

Including Indigenous Knowledge and Experience in IPCC Assessment Reports

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Including Indigenous Knowledge and Experience in IPCC Assessment Reports

The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change, forming the interface between science, policy, and global politics^{1,2}. Indigenous issues have been underrepresented in previous IPCC assessments³, and in this *Perspective* we analyze how Indigenous content is covered and framed in Assessment Report 5 Working Group II (WGII). We find that while there is reference to Indigenous content in WGII, increasing from Assessment Report 4, the coverage is general in scope and limited in length, there is little critical engagement with Indigenous knowledge systems, and the historical and contextual complexity of Indigenous experiences are largely overlooked. The development of culturally relevant and appropriate adaptation policies requires a more robust, nuanced, and appropriate inclusion and framing of Indigenous issues in future assessment reports and we outline how this can be achieved.

The assessment reports of the IPCC play a critical role in producing global knowledge on climate change^{4,5}. This is not a value-neutral role, with the very act of reviewing and assessing the state of knowledge in a given area influenced by author training, disciplinary background, and positionality. Author teams decide what research to include and exclude, how much space to allocate to each topic, a structure for framing knowledge, how to deal with conflicting arguments, and writing style and language^{1,6-9}. Before author teams are identified, Working Group Chairs are selected and the broad function and outline of assessment reports decided; a process that takes place within an intergovernmental space that is influenced by competing national interests. IPCC chapters are thus framed through specific lenses, which although moderated to some extent by the extensive expert review process of the IPCC nevertheless influence how climate change is portrayed, what information is included, and creates discursive spaces for responding^{2,10-14}. The framing of IPCC chapters, in turn, influences international climate change policy development and decision making given the agenda setting role of the IPCC^{6,8,15-17}.

Studies examining the framing of IPCC assessment reports are relatively recent, and are part of a broader 'reflexive turn' in science and technology research to examine the epistemological and normative framing of institutional organizations involved in expert-led assessments^{2,6,18-20}. While this work emphasizes the important contributions of the IPCC and evolution of the scope of assessment reports over time, it has also been noted that the procedural rules governing how the IPCC operates and positionality of author teams (e.g. disciplinary background) has resulted in the privileging of positivist science and technocratic perspectives, the marginalization of other ways of knowing (e.g. local/traditional/Indigenous knowledge), and the prioritization of scenarios and modeling approaches^{1,19,21-24}. Recent papers have also questioned the absence of social science and humanities authors in WGII and III^{1,9,22,25}, the newsworthiness of AR5 WG reports and outreach materials^{9,26-28}, and the extent to which marginalized and vulnerable populations are captured³.

In this *Perspective*, we document and examine how research reporting on Indigenous peoples' experiences with climate change is framed in IPCC AR5 WGII, and the extent to which Indigenous-focused content features in the chapters and in the Summary for Policy Makers (SPM). The work responds to: i). concern over a neglect of Indigenous issues in IPCC assessments, in-part reflecting a lack of engagement of Indigenous scholars, organizations, and knowledge-holders in assessment reports, limited engagement of researchers who have worked with Indigenous peoples, the epistemological framing of the IPCC process, and limited published research on Indigenous peoples and climate change ^{3,5,29-32}; and ii). efforts through UNESCO and the United Nations University to promote coverage of Indigenous content in the IPCC, including through greater engagement of Indigenous peoples ²⁹. The treatment of Indigenous issues in the IPCC is of particular interest because Indigenous peoples have been identified as uniquely sensitive to climate change impacts ^{29,33,34}, and their accumulated knowledge can help us better understand the challenges posed by climate change and how to respond ^{3,33,35,36}. Discursive space for considering Indigenous issues is also expanding within the United Nations Framework Conference on Climate Change (UNFCCC) and domestically in some nations ^{37,38}, and the extent to which Indigenous content is captured in the IPCC (and how) can have an important role in shaping priorities and guiding actions ⁶.

The results are based on a content analysis of all 30 chapters in AR5 WGII and the SPM. First, each chapter in WGII was read and Indigenous specific keywords were developed. Keyword searches were performed for each chapter and the surrounding text encompassing relevant content was captured. Second, captured text was coded by content, context, frame, and descriptive characteristics (see supplementary information for methods).

