PLOS CLIMATE

RESEARCH ARTICLE

An intercultural approach to climate justice: A systematic review of Peruvian climate and food policy

Ingrid Arotoma-Rojas[1]*, **Lea Berrang-Ford**[1], **James D. Ford**[1], **Carol Zavaleta-Cortijo**[2,3], **Paul Cooke**[4], **Victoria Chicmana-Zapata**[2]

1 Priestley Centre for Climate Futures, University of Leeds, Leeds, United Kingdom, **2** Faculty of Public Health and Administration, Intercultural Citizenship and Indigenous Health Unit (UCISI), Universidad Peruana Cayetano Heredia, Lima, Peru, **3** Nutritional Epidemiology Group, School of Food Science and Nutrition, University of Leeds, Leeds, United Kingdom, **4** School of Languages, Cultures and Societies, University of Leeds, Leeds, United Kingdom

* eeiear@leeds.ac.uk

Citation: Arotoma-Rojas I, Berrang-Ford L, Ford JD, Zavaleta-Cortijo C, Cooke P, Chicmana-Zapata V (2024) An intercultural approach to climate justice: A systematic review of Peruvian climate and food policy. PLOS Clim 3(9): e0000404. https://doi.org/10.1371/journal.pclm.0000404

Editor: Ana Maria Loboguerrero, Alliance of Bioversity International and CIAT: Alliance of Bioversity International and International Center for Tropical Agriculture, COLOMBIA

Received: February 12, 2024

Accepted: August 21, 2024

Published: September 20, 2024

Peer Review History: PLOS recognizes the benefits of transparency in the peer review process; therefore, we enable the publication of all of the content of peer review and author responses alongside final, published articles. The editorial history of this article is available here: https://doi.org/10.1371/journal.pclm.0000404

Data Availability Statement: Data available on the supporting information.

Abstract

Despite increasing global recognition of Indigenous knowledge and rights in climate governance, Indigenous Peoples' initiatives are often constrained by state-centric structures. Their perspectives frequently clash with development strategies that prioritize economic growth and resource extraction, particularly in biodiversity hotspots where many Indigenous Peoples live. Despite the crucial role that nation-states play in addressing climate change, research on the incorporation of Indigenous Peoples in national climate policies is limited. This paper addresses this gap by analysing the inclusion of Indigenous Peoples in Peruvian policies and the associated justice implications. We do so by developing and presenting an intercultural justice framework, through a textual and discursive analysis of 21 Peruvian policies related to food security and climate change. Our findings reveal that there is minimal inclusion of Indigenous Peoples in Peruvian national climate and food policy, highlighting their vulnerability, with limited integration of their knowledge and worldviews, thus perpetuating colonialism. However, Indigenous organisations are claiming important participatory spaces, beginning to influence Peruvian climate and food policies, albeit nominally.

1 Introduction

Climate justice is underpinned by the fundamental understanding that climate change's impacts on human society are experienced disproportionally: climate impacts exacerbate–and are shaped by–existing inequalities [1, 2]. This aspect of climate change's impacts–with the most marginalised people most likely to experience the most significant impacts–places climate justice and marginalised populations at the frontline of climate change discourse. Reflecting this, the latest report of the Intergovernmental Panel on Climate Change (IPCC) [3] calls for consideration of three dimensions of climate justice when developing, implementing and evaluating climate interventions: (1) targeting distributive justice to address the structural

Funding: This research was supported by the Indigenous Health Adaptation to Climate Change (IHACC) Program (http://ihacc.ca/) through funding from the Canadian Institute of Health Research (106372-003, 004, 005 to LBF and IAR), the Royal Society Wolfson Research Merit Award (WM160093 to LBF), the UKRI GCRF/Newton Fund (EP/V043102/1 to JF, IAR, CZC, VCZ), and the Wellcome Trust (218743_Z_19_Z to CZC). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing interests: The authors have declared that no competing interests exist.

inequities, burdens and benefits that make some people more vulnerable than others; (2) procedural justice to analyse who decides and who is excluded; and (3) recognition justice to privilege interventions rooted in different worldviews, challenging the dominance of the Eurocentric hegemony of Western knowledge [3, 4].

Adaptation–the process of preparing for, avoiding, and minimising the impacts of climate change–plays a crucial role in responding to the risks posed by climate change. However, adaptation planning risks reproducing systemic inequalities in resource distribution, knowledge production, and power without explicitly integrating a climate justice framework, often favouring the less marginalised [2, 5–8]. For example, after analysing 34 international-funded adaptation interventions, Eriksen et al. [9] evidenced that adaptations may exacerbate, redistribute, or create new vulnerabilities by privileging the elite and avoiding addressing the socio-political causes of vulnerability, leaving the most vulnerable behind. Additionally, ecosystem restoration and conservation are at the centre of climate change mitigation strategies [10], which aim to decrease the emissions that cause climate change. These mitigation strategies, however, frequently exclude consideration of climate justice and the impact on marginalised peoples who depend on affected ecosystems, aggravating their situation by causing displacement and environmental conflicts [11–13]. For example, by analysing climate governance of national protected areas to fight deforestation in the Peruvian Amazon, Paredes & Kaulard [14] evidenced that Indigenous Peoples' practices of small-agriculture, fishing, hunting, and gathering were criminalised when entering protected conservation areas without permission, not considering the traditional uses of the territory, limiting Indigenous Peoples' access to land and increasing their livelihood vulnerability.

Climate justice is particularly resonant for Indigenous Peoples, who in many cases face persistent marginalisation in decision-making spaces, combined with the degradation of ecosystems and biodiversity, as well as climate change impacts, with broader negative consequences for their food systems, heritage, and socio-cultural identity [15, 16]. Indigenous Peoples' lands safeguard 80% of the planet's remaining biodiversity, and rates of biodiversity loss are lower in Indigenous territories [17–20]. However, over the last 50 years, Indigenous food systems–based on their interdependence on ecosystems, including biodiversity–have been affected by development frameworks that prioritise urbanisation, natural resource extraction, and monoculture, making them highly vulnerable to a range of climate impacts, including, for example, increases in the frequency, intensity and severity of droughts, floods, heatwaves, and sea level rise [3, 16, 18, 21]. Despite playing a key role in the current climate crisis, knowledge production for adaptation and mitigation strategies has largely excluded Indigenous knowledge and been managed by Western science, and in doing so, typically dismissed Indigenous conceptualisations, epistemologies, and worldviews linking nature and society [4, 22–24].

Regardless of the recent growing recognition of Indigenous knowledge and rights within global climate governance, Indigenous Peoples' initiatives are limited within state-centric structures, which favour economic growth, overpower discourse on Indigenous rights, and often result in a tokenistic representation of Indigenous perspectives in decision-making [25–28]. National climate policy represents a new public sphere in which the relationship between nation-states and Indigenous Peoples is being redefined: addressing climate change is an opportunity to simultaneously enhance justice, sustainable development, and recognise Indigenous Peoples' rights [2, 4, 11]. Nation states play a crucial role in addressing climate change by developing policies that advance a just transition to climate-resilient development; however, these initiatives usually clash with development strategies that privilege economic growth and resource extraction, especially in biodiversity hotspots where Indigenous Peoples frequently live [29]. As Routledge et al. [1] suggest, nation-states are paradoxically both the source of the problem and a crucial part of the solution towards climate-resilient development. However,

there is little research and understanding of how national climate policies include Indigenous Peoples and their justice implications [28, 30–32].

To fill this gap, this paper develops a conceptual framework grounded in intercultural climate justice to analyse the inclusion and representation of Indigenous Peoples in national policy, using the case of national climate and food policies in Peru. Following a dual approach to critical discourse analysis, we apply this framework in Peru to understand: (1) how Indigenous Peoples are being presented in climate and food policies, and (2) the justice implications of the strategies within these policies for Indigenous Peoples.

