: Borne 2010)

Figure 1 illustrates this relationship through the distinction between reflection, visible conscious responses to risk and reflex the less visible reorganisation of social life that occurs in anticipation of, or reaction to, risk (Borne, 2010). These processes are interrelated, with increasing reflexive modernisation creating conditions for reflective activity.

Empirical research conducted at both global and local scales has demonstrated that reflexive responses to environmental risk are neither uniform nor inevitable. In particular, inconsistencies between global and local discourses of sustainable development have been shown to create barriers to effective policy implementation and behavioural change (Borne, 2009). Rather than producing reflexive action, such inconsistencies may give rise to processes of counter-reflexivity, in which awareness of globalised risk is mediated, deflected, or inhibited by more immediate local concerns. Counter-reflexivity provides a more nuanced account of how individuals and communities engage with environmental risk.

Figure 2: Counter Reflexivity



(Adapted from Borne 2010)

As illustrated in Figure 2, the discursive framing of sustainable development can suppress responses to global risks when these are perceived as distant or abstract, particularly in contexts where localised risks are experienced as more immediate or pressing. Beyond scalar tensions between the global and the local, counter-reflexivity also reflects the ways in which environmental knowledge is produced, communicated, and consumed. Risk is encountered through both scientific and aesthetic dimensions, and through hybridised forms of knowledge that blur distinctions between expert and lay understandings (Latour, 1993). These hybrid formations are best understood as knowledge assemblages or coalitions, rather than linear knowledge hierarchies (Irwin & Michael, 2003).

Within this framework, reflexive modernity is assessed through discourses of sustainable development operating across global and local contexts. Sustainable development and reflexive modernity are argued to share a discursive symbiosis, grounded in a number of common concerns. These include, the relationship between humanity and the environment, challenges to dominant narratives of progress, science, and rationality, the reconfiguration of global/local boundaries and questions of intergenerational equity shaped by the incompatibility of political and geological timescales. Viewing sustainable development through a risk society lens therefore provides a theoretically robust means of analysing how sustainability is articulated within governance frameworks and how these articulations shape social responses.

At the same time, examining sustainable development discourse empirically offers a means of interrogating key claims within risk society theory, particularly those concerning the emergence and limits of reflexive modernity. This reciprocal relationship allows for a tightening of the theoretical framework while providing a foundation for analysing the conditions under which reflexive or counter-reflexive responses to environmental risk emerge. The following section introduces surfing as an empirical case through which these dynamics can be explored.

Surf Connection

Surfing engages millions of participants worldwide and supports a global cultural and commercial ecosystem. Although precise figures vary, estimates suggest that over 35 million people actively surf, with many more engaging with surfing culture through media, imagery, and lifestyle consumption (O'Brien & Eddie, 2013; International Surfing Association, 2015). This cultural reach underpins a multibillion-dollar industry, with the global surfing market estimated at approximately US$2.7 billion and projected to grow to over US$3.1 billion by 2026 (Global Industry Analysts, 2022).

Beyond its economic and cultural significance, surfing presents a number of analytically valuable dimensions for academic inquiry. Existing research has explored surfing in relation to subculture, identity, technological change, and sustainability, including developments in wave forecasting technologies, artificial wave infrastructure, and industry practices (Borne, 2018). Of particular relevance to this paper is the growing body of work that conceptualises surfing as an environmental or nature-based activity, in which sustained immersion in the ocean creates heightened sensitivity to environmental change (Borne & Ponting, 2015; Borne & Ponting, 2017; Borne, 2018; Wheaton, 2020; Olive & Wheaton, 2021).

Building on this literature, the research presented here examines surfing as a practice through which environmental risk is experienced directly, potentially creating conditions for pro-environmental awareness and action. Returning to the theoretical proposition developed above, the symbiotic relationship between sustainable development and reflexive modernity can be extended to include surfing as an empirical site in which these dynamics are played out. Table 1 summarises this relationship, illustrating how key dimensions of risk society and sustainable development align with central features of surfing as a nature-based activity.

Table 1: Surfing connections

Risk Society and Sustainable Development	**Surfing**
Explore the relationship between humanity and the environment	Direct nature connection
Draw into question notions of progress, science and rationality	Wave knowledge and the relationship between science and local aesthetics and experience
Open up the boundaries between the global and the local	Global activity economically and culturally
Explore new forms of political and governance structures	Surfing activism and not for profits
Intergenerational equity	Surfing stewardship for future generations

(Adopted from Borne 2018)

Drawing on the preceding discussion, a central presumption of reflexive modernity is that heightened awareness of environmental risk will translate into action. Surfing is therefore a particularly revealing activity through which to explore this proposition. The connection between surfing and nature has been described at an ontological level, with Booth (2018; 2024) characterising surfing as a nature sport defined by direct and sustained immersion in the ocean. This intimate engagement with waves and coastal environments suggests a heightened sensitivity to environmental change and, by extension, a potential pathway from awareness to pro-environmental behaviour.

On this basis, surfers might reasonably be expected to act as environmental stewards, given their direct exposure to issues such as climate change, marine pollution, and coastal degradation. Empirical research lends some support to this expectation. Larson et al. (2018), for example, identify participation in surfing as a positive predictor of environmental protection, suggesting that elevated environmental norms among surfers may be reinforced by broader sustainability initiatives within the surfing industry. Relatedly, surfers are often understood to possess distinctive forms of experiential ocean knowledge, described by

Reineman (2016) as wave knowledge, developed through repeated immersion and close observation of marine conditions.

