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ADVANCED REVIEW

Perspectives on Indigenous well-being and climate change adaptation

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Abstract

Though it is often said that climate change is a risk to people's well-being, the specific ways in which it affects people's well-being is still poorly understood, especially as it relates to Indigenous Peoples and Local Communities. Two interrelated issues contribute to this gap in knowledge: (1) the use of different conceptualizations of well-being across disciplines; and (2) the limited use of local and context-specific understandings of well-being that are meaningful to people exposed to climate change. Here, we review 103 articles covering the topic of climate change adaptation and well-being. We find that, despite the growing interest on the topic, most of the articles do not include definitions of well-being. We then propose an approach informed by emic values to better understand how climate change may affect well-being in Indigenous Peoples and Local Communities. We conclude that, given the increasing recognition of well-being as a fundamental marker of successful adaptation, well-being should be central to climate change research and policymaking, but for this to be of benefit to Indigenous Peoples and Local Communities context-specific understandings of well-being are necessary.

This article is categorized under:

Vulnerability and Adaptation to Climate Change > Values-Based Approach to Vulnerability and Adaptation

Climate and Development > Sustainability and Human Well-Being

The Social Status of Climate Change Knowledge > Sociology/Anthropology of Climate Knowledge

KEYWORDS

Indigenous Peoples, local communities, wellbeing, psycho-cultural indicators, adaptation

1 | INTRODUCTION

It is now widely accepted that climate change impacts biophysical systems and affects the well-being of people. Effects of climate change can be observed directly in the environment and, more indirectly, in individuals and communities under different psycho-social descriptors that include eco-anxiety, emotional distress, and loss of sense of place and identity (Cunsolo et al., 2020; Doherty & Clayton, 2011; Gibson et al., 2019, 2020; Steiner, 2015). Less well understood is

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the extent to which well-being is constituted by those psycho-social descriptors, namely what is and what is not well-being. This is so because well-being is seldom described beyond its more implicit constituents, often loosely articulated as a vague collection of generic terms with positive attributions pointing toward a state of human satisfaction (Ogunbode et al., 2019; Tian et al., 2015). This generic conceptualization prevails because well-being is experienced more than it is theorized, and when it is theorized it remains empirically untested (Kahn & Juster, 2002). Thus, well-being is depicted as a “common sense” notion that expresses something we all think we know from our own lay impressions of “being well” or “feeling good” (Blaxter, 2010; Huppert, 2009). From this perspective, well-being represents an aspirational ideal of satisfaction and prosperity based on individual lived experience, folk science, or socially constructed paradigms (Bonnano et al., 2015; Sointu, 2005).

This generalized idea of well-being is often uncritically applied in the context of climate change adaptation research, either with no proper working definition or conflated with related notions such as physical and mental health, making well-being and its cognate concepts non-operational (Feeny et al., 2014; Ford et al., 2018; Kelman et al., 2021). Adding mental health as an isomorph of well-being is premised upon the longer research tradition of the former and its wide acceptance in the biomedical and psychological sciences (Krueger & Markon, 2006). The conflation of mental health and well-being can be traced to the World Health Organization’s definition of mental health as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization [WHO], 2004). In this framework, mental health is “a state of well-being” where the former is uncritically subsumed in the latter (Ford et al., 2018; Obradovich et al., 2018; Tiatia-Seath et al., 2020).

While there is a noticeable recent push in the literature to assess climate change impacts on people, research remains highly compartmentalized into disciplines with different conceptualizations of well-being (see Table 1). An added problem is that studies do not always link specific climate drivers to core elements of well-being, which is necessary to evaluate risks and target adaptation goals. For example, Hudson et al. (2019) surveyed households in three French regions at risk of flooding, finding that adaptation investments correlated positively with the reported subjective well-being. Although the perception of risk—whether that risk eventuated or not—was enough to decrease well-being, it was conceptualized as “happiness” (i.e., subjective well-being), not considering other relevant dimensions (e.g., objective, relational, or environmental well-being) that also impact the human experience of climate change (Brueckner-Irwin et al., 2019; Rao et al., 2020; Walker et al., 2021).

TABLE 1 Conceptualizations of well-being across disciplines.

Disciplines	Well-being conceptions
Biomedical sciences	Emphasizes the promotion of health and the quality of life, not just a mere absence of disease. In this approach, the concept of well-being is a basic constituent of the definition of health (WHO, 2004).
Psychology	Pivots on psychological constructs related to satisfaction with life, positive emotions, coping strategies, mental health symptoms, cognitions, and other internal states (e.g., motivations). Thus, psychological well-being captures the eudaimonic component, whereas subjective well-being focuses on the hedonic component (Adler & Seligman, 2016; Diener et al., 2003).
Economy and political science	Use socio-economic indicators to understand the social context—how individuals and communities relate to the state—and gauge well-being in terms of equity, social justice and the role of governments and markets in maintaining structural imbalances (Sointu, 2005).
Development studies	Pro-poor approach to well-being where access to basic services and goods is at the base of material, positive well-being (Gough & McGregor, 2007; Sen, 2000).
Human geography and environmental science	Stress the more material aspects of well-being, including land, resources, and ecosystem services, allowing for the inclusion of affective and other immaterial values. Hence, well-being is a function of people, space, and the environment (Brueckner-Irwin et al., 2019; Díaz et al., 2015).
Anthropology, sociology, and cultural geography	Use interpretive frameworks that locate well-being within a given cultural edifice and study how social relations shape and are shaped by that culture. Well-being, therefore, is informed by cultural artifacts such as systems of knowledge, intangible values, and social practice, being a manifestation of interpersonal relations, including relations with nonhuman entities that encompass deities, spirits, and ancestors (Dacks et al., 2019; Panelli & Tipa, 2007).

Note: Conceptions of well-being move from the internal to the external (or from the intrapersonal to the interpersonal), with the environment as a contextual backdrop of varying influence.

Thus, since climate change also threatens places, relations, culture, and identity—tangible things and intangible values that are constitutive elements of well-being—individual-based conceptualizations of well-being seem insufficient to determine the goals of adaptation (Barnett et al., 2016; Singh et al., 2021). The social, relational, and environmental aspects of well-being are particularly important for Indigenous Peoples and Local Communities (IPLC) whose connection to the environments they inhabit are rooted in long and ongoing socio-cultural and historical trajectories that determine their cultures and identities, and therefore their autonomy and sovereignty (Anae, 2019; Hayward et al., 2019; Reidmiller et al., 2018; Sterling et al., 2020; Yates et al., 2021).