2 Methodology

2.1 Indigenous Peoples in Peru and why the climate and food intersection matters

It has been over two hundred years since Peru gained independence from Spain's colonial rule in 1821, yet Indigenous Peoples remain excluded and discriminated against due to persistent colonial legacies within political institutions [33]. Indigenous movements in Peru are commonly seen as weak because they have not constituted a political party, nor have there been many elected representatives in Congress or subnational governments, although Indigenous Peoples represent 26% of the Peruvian population according to the last census [34–36]. However, Indigenous institutions in Peru are most likely to use counter-hegemonic pathways by strengthening bottom-up organisations that pressure the government to recognise their rights [37]. For example, in 2009, in the context of the North American Free Trade Agreement (NAFTA), Indigenous organisations opposed the enactment of new laws to reduce collective property rights over Amazonian forestry lands, leading to a confrontation known as the Bagua conflict that ended in 33 people dying and more than two hundred injured civilians. On the second anniversary of this conflict, and to promote procedural justice, the Prior Consultation Law was enacted as the first step to recognise Indigenous Peoples´ rights to free, prior, and informed consent (FPIC). More than a decade later, it is still debatable whether this law has increased the participation of Indigenous Peoples in decision-making spaces towards self-determination or, instead, fostered extractive agendas in their territories [38–40].

Extractive industries have historically contested and impacted Indigenous territories socially and environmentally. The Peruvian government is heavily dependent on tax revenues from extractive industries. However, within an extractivist development framework focused primarily on economic growth, there is an inequitable distribution of risks because Indigenous Peoples must live with constant environmental pollution threats, portraying these as manageable and acceptable risks for the entire nation's development [41, 42]. Supporters of this development framework have also consolidated the narrative that Indigenous Peoples are "the dog in the manger" [43], as former Peruvian President Garcia once called them in a national newspaper, characterising them as unproductive people managing a vast yet potentially highly productive land. However, with weak institutions to supervise, monitor, and evaluate the activities of extractive industries, many negative impacts have occurred. For example, in Indigenous territories in the Amazon basin, there were 474 oil spills from 2000 to 2019, 65% of them caused by the corrosion of oil pipelines [44], with detrimental impacts on Indigenous Peoples' health as high levels of lead have been found in their bodies [45]. Additionally, there is also an inequitable distribution of benefits because Indigenous Peoples have the lowest wellness indicators in terms of health (20.8% of Indigenous children under five years suffer from chronic malnutrition in contrast with only 9.7% of non-Indigenous, anaemia in Indigenous children represent 38.7% compared with 26.7% of non-Indigenous), education (35.7% of Indigenous Peoples only finish elementary schooling, with a 16.1% Illiteracy rate), and the economy (8.7% of

Indigenous Peoples are extremely poor, only 21.1% of Indigenous Peoples comprise the economically active population), among others [46].

Conservation of the Amazon rainforest has become increasingly crucial for mitigating climate change, although many initiatives still do not respond to Indigenous Peoples' food insecurity. Deforestation is Peru's most important carbon emission source, so forest conservation has become increasingly central for climate change mitigation [47]. However, many of these initiatives have encountered institutional gaps because of overlapping property rights between forest-protected areas, mining concessions, timber concessions, and Indigenous land tenure [48]. Recent research has shown that Indigenous Peoples' food systems are highly compromised because of the loss and degradation of the forest, which has increased due to extractive industries, road construction, and monocultures [15, 49]. Therefore, forest conservation initiatives could respond to Indigenous Peoples' food insecurity and climate change. In this context, analysing how Indigenous Peoples are framed within policies reflecting the climate and food interaction is essential.

2.2 Intercultural justice framework

Our framework is based on critical interculturality, a decolonial, social, political, ethical, and epistemic approach to implode, reconceptualise, and redefine the historic structural oppression between hegemonic and subaltern cultures by pursuing justice [50, 51]. It embraces contact and interchange of peoples, practices, knowledge, and values across cultures, considering and acknowledging the historical power relations in which they are (re)produced for broadening up to other ways of being, knowing, valuing, and living [52].

Critical interculturality originated in Latin America, where colonialism utilised race and modernity as a justification to invade, control, and claim European power over Indigenous territories [53]. Despite the end of formal colonialism, Indigenous Peoples' exclusion continues in many independent states due to Western-oriented political, cultural, and epistemic development, marginalising non-European ways of being [54]. Historically, in post- and settler-colonial States, cultural diversity management has been characterised by assimilation and invisibility to create only one nation that positioned hegemonic Western culture at the core of political systems [55]. Consequently, Indigenous Peoples' characteristics, knowledge, and worldviews are usually framed as "primitive", "traditional", "mythic", "irrational", and incompatible with the Eurocentric perspective of development as "civilised", "modern", "scientific", and "rational" [54, 56].

To operationalise critical interculturality, we employ critical discourse analysis, a methodological approach that examines how language constructs, perpetuates, and legitimises power dynamics [57, 58]. Policy text analysis employs this method to understand what problems exist or remain invisible, how they are comprehended, which solutions are proposed, and how subjects are portrayed [59–63]. We developed a novel dual approach to conceptualise and categorise public policy narratives across a scale of increasing engagement with critical interculturality and social justice (Fig 1). On the one hand, this analysis is especially interested in how Indigenous Peoples are constructed as subjects in public policy, i.e. what elements of their cultural identity are being explicitly acknowledged and highlighted. We established four categories: (a) the lowest level of engagement is '***general mentions***' only, in which there is no mention of any cultural characteristic of Indigenous Peoples; (b) low engagement in interculturality is reflected as mentions of ***'Indigenous Peoples' characteristics***' of their traditional ways of living; (c) '***Indigenous knowledge***' reflects moderate engagement with interculturality; and (d) ***'Indigenous worldviews***' reflects the highest level of engagement in interculturality in public policy discourse because they are acknowledge as having different values and ways of sensing/understanding the world.

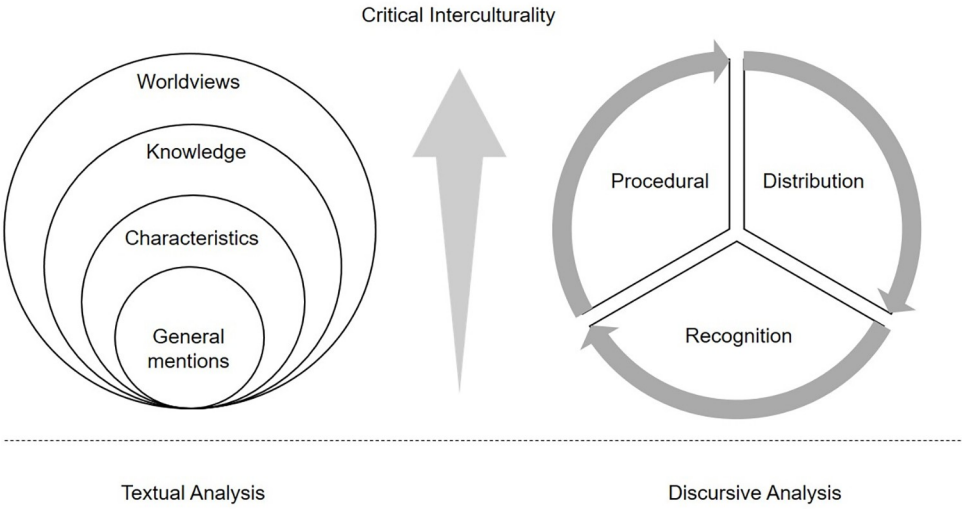

Fig 1. Dual approach in the intercultural justice framework.

https://doi.org/10.1371/journal.pclm.0000404.g001

On the other hand, our dual approach also considers the extent to which policies engage with dimensions of justice for Indigenous Peoples, conceptualising justice across three dimensions: (1) **procedural justice**, reflecting the degree of Indigenous Peoples' participation in policy design, monitoring, and evaluation; (2) **recognition justice** which considers policies that overcome monoculture states by including different ways of being, knowing, valuing; and (3) **distributive justice**, assessing whether policies aim to address structural characteristics from which injustice originates [3, 8, 64, 65].

2.3 Methods

2.3.1 Policy selection. We systematically reviewed Peruvian policies addressing climate change and/or food and nutrition security (Fig 2). The official list of national policies outlined by the Peruvian National Centre for Strategic Planning (CEPLAN) was used in three occasions: March 2020 (n = 173), March 2021 (n = 58), and May 2023 (n = 72), which retrieved a total of 303 policy text (see more in S1 Table). The three lists were merged, and duplicates were removed, resulting in 217 policy documents (S2 Table). From this list, 13 were selected following our inclusion criteria: documents with climate change, food security or nutrition, subsistence agriculture, and/or interculturality in the title, as well as documents published by the Ministry of Development and Social Inclusion (Table 1). An initial review of these included documents identified references to 5 additional relevant policies and 3 reports of the Peruvian Government to the UNFCCC related to climate change, revised in July 2023 (see S3 Table). The total list of analysed policies was 21 (Table 2), representing the complete set of current policies concerning climate change or food and nutrition security in Peru.