Wave knowledge has been recognised as a valuable form of local knowledge with potential applications in coastal management and planning, particularly in the context of accelerating climate impacts on wave resources and coastal systems (Reineman, 2016). Subsequent research has explored surfers' capacity to mobilise this knowledge collectively, highlighting their involvement in coastal governance debates and sustainability related protest and activism (Hales et al., 2017; Ware et al., 2017).

However, the relationship between experience, knowledge, awareness, and action is neither linear nor guaranteed. Despite high levels of environmental concern, research has identified persistent gaps between surfers' attitudes and their everyday practices (Langseth & Vyff, 2021). It is this tension between immersion in nature and inconsistent environmental action that gives rise to what is described here as the surfer environment paradox. This paradox provides a conceptual lens through which to examine the limits of reflexivity and the conditions under which counter-reflexive responses to environmental risk may emerge.

The surfer- environment paradox

The paradox inherent in the fusion of surfing and environmentalism can be broadly understood as occupying two distinct camps. The first operates at the individual level. Lazarow and Olive (2017) recognise a tension within surfing between individualisation and broader participation, noting that 'understanding the multiple and sometimes competing values and motivations that drive these enthusiasts is important if surfers are to be further mobilised into supporting place-based and/or environmental causes' (Lazarow & Olive, 2017: 206). The second tension relates to the surfing industry itself, which relies on the production, packaging, and global distribution of consumer products, often manufactured in less developed countries with weaker employment and environmental regulations (Laderman, 2015). This paper focuses exclusively on the former, individual level dimensions of this paradox, with the following discussion elaborating key aspects of this relationship.

Action through environmental engagement

Initially it is pertinent to situate this discussion within broader debates concerning environmental knowledge and action. The question of whether direct engagement with nature promotes not only environmental awareness but also pro-environmental behaviour has received increasing attention. As with all behaviour change processes, the relationship between education, awareness, values, and action is far from straightforward, and assumptions that increased awareness will automatically translate into behavioural change remain contested. Environmental behaviour is shaped by a complex mosaic of factors that can include geographical location, historical context, cultural background, age, gender, and social norms, all of which suggests that no single theoretical or conceptual model can adequately capture this relationship.

Against this backdrop, growing attention has been paid to the role of outdoor recreation in shaping environmental attitudes and behaviours (Alcock et al., 2020; Martin et al., 2020), alongside a related body of research on human–nature connectedness (Barragan-Jason et al., 2022). Whether on land or in the ocean, there is increasing evidence that sustained engagement with natural environments can influence individuals' relationships with the environment and their willingness to act upon environmental concerns (DeVille, 2021). The central question addressed here is therefore:

Does a surfer's immersion in the ocean translate into heightened understanding of, and action towards, environmental issues?

This question relates directly to the core theoretical dilemma explored in this paper, whether processes of reflexivity or counter-reflexivity are operating at this level of analysis within the surfing community. It begins from the premise that engagement with, and identification with, nature may promote not only environmental awareness but also a sense of stewardship that can translate into pro-environmental behaviour. While debates over what constitutes 'nature' remain ongoing (Fox & Alldred, 2018; Latour, 2005; Macnaghten &

Urry, 1998; Rekret, 2016), a number of empirical studies provide useful insights. Larson et al. (2011), for example, found that participation in outdoor recreation within US state parks was associated with pro-environmental behaviour.

Extending this analysis to surfing specifically, Larson et al. (2018) explore whether surfing encourages pro-environmental behaviour through surfers' intense attachment to particular surf breaks. They suggest that these attachments are often 'so strong that they might be characterised as ownership rather than attachment' (Larson et al., 2018: 446), a dynamic commonly described within surfing vernacular as localism, which may foster heightened stewardship and environmental action (Usher, 2017). Importantly, Larson et al. (2018) call for further research examining normative beliefs and surfer behaviour across diverse social, political, and environmental contexts. This paper extends that agenda by incorporating surfers' perceptions of specific environmental risks, including climate change, and situating these concerns within a broader risk-based analytical framework.

Specifically relevant to this discussion, Larson et al. (2018) a draw attention to work by Whilden and Stewart (2015), who argue that large-scale environmental change will significantly affect the quality and frequency of waves at many surf breaks, potentially shaping surfers' motivations to engage in environmental activism. Whilden and Stewart are the founders of Sustainable Surf, a Californian non-profit organisation established to catalyse sustainability transitions within the surfing world. As discussed in the following section, the survey presented in this paper was co-constructed in partnership with Sustainable Surf. The next section therefore outlines the methodological approach adopted and situates the survey within the broader evolution of this research agenda.

Methodology

The research presented in this paper forms part of a longitudinal research agenda spanning nearly twenty-five years, underpinned by epistemological discussions with risk, modernity, and sustainable development (Borne, 2009; 2010; 2013). The core thesis suggests that the rise of sustainable development discourse over the past five decades is closely linked to the increasing visibility of environmental risk arising from human environment interactions (Borne, 2013). Methodologically, this research adopts a pragmatic epistemological stance,

moving away from a rigid division between realist and constructivist approaches to risk and sustainability.

As Beck argues, the decision to adopt realist or constructivist positions should not be treated as an ontological binary, but instead as a pragmatic choice shaped by research objectives and the specific empirical context (Beck, 2000). This research therefore aligns with a pragmatic research paradigm, in which methods are selected for their capacity to illuminate complex social processes rather than to conform to a single epistemological tradition (Morgan, 2007). This approach is particularly appropriate when examining sustainability-related behaviours, where material risks, discursive constructions, and lived experience intersect.