Given their special bond with the places they inhabit, the well-being of IPLC is more dependent on healthy environments than that of other groups of people, as they rely on these to sustain their livelihoods and to maintain the meaningful connections that inform their worldviews (Berry et al., 2010; Big-Canoe & Richmond, 2014; Green et al., 2010; Panelli & Tipa, 2007). Indigenous peoples inhabit landscapes, seascapes and mythscapes, evidencing how humans belong to nature rather than the other way around (Guardiola & García-Quero, 2014; Ingold, 2005). For example, studies among IPLC in Australia and Canada show the importance that traditionally hunted and harvested food has in preserving the identity and well-being of communities, as procuring traditional food fosters a sense of custodianship for the environment, but also a feeling of self-efficacy that is relational in nature through the intergenerational transmission of important environmental knowledge (Durkalec et al., 2015; Petheram et al., 2015). Thus, environmental losses erode the autonomy, sovereignty, social status, and cultural heritage of Indigenous groups by disrupting their sense of place and belonging, all of which are likely core elements of well-being for IPLC (Cunsolo et al., 2020; Johnson et al., 2021; McMichael et al., 2021; Petzold et al., 2020).

IPLC are already experiencing the impacts of climate change on their livelihoods (Chia et al., 2016; Pyhälä et al., 2016; Walker et al., 2021). Research on well-being studies needs to be attuned to these ongoing changes and anticipate future ones, as socio-cultural and environmental changes go hand in hand (Castree et al., 2014). In practice, this means that, as historical and current living conditions change, so do conceptualizations on which well-being is based, and research on climate change and well-being should also encompass these changes (Shockley, 2014).

To assess the state of knowledge on the topic we conducted a systematic literature review targeting peer-reviewed articles that dealt with climate change and well-being. The focus of the review was to assess how recent literature on climate change adaptation and well-being conceptualizes well-being, and in particular the well-being of IPLC. In the following section, we describe the literature review process and the analytical choices to generate the results. Next, we present the results of the literature review, offering a summary of the main findings with the support of data visualizations. These show that few studies define what well-being is and, the articles that do, use theories developed in Western, educated, industrialized, rich, and democratic (WEIRD) societies. In the discussion section, we propose an approach that is more attentive to the elements and values that inform the specific worldviews of IPLC, and of how environmental change impacts those elements and values and affects well-being. Last, we conclude with a series of recommendations for researching climate change and well-being that could lead to better adaptation outcomes for IPLC.

2 | METHOD

2.1 | Planning and data collection

Following well established approaches to systematic research synthesis on human dimensions of climate change in the social and environmental sciences (Berrang-Ford et al., 2015; Ford et al., 2011), we carried out a systematic literature review on the impacts of climate change on the well-being of IPLC in the context of climate change adaptation. Within that context, the objectives of the review were threefold: (1) to explore how many peer-reviewed articles provided definitions of well-being and how they conceptualized it; (2) to explore how many articles focused on IPLC versus WEIRD societies; and (3) to explore how many articles were empirical, rather than providing a theoretical overview.

We started our search using the Web of Science Core Collection that included bibliographic databases such as the Science Citation Index Expanded (SCIE), the Social Sciences Citation Index (SSCI), the Arts and Humanities Citation Index (AHCI) or the Emerging Sources Citation Index (ESCI) with circa 85 million sources and more than 21,000 peer-review journals. We restricted the query to peer-reviewed papers published in English between January 2010 and January 2022 that included the keywords “climate change” (covering environmentally-relevant events generally attributable to climate change, rather than non-climatic drivers or episodes) AND “adaptation” (covering the “process of adjustment to actual or expected climate and its effects...to moderate harm or exploit beneficial opportunities,” see IPCC, 2022: 1758) AND “wellbeing” OR “well-being” (a broad concept encompassing subjective and objective

dimensions, see below) in their titles OR abstracts OR keywords. We purposefully kept a simple iterative search process by not including keywords' synonyms and further operators to maintain a degree of flexibility, as a more complex search capturing a higher number of articles would not have necessarily yielded different results in qualitative terms (Berrang-Ford et al., 2015). A few articles that were in press by January 2022 were assigned the year of their advanced online publication. As a result of the previous query, a total of 103 articles were included in the data set for the present review. The data set, its corresponding codebook containing the variable names, as well as their description, structure, and codes, and the R code to replicate the analyses and data visualizations are openly available in the Open Science Foundation (OSF) repository at <https://osf.io/exkyq/>.

The original data set included relevant bibliometric information to identify the articles (e.g., authors, title, journal, year of publication, digital object identifier) along with useful metadata such as the number of citations and the research discipline or group of disciplines of the scientific journals. The original data set exported from Web of Science was edited to add an arbitrary 'id' code to index the 103 articles, to rename most of the original variable names to make them shorter and readable, and to include 22 new vector columns with binary values (1 = occurrence, 0 = absence). These new 22 vector columns included 18 variables related to the journals' research disciplines (e.g., anthropology, psychology, environmental science and ecology) that were originally stored as character data. The remaining new four variables were the result of classifying the 103 articles into four binary options: the article provided a definition of well-being (*wellBeing* = yes/no), the article covered the topic of climate change and adaptation (e.g., not climate change mitigation, disaster risk reduction) (*climate.change* = yes/no), the article was empirical (*empirical* = yes/no), and the article focused on IPLC (*indigenous* = yes/no).

Two independent judges evaluated the 103 articles after being randomly split into two blocks ($n_1 = 52$, $n_2 = 51$). Both reviewers read the articles and entered the codes for the variables *wellBeing*, *climate change*, *empirical*, and *indigenous*. For example, if an article was assessed as not being empirical (e.g., articles that are reviews, perspectives), the judge entered a 0 in their corresponding spreadsheet. After coding the articles of the block assigned to each judge, the judges swapped their coded blocks of articles to be cross validated. In case of disagreement, both judges discussed their classifications and agreed a final code by consensus.

For this review's purpose, we have accepted a list of elements constitutive of well-being as a "working definition," rather than including only those articles that give a fully fleshed out definition of what they consider to be well-being. This means that articles that loosely listed elements of well-being (e.g., health, justice, happiness, economic growth, security, freedom), or articles that categorized well-being in any given way (e.g., as subjective, objective, or social) without necessarily specifying what was implied by these categories or what elements they covered, were included in the category of "providing a definition of well-being." Similarly, we have adopted an inclusive view of what constitutes IPLC when reviewing the articles, incorporating as such studies carried out among rural communities in the Global South (e.g., China, India) that may not define themselves necessarily as Indigenous, but that cannot be considered as Western, industrialized, or rich. A more strict interpretation of what constitutes IPLC, such as for example the one provided by IPBES ("individuals and groups who self-identify as indigenous or as members of distinct local communities, with particular emphasis on those who maintain an inter-generational historical connection to place and nature through livelihoods, cultural identity, languages, worldviews, institutions, and ecological knowledge", IPBES, 2019) would have yielded an even lower number of articles, emphasizing the point that very few studies on climate change adaptation engage meaningfully with the well-being of IPLC.