2.3.2 Textual analysis. For the textual analysis, each paragraph mentioning Indigenous peoples were extracted from the 21 policy documents. To ensure a comprehensive search, a set of Spanish keywords was employed, tailored to the specific context of Peru. This set included terms such as "andinos", "nativos", and "amazónicos" reflecting the terminology used to describe Indigenous Peoples in Peru according to their ecosystem (see Table 3).

All the documents were automatically coded in Nvivo software using the "query search" function of the keywords. These gave 1194 blocks of text containing any of the keywords in the documents. From these, 690 results (blocks of text) were excluded where the text: (a) was in

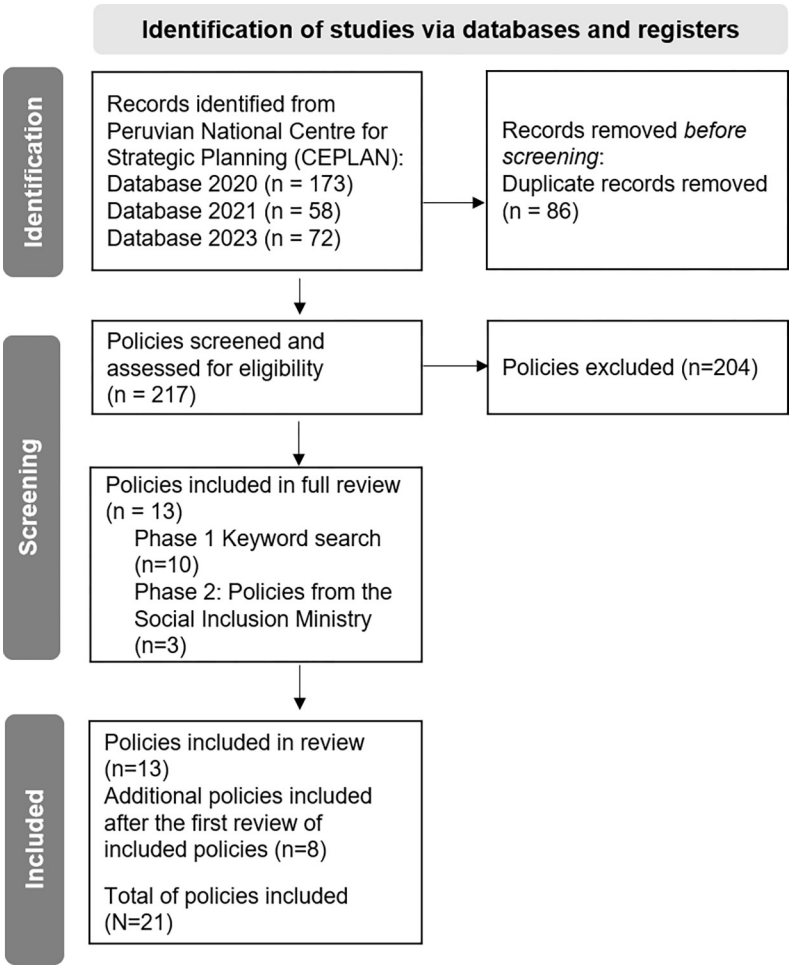

Fig 2. PRISMA flow diagram.

https://doi.org/10.1371/journal.pclm.0000404.g002

the index, footnote, glossary, annexes, or definition section of the document, (b) was a citation of another document already included; (c) referred to a specific name of an Indigenous organisation, law, or policy; (d) did not refer to people/humans (e.g. native plants, Indigenous land, traditional economy, Amazon rainforest, Andean mountains, intercultural characteristics of a policy or project or law); or (e) was not in paragraph format (i.e. infographics, tables, etc.). Many of these results comprised a set of paragraphs. To ensure consistency, we extracted results from this textual analysis in units of individual paragraphs and moved all results into a coding matrix in Excel, resulting in 541 paragraphs across all policy documents (see S4 Table).

We categorised each paragraph into one of four elements of Indigenous people's cultural identity, reflecting a scale of increasing engagement with critical interculturality within public policy (Fig 1): general mentions, Indigenous characteristics, Indigenous knowledge, and Indigenous worldviews. The coding was undertaken by two authors, IAR and VCH, to ensure rigour and consistency. After this, inductive coding of each paragraph was carry out within the four categories, following thematic analysis principles by groupings of similar codes [86] (Fig 3). Inductive categories are described in the results.

2.3.3 Discursive analysis. The second component of our analysis examines the justice implications of Peruvian climate and food policies. This analysis was conducted on the full text

Table 1. Search approaches.

Criteria	*Inclusion*	*Exclusion*	*Policies meeting final inclusion criteria*
PHASE 1: *Keyword search in the Peruvian National Centre for Strategic Planning database*	Policies with the following in TITLE: • Climate change (Search CLIM*) AND • Food Security or nutrition (Search NUTRI*) AND • Rural or subsistence agriculture (Search "Agricultura fam*") • Intercultural	Documents published by the Peruvian Government that address Indigenous Peoples but are not directly related to climate change, food security, nutrition, or health (e.g., intercultural education).	10
PHASE 2: *Search of documents published by the Ministry of Development and Social Inclusion (MIDIS)*	All documents included	n/a	3
***PHASE 3*:** *Snowball technique to identify additional documents*	Documents referenced in the selected policies from phases 1 and 2 related to food security.	Listed documents that are not related to food security.	5
PHASE 4: *Include documents from the Peruvian official communications to the UNFCCC*	Latest national reports	Older documents pre-dating most recent communications	3
		The total of policy documents included in this review	**21**

https://doi.org/10.1371/journal.pclm.0000404.t001

of 18 national policies (Fig 3). We applied the multidimentional justice framework to analyse justice implications for Indigenous Peoples in climate and food policies [22, 32, 64, 65]. Specifically, procedural justice was evaluated based on the ability of Indigenous Peoples to participate in the design and implementation of national policies. Recognition justice was assessed by the extent to which Indigenous knowledge, values and interests are included in the policy. Distributional justice was examined in terms of how equitable and fair these policies address the distribution of goods and resources among Indigenous Peoples.

3 Results

3.1 How are Indigenous Peoples portrayed in the Peruvian climate and food policy?

The inclusion of Indigenous Peoples in Peruvian climate and food policies is minimal, averaging of 26 paragraphs per policy, with a range of 0 to 95 (Fig 4). Three policies do not mention Indigenous Peoples at all: the Guidelines for Integrated Climate Change Management (2016), the National Plan of Food and Nutritional Security (2015), and the Plan for Risk Management and Adaptation in the Agricultural Sector (2012). The policies with the most references to Indigenous Peoples are food and nutrition-focused: the Strategy for Social Action with Sustainability (2016) with 95 paragraphs, the National Plan of Family Farming (2019) with 88 paragraphs, and the Intercultural Health Sector Policy (2016) with 79 paragraphs. Indigenous Peoples' references are similar in both food and climate-focused policies, with an average of 26 and 25 paragraphs, respectively. Additionally, the Ministry of Health has the highest inclusion, averaging 41 paragraphs, followed by the Ministry of Environment with 33 paragraphs, and the Ministry of Development and Social Inclusion with 23 paragraphs.

Additionally, there is no evidence that the inclusion of Indigenous Peoples in climate and food policies is increasing over time (Fig 4). For food-climate policies, 2016 was the year many policies were enacted, and there were significant mentions of Indigenous Peoples in the policies. However, the following years did not incorporate noteworthy mentions of Indigenous Peoples in Peruvian climate and food policies.

Table 2. List of policies.