Although the empirical focus of this paper is a single survey instrument, the survey is embedded within a broader ethnographic and mixed-methods research tradition developed across multiple projects and empirical sites (Borne, 2010; 2013; 2018; 2023, 2026). The research trajectory has included global-scale analyses of sustainable development governance, including work at the United Nations level, alongside local and meso-scale studies of environmental risk, governance, and behavioural change. It was through earlier local level research, specifically within community based energy reduction initiatives that the foundational structure of the questionnaire was first developed and iteratively refined before being adapted for use within governance and sustainability contexts (Borne 2026).

With the above in mind the research presented in this paper combines descriptive survey data with analytic auto-ethnographic insight, drawing on the author's long-term immersion in surf culture and sustainability-oriented surfing research (Borne, 2018; Cook, 2022). This approach aligns with analytic auto-ethnography, where the researcher's embedded position in surf culture is used reflexively to contextualise empirical findings rather than to substitute them (Anderson, 2006). Auto-ethnographic insight is therefore treated as an analytical lens through which patterns identified in the survey data are interpreted, situated, and critically examined.

The survey instrument was adapted specifically for the surfing context through preliminary interviews and ongoing collaboration with the founders of Sustainable Surf (Borne & Ponting, 2015). This process ensured that the survey categories reflected both theoretical concerns emerging from the risk society and reflexive modernity literature, and the practical realities of sustainability engagement within the surfing community. The final survey comprised seven interrelated thematic components: motivation and awareness; community; risk and reaction; global–local interconnections; responsibility; action; and perceived barriers to action.

Table 2: Thematic Components

Category	**Rationale**
Motivation and awareness	Underlying rationale for engagement with surfing and awareness of broader sustainability issues
Community	Connection with community influence engagement
Risk and Reaction	Perceptions of risk impact on subsequent behavior
Global and Local	Interconnection between the global and local impacts knowledge behavior and actions
Responsibility	Feeling of responsibility and ownership of issues influence subsequent behavior
Action	Identifies action taken by respondents
Barriers	Identifies perceived barriers to action

Rather than seeking to establish causal or inferential relationships between variables, the survey was designed as an exploratory and descriptive tool, intended to capture broad patterns of perception, concern, and engagement across an internationally distributed respondent group. This methodological choice reflects longstanding critiques of linear models of behavioural change, which inadequately account for the complex and mediated

relationships between awareness, values, context, and action (Whitmarsh et al., 2012). In line with survey methodology literature, the instrument is therefore used to generate an empirically grounded overview of attitudes and behaviours, providing analytical insight rather than predictive generalisation (Groves et al., 2009; Bryman, 2016).

The research also draws conceptually on socio-technical transitions theory, particularly the multi-level perspective (MLP), to situate Sustainable Surf as an niche actor within broader sustainability transitions in the surfing sector (Geels, 2024; Borne, 2018). Methodologically, the MLP is employed as a heuristic framework rather than a deterministic model, enabling the positioning of Sustainable Surf within interacting landscape, regime, and niche dynamics. This supports analysis of how cultural practices, risk perception, and organisational initiatives intersect to influence sustainability-oriented change.

The survey and analysis presented in this paper are situated within a longer-term programme of collaborative research engagement with Sustainable Surf, spanning multiple projects and phases of inquiry. Earlier research examined the organisation's Waste to Waves surfboard recycling initiative, which subsequently expanded into wider programmes including Deep Blue Life and sustainability focused interventions across surf events and industry practices (Borne & Clarke, 2019; Borne, 2018). This work developed into a broader longitudinal examination of the role of multiple actors in catalysing sustainability transitions within the surfing sector, informed by risk society theory and socio-technical transitions scholarship (Borne 2018; Geels, 2024). The present survey, branded as the Deep Blue Survey, extends this research trajectory by shifting analytical focus from organisational initiatives to surfers' perceptions of risk, responsibility, and environmental action, while remaining grounded in the empirical insights generated through sustained engagement with the surfing sustainability field.

The survey was disseminated via the Sustainable Surf website between June 2017 and January 2018. Participation was incentivised through a prize draw for a surfboard. The survey received 575 responses from participants across 35 countries, providing a diverse and internationally distributed dataset. The analysis presented in this paper synthesises these survey results with interdisciplinary literature spanning risk theory, environmental behaviour, sustainability transitions, and surf studies, in order to advance understanding of

the relationship between direct nature engagement, risk perception, and reflexive, or counter-reflexive, responses within sustainable development.

Results/ Discussion

Motivations and Awareness

The personal relevance and connection with the surfing scene (Irwin, 1973) is identified as crucial for understanding participants' motivations for engaging with environmental issues (Lazarow & Olive, 2017). It is acknowledged that the composition of this scene is far from homogenous. What is clear from the results presented here is that the majority of participants indicated regular engagement with surf cultures, including surf media, films, and clothing. As Lazarow and Olive note, 'understanding the multiple and sometimes competing values and motivations that drive these enthusiasts is important if surfers are to be further mobilized into supporting place-based and/or environmental issues' (2017: 206).

Figure 3: Motivations for going surfing

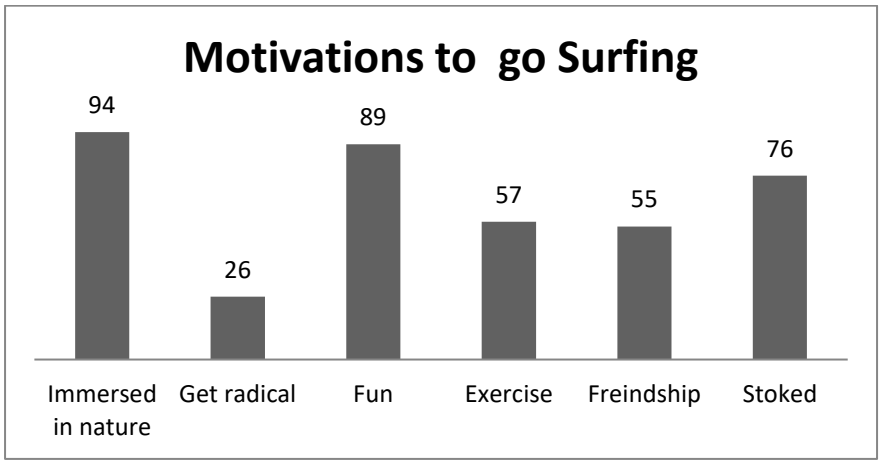


Figure 3 indicates that immersion in nature was a significant motivation for going surfing, with 84 per cent of respondents identifying this factor. This was closely followed by having fun (89 per cent), being 'stoked' (76 per cent), getting exercise (57 per cent), friendship (55 per cent), and 'getting radical' (26 per cent).