Indigenous content in AR5 WGII

Indigenous peoples, knowledge, experiences and livelihoods are commonly referred to in WGII. There are 382 uses of keywords indicating Indigenous content and in a quarter of these cases specific Indigenous groups are mentioned. There is considerable variation in Indigenous content among chapters, with 6/30 chapters having no mention of Indigenous content (chapters 3, 4, 8, 10, 17, and 30). Notably, when comparing AR5 WGII with AR4 based on keyword searches, there is a 60% increase in the occurrence of Indigenous relevant keywords in AR5. Indigenous content is more concentrated in regional chapters in AR4 (57%) than AR5 (46%), and while Indigenous keywords are evident in 17/20 chapters in AR4, overall keyword counts are much lower.

Of the sectorial focused chapters, Indigenous content is most common in the *Human Security* chapter, with 58 mentions of Indigenous keywords, followed by *Detection and Attribution of Observed Impacts* (n=31 keyword mentions), and *Livelihoods and Poverty* (n=22) chapters. Regionally, Indigenous content is most common in the *Polar Regions* chapter (n=59), followed by *Australasia* (n=38), *Central and South America* (n=21), *Africa* (n=19), and *North America* (n=15). The *Europe, Asia, and Small Islands* (chapters all have fewer than 10 keyword mentions. Four chapters in the section, *Natural and Managed Resources and Systems and Their Uses* (chapters 3-7), and the *Human Health, Adaptation Needs & Options, Adaptation Opportunities, Constraints, & Limits* chapters, all had fewer than 10 references to Indigenous keywords, despite covering topics relevant to Indigenous peoples and where published research exists. There are 14 specific references to Indigenous keywords in the SPM.

Two overarching frames of Indigenous content are discernible in WGII. On the one hand, Indigenous peoples are portrayed as victims of the impacts of climate change. This frame is documented in 28 paragraphs coded as having Indigenous content, and in the context of the sensitivity of Indigenous peoples to climate change given their inhabitation in areas undergoing rapid change, high dependence on resource based livelihoods, and socio-economic disadvantage. On the other hand, the framing of Indigenous knowledge systems as important for managing and adapting to climate change and monitoring impacts is evident in 19 paragraphs across chapters. The role and importance of traditional knowledge (TK), or traditional ecological knowledge (TEK), figures prominently in this framing and is one of the most common Indigenous focused keywords in WGII (73 keyword references). TK and TEK are noted in the context of resource management, adaptation, detecting climate change impacts, and as a factor affecting vulnerability and adaptive capacity. Both ways in which Indigenous content is framed do not typically occur at the same time; paragraphs or sections where the primary focus is on impacts and negative implications for Indigenous peoples do not usually document in comparable depth work characterizing adaptive capacity, and vice versa. Furthermore, there are limited references to Indigenous territory or land, or recognition of how land rights, dispossession, colonization, or historic inequities affect vulnerability or adaptive capacity to climate change^{33,39-41}. For example, the scholarship indicates how Indigenous peoples in multiple geographical contexts have been pushed into marginalized territories that are more sensitive to climate impacts, in-turn limiting access to food or cultural resources from which to respond to change and undermining aspects of social-cultural resilience^{39,42-45}.

The broad ways in which Indigenous content is framed mirror common portrayals of Indigenous peoples, their knowledge and experiences in general scientific and popular discourse, forming part of what Roosval and Tegelberg⁴⁶ term the “victim-heroes” frame: victims through the framing Indigenous peoples as highly vulnerable, heroes through possessing knowledge that can help address the problem. While both frames are present in the peer-reviewed literature on Indigenous peoples and climate change³³, the complexity and diversity of Indigenous experiences, understanding, and responses to climate change evident in the scholarship is not captured in many of the cases where Indigenous content is documented in WGII. This means that relevant knowledge and opportunities to advance understanding of climate change through Indigenous people’s knowledge, experiences and values are not represented, resulting in a partial understanding of the core issues, and limiting the potential for locally and culturally appropriate adaptation responses.