To ensure that the articles that included in their titles, abstracts, or keywords "climate change" and "adaptation" clearly covered those topics in the main body of the text, we carried out an in-depth analysis of all the articles. The last part of the review pivoted on the empirical articles focusing on IPLC and providing well-being definitions ($n = 7$). For those articles, we analyzed what the main climate drivers were, how well-being was conceptualized, and whether these conceptualizations varied depending on the research methods used to design the studies and to analyze the data. Regarding the evaluation of these seven articles, both independent judges found no disagreements after coding the sample's region (e.g., South America, Africa), the methodology (i.e., quantitative, qualitative, and mixed methods research), the type of climate change driver (e.g., drought), and the definition of well-being provided in the article.

2.2 | Data analysis and visualization

Data analysis and visualizations were performed using R (version 4.1.2)—a programming language and environment for statistical computing and graphics—and R Studio (version 2021.09.1+372) (R Core Team, 2022). Network analyses were conducted with the R packages included in "statnet." The network graph layout was generated with the

Fruchterman–Reingold algorithm, a force-directed algorithm which plots closely related nodes and places at the center of the network the nodes with the highest degree of centrality (i.e., the best-connected nodes).

3 | RESULTS

We reviewed 103 articles published between 2010 and 2021. As shown in Figure 1, there is growing interest on the topic of climate change adaptation and well-being in the past decade, both on IPLC and WEIRD societies, followed by a substantial increase in more recent years.

Although there is a current trend in the climate change adaptation literature to include more mentions of well-being in the title, abstract and keywords, this growing number of mentions does not translate into a qualitative engagement with well-being in the article. In fact, only 14% of the total articles reviewed provided a definition of well-being (Figure 2a), whereas a large majority left the concept fully unexplained. Many articles gave cursory statements of well-being as a condition of generic satisfaction and lack of disease. This shows a tokenistic approach to well-being with no real intention to explore the issue beyond acknowledging its existence and potential importance, something that Lamb and Steinberger's (2017) review of well-being and climate change mitigation already reported.

In terms of focus (IPLC vs. WEIRD societies), there is a very similar proportion of studies with a focus on WEIRD societies (48%) and IPLC (52%), $\chi^2(1, N = 103) = 0.31, p = 0.577, 95\%CI [-0.20, 0.10]$ (Figure 2a). After inspecting the 89 articles that did not provide a definition of well-being, we found no significant difference between those with a WEIRD (48%) and IPLC (52%) focus, $\chi^2(1, N = 89) = 0.10, p = 0.764, 95\%CI [-0.19, 0.12]$. In sum, we found that the lack of definition of well-being is common and equally shared by both WEIRD- and IPLC-focused articles.

The overall number of articles reviewed that were empirical (54%) and nonempirical (46%) was also similar, $\chi^2(1, N = 103) = 1.24, p = 0.265, 95\%CI [-0.23, 0.06]$. However, we found that empirical articles were more likely to

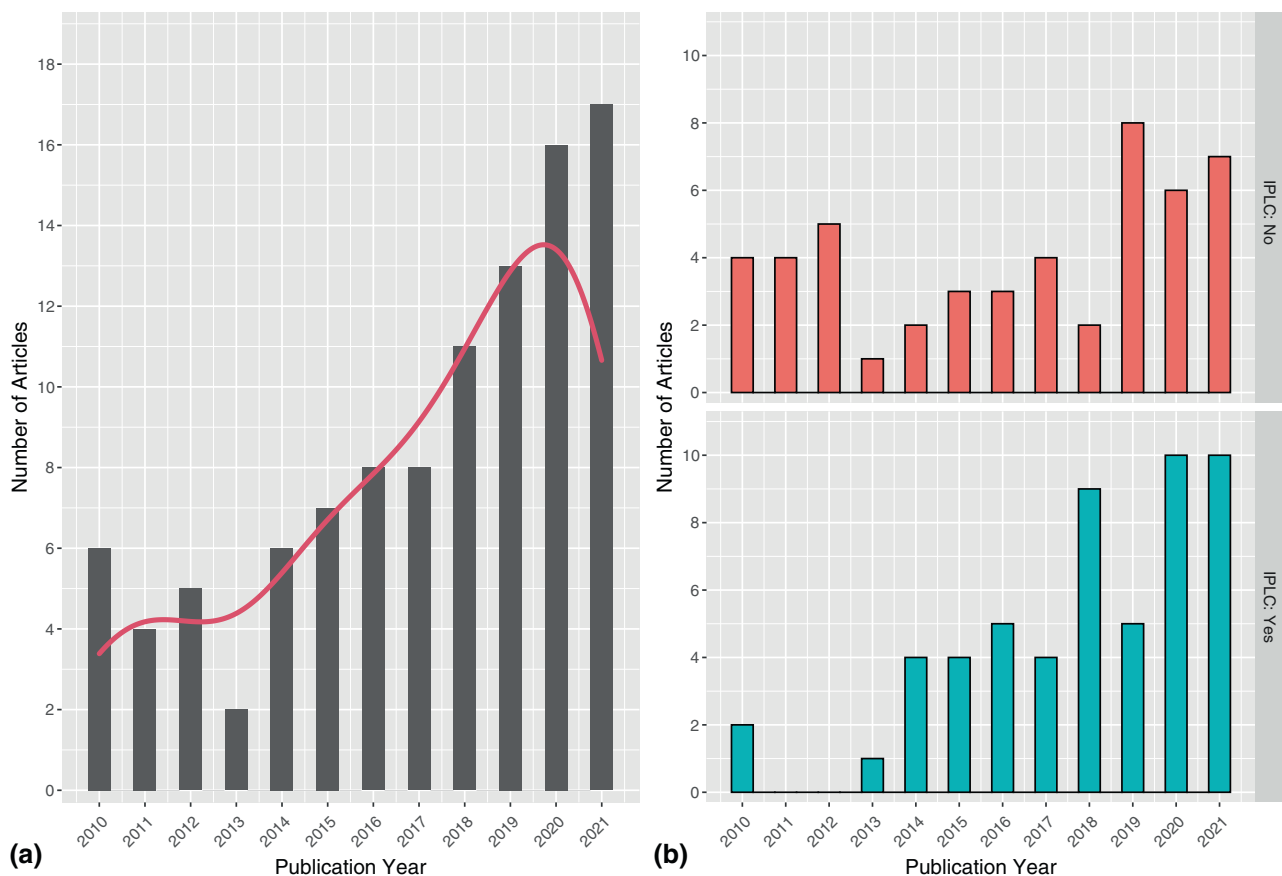


FIGURE 1 Histogram and density plots showing the number of reviewed articles from 2010 to 2021 (a). Facet histograms displaying the number of reviewed articles as a function of including or not Indigenous Peoples and Local Communities (IPLC) (b).