All respondents indicated that they considered themselves environmentally aware, with over 80 per cent suggesting that it was the act of surfing itself that contributed to this awareness. Extending this observation, respondents were also asked about their concern for the health of the oceans. The vast majority (98 per cent) reported a very high level of concern, with many reinforcing the view that surfing had increased their sense of responsibility for ocean protection.

Respondents also made direct connections between ocean health and personal wellbeing, suggesting that declining ocean quality negatively affected their wellbeing. This connection is significant, as it highlights tensions between individualised motivations and broader social and environmental responsibility (Lazarow & Olive, 2017). The relationship between marine and coastal environments and wellbeing has received increasing attention in recent years (Fudge et al., 2023), including research on surfing and wellbeing more specifically (Britton & Foley, 2021; Hunter & Stoodley, 2021), surfing within Marine Protected Areas (Lloret et al., 2023), and targeted surfing programmes designed to enhance wellbeing (Olive et al., 2023; Marshall et al., 2023). While research in this area continues, the results presented here suggest a relationship that is not simply individualistic, but one that connects personal experience with wider social and environmental concerns.

This observation evokes the notion of citizenship. While environmental citizenship has a longer intellectual history (Dobson & Bell, 2005), marine citizenship has only recently begun to coalesce as a distinct concept (McKinley & Fletcher, 2012; Buchan et al., 2023). McKinley and Fletcher (2012: 839) define marine citizenship as a process through which individuals take greater personal responsibility for ocean health in ways that support marine governance. Within surfing scholarship, this has been further extended through the concept of ‘saltwater citizenship’ (Whyte, 2019).

Taken together, these results establish a clear connection between respondents’ engagement with the surfing scene, their relationship with nature and the ocean, and their reported environmental awareness. The following section builds on these findings by exploring how surfers conceptualise community and how environmental concern extends beyond specific geographical locations.

Beyond Place

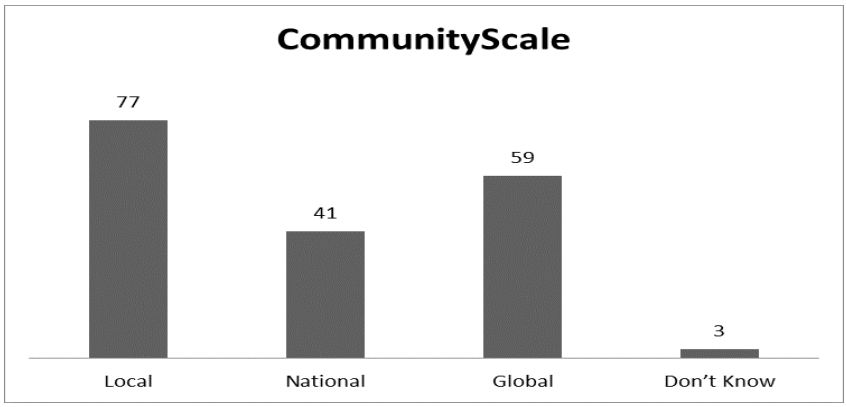
It was previously noted that place attachment has been identified as a strong factor influencing environmental behaviour. However, theories of place and space increasingly contend with the realities of globalisation and technological advancement. Expanded transport and communication networks lift many individuals beyond the confines of fixed spatial boundaries, producing more fluid and non-linear constructions of environmental identity and behaviour (Beck 2000). For surfers, the exponential growth of interactive web technologies and platforms such as Magicseaweed and Surfline provides constant access to information about distant surf locations, effectively extending surfers' spatial horizons (Borne, 2018). These developments have, in turn, generated debate regarding their implications for tourism dynamics and local environmental impacts (Ponting & O'Brien, 2015; O'Brien & Ponting, 2015; Mach et al., 2020).

While Sustainable Development Goal 11 explicitly addresses community through the aim of creating 'sustainable cities and communities', the practical conflation of cities and communities within this goal risks obscuring the complexity of community as a dynamic and ambiguous concept. Here, a broader and more fluid understanding of community is adopted, recognising its central role in achieving sustainable development and mediating humanity's relationship with the natural world. Community is therefore integral to the exploration of reflexive modernity and sustainable development, particularly in contexts shaped by technological connectivity. Although a full theorisation of community is beyond the scope of this paper, it is worth noting Beck's observation that the spaces in which people act and think are becoming simultaneously smaller and more global in nature (Beck, 1999). As a result, multiple communities can occupy the same bounded space, with surfers' identities and motivations shaped by their positions within overlapping local and global networks.