Year	*Institution*	*English Title*	*Focus*
2012	Ministry of Agriculture (MINAGRI)	Plan for risk management and adaptation to Climate Change in the agricultural sector 2012–2021 [66]	Climate change
2012	Ministry of Women and Vulnerable People (MIMP)	National Plan of Action for Children and Adolescents 2012–2021 [67]	Food and nutrition
2013	MINAGRI	National Strategy of Food and Nutritional Security 2013–2021 [68]	Food and nutrition
2015	Ministry of Environment (MINAM)	National Strategy for Climate Change [69]	Climate change
2015	MINAGRI	National Family Farming Strategy 2015–2021 [70]	Food and nutrition
2015	MINAGRI	National Plan of Food and Nutritional Security 2015–2021 [71]	Food and nutrition
2016	MINAM	Peru. Third National Communication [47]	Climate change
2016	MINAM	National strategy on forests and climate change [72]	Climate change
2016	MINAM	Guidelines for Integrated Climate Change Management [73]	Climate change
2016	MINAM and MIMP	Climate Change Gender Action Plan [74]	Climate change
2016	Ministry of Health (MINSA)	Intercultural Health Sector Policy [75]	Food and nutrition
2016	Ministry of Development and Social Inclusion (MIDIS)	Strategy for Social Action with Sustainability [76]	Food and nutrition
2016	MIDIS	Guidelines for Promoting Early Childhood Development [77]	Food and nutrition
2017	MIDIS	Sectorial Plan to reduce Chronic Child Malnutrition and Anemia in children under 36 months, 2017–2021 [78]	Food and nutrition
2017	MINSA	Plan for the reduction and control of maternal anaemia and chronic children malnutrition 2017–2021 [79]	Food and nutrition
2018	MIDIS	Multisector plan for the fight against anaemia [80]	Food and nutrition
2019	MINAGRI	National Plan of Family Farming 2019–2021 [81]	Food and nutrition
2020	Peruvian Government	Nationally Determined Contribution–NDC [82]	Climate change
2021	MINAM	National Adaptation Plan—NAP [83]	Climate change
2022	MIDIS	National Development and Social Inclusion Policy by 2030 [84]	Food and nutrition
2023	Peruvian Government	Peru. Biennial update report. BUR 3. [85]	Climate change

https://doi.org/10.1371/journal.pclm.0000404.t002

Indigenous worldviews and knowledge are rarely mentioned in climate or food policies in comparison with mentions of Indigenous Peoples' characteristics (Fig 5). Among all extracted paragraphs, 46% mention Indigenous Peoples' characteristics, 35% are general acknowledgements, 13% acknowledge Indigenous Peoples as knowledge holders, and only 6% acknowledge Indigenous Peoples' worldviews (Table 4).

3.1.1 Indigenous worldviews. Mentions of Indigenous worldviews were negligible and generally excluded from policy strategies. Indigenous worldviews are usually at the beginning

Table 3. Keywords used for relevant paragraph searches.

	Search (Spanish)
Indigenous, native, ethnic, intercultural, traditional, ancestral, Amazonian, Andean, and worldviews	indígena OR indígenas OR nativa OR nativas OR native OR nativo OR nativos OR etnia OR etnias OR étnicos OR étnicas OR étnica OR interculturalidad OR intercultural OR saberes OR tradicional OR tradicionales OR ancestral OR ancestrales OR andinos OR amazónicos OR andino-amazónicos OR cosmovisión OR cosmovisiones

https://doi.org/10.1371/journal.pclm.0000404.t003

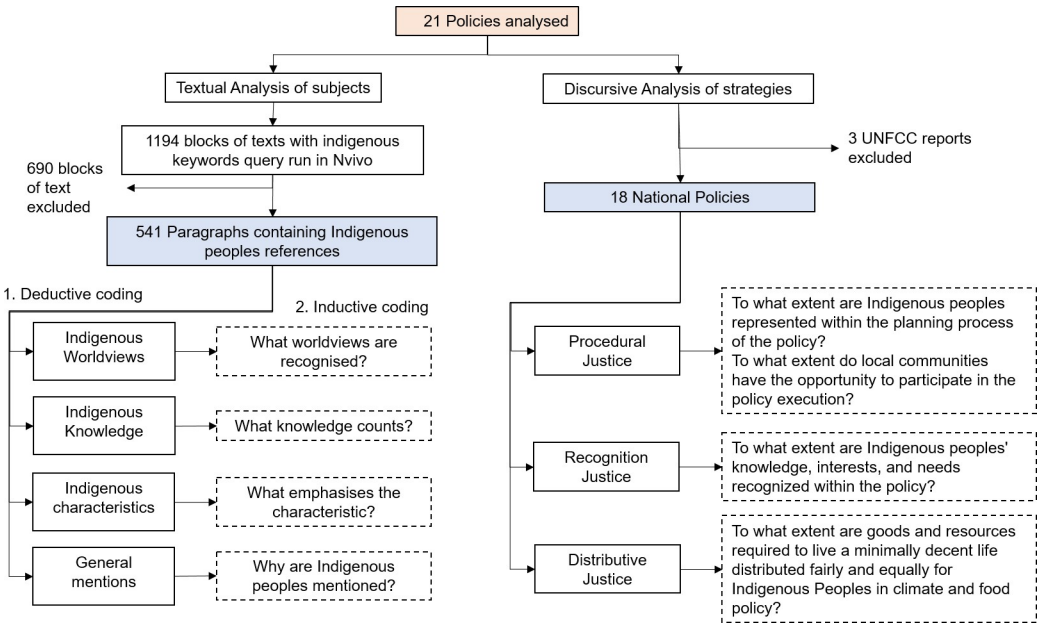

Fig 3. Flow diagram of systematic document extraction and analyses.

https://doi.org/10.1371/journal.pclm.0000404.g003

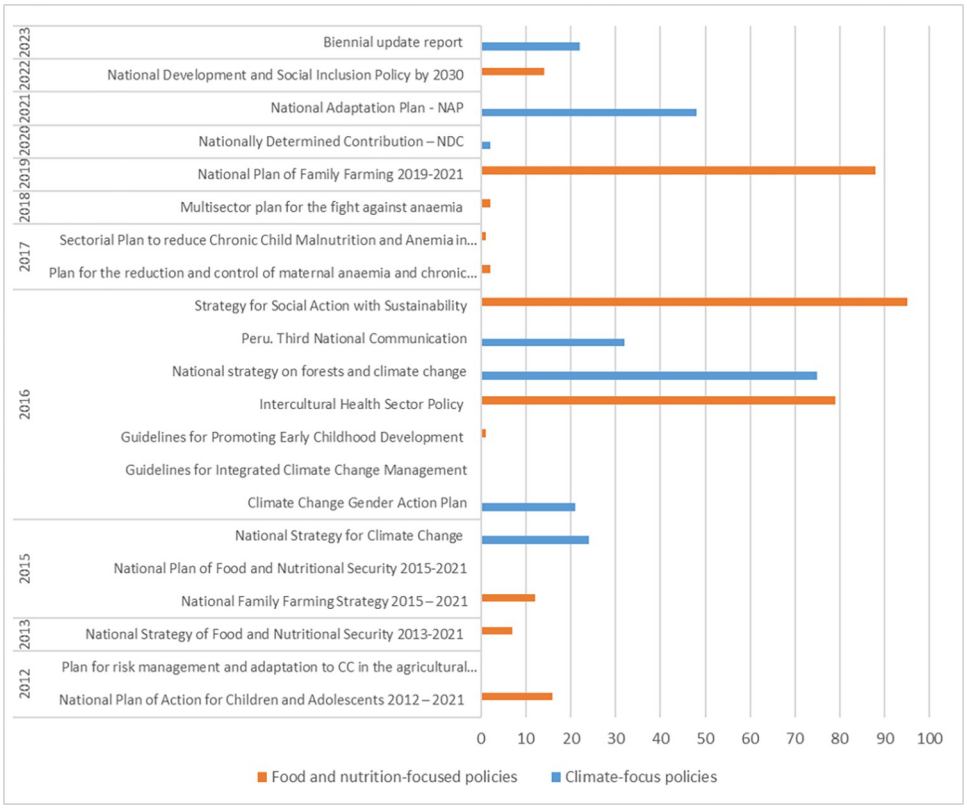

Fig 4. Number of paragraphs referring to Indigenous Peoples in Peruvian national climate and food policy documents by policy and year.