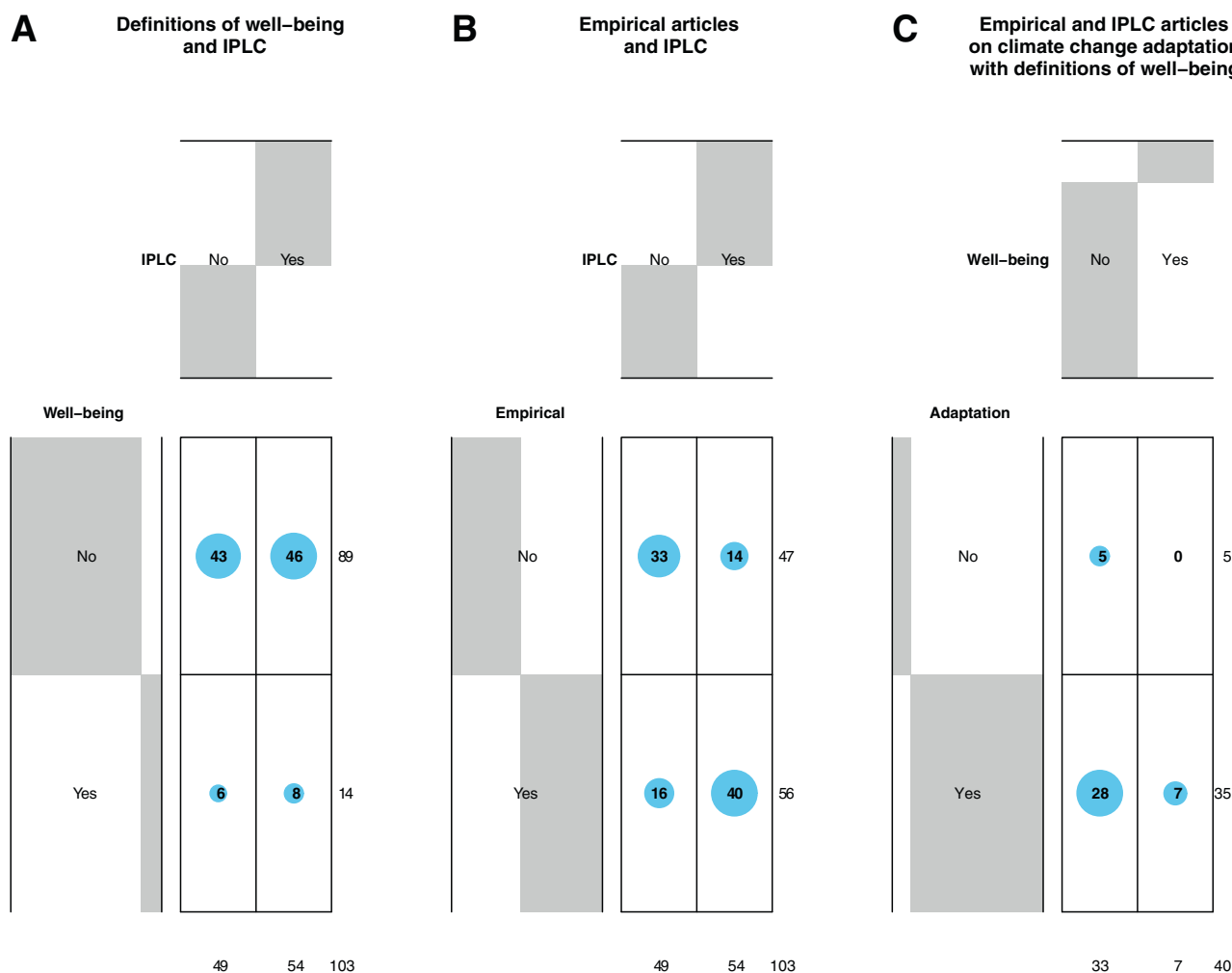


FIGURE 2 Articles providing a definition of well-being and Indigenous Peoples and Local Communities (IPLC) (a). Empirical articles and Indigenous Peoples and Local Communities (IPLC) (b). Empirical articles on Indigenous Peoples and Local Communities (IPLC) as a function of covering the topic of climate change adaptation and providing a definition of well-being (c).

have an IPLC focus than nonempirical ones (e.g., review, perspectives), $\chi^2(1, N = 103) = 16.14, p < 0.001$ (Figure 2b). Conversely, the odds of finding nonempirical articles in our data set was 5.89 times more likely in articles focusing on WEIRD societies than on IPLC. Despite this, only 7 out of 40 empirical articles on climate change adaptation among IPLC provided some sort of operational definition of well-being, and of those only one derived it inductively from IPLC, while the rest applied definitions coined in WEIRD settings (Table 2).

Upon detailed analysis of the seven empirical articles that collected data in IPLC and provided a definition of well-being (Figure 2c and Table 2), three main findings emerged. First, most of the climate change drivers were related to land and water degradation (e.g., droughts, flooding) and food security, while other common drivers such as sea level rise (SLR)—often echoed by the media as the main climate-related existential threat (Jarillo & Barnett, 2022)—were absent from our sample. This result could be a consequence of the lack of research on well-being and IPLC in locales where SLR is the main concern and researchers are more focused on the material impacts of rising sea levels (Graham et al., 2013).

Second, in terms of the definitions of well-being, all but one used eudaimonic or objective conceptualizations of well-being (EWB), such as those found in the capabilities framework (Nussbaum, 2000), and three of those articles combined it with a subjective well-being conceptualization (SWB). All these conceptualizations of well-being were coined from existing frameworks developed in WEIRD settings (e.g., the Millennium Ecosystem Assessment) and then applied to IPLC. Only one of the reviewed studies (Gutierrez et al., 2020) had an inductive approach whereby IPLC participants themselves defined the components of well-being based on a local (Quechua) concept, *sumac kawsay* (Table 2).

TABLE 2 Empirical articles with IPLC providing a well-being definition.

Publication	Sample	Well-being definition	Climate change impact	Method	Data collection
Butler et al. (2014)	Pacific	"...basic material for a good life, freedom of choice, good social relations, and security, which is the antithesis of poverty"	<ul style="list-style-type: none"> • Drought • Food security 	Quantitative methods	<ul style="list-style-type: none"> • Rating scales
Chia et al. (2016)	Africa	"...living a decent life encompassing good health, security, basic material needs and social relations" (Millennium Ecosystem Assessment, 2005)	<ul style="list-style-type: none"> • Land degradation 	Mixed methods research	<ul style="list-style-type: none"> • Survey • Focus groups
Gutierrez et al. (2020)	South America	"... <i>buen vivir</i> (well-being), derived from the Quechua concept of "sumak kawsay" describing a harmonious way of life that is community-centric, ecologically balanced, and culturally sensitive" (Zimmerer, 2012)	<ul style="list-style-type: none"> • Flooding • Landslides 	Mixed methods research	<ul style="list-style-type: none"> • Survey • Focus groups • Free listing • Structured interviews
Petheram et al. (2015)	Australia	"...a state of being with others and the natural environment that arises where human needs are met, where individuals and groups can act meaningfully to pursue their goals, and where they are satisfied with their way of life" (Gough & McGregor, 2007)	<ul style="list-style-type: none"> • Food security 	Qualitative methods	<ul style="list-style-type: none"> • Semi-structured interviews • Informal discussions • Participant observation • Diagramming • Visual tools
Singh & Basu (2020)	Asia	"...we use an expanded well-being lens (which includes material, subjective, and relational well-being)" (Cohen, 2005)	<ul style="list-style-type: none"> • Drought • Land degradation 	Mixed methods research	<ul style="list-style-type: none"> • Survey • Focus groups • Life histories
Thanh et al. (2021)	Asia	"...basic materials for a good life, health, security, social relations, and freedom of choices and actions... these indicators allowed the inclusion of material living conditions, individual preferences, and social and cultural contexts" (Millennium Ecosystem Assessment, 2005)	<ul style="list-style-type: none"> • Water degradation 	Mixed methods research	<ul style="list-style-type: none"> • Survey • Focus groups • Semi-structured interviews
Walker et al. (2021)	Africa	"...the interplay between multiple factors: (1) the resources a person is able to command, (2) the goals they are able to achieve with those resources, and (3) the meaning they give to the goals they achieve" (The Wellbeing in Developing countries framework; McGregor, 2007)	<ul style="list-style-type: none"> • Drought 	Mixed methods research	<ul style="list-style-type: none"> • Semi-structured interviews • Pile sorting task