Reflecting this conceptual framing, a series of survey questions were designed to explore respondents' understandings of, and engagement with, community. Respondents were initially asked whether they felt part of a community, with 91 per cent indicating that they did. To challenge assumptions of homogenous or singular community membership,

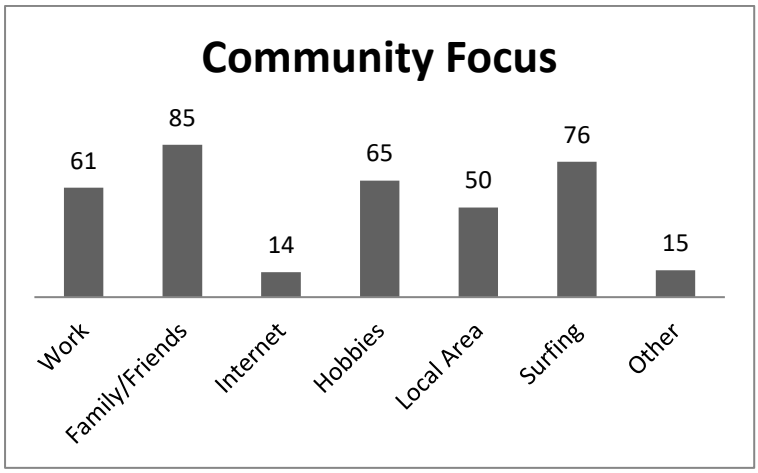
participants were then asked whether they felt part of more than one community. Significantly, 92 per cent of respondents reported belonging to multiple communities. This notion of community as non-place-specific and extending beyond fixed boundaries was explored further by asking respondents to identify whether they associated their communities with local, national, or global scales.

Figure 4: Community Scale



As shown in Figure 4, participants predominantly identified their community as being located within their local area. However, respondents also clearly indicated that their sense of community extended beyond the local scale. Fifty-nine per cent of participants identified their community as global in nature, while 41 per cent associated their community at the national level. These results suggest that respondents were able to occupy multiple communities simultaneously, reinforcing the earlier observation that community is not necessarily spatially bounded. Having established this frame, respondents were then asked to indicate the primary focus of their community or communities.

Figure 5: Community Focus



The results displayed in Figure 5 indicate a highly diverse pattern of community association. The highest levels of association were with friends and family (85 per cent), followed by surfing as an activity (76 per cent). Hobbies were identified as a source of community by 65 per cent of respondents, while work was identified by 61 per cent. Half of the respondents (50 per cent) indicated that their local area formed an important component of their sense of community.

Internet-based communities were identified by 14 per cent of respondents, while 15 per cent selected 'other'. Taken together, these findings point to a response group characterised by diverse and overlapping forms of community. While locality remains significant for many participants, it does not operate as an exclusive or dominant frame of reference.

Although the terms local and localism are not synonymous within the surfing context, it is instructive to briefly consider how localism has been conceptualised within the literature. Usher (2017) describes surf localism as territorial behaviour centred on particular surf breaks, noting that 'localism has always been about sustaining the local: maintaining the availability of waves for locals in a place to which they are strongly attached, and maintaining the surf culture they have formed with other local surfers' (Usher, 2017: 149). This sense of localism, and the identities associated with it, extends beyond individual

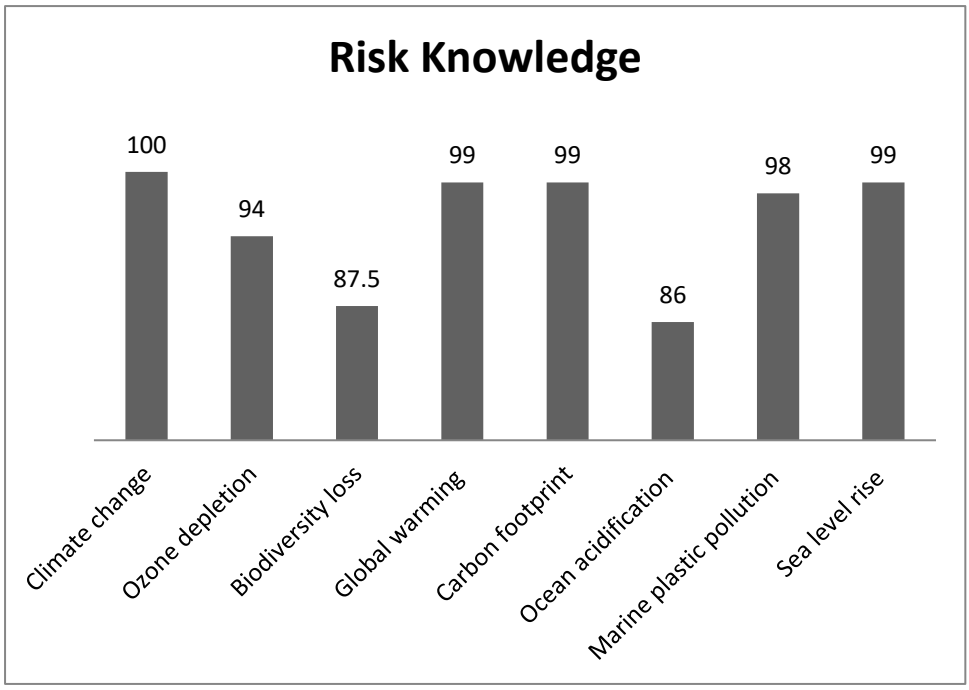
attachment to influence coastal management practices and forms of political activism (Ware et al., 2017; Hales et al., 2017).

At the same time, the results highlight a group whose identities and community affiliations are not confined by geographical boundaries. A central proposition of this paper is that environmental engagement and subsequent action, while significantly shaped by local contexts, also possess an aspatial dimension. Although only a minority of respondents explicitly identified the internet as a community, digital platforms nevertheless facilitate global connections and shared identities that shape environmental concern and action, even when not recognised as 'community' in conventional terms (Borne, 2018). The tension between global and local forms of belonging therefore emerges as a key identity dynamic within the survey and is explicitly represented in the analysis.