https://doi.org/10.1371/journal.pclm.0000404.g004

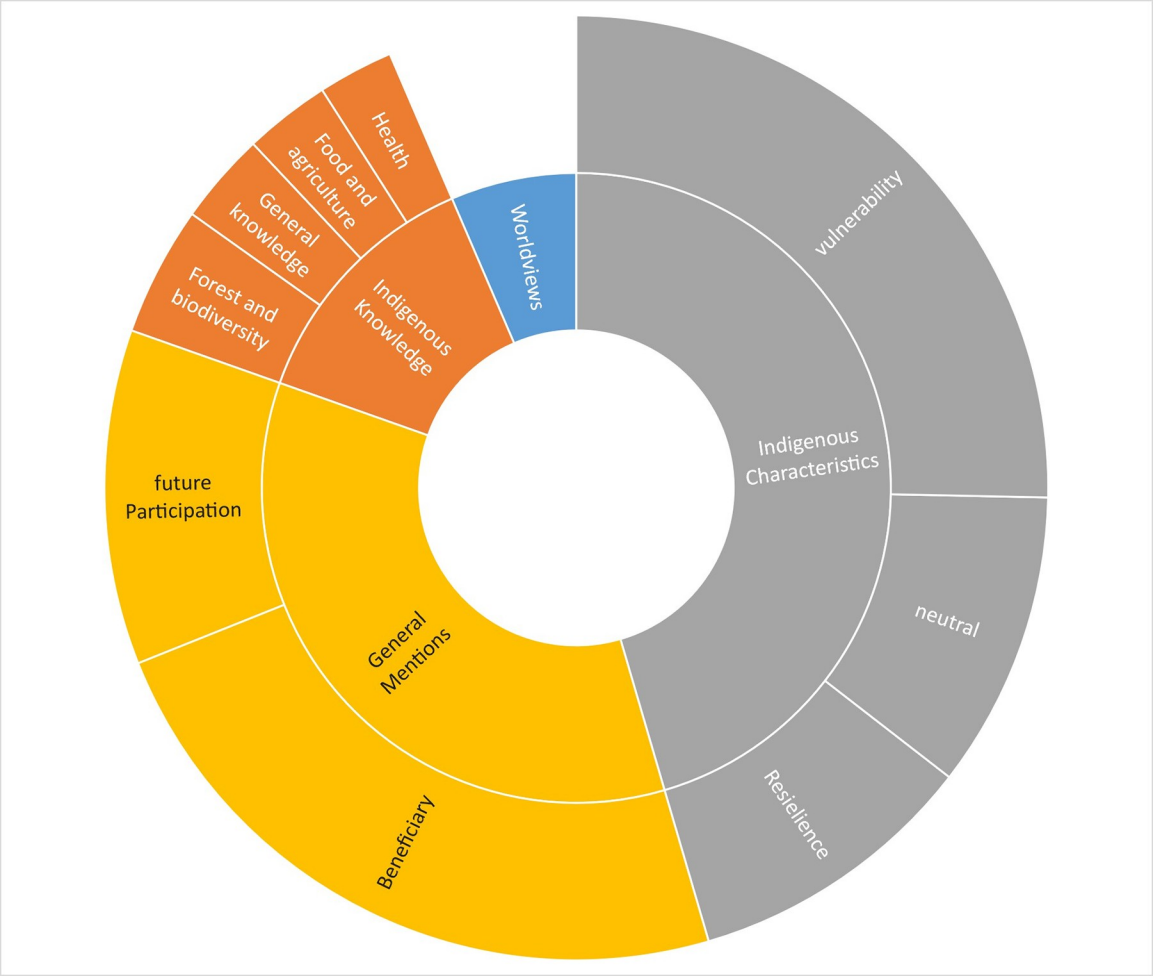

Fig 5. Proportion of paragraphs referring to Indigenous Peoples by categories (n = 541 paragraphs in total). The inner circle shows the distribution of deductive categories: General Mentions' of Indigenous Peoples, Indigenous Characteristics, Indigenous Knowledge, and Indigenous Worldviews. The outer ring reflects sub-categories emerging from inductive coding analyses. No sub-categories are shown for Indigenous Worldviews, as there were insufficient results to further disaggregate results within this category.

https://doi.org/10.1371/journal.pclm.0000404.g005

of the policies, where the government acknowledges the importance of integrating different conceptions of well-being and development priorities as part of its intercultural approach to delivering services, which has been mandatory by law since 2015 [87]. However, further mention or integration of these worldviews is absent when reviewing the strategies beyond these initial introductions, except for the Intercultural Health policy (2016) [75]. This policy established a new approach for integrating Indigenous worldviews and interpretations of diseases, usually linked to spirituality, by incorporating community health agents, like shamans and healers, into the state health service and their traditional medicine [75].

Indigenous worldviews mentions mostly appeared when connected to climate change mitigation. Indigenous Peoples' spirituality is also highlighted when addressing the importance of Indigenous territory for climate policies. The Peruvian government acknowledges that Indigenous Peoples' holistic approach, which emphasizes living in harmony with nature, benefits forest conservation. This perspective aligns with climate change mitigation programs, especially those focused on reducing deforestation [47, 72]. Therefore, some paragraphs stipulate that protecting the forest implies Indigenous well-being because of their physical and spiritual dependence; thus, spirituality is considered a cornerstone for climate change mitigation [72].

Table 4. Examples of categorisation of paragraphs. All percentage values reflect the proportion of paragraphs relevant to each category or sub-category out of 541 paragraphs referring to Indigenous Peoples.

Inductive codes	Definition	Paragraph example
Indigenous Worldviews (6%)		
No inductive coding was undertaken due to the minimal number of paragraphs.	"Among the Matsigenka Indigenous People, the notion of wellbeing is closely linked to the absence of disease and the preservation of social harmony (. . .) the ills of the body originate from damage to the person's soul caused by a social imbalance between humans or relationships with other beings in nature. The perception of health-illness of the Matsigenka population is unknown to health personnel and, as a result, the symptoms of the culturally defined conditions such as "harm" and loss of soul, among others, are generally excluded from care and treatment in health centres or come only when cases have become severe. [. . .]" [75]	
Indigenous Knowledge (13%): What knowledge counts?		
Forest and biodiversity (4%)	Indigenous Knowledge about forest management, biodiversity conservation, biological and genetic resources produced by flora, fauna, microorganisms, and all forms of nature	"The migrant population from other regions of the country lacks the knowledge, practices, and techniques to live from the forest, which leads to changing the use of the land towards activities culturally closer to their experience, such as livestock or agriculture. [. . .]. The notable exception is the Indigenous Peoples and the riverine population who live directly from the forest resources, which, however, are perceived as unproductive by many migrants." [72]
No specific knowledge (3%)	Paragraphs where Indigenous Knowledge is mentioned but not specified	"The knowledge of the peasant communities and the ancestral knowledge of the Afro-Peruvian people and the Indigenous or native peoples are the best legacy for adaptation to climate change that values and keeps alive the culture of its population." [83]
Health (3%)	Indigenous Knowledge about health treatments with no explicit mention of spirituality	"In Peru and other countries in the Region, previous experiences have been developed, showing that when the intercultural component is included, the use of health services increases significantly, not only due to the greater acceptance by the population but also due to improving the quality of service as a result of the incorporation of traditional knowledge in health, based on scientific evidence. This implies the revaluation of traditional knowledge, a substantive element in the social inclusion policies of historically excluded communities." [75]
Food and Agriculture (3%)	Indigenous Knowledge related to food production, water management, family farming	"Indigenous and peasant communities conserve and use traditional practices and technologies, which have managed diverse environmental conditions and, in some way, control changes in climate pressure. The communities' traditional knowledge provides them with a basis for land and resource use practices, which are suitable for incorporating into effective adaptation strategies to climate change." [74]
Indigenous Characteristics (45%): What emphasises the characteristics?		
Vulnerability (25%)	Characteristics of Indigenous Peoples that emphasise vulnerability, such as poverty, marginalisation, conflict, and food insecurity, among others	"The effects of climate change are altering the livelihood of Indigenous Peoples who depend on their territory and natural resources for their subsistence. In the case of the population of the Amazon, where per capita fish consumption can vary between 250 to 800 grams per person per day, climate change is increasing the temperature of rivers, decreasing the volume of precipitation, causing migration of species and increasing sedimentation in rivers, which greatly affects the food security of this population" [68]
Neutral (10%)	Indigenous descriptions of characteristics that indicate neither vulnerability nor resilience, such as ethnic and cultural identity, food preferences, livelihoods, or rights	"Peru is a multi-ethnic and pluricultural country, which includes a majority of mestizo population and Indigenous and native peoples. Due to various social and historical processes, Afro-Peruvian populations have been incorporated as a product of a forced exodus or diaspora and, through migration, Asian Peruvian populations. All of them constitute the cultural diversity of the country, which must be addressed concerning its ethnic and cultural identity." [75]