And third, regarding the methodological approaches, most of the studies reported in the seven articles relied on mixed methods research, with only two relying exclusively on quantitative or qualitative methods. Survey data (mostly gathered at the household level rather than at the individual level) was the preferred among the quantitative methods toolbox, whereas focus group discussions and interviews were mostly selected from the qualitative methods repertoire (Table 2). We did not find an evident trend between the research methodology used in the studies and a specific type of conceptualization of well-being. This is because only one article out of seven relied on research methods that explored and developed well-being frameworks inductively (Gutierrez et al., 2020). The rest of the articles used existing frameworks to deductively measure levels of well-being in material terms (e.g., goods and services), subjective terms (e.g., personal security, freedom) or relational ones (e.g., social relations, relations with the environment). Thus, disciplinary frameworks, rather than research methods, influence conceptualizations of well-being.

Given the influence of disciplinary approaches on well-being conceptualizations, we also inspected the occurrence and co-occurrence of the research disciplines of the journals that published the 40 empirical articles on climate change adaptation and well-being in IPLC (Figure 3). A large proportion of these studies were published in environmental science and ecology journals, followed by development studies and geography journals. Focusing on the co-occurrence of research disciplines and their degree of centrality (i.e., the number of nodes connected to a focal node), environmental science and ecology journals were pivotal in the network, with multidisciplinary journals that also included research fields such as development studies or demography being ranked second and third respectively by their degrees of centrality (Figure 3a). Although it was not surprising to see research disciplines such as urban studies or science and technology not represented in IPLC-focused empirical studies, the absence of other disciplines such as psychology was worth noting. Interestingly, psychological and subjective models of well-being (SWB, see Adler & Seligman, 2016; Diener et al., 2003) are very popular outside psychology and are used in many studies that refer to well-being in the climate change adaptation context. However, empirical publications covering climate change adaptation and well-being are lacking in psychology journals (cf. Doherty & Clayton, 2011). Despite much debate on the need to overcome narrow sampling due to the lack of generalization of psychological findings beyond WEIRD societies (Arnett, 2008; Henrich et al., 2010), it is still a pending task of the psychological sciences (Medin, 2017).

4 | DISCUSSION

There is a growing body of literature that cites well-being as part of the human dimensions impacted by climate change without defining what is meant by well-being. This signals that the topic is important but needs further development, especially in terms of its theoretical framing—largely circumscribed to Western conceptualizations, mostly inadequate

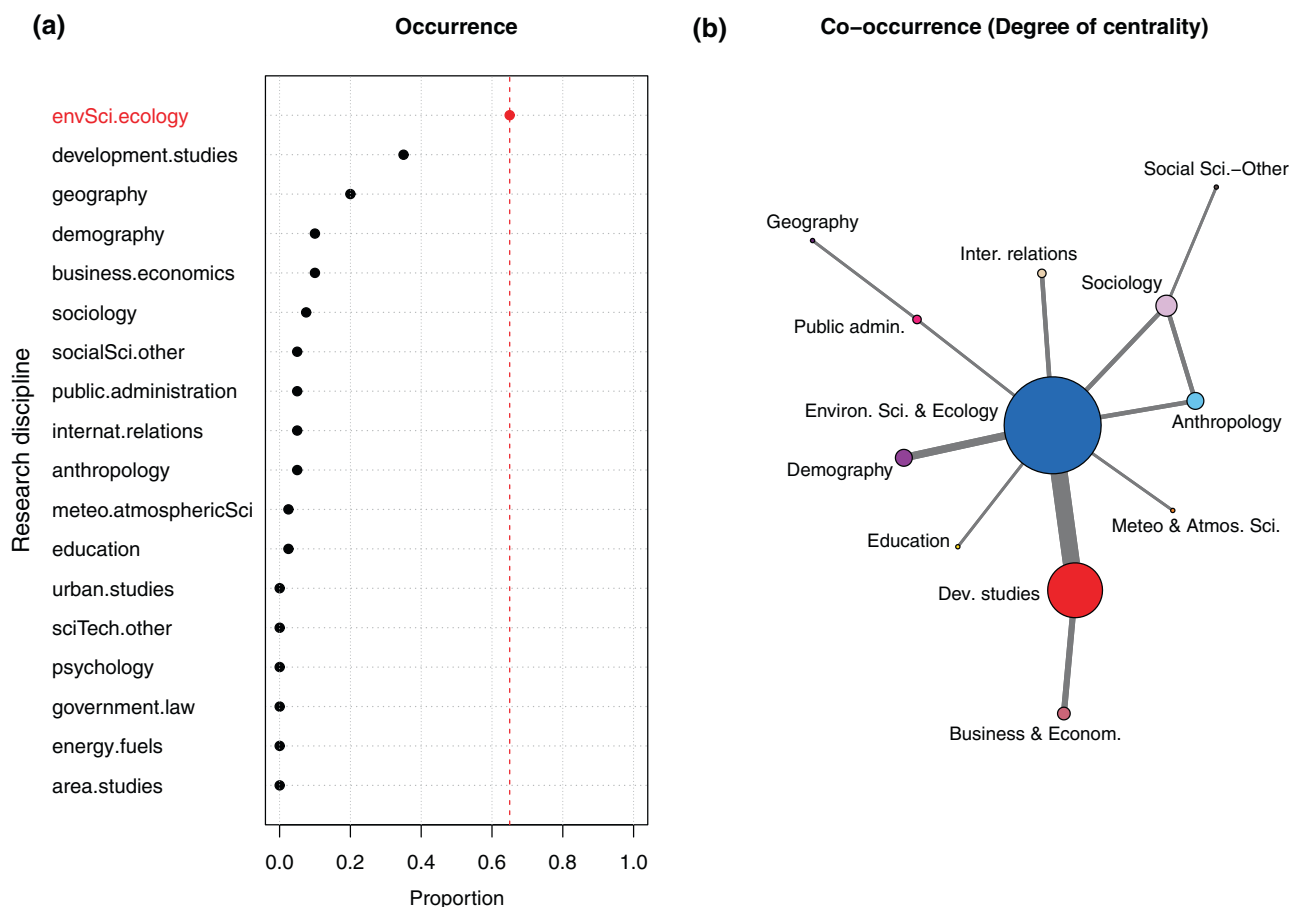


FIGURE 3 The significance of each research discipline in the reviewed articles (a) and how these disciplines are connected in a network showing their degree of centrality on the topic of climate change adaptation and well-being (b).

for IPLC. In the following section, we discuss this shortcoming by looking at the conceptual and disciplinary trajectory of well-being and we propose an approach better suited for IPLC that would assist in making well-being the goal of adaptation.