Reviewing the AR5 WGII chapters also reveals what have been termed ‘silencing effects’, where inconsistencies and omissions in the text silence certain realities, conditions, or experiences^{7,47}. First, the coverage of Indigenous issues remains general in scope and limited in length. The majority of cases where Indigenous content is documented (70%) are characterized as ambiguous/general, making broad statements without providing detail or specific examples (see supplementary materials). Indigenous peoples, for example, are commonly referenced in lists alongside marginalized or vulnerable social groups, without a nuanced discussion of different lived experiences or cultural and colonial histories. In 30% of cases, there is a substantive/specific referencing of Indigenous content, evident mainly in chapters 18 and 28 (*Detection and Attribution of Observed Impacts* and *Polar Regions*, respectively) (see supplementary materials). Coding sought to further probe the extent of reference to Indigenous content based on the number of sentences in coded

paragraphs that are relevant to Indigenous peoples. In most cases (68%), only one sentence refers directly to Indigenous content, with few (9%) including Indigenous content in over five sentences.

Second, while the emphasis on TK in WGII is to be welcomed, there is limited critical engagement with the diversity, range, and complexities of Indigenous knowledge systems. “Traditional knowledge” (TK) can be broadly defined as a cumulative body of knowledge, practice, and values acquired through experience and observations or from spiritual teachings and handed down from generation to generation^{41,48,49}. TK has been widely used in climate change research as a source of climate history and baseline data for observed changes, and the majority of chapters in WGII draw upon TK studies as a source of information for expanding scientific understanding on climate change impacts, adaptation, and vulnerability. The inclusion of research that documents TK of biodiversity impacts of climate change, however, is limited, and rarely considered side-by-side with scientific knowledge in chapters: in the Polar Regions chapter for instance, the section on polar bears is based on scientific knowledge alone, despite there being alternative perspectives from Inuit (Indigenous peoples of the Arctic)^{50,51}. Moreover, TK is largely documented in chapters in a techno-bureaucratic manner as a source of empirical observations by individuals about specific events or phenomena—what has been termed ‘category 1’ use of TK⁵²—rather than as a complex knowledge system grounded in generations of place-based observations and experiences. Studies on how the knowledge, experiences, stories, values, ways of knowing, and beliefs that underpin how climate change is perceived, understood, and responded to^{35,53-59}, are largely absent.

Across chapters, TK is commonly treated as a static form of knowledge being undermined or made irrelevant by climate change, overlooking the highly dynamic and evolving nature of TK in light of climate impacts^{35,41,55,60,61}. Further, there are frequent examples given in WGII of instances where TK underpins coping mechanisms or is noted to be important for adaptation, yet scholarship that problematizes the appropriation and/or reduction of TK in policy contexts, or examines the power relations embodied within traditional knowledge systems themselves⁶²⁻⁶⁵, is largely absent.

Finally, the historical and contextual complexities that underpin Indigenous peoples’ experiences with and responses to climate change are largely overlooked. Research consistently identifies the ongoing effects of colonialism, marginalization, power relations, land dispossession, and land rights, to be central to understanding the human dimensions of climate change for Indigenous peoples in diverse contexts^{33,66-71}. In this case, climate change acts as a risk multiplier to these underlying long-term challenges, which shape impact pathways and adaptive capacities, and ultimately determine the success of adaptation^{66,68,72}. These topics figure minimally in WGII: histories of colonialism, oppression, and/or racism are only documented in 2 paragraphs; and while marginalization is frequently referred to, the causes are largely absent. Indigenous content primarily focuses on the proximate factors affecting impacts, adaptation, and vulnerability (e.g. poverty, ill-health, changing livelihoods, marginalization, erosion of TK) without posing the deeper questions around why these conditions exist, and the historic, political, social, and economic processes that have led to them.

Implications

There are a number of potential implications from the way Indigenous content is framed in the IPCC reports, particularly at a time when interest in the human dimensions of climate change for Indigenous peoples is expanding among decision makers, researchers, Indigenous organizations, and civil society^{20,37,38,73}. The documented silencing effects in AR5 WII contribute towards divorcing climate change from its socio-political-historical-cultural context, constructing climate change as a problem *for* society as opposed to a problem *of* society^{33,74}. Such de-politicization directs attention away from the underlying root causes of vulnerability, and constrains the potential for linking adaptation to broader policy goals or decolonizing processes. Responding to climate change thus becomes a function of techno-managerial planning, in which TK is ‘integrated’ into risk mitigation programs, but where existing power structures, inequalities, and histories go unchallenged; as such, TK becomes a tool, rather than a complex, rich, and nuanced knowledge system.