(*Continued*)

Table 4. (Continued)

Inductive codes	Definition	Paragraph example
Resilience (10%)	Characteristics of Indigenous Peoples that evidence resilience such as collective action and organisation, previous participation, sustainable livelihoods	"It should be noted that the peasant and Indigenous communities are home to a significant proportion of family farmers, who, in addition to controlling a significant agricultural area and in the current context, far from disappearing, have reconfigured their productive and institutional dynamics in the face of changing conditions of development and access to markets." [81]
General mentions (35%): Why are Indigenous Peoples mentioned?		
Beneficiary (23%)	Paragraphs where Indigenous Peoples are mentioned as beneficiaries of state programs, emphasise either program limitations, progress or planning.	"With the focus on the service offering of the State, it will be possible to reduce the impact of geographical difficulties in accessing them and reduce or eliminate the travel and stay expenses that native communities usually incur. As a result, care coverage for the indigenous population will increase." [76]
Future Participation (11%)	Paragraphs where Indigenous Peoples are identified for future participation in state programs	"Promote indigenous participation, and of peasant and native communities, in spaces generated by public institutions (Indigenous Policies Working Group and others), linked to the sustainable management of natural resources in the face of climate change, food security and family farming." [81]

https://doi.org/10.1371/journal.pclm.0000404.t004

3.1.2 Indigenous knowledge. References to Indigenous Knowledge constitute 13% of paragraphs in Peruvian climate and food policies, addressing forest and biodiversity management (4%), health (3%), food and agriculture (3%) and unspecified knowledge (3%) (Table 4). The category of forest and biodiversity knowledge highlights the urgent need to preserve the Amazon rainforest for climate change mitigation by learning from Indigenous Peoples about sustainable resource use and harmonious living with the forest and its biodiversity [47, 72]. Furthermore, Indigenous knowledge of forest conservation is linked to reducing Indigenous Peoples' vulnerability and fostering climate change adaptation [83]. When referring to Indigenous Knowledge in terms of biodiversity, there is also an emphasis on protecting the biological and genetic resources produced by flora and fauna species, microorganisms, and all forms of nature, so its use could generate economic growth for Indigenous Peoples, creating businesses associated with biodiversity conservation [70, 72, 75, 76].

The Intercultural Health Policy (2016) acknowledges the importance of integrating Indigenous health knowledge and traditional healers into official health systems to improve care for Indigenous peoples. However, it restricts this integration to Indigenous knowledge that meets scientific validation standards [75]. Other policies, like the National Adaptation Plan (2021) also highlights the need to incorporate Indigenous knowledge to prevent and treat health diseases related to climate change [83]. Despite the recurring emphasis on this integration, only a few paragraphs specified that Indigenous health knowledge must be validated by scientific research to be included (see Table 4). Additionally, the use of Indigenous Knowledge in the health sector has a history of exploitation, and challenges remain in protecting this knowledge due to its collective nature. Policies aim to create a platform that enables Indigenous peoples to collectively share the commercial benefits of Indigenous health knowledge [75].

Food and agricultural knowledge that Indigenous Peoples have gathered historically to survive climatic variations is also mentioned (3%), especially in climate policies. Some documents specified this technical knowledge as Indigenous Peoples' capacity for reading weather with bioindicators, harvesting water from rainfall and glaciers, using crop platforms, recovering degraded areas, improving crops, undertaking polyculture, breeding, and the collective use and management of natural and wildlife resources [69, 70, 72, 76, 81, 83].

3.1.3 Indigenous characteristics. Climate and food policies mostly portray Indigenous Peoples as highly vulnerable (25%), in contrast with portrayals of resilience (10%) or neutrality

(10%) (Table 4). Most paragraphs explicitly highlight Indigenous Peoples' climate vulnerability because of the erosion of the natural resource base underpinning their livelihood [47, 72, 74]. In the case of the Amazon, forest sensitivity to rising temperatures and propensity to fire and pest outbreaks are identified as directly affecting the livelihood of Amazonian Indigenous Peoples [72], with decreasing availability of water and firewood creating severe implications for the availability of time and the workload of Indigenous women and children [74]. There are also mentions of the vulnerability of Andean Indigenous Peoples, although there is no further explanation [47]. Together with the erosion of their livelihoods, Indigenous Peoples' climate vulnerability is also considered to be accentuated because of historical exclusion and poverty [68, 69, 72].

Indigenous Peoples' food insecurity is also mentioned, including the prevalence of anaemia, childhood malnutrition–with associated implications for brain development—and the increased risk of acquiring chronic diseases (diabetes, hypertension, heart attacks) from the age of 45 [76, 78]. Indigenous Peoples' food insecurity is understood as a complex problem generated by the lack of inclusion in health services and programs and the lack of capacity of health practitioners to understand or accommodate Indigenous cultures, compounded by illiteracy and distrust of government health systems [75].

Very few paragraphs connect Indigenous food and climate vulnerability. Connections are only explicitly articulated for the Amazon, where climate change is raising the temperature of the rivers and changing precipitation patterns, making fish species migrate, increasing sedimentation of waterways, as well as increasing the chances of crop failure in the short term and reducing production in the long term, all of which is significantly affecting Indigenous food systems [47, 69, 72, 81, 83]. There are no mentions of Indigenous Peoples from the Andes and their food insecurity related to climate change.

Indigenous Peoples' vulnerability is also acknowledged to be increasing due to actions by external stakeholders, such as the government and extractive industries. The lack of inclusion of Indigenous Peoples in the government's service delivery is identified as another essential characteristic of their vulnerability, i.e. adequate healthcare, education, water, electricity, road connectivity, land titling, and access to justice institutions, and therefore, Indigenous Peoples have the worst human development indicators in Peru [47, 68, 76, 81, 84]. Additionally, paragraphs on vulnerability emphasised the environmental degradation of Indigenous territories, mainly related to extractive industries, including mining, oil, and deforestation [72, 76, 81, 84].

Climate and food policies equally mention Indigenous Peoples' resilience and neutral characteristics (22% each). Neutral paragraphs mention Indigenous collective rights, food preferences, language, livelihoods, and traditional institutions. In the case of resilience, paragraphs highlight Indigenous Peoples' past participation in climate governance [47, 67, 72, 74, 75, 82, 83, 85]. Another important resilience characteristic is related to Indigenous ways of organising towards collective actions, e.g. the use of traditional institutions and dynamics of family labour and cooperation ("ayni" or "Minka"), and their ability to adapt these dynamics in the face of new contexts [69, 70, 81]. Sustainable livelihoods are also identified as a resilience characteristic. This includes, for example, Amazonian Indigenous Peoples conserving natural resources and forest biodiversity and Andean Indigenous Peoples sowing and harvesting water since ancestral times [47, 70, 72, 74, 76, 81, 83, 85].

3.1.4 General mentions. General mentions of Indigenous Peoples are usually framed in the context of beneficiaries of government programs and services (23%) or the importance of including and consulting Indigenous Peoples in future policy implementation (11%) (Table 4). For example, climate policies incorporated paragraphs about sensitising Indigenous Peoples in adaptation [47], the importance of their participation in climate governance [85], and improving the legal tenure of their territory [72]. Food policies emphasise prioritising their awareness

of health issues and bringing state services to remote Indigenous communities [67, 70, 76, 80, 81].