4.1 | Framing well-being

Acknowledging the existence and relevance of well-being in the context of climate change impacts is not tantamount to defining it, something that different disciplines attempt from a variety of angles. For example, in the psychological sciences, current theoretical frameworks tend to focus on intra-personal aspects (e.g., internal states such as “positive emotions”). Thus, the paradigm known as Subjective Well-Being (SWB) focuses on individuals' cognitive and emotional self-evaluations of their own lives in terms of satisfaction (Diener et al., 2003), often being applied uncritically as a synonym of happiness (e.g., Emmerling et al., 2021; Nowok et al., 2013). This paradigm has been used as the basis to develop indicators such as the Gross National Happiness Index (GNH) in Bhutan or the World Happiness Report (Ura et al., 2012).

In contrast to the view of well-being purported by SWB, Eudaimonic Well-Being (EWB) is based upon the Aristotelian idea of “flourishing.” EWB emphasizes the fulfillment of specific needs that present individuals with the opportunity to achieve their full potential through growth and development (Ryan & Deci, 2001). The eudaimonic approach is at the base of the capabilities framework (Sen, 2000) and cognate initiatives that measure well-being, such as UN's Millennium Ecosystem Assessment, Millennium Development Goals, and Sustainable Development Goals. Although not entirely focused on the intra-personal level as SWB and despite its claims for sociality and universality, the notion of EWB still asks individuals what is needed to flourish, tallying results into group-level aggregates assumed to represent countries (e.g., the Happy Planet Index) and ignoring within-societies diversity (Lamb & Steinberger, 2017; Remling & Persson, 2015).

In addition, most existing frameworks and models assessing well-being have been developed by Euro-American researchers using their own cultural lenses as the ground truth (Tam et al., 2021), carrying out empirical studies in the so-called WEIRD societies. As a result, many approaches to well-being rely on the individual level to construct group-level indices using instruments (e.g., psychological scales and inventories) devised to measure psychological constructs and intrapsychic entities such as personality traits, affect, motivations or attitudes (Adler & Seligman, 2016; Feeny et al., 2014; Guardiola & García-Quero, 2014; Ryff & Keyes, 1995). When non intra-psyche dimensions are used instead, they are assumed to be objective, carrying with them the homogenizing uniformity of a series of prescriptive characteristics (Lamb & Steinberg, 2017; Shockley, 2014). Moreover, these dimensions of objective well-being (e.g., justice, health, education) are oftentimes decided following parameters set up by researchers, national governments, and inter-governmental institutions external to local and Indigenous groups (e.g., The World Bank, UNDP). For example, the Human Development Index comprises indicators that are country-level estimates following pre-existing templates and ignoring emic elements of well-being (Agarwala et al., 2014; King et al., 2014). Time and again, these approaches measuring well-being at the country-level are not adequate to capture the more holistic, communal, and relational aspects of Indigenous well-being (Johnson et al., 2021).

4.2 | Non-Western well-being

Although the inadequacy of the current frameworks and methods to assess well-being in Indigenous settings has been discussed elsewhere (Ingersoll-Dayton et al., 2004; Manuela & Sibley, 2014; Panelli & Tipa, 2007), the need to develop models attuned to Indigenous worldviews and values remains (Durie, 2004). This is so because claims on the universal nature of well-being based on global indicators reputed to have the same relevance across societies can potentially miss the mark of what denotes well-being for communities and individuals in precise settings at risk from climate change.

The so-called personal or individual perceptions of well-being are in fact a prescriptive “ideal” based on Western socio-cultural norms (Sointu, 2005). Hence, the imposition of these WEIRD frames of reference and the Western research traditions of some disciplines has important implications that transcend those fields of research (e.g., the cognitive sciences, psychiatry) and rest on problematic assumptions (Christopher, 1999; Izquierdo, 2005). In sharp contrast, many Indigenous peoples see their engagements with the world they inhabit as relational. Human beings are social beings and even the most unique traits of their personalities are marked by past experiences and trajectories and

ongoing interactions with others, as well as interactions with the environment (Lumā Vaai & Nabobo-Baba, 2017). There is a plethora of evidence that points to these communal and relational characteristics of Indigenous well-being, where all the human and nonhuman elements are interconnected (Johnson et al., 2021; Le Duff et al., 2020; Meo-Sewabu, 2015; Petheram et al., 2015). In these settings, the well-being of a person is intrinsically linked to the well-being of other entities. For example, Australian and Māori Indigenous peoples have a duty of care toward both the environment and other community members (Fletcher et al., 2021; Moewaka Barnes & McCreanor, 2019). In sum, some approaches to well-being are more attuned than others to acknowledge its societal and ecological components, avoiding WEIRD uniformitarian assumptions that deemphasize or even neglect the cognitive, behavioral, and cultural diversity of IPLC.

Moreover, the full-fledged individualism that Western societies tout is deceptive and overlooks the importance of relationships for well-being. Yet, as White (2010) argued, “relationships are not, as in a social-capital approach, something that an individual ‘has’. Rather, people become who and what they are in and through their relatedness to others” (p. 164). In some Indigenous groups, such as small-scale societies in Papua New Guinea and other Pacific Islands, the “dividual person” or “relational personhood” (Strathern, 1988) means that a person is a composite of relational events, never free from obligations to others, to the extent that one is never a bounded individual but rather a *multidual*. Among many Indigenous communities, obligations toward other members extend beyond death, and relationships with ancestors are all important to maintain a sense of sociality that confers a specific identity to a group of people (Jarillo et al., 2020; Le Duff et al., 2020). From this perspective, the individualistic roots of Western well-being appear fabricated, since “identity already incorporates others” (Christopher, 1999, p. 147), with social and relational identities necessarily merging with the personal identities of WEIRD societies’ peoples (White, 2010). Individualistic conceptions of well-being that detach people from their communities in the name of labor flexibility serve more the interests of global capital than those of IPLC (White & Jha, 2020), projecting an image of the self as a standalone entity that is at odds with the ethos of most Indigenous peoples.