Risk and Reaction

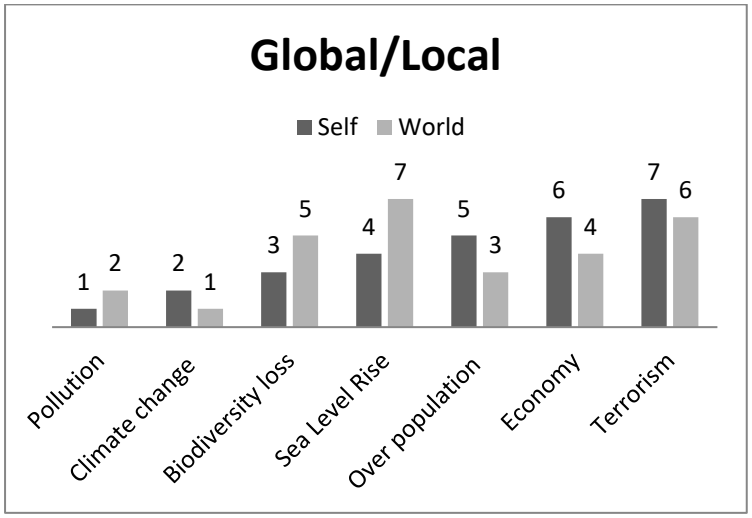
Risk forms a central component of both the theoretical and empirical dimensions of this research. The relationship between risk perception and environmental concern has been widely identified as an important factor in understanding environmental behaviour (Borne, 2009; Whitmarsh et al., 2012). In the context of surfing, a risk-based perspective also responds to calls by Larson et al. (2018) to extend analysis beyond place attachment and explore how surfers engage with broader environmental concerns.

Figure 6: Risk Knowledge



Following Borne (2010), a limited set of risks representing key global environmental issues were identified and respondents were asked to indicate their level of concern. Figure 6 displays high levels of concern across all risks presented, with all categories scoring at 85 per cent or above. Climate change emerged as the primary concern, followed by global warming, carbon footprint, and sea-level rise. Marine plastic pollution also scored highly, with 98 per cent of respondents indicating concern. Taken together, these results suggest a respondent group with a high level of awareness of global environmental risks.

Figure 7: Global and Local

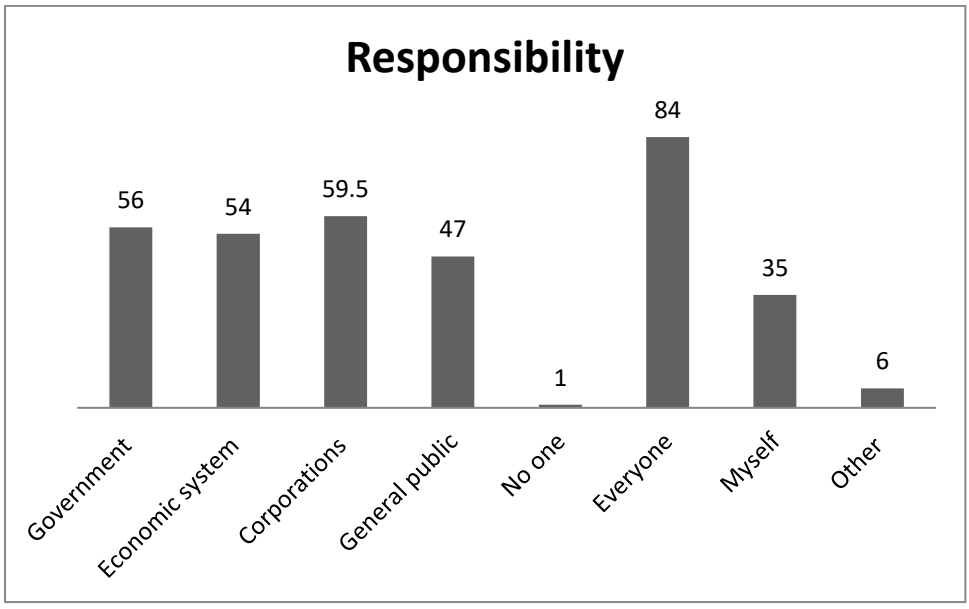


Building on the preceding discussion, the research sought to explore the relationship between local and global understandings of environmental risk and to assess whether differences in these perceptions were evident. Respondents were asked to prioritise a list of environmental risks, first in relation to themselves and then in relation to the world more generally. Overall, there was broad parity between individual-level concern and concern for the world. Pollution and climate change were ranked as either the highest or second-highest priorities at both scales.

Some differences in emphasis were nevertheless evident. Biodiversity was ranked as more important to individuals (third) than to the world more generally (fifth), while sea-level rise was also prioritised more highly by individuals (fourth) than at the global scale (seventh). In contrast, overpopulation was ranked as a lower priority for individuals (fifth) than for the world (third), and the economy was similarly prioritised more highly at the global level (fourth) than at the individual level (sixth). Terrorism was ranked as the lowest priority in both cases, although it was considered slightly more important at the global level (sixth) than for individuals (seventh).

Responsibility

Figure 8: Responsibility



Feelings of responsibility have been identified as a key factor in individuals' willingness to engage with environmental issues (Hallman & Wandersman, 1992; Reese & Jacob, 2015; Punzo et al., 2019). This component of the survey asked respondents to identify a range of actors, including themselves, whom they considered responsible for addressing environmental issues. The responses indicate a broad distribution of perceived responsibility. While a large majority of respondents (84 per cent) felt that 'everyone' was responsible, only 35 per cent identified themselves as personally responsible. This pattern introduces a tension in the data, complicating assumptions that surfers are necessarily positioned to lead pro-environmental behaviour.