3.2 What are the justice implications of climate and food strategies for Indigenous Peoples?

3.2.1 Procedural justice. Despite being highlighted as the most vulnerable to climate change and food insecurity, Indigenous Peoples are usually not involved in food-climate policy design (Fig 6). Analysis of procedural justice in the planning process of each policy determined that among the 18 national policies, 12 have no information on whether Indigenous Peoples or their representatives have participated in any form. Only 5 policies indicated that Indigenous Peoples' representatives participated in the planning process: the National Plan of Action for Children and Adolescents (2012), the National Strategy to Climate Change (2015), the National Strategy on Forests and Climate Change (2016), the Climate Change Gender Action Plan (2016), and the National Adaptation Plan (2021). Only one policy reported seeking free, prior, informed consent (FPIC) with Indigenous Peoples: the Intercultural Health Policy 2016. Indigenous participation was not even pursued in some cases; for example, in the methods section of the National Plan of Family Farming (2019) [81], the Ministry of Culture suggested a process of FPIC for this policy as most family farmers are Indigenous; however, it was decided that the participation of Indigenous Peoples was not mandatory at a national level, rather only locally when/if any of the actions of the Plan could directly affect their collective rights.

Indigenous participation in planning is more common in climate-focused than food- and nutrition-focused policies (Fig 6). Despite the National Intercultural Health (2016) policy being the only policy including FPIC with Indigenous Peoples, most food and nutrition-focused policies did not report any Indigenous participation in the planning process. In the case of climate-focused policies, most policies had some element of Indigenous involvement in the design process, even if it was done virtually, such as in the case of the National Adaptation Plan (2021), which ran virtual workshops during the COVID-19 pandemic [83].

The opportunity for Indigenous Peoples to participate in policy implementation has increased over the years. The National Adaptation Plan (2021), the latest climate policy, emphasizes the central role of the Indigenous Peoples' Platform against Climate Change,

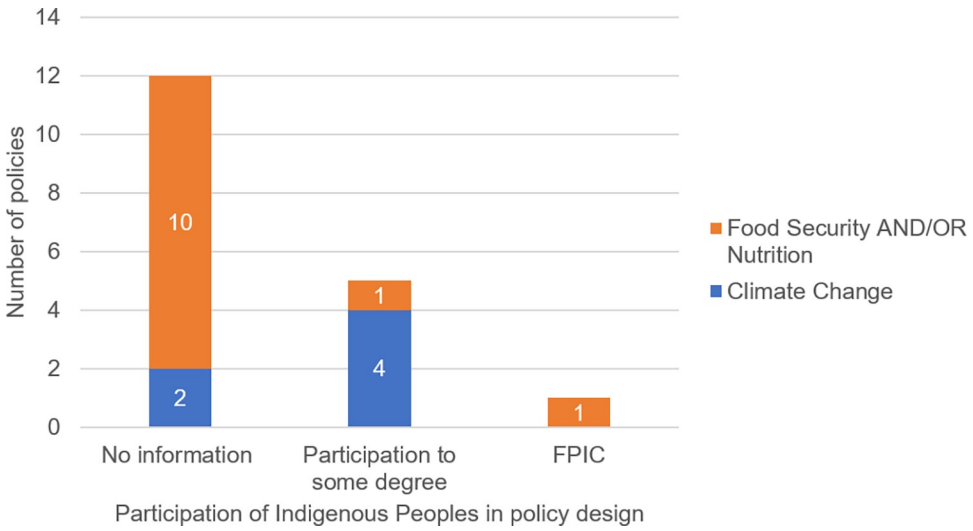

Fig 6. Procedural justice in climate and food policy planning.

https://doi.org/10.1371/journal.pclm.0000404.g006

created in 2020 as a request from Indigenous organisations in the process of FPIC of the regulation of the Framework Law on Climate Change [88, 89]. This platform should be key for revaluing Indigenous Knowledge in managing, articulating, disseminating and monitoring adaptation proposals since its creation. In the case of the National Development and Social Inclusion Policy (2022), the latest food-oriented policy, Indigenous Peoples' participation is only established to achieve food security focused on creating biodiversity hotspots and conditional conservation cash transfers [84].

3.2.2 Recognition justice. Indigenous knowledge, interests, and needs are minimally recognised in Peruvian food-oriented policy strategies despite acknowledging that they are the most food insecure. Despite being the oldest policy analysed, the National Plan of Action for Children and Adolescents (2012) contains significant recognition of Indigenous Peoples' rights [67]. The policy establishes a specific strategy for Indigenous Peoples, for example, prioritising the farthest Indigenous communities and recognising many intercultural rights such as cultural birth, culturally appropriate food, and intercultural education. However, later food-oriented policies only include Indigenous Peoples in the definition of the problem but do not establish a specific intervention considering their cultural diversity [70, 71, 75, 77, 78, 80], e.g. aims to increase and promote "proper" health attendance, nutrition, hygiene, etc. without defining what "proper" means in an Indigenous context. Recognition of Indigenous interests remains limited across many policies, even those purportedly focused on strategies for Indigenous Peoples. This is evidenced, for example, by the dominance of texts focused on economic growth by increasing associativity, legal tenure of Indigenous lands to access bank loans, the commercial use of Indigenous Knowledge of biodiversity and plants, or conditional cash transfers for forest conservation [70, 81].

Among food-oriented policies, those that recognise Indigenous knowledge, interests, and needs have a strategy tailored explicitly for Indigenous Peoples. The Strategy for Social Action with Sustainability (2016) establishes an individual and a collective approach for Indigenous Peoples, understanding that food and other health problems are individual and communal [76]. The strategy is focused on three main results: legal tenure over Indigenous lands, sustainable management of their territory, and cultural identity. Additionally, the Intercultural Health Policy [75] establishes strategies for incorporating Indigenous knowledge into public health systems by differentiating health attention for Indigenous Peoples, valuing and incorporating Indigenous Knowledge, and increasing the understanding of interculturality within health personnel.

Indigenous knowledge, interests, and needs are more frequently and extensively recognised in climate-oriented policies because of the growing importance of Indigenous Peoples as forest stewards. For example, in the case of the National Strategy of Forests and Climate Change (2016) [72], the strategy clearly emphasises that its main objective is to minimise forest loss and degradation not only because it will reduce greenhouse gas emissions but also because its critical role for increasing Indigenous Peoples' resilience to climate change, by acknowledging that "forests have value beyond carbon, such as spiritual and cultural" [72]. This is also emphasised in the National Adaptation Plan (2021) by establishing the importance of revaluing Indigenous Knowledge for biodiversity, forest conservation, and sustainable livelihoods [83].

Like food-oriented policies, climate-oriented policies explicitly and implicitly reinforce the central role of market-oriented strategies. For example, the National Adaptation Plan (2021) establishes that to reduce current and future loss and damage to people and livelihoods due to climate change, Indigenous Peoples must diversify their livelihood and increase their access to the market [83]. Other policies also emphasise the opportunity for Indigenous Knowledge of forests and biodiversity to create bio businesses that could increase the economic value of

forests and prevent deforestation [72] as well as financial retribution for conservation and ecosystem services [69].

The most holistic approach to recognising Indigenous knowledge, interests, and needs is presented by the Climate Change Gender Action Plan (2016) [74], in which Indigenous knowledge is valuable for forest, biodiversity, and water management, food security, and intercultural health. This policy is focused on open spaces for revaluing Indigenous Knowledge within the State, as it establishes the creation of an Indigenous Knowledge Platform, its legal protection, collective nature, and the need to increase the participation of Indigenous women in climate governance.

3.2.3 Distributional justice. Despite Indigenous Peoples being mentioned as vulnerable population, most food and climate policies do not prioritise the distribution of goods and resources to Indigenous territories [78–81, 84]. In policies where Indigenous Peoples are considered in the strategy, there is a systemic understanding of the problem behind Indigenous Peoples' vulnerability to food security and climate change; however, the proposed plans presented in the policy documents provide limited scope for recommendations beyond business-as-usual. The few policies that include interventions exclusively for Indigenous Peoples focus almost solely on land ownership and health services.

Indigenous land ownership is essential for climate and food policies as land grabbing is a significant problem that harms both Indigenous food systems and forest conservation for climate change mitigation. In many policies, this is established as a strategy [68, 70, 76], and even conditional cash transfers are stipulated for Indigenous communities that can preserve forests [69, 72, 83]. However, there are clear gaps in the legal system to deliver an intercultural service, the costs associated with the legal land tenure process, or even the monitoring system to defend their traditional lands from other competing actors.

Perhaps one of the most significant policies for Indigenous Peoples is the Intercultural Health Policy [75], which established a resource allocation to change the public health system for Indigenous Peoples, making it more intercultural. This has helped strengthen health personnel's capacities to understand other worldviews and knowledge about diseases and treatments, as well as the importance of interculturality across all public services. This is a good umbrella under which Indigenous Peoples could demand comprehensive and fair health provision.