4.3 | A proposed approach to study climate change impacts to IPLC’s well-being

Owing to this, research on climate change and well-being in Indigenous societies would benefit from starting with a successful proof of concept: searching for culture-dependent descriptive definitions of well-being rather than providing “ex cathedra” prescriptive ones. We propose that studies of well-being and climate change adaptation among IPLC begin through empirical work to inductively determine the foundational life elements of a community from the local people’s point of view. This approach takes its cue from work carried out recently in Pacific Island communities, where bio-cultural or ecocultural indicators were developed locally to foster holistic understandings of a wide range of issues faced by IPLC, encompassing ecological, socio-cultural and governmental global and local phenomena (Caillon et al., 2017; Dacks et al., 2019; Sterling et al., 2017, 2020). For example, the Māori of Aotearoa (New Zealand) conceptualize well-being (*oranga*) in overlapping layers comprised of social belonging, connections to people, spirits, places, and ancestors that require maintaining relationships among all those elements (Johnson et al., 2021). In the Marshall Islands, the “good life” (*emman mour*) is signified by the need to nurture a connection to the land and the people based on traditional tenets such as togetherness and the obligation to take care of each other (*lale doon*, see Loek et al., 2004; Rudiak-Gould, 2011). In Fiji, *bula sautu* or “good quality life of the people” is a communal endeavor to maintain a harmonic society by means of ensuring the well-being, prosperity, peace, and good quality of life for all its members while striving toward good health (Meo-Sewabu, 2015). Similar concepts have prompted legislative changes in Indigenous-led governments in South America such as in Ecuador, where *el buen vivir* (“the good life”) is enshrined in the constitution as a cultural concept of well-being that hinges on environmental conservation, the sustainable management of resources, and the continuation of traditional livelihoods through communal governance systems (Guardiola & García-Quero, 2014).

These conceptualizations include not only rights and freedoms but also social and cultural duties and obligations that, when fulfilled, make people thrive, ensuing their continuity in ways that are fully satisfactory for them as a collective but also as individuals within that collective. Those elements do not necessarily need to be expressed directly as an exclusive function of well-being because (1) they express a common good, and (2) they are constitutive and defining of a worldview, the ethos of a given group of IPLC as seen by themselves. Well-being derives from those elements, rather than the other way around. Thus, the good life is more than happiness at the emotional level or the distribution of goods and services at the material one—all of which are important but not exhaustive components of well-being for

IPLC. Well-being stems from doing things right, observing taboos and adhering to responsibilities, revealing that the unwanted consequences of climatic changes in the environment are not always seen through a Western and intrapsychic lens. Instead, these can be due to bad stewardship, disregarding ancestral customs or religious precepts, or a lack of interpersonal solidarity within the community (Gutierrez et al., 2020; Makondo & Thomas, 2018).

Because interdependence is a key element for Indigenous peoples, psycho-cultural frameworks of well-being need to shift the focus of attention to relational aspects and develop indicators assessing interdependence models (e.g., which connections are important, for whom, and what the climatic threats to those connections are). For example, among many Pacific Islands communities, identity is determined by the capacity to maintain meaningful connections with other community members, ancestors, spirits, and the environment, as established by cultural values and socially sanctioned practices (Thomsen et al., 2018). Thus, the Māori in the Northland Region of Aotearoa have a special connection with the Mangakāhia river (an entity with personhood). Recent climate-related changes to its water levels have reduced its *mauri* (vitality) and therefore that of the community, entailing an erosion of their sense of social belonging (*whanaungatanga*, see Johnson et al., 2021).

Since features of well-being that are specific to IPLC are likely to be found in the interplay between the individual, communal, and environmental levels (Clayton et al., 2015), interdisciplinary approaches would allow to assess well-being intra- (e.g., psychology) and inter-personally (e.g., sociology, anthropology), as well as with relation to the environment (e.g., geography, environmental sciences). This is particularly relevant in contexts where the environment is socially constructed through the continuous enactment of cultural practices (Graham et al., 2013) (Box 1). In such contexts, adaptation is more than avoiding or buffering climatic impacts on places and assets, becoming also a practice geared toward fixing social issues with environmental, historical, political or economic roots, inasmuch as these are all linked to a group's cultural continuity and the well-being that ensues from it (Nurse-Bray et al., 2020). An interdisciplinary, psycho-cultural approach is better suited to gain insights from socio-economic, political, cultural, and environmental issues affecting well-being. Consequently, it is important for studies on well-being and adaptation to start off with engagement and inclusion of communities in the terms set by IPLC. Taking the worldviews and socio-cultural practices of IPLC at face value matters not only to build rapport and a holistic understanding of well-being, but also to avoid power asymmetries and allow for the empowerment of those communities where adaptation is needed (Nalau et al., 2018).

4.4 | Well-being as the goal of adaptation: Opportunities and challenges

Approaching well-being through a psycho-cultural lens can lead to better adaptation outcomes for IPLC with practical implications at policy level, as well-being is increasingly becoming the centerpiece of effective adaptation strategies and

BOX 1 A holistic view of psycho-cultural well-being from PNG

For the subsistence horticulturalist islanders living in the Milne Bay Province (Papua New Guinea), yams are a staple, but also a currency, ritual objects of exchange and symbols of status that grow thanks to the intercession of ancestral relatives living in the underworld of Tuma Island. Assessing objective well-being in terms of the nutritional value of yams would miss the point, for yams are more than food. Full personhood is attained through the consumption of yams that are grown, exchanged, stored, eaten, and planted again in a reproductive cycle involving connections to one's own land, deceased relatives and living affines, botanical knowledge, communal labor, social obligations, and relations of reciprocity, all of which take place in a coral island environment shared by the living and the dead. The capacity to grow yams is the fulcrum of physical, social, and cultural reproduction. It relies on multiple connections between humans, nonhumans, and the environment that climate change can potentially destabilize, undermining the elements of well-being that come with it. Yet, in the locals' worldview, droughts and ensuing famine periods can be motivated by political reasons and facilitated by acts of magic that take place through the intercession of ancestors and spirits (Jarillo et al., 2020). The environment is thus constructed as an assemblage of climatic, human, and ancestral elements. This environment is shaped by human and beyond-human forces, and islanders constantly seek to strike a balance among those forces to guarantee the well-being of the community by following cultural norms.

a marker of just and equitable adaptation policies (Adger et al., 2022; Singh et al., 2021). For instance, countries like the Marshall Islands are already “taking a broader focus to include nonphysical dimensions of well-being, livelihood and habitability, and to address issues of cultural and land rights, the legal, economic and sovereign aspects of potential extreme climate impacts, and the enabling environment which will be required to deal with these” (CCD RMI Adaptation Communication Report, 2020).

4.4.1 | Opportunities

Adaptation requires adjustments in ecological and social systems to respond to or take advantage of climate change impacts, but responses to environmental threats are not always guided by logical choices and rational actions. Adaptation can also respond to socio-cognitive and affective dimensions, as well as worldviews and cultural values, evidencing that preparedness is as much a state of mind as it is a matter of technological prowess, economic capacity, or political action (Kashima, 2020). The adaptation literature shows that IPLC often choose adaptation initiatives that are based on local values and institutions instead of Western ones, as the latter are considered too materialistic and centered on the individual and weaken the constituents of the former (e.g., togetherness, solidarity, family and community networks, reciprocity obligations) (Graham et al., 2013; Makondo & Thomas, 2018; Nalau et al., 2018; Singh et al., 2021).