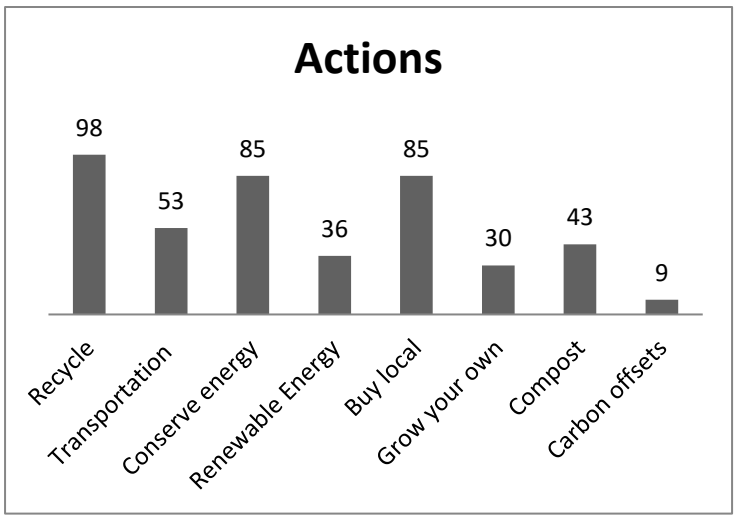
This tension is further reinforced by responses to a subsequent question asking whether respondents had calculated their own carbon footprint, with 88 per cent indicating that they had not. Corporations, government, and the more abstract 'economic system' all attracted similar levels of attributed responsibility, suggesting that responsibility was frequently externalised rather than internalised at the individual level.

The preceding sections have explored respondents' motivations, environmental awareness, perceptions of community, and understandings of risk across both local and global scales. Within this broader context, the findings presented here point to an important distinction between environmental concern and the attribution of responsibility. The following section extends this analysis by examining respondents' reported environmental actions and the barriers that may inhibit further engagement.

Action and Barriers

Building on the preceding insights, the research sought to explore the relationship between environmental awareness and subsequent action. Participants were therefore asked to indicate the types of environmental actions they undertook

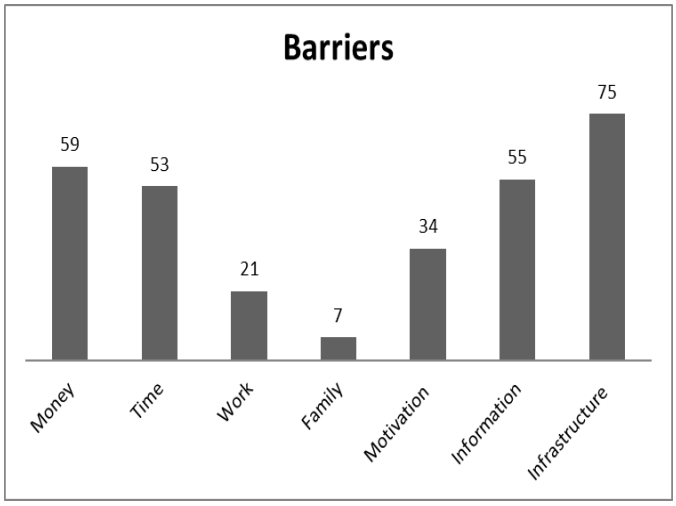
Figure 9: Actions



As evident in Figure 9, a large proportion of respondents (98 per cent) reported that they actively recycled. This was followed by energy conservation and buying local produce. Over half of participants (53 per cent) indicated that they considered environmental impacts in their transportation choices, while 43 per cent reported composting. Thirty-six per cent of respondents used renewable energy, 30 per cent grew their own food, and 9 per cent reported purchasing carbon offsets.

These results suggest a group that not only reports high levels of environmental awareness but also engages in a range of pro-environmental actions. However, as expected, there was considerable variation in levels of engagement across different activities. This diversity highlights the importance of examining the barriers that may inhibit further or more consistent pro-environmental behaviour. Participants were therefore presented with a number of factors that could constitute barriers to environmental action.

Figure 10: Barriers



Responses to the question of barriers to environmental action revealed a diverse range of constraints. The most significant barrier identified was infrastructure, reported by 75 per cent of respondents. Financial limitations were cited by 59 per cent, while a lack of information was identified as a barrier by 55 per cent. Time constraints were reported by 53 per cent of participants, and a general lack of motivation was identified by 34 per cent.

In contrast, work commitments were considered a barrier by only 21 per cent of respondents, and family responsibilities were rarely identified as a barrier (7 per cent). Taken together, these findings suggest that structural and systemic factors, rather than personal or relational constraints, play a more prominent role in shaping respondents' capacity to engage in pro-environmental behaviour.

Discussion/ Conclusion

This paper has implications for surfing related research, sustainable development policy, and broader theoretical debates. Within the surfing literature, it responds to calls for further research exploring how wave knowledge and nature connectedness shape environmental behaviour (Lazarow & Olive, 2017). It also engages with Reineman's suggestion that surfers' distinctive wave knowledge holds particular advantages for supporting coastal management and enhancing the protection of surfing related spaces through activism and political engagement (Hales et al., 2017). The discussion further draws on the idea of surfing as a nature sport, through which surfers develop a particular perspective on nature and the environment (Booth, 2018; Booth, 2024).

Beyond this, the research extends analysis beyond the geographically bound contexts frequently associated with 'the local'. This was achieved through an exploration of perceptions of community that reflects broader processes of globalisation and recognises the growing role of travel, surf forecasting, and information-based technologies. Environmental and social issues were examined at both global and local scales to gauge levels of concern and association at the individual and collective level. Risk was introduced as a distinct analytical category, based on the proposition that perceived environmental threat may act as a catalyst for subsequent action.