Compounding de-politicization, the IPCC with its global focus and emphasis on consensus, has been critiqued as homogenizing knowledge, cultures, and ways of knowing^{32,75}. Such generalization is problematic as the human dimensions of climate change are highly place- and culture-specific⁷⁶. The vulnerabilities facing Indigenous peoples, for example, often differ considerably from non-Indigenous peoples inhabiting the same region, as well as between and within Indigenous peoples, and affected by different factors, necessitating quite different responses^{15,33,34,44,68}. By adding Indigenous peoples to lists of vulnerable populations, for example, WGII loses sight of the situated and historical nature of this vulnerability, further diverting attention away from the ideological and political contestation and struggle required to overcome vulnerability in many Indigenous settings. Homogenization further overlooks the active and complex role of Indigenous communities, organizations, and governments in responding to climate change, building upon significant adaptive capacities and societal strengths, and missing important worldviews and ethical ways of engaging with and understanding the natural world.

The framing of Indigenous peoples in WGII mirrors broader critiques on the science of the Anthropocene and climate issues in general, where it has been argued that the diversity of human experience and social-political drivers have been overlooked in the narrative of pending catastrophe, the tropes of cultural loss, and the urgent need for pan-global solutions^{15,23,77-79}. Swyngedouw⁷⁷ defines this as ‘post politics’, where ideological struggle has been replaced by techno-managerial planning dominated by the biophysical and quantitative social sciences. The framing also has parallels with colonial characterizations of Indigenous peoples as inherently vulnerable and in need of intervention or, alternatively, in perspectives linking Indigeneity only to nature, which neglect the complexity and diversity of Indigenous cultures, knowledge systems, and on-going adaptive capacities^{39,74}.

Considerations for AR6

In critically examining AR5, we do not dispute the extent, rigor, or importance of the assessment; the size and scope of the endeavor is truly impressive. Yet, we agree with others who have argued for strengthening various components of the assessment process (e.g. ^{9,80-83}). In particular, if Indigenous content is to be more meaningfully captured and in ways that respect and build upon Indigenous beliefs, values, and practices, there is a need for greater input and leadership from Indigenous scholars and knowledge holders, and the social sciences. Such a process needs to be mindful that Indigenous knowledge provides

an alternative, yet equally valid, way of understanding the human dimensions of climate change to science, and acknowledge that both knowledge systems may differ and contradict each other in some circumstances. In such cases, both knowledge systems should not be pitted against each other to arrive at a ‘correct’ understanding, but viewed as providing diverse perspectives; such an approach underpins the ‘two-eyed seeing’ framework that has emerged to embrace the contributions of both Indigenous and scientific ways of knowing to better understand the challenges facing Indigenous health in Canada⁸⁴. More integration of place-based research is also needed^{15,35,53,85,86}, as the human dimensions of climate change are intimately place-based for Indigenous peoples^{35,53}. Specifically, we propose 4 ways by which Indigenous issues can be more comprehensively integrated into the IPCC process:

1. A specific **Indigenous-focused and/or traditional knowledge chapter** is needed in WGII, with Indigenous scholars, Elders, and thought-leaders represented at the lead and contributing author levels. The importance of such a chapter reflects the unique sensitivity, adaptability, resilience, and vulnerability of Indigenous peoples to climate change, and alternative conceptions of impacts and adaptation embodied in Indigenous knowledge systems. Such a chapter(s) would confer credibility and rigor to the assessment of Indigenous issues in a changing climate, and have influence on UNFCCC negotiations and national-level planning, helping define the problem and solution space^{3,18,87,88}.
2. AR6 should **promote greater involvement of authors with expertise working with Indigenous peoples, particularly Indigenous scholars, leaders, and reviewers**. Authorship has an important role for shaping content in IPCC assessment reports^{3,89,90}, as Griggs⁸³ argues “The selection of lead authors is probably the most crucial step in the [IPCC] process.” Chapters in AR5 WGII that had authors (Coordinating Lead Authors, Lead Authors, and Review Editors) who worked on Indigenous issues (n=6), defined as those previously publishing on Indigenous issues and climate change, had greater and more in-depth coverage of Indigenous-focused content. A concerted effort to seek out and include Indigenous representation in AR6 early in the process will be essential to more robust and representative coverage in the next assessment report^{3,18,24}. The 2014 US National Climate Assessment (NCA), for instance, made significant progress in integrating Indigenous issues by having a specific chapter on Indigenous Peoples, Land, and Resources which was led by a team comprised of tribal members, agencies, academics, and non-governmental organizations, involving collaboration to solicit, collect, and synthesize traditional knowledges²⁰.
3. Recognizing Indigenous issues and traditional knowledge as cross-cutting across many chapters of WGII, the **IPCC needs to develop special guidelines for accessing and incorporating Indigenous knowledge systems**. Such guidelines need to take into account that much valuable information on the human dimensions of climate change occurs outside the peer reviewed literature in oral histories, traditional practices, and the grey literature, and be developed in collaboration with Indigenous knowledge holders. New procedures are needed to capture this information while also respecting ethical and cultural norms, and establishing credibility of different sources of understanding³¹, and needs to be part of a broader dialogue on incorporating alternative literature and forms of expertise into IPCC assessments⁸¹.

4. The production of a **Special Report (SR) on Indigenous peoples and climate change** within the IPCC's next work cycle, combining both the foci of both WGII and WGIII, would allow global Indigenous issues to be documented and examined in greater depth and would confer greater flexibility to integrate Indigenous knowledge and the myths, stories, culture, and history. This would help not only enhance our understanding of impacts, adaptation, and vulnerability, but also broaden perspectives on the framing of climate change. Yet creating a specific SR, or having a specific Indigenous chapter, while vital for better capturing Indigenous issues in IPCC, could risk isolating Indigenous knowledge / people from the main body of assessment reports. Indigenous issues are cross-cutting across many chapters and need to be incorporated as such, underpinning the importance of recommendations 2 and 3 in any strategy to enhance Indigenous content in IPCC.

In making these recommendations, we also note that the IPCC can learn from other international scientific assessments that have a greater recognition of Indigenous issues. The *Intergovernmental Platform on Biodiversity and Ecosystem Services* (IPBES), for example, has created a task force for strengthening the quality of Indigenous peoples participation in platform deliverables, with the development of procedures for working with Indigenous knowledge systems key to its 2014-2018 work program. Similarly, the Arctic Council's *Arctic Climate Impact Assessment* had a strong emphasis on the participation of Indigenous peoples' representatives throughout the assessment, with specific chapters combining Indigenous perspectives and science.

Whether the governments who make-up the IPCC would consider having an enhanced Indigenous focus along the lines suggested, is unclear. Greater engagement of Indigenous issues would necessarily involve consideration of diverse issues, including land rights, dispossession, colonial histories, and access to resources, which remain highly politicized topics in nations where Indigenous rights are contested or not recognized³. The IPCC has acknowledged the need to make special effort to include Indigenous knowledge, and has noted the importance of engaging knowledge holders, regional scientists, local experts, and grey literature, but there has been limited high-level indication of intent for larger scale changes. There has been negligible discussion of Indigenous issues in Sessions of the IPCC, for example nor have Indigenous issues been covered in any decisions adopted by the Panel concerning the AR6 work cycle or in the proposed potential SR themes for consideration at the IPCC's 42nd session in October.

This *Perspective* seeks to further promote, with evidence, the need for greater consideration of Indigenous issues in the IPCC. Indigenous peoples are diverse and face different challenges dealing with climate change, but there are also similarities in many of the underlying factors affecting sensitivity, adaptive capacity, and vulnerability which warrant the consideration of Indigenous peoples to have 'special rights' in the context of a changing climate in both the IPCC and UNFCCC. The convening of a taskforce or specific workshop on Indigenous peoples' engagement within the IPCC would be an important first step in moving forward, and the inclusion of more Indigenous-focused and Indigenous-led content is essential to creating stronger, more robust, and more usable assessments

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