Making well-being the goal of adaptation implies that affected communities need to be consulted to define what are the elements that uphold their concept of well-being, and what are the best ways to preserve those elements. In practice, this means that research leading to identifying these elements needs to be collaborative, and that extensive and meaningful consultation with IPLC needs to take place so that adaptation policies are efficacious by local standards. Integrating local values within adaptation policies is not just a matter of political correctness. There is consensus in the literature that the effectiveness of adaptation is better determined at the local and community level, and not by international donors or supra-local institutions (Barnett, 2020; McNamara, 2013; McNeeley & Lazrus, 2014). If and where adaptation is succeeding, the well-being of IPLC (as defined by their own criteria) should reflect this effect (Singh et al., 2021). Likewise, if psycho-cultural indicators of well-being are positive, it is expected that people will be better equipped to deal with adversity, as positive well-being is associated with resilience (Tov, 2018). Conversely, if well-being in a community is negatively affected by climate change the outcome of adaptation in that community might be negatively impacted. In sum, it can be hypothesized that high levels of well-being enable adaptation, whereas low ones act as a barrier.

4.4.2 | Challenges

There are, nonetheless, several challenges that need to be overcome for psycho-cultural indicators to stay meaningful and inform adaptation policies in IPLC. Here, we identify four of them. First, there is a requirement for a small-scale to large-scale knowledge transfer. It is relatively easy to single out well-being's constitutive elements in small and highly cohesive communities and implement intervention programs. However, it is harder to do so for diverse groups of IPLC sharing a territory or for a whole nation, making upscaling an ongoing challenge, especially when trying to turn psycho-cultural indicators into policies and adaptation projects at the implementation level (McCarter et al., 2018).

Second, inductive studies that do not impose Western epistemological frameworks and methodologies can still be extractive, and even collaborative research does not ensure the alignment of goals among researchers and IPLC. Research involving place-based or so-called traditional knowledge can rightly be seen as a tool of neocolonial appropriation in the guise of (Western) scientific validation of that knowledge (Agrawal, 2002). Clearly stating the goals of any research project that purports to learn about well-being among IPLC is necessary. Similarly, gauging the interest of local communities in such projects must be followed by a step-by-step agenda of what such research ought to produce, how and who is to participate and benefit from it. Ideally, the research project will be a “give and take” exchange where researchers and locals learn from the process. This type of co-learning can also facilitate reflexive understandings of well-being that can bridge diverse perspectives when these are found within members of the same communities, helping target adaptation interventions so as to make them fairer and more equitable.

Third, within-group diversity is usually disregarded to focus on between-group comparisons and translational research. Yet, worldviews, values, needs, and the roles they fulfill in anchoring current and future aspirations might not always be shared equally by all members of an Indigenous community (Walker et al., 2021). For example, the Alternative Indicators of Well-being for Melanesia (Vanuatu National Statistics Office, 2012) is an example of a local

conception of well-being that has been institutionalized for a whole country using resource access, cultural practice, and community vitality as the core dimensions of well-being, with a high degree of cultural consensus. If we decide to conduct a cultural consensus analysis to explore local conceptions of well-being, deviations from the culturally “correct” answer will be classed as individual differences in the locals’ knowledge of what is well-being for the local communities (Borgatti & Carboni, 2007). However, the use of network analysis could model static and dynamic interdependent data taking into account personal and social attributes—usually included in between-group comparisons—but allowing for the detection of communities and subgroups within IPLC (Newman, 2006).

Fourth, defining the psycho-cultural elements of well-being in a given place and for a group of people does not amount to producing a checklist. Rather, what matters is understanding the role those elements fulfill in a changing world (Shockley, 2014). The latter aspect is essential as studies on climate change and IPLC tend to focus on “tradition” and idealized notions of Indigeneity that obscure colonial and postcolonial trajectories (Nurse-Bray et al., 2020; Shawoo & Thornton, 2019). These studies ignore that Indigenous peoples too inhabit a world that is more than local and customary, and that some of their needs and aspirations such as access to healthcare, education and jobs overlap with those of non-Indigenous populations (Barnett et al., 2023; Cameron, 2012; Petheram et al., 2015). Therefore, as the world changes, Indigenous conceptions of well-being change with it, carrying the mandate for further research.

5 | CONCLUSION

Positive levels of well-being tend to correlate with higher life satisfaction and an increased capacity to cope with environmental changes (Tschakert et al., 2019). However, determining what is well-being and what counts as positive levels of well-being is the fulcrum of the studies on climate change adaptation and well-being in IPLC. Our review showed that despite being mentioned in many climate change-related studies, human well-being is hardly ever engaged with as a concept beyond generic references to health or satisfaction, a shortcoming that becomes even more acute in the case of IPLC. Yet, well-being is more than being good, and whereas mental and physical health can rightly be considered as an important part of it, there is more to well-being than an absence of disease. Likewise, well-being cannot be reduced to positive emotions or access to assets. While all these components are relevant, they might miss the mark when it comes to the well-being of IPLC. Data-driven, bottom-up approaches defining the constitutive elements of well-being in Indigenous communities are essential, especially when those communities are under threat because of climate change.

What are the implications of inductively derived, psycho-cultural conceptualizations of well-being for IPLC? If we consider well-being as the interplay of material and immaterial elements, as well as objective and subjective aspects, the connections among these components matter as much as the elements themselves. This is particularly true when relations at the community level are constitutive of that community and the reason to act for its continuity. Adaptation is, among other things, a process of societal transformation (Nurse-Bray et al., 2020). The increased focus on well-being as an indicator of adaptation partly reflects this process, as the human dimensions of climate change take center stage. Despite its manifold conceptualizations, the ultimate point of climate change adaptation ought to be people’s well-being.

AUTHOR CONTRIBUTIONS

Sergio Jarillo: Conceptualization (lead); data curation (supporting); formal analysis (equal); funding acquisition (lead); investigation (lead); methodology (equal); project administration (lead); resources (lead); software (supporting); supervision (lead); validation (equal); visualization (supporting); writing – original draft (lead); writing – review and editing (equal). **Carlos Crivelli:** Conceptualization (supporting); data curation (lead); formal analysis (equal); funding acquisition (supporting); investigation (supporting); methodology (equal); project administration (supporting); software (lead); supervision (supporting); validation (equal); visualization (lead); writing – original draft (supporting); writing – review and editing (equal).

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The authors have declared no conflicts of interest for this article.

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DATA AVAILABILITY STATEMENT

The data and the R code created to reproduce the results and data visualizations supporting the findings of this advanced review are openly available in the Open Science Framework repository at <https://osf.io/exkyq/>.

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