The research also explored participants' sense of responsibility as a marker for pro-environmental behaviour, and it is perhaps here that the clearest evidence of the surfer environment paradox emerges. While inevitable tensions are present in the data, the results nevertheless suggest that surfers constitute an environmentally aware and motivated group. Respondents consistently indicated that surfing, as an activity, facilitated a deeper connection with nature, and that this heightened awareness holds the potential to translate into increased environmental action.

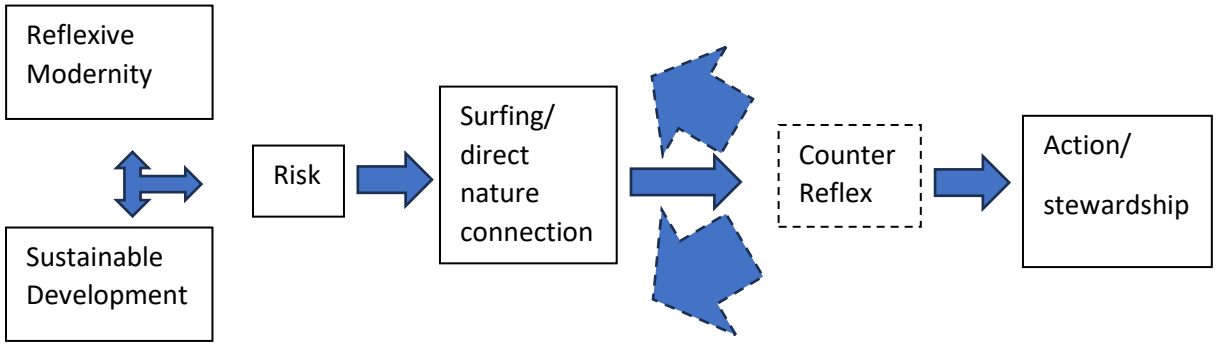
Taken together, the initial insights point to three broad conclusions regarding the role of surfing in promoting environmental engagement. First, surfing appears to increase environmental awareness; second, this awareness translates into some forms of environmental action; and third, a number of barriers constrain further or more consistent engagement in environmentally responsible behaviour. As discussed earlier, and in response to calls to expand the sophistication and scope of analysis in this area, the research therefore moved beyond these initial observations to examine the conditions under which awareness does or does not lead to action.

At the theoretical level, the analysis has been situated within the context of Ulrich Beck's risk society, enabling a discussion that moves beyond more reductionist accounts of environmental risk and behaviour. In doing so, the research re-engages with earlier theoretical propositions, particularly those concerning processes of counter-reflexivity. Taken as a whole, these observations provide a basis for advancing discussion on

sustainable development by clarifying the mechanisms through which environmental risk is mediated, interpreted, and acted upon.

Re-engaging with the model of counter-reflexivity presented in Figure 2, it is now possible to propose an additional dynamic to this framework. Figure 2 suggested that, at the local level and within a specific context, reflexive responses to global risks articulated through sustainable development discourse were not taking place. Instead, a process of counter-reflexivity was observed, driven by a range of mediating factors that inhibited reflexive engagement and limited subsequent action. Figure 11 presents a reconfigured perspective that builds on this earlier model.

Figure 11: Reconfiguring a counter reflexivity



It has been established that sustainable development and reflexive modernity are connected through a symbiotic relationship, forged through the increasing prevalence of risk as an organising principle within society. The research presented here reinforces the value of this relationship. When applied to the case of surfing, risk is mediated through direct engagement with nature, with surfing operating as a nature-based activity. At this point, and in contrast to earlier observations, processes of counter-reflexivity appear to be permeated, enabling reflexive responses and subsequent action. It is therefore suggested that surfing has the potential to facilitate deeper engagement with nature, contributing to the overcoming of counter-reflexive tendencies and enhancing environmental behaviour.

These observations also address the surfer environment paradox, which highlights the tension between the individualistic nature of surfing and the advantages that immersion in nature may hold for those engaged in the activity. It is argued here that this paradox does not necessarily inhibit surfers' capacity to act environmentally, either individually or through collective forums. Rather, overcoming counter reflexivity and addressing the surfer environment paradox can be understood as mutually reinforcing processes. Drawing again on a risk society analysis of individualisation, individualisation is not interpreted as a condition of autonomy or separation, but as a process of dis-embedding and re-embedding individuals' relationships with broader social structures (Beck, 1992).

These observations provide fertile ground for continued research, not only within surfing but across a wider range of nature-based activities. It is suggested that deep, active engagement with place and a sense of ownership can contribute to environmental action. This has implications for the design of programmes and initiatives aimed at promoting pro-environmental behaviour, as well as for advancing progress across multiple Sustainable Development Goals. Such initiatives must move beyond reductionist or overly general interpretations of individual targets and instead engage with the complex conditions under which action becomes possible.

Ultimately, this paper contributes to the ongoing task of interrogating the normative assumptions that underpin sustainable development. It is important not only to challenge these assumptions, but also to explore innovative mechanisms for mobilising the diverse global and local narratives of sustainable development in ways that generate more durable responses to contemporary challenges. Recent evaluations highlight slow and stagnant progress towards the United Nations Sustainable Development Goals (UNDP, 2024; United Nations, 2024; Sachs et al., 2024), with only 16 per cent of targets currently on track for 2030 and 84 per cent showing limited or reversed progress. While these trends reflect significant structural inequalities and systemic constraints, applying counter-reflexive analytical frames offers a more realistic lens through which to understand these dynamics and to inform the development of more effective sustainability policies.

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