4 Discussion and conclusions

This paper examines the representation of Indigenous Peoples in Peruvian climate and food policies and evaluates the justice implications of these policies using an intercultural justice framework, based on a textual and discursive analysis. Our findings reveal that Indigenous Peoples are minimally included in these policies, highlighting their extreme vulnerability to climate change and food insecurity. The integration of Indigenous knowledge and worldviews is also a limited, primarily due to their exclusion from policy design and implementation. Additionally, there is a limited attempt to distribute goods and resources fairly to address existing inequalities. Despite the ongoing limited incorporation of Indigenous Peoples' cultural diversity in national climate and food policies, there is an important space that is being claimed by Indigenous organisations to enhance their participation.

Addressing Indigenous Peoples mainly in the definition of the problem rather than in the strategy or action plan evidences a lack of consideration of their cultural diversity and a continuation of one-size-fits-all policies. Several research have documented the inclusion of Indigenous Peoples in less substantial parts of national climate policies [30, 90, 91], as well as international mechanisms [26, 28, 92–94]. This is also referred to as the "victimisation

framework" [92], in which Indigenous Peoples are portrayed as helpless victims of a catastrophic emergency who need to be saved by others. This framework creates a risk of homogenising the lived experiences of Indigenous Peoples about climate change and food insecurity: while highlighting only vulnerability, resilience experiences are omitted [95]. The portrait of Indigenous Peoples as passive victims legitimises outside interventions and state control, privileging solutions that are not based on Indigenous knowledge and worldviews, thereby perpetuating colonialism [96]. Furthermore, the omission of Indigenous peoples in the strategies of action plans only evidence the lack of tailored policies for adaptation to climate change and increase food security.

Additionally, the confinement of Indigenous knowledge to technical skills around agriculture and resource management presented in Peruvian climate and food policies risks delegitimising Indigenous knowledge because it only understands Indigenous knowledge with a Western knowledge framework. The inclusion of Indigenous knowledge in climate change is especially difficult for natural sciences that are more aligned with positivist ideas [97], which delegitimise Indigenous Knowledge by referring to it as "anecdotal" [92] and in need of validation by scientific knowledge [98]. As such, Indigenous knowledge is being included "in a symbolic way rather than moving towards epistemic belonging" [25]. Furthermore, most strategies in the analysed policies focus on implementing market-oriented plans and the economic value of their ecosystem's conservation. This is a contradiction in many ways because the current climate crisis originated by pursuing unlimited economic growth based on a dualist ontology of Western modernity [96, 99]. Thus, solutions to climate change should privilege Indigenous worldviews, knowledge, and priorities considering as equally valid as other types of knowledge and ways of living [26, 100].

Although most policies have historically excluded Indigenous Peoples from design and implementation, the FPIC law has provided opportunities for Indigenous participation, impacting how Indigenous Peoples, their knowledge, and worldviews are being represented in Peruvian climate and food policies. The Intercultural Health Sector Policy (2016), the National Strategy on Forest and Climate Change (2016), and the Climate Change Gender Action Plan (2016) notably include Indigenous worldviews in their texts because Indigenous peoples participated in the design of these documents. Although some researchers argue that such spaces in climate governance do not give Indigenous Peoples opportunities to "assess and influence the multiple, interacting stressors that contribute to their climate vulnerability" [28], this paper provides evidence that meaningful Indigenous participation in the policy design process ensure that their inputs are integrated as well as a more respectful representation of their cultural diversity.

Finally, the biggest limitation of this research is that the results are focused only on nominal inclusion of Indigenous Peoples in policy texts. Further research could be undertaken to analyse, for example, how nominal inclusions translate into policy implementation. Additionally, a close analysis of the role of the Indigenous Peoples' Platform against Climate Change in Peru since its creation in 2020 could provide insights into whether Indigenous-led initiatives contribute to a just climate transition and overcome systemic barriers in policy making.

Supporting information

S1 Checklist. PRISMA checklist.
(DOCX)

S1 Text. Missing data protocol.
(DOCX)

S1 Table. CEPLAN policy list with duplicates. This table provides a complete list of national policies extracted from CEPLAN's webpage for the years 2020, 2021, and 2023, totalling 303 policy documents. The table is in Spanish, and some columns are left blank due to changes in the format of the official policy list over the different years it was retrieved.
(XLSX)

S2 Table. Phase 1 and 2 of policy search. This table contains a revised list of national policies extracted from CEPLAN's webpage for the years 2020, 2021, and 2023, with duplicates removed, resulting in a total of 217 policy documents. It also includes a column that explains the criteria used for including or excluding each policy title.
(XLSX)

S3 Table. Textual analysis of Peruvian climate and food policies. This table includes the focus of each policy, the search phases during which each policy was included, the data extraction date, and the data extractor's name. It also provides a detailed textual analysis of each policy, indicating the number of paragraphs mentioning Indigenous peoples and the number of paragraphs in each category: general mentions, characteristics, knowledge, and worldview.
(XLSX)

S4 Table. Paragraphs mentioning Indigenous Peoples. This table lists the 541 paragraphs mentioning Indigenous peoples, identifying the policy from which it has been retrieved, and the focus of the policy. It categorises each paragraph into deductive coding: general mentions, characteristics, knowledge, and worldviews. It also includes inductive coding.
(XLSX)

S5 Table. A discursive analysis of Peruvian climate and food policies. This table includes the discursive analysis of 18 National Policies according to procedural, recognition, and distributive justice questions.
(XLSX)

Acknowledgments

I want to thank my primary supervisor, Prof. Lea Berrang-Ford, who made this paper possible. Her guidance and advice carried me through all the years of writing this paper and encouraged me to finish it. I would also like to thank Prof. James D. Ford and Dr. Carol Zavaleta for believing in this paper since it started and for believing in me to lead a policy analysis working group so I could have the time and resources to finish this paper.

Author Contributions

Conceptualization: Ingrid Arotoma-Rojas, Lea Berrang-Ford, James D. Ford, Carol Zavaleta-Cortijo.

Formal analysis: Ingrid Arotoma-Rojas.

Investigation: Ingrid Arotoma-Rojas.

Methodology: Ingrid Arotoma-Rojas, Lea Berrang-Ford, James D. Ford.

Project administration: Ingrid Arotoma-Rojas.

Supervision: Lea Berrang-Ford, James D. Ford.

Validation: Victoria Chicmana-Zapata.

Visualization: Ingrid Arotoma-Rojas.

Writing – original draft: Ingrid Arotoma-Rojas.

Writing – review & editing: Ingrid Arotoma-Rojas, Lea Berrang-Ford, James D. Ford, Carol Zavaleta-Cortijo, Paul Cooke, Victoria Chicmana-Zapata.

References

1. Routledge P, Cumbers A, Derickson KD, Driscoll Derickson K. States of Just Transition: realizing climate justice through and against the state. Geoforum. 2018; 88. https://doi.org/10.1016/j.geoforum.2017.11.015
2. Sultana F. Critical climate justice. Geogr J. 2022; 188: 118–124. https://doi.org/10.1111/geoj.12417
3. Pörtner HO, Roberts DC, Adams H, Adler C, Aldunce P, Ali E, et al. Climate change 2022: impacts, adaptation and vulnerability. IPCC; 2022. https://doi.org/10.1017/9781009325844.001
4. Sultana F. The unbearable heaviness of climate coloniality. Polit Geogr. 2022; 99: 102638. https://doi.org/10.1016/j.polgeo.2022.102638
5. Araos M, Jagannathan K, Shukla R, Ajibade I, Coughlan de Perez E, Davis K, et al. Equity in human adaptation-related responses: A systematic global review. One Earth. 2021; 4: 1454–1467. https://doi.org/10.1016/j.oneear.2021.09.001
6. Berrang-Ford L, Siders AR, Lesnikowski A, Fischer AP, Callaghan MW, Haddaway NR, et al. A systematic global stocktake of evidence on human adaptation to climate change. Nat Clim Chang. 2021; 11: 989–1000. https://doi.org/10.1038/s41558-021-01170-y
7. Juhola S, Heikkinen M, Pietilä T, Groundstroem F, Käyhkö J. Connecting climate justice and adaptation planning: An adaptation justice index. Environ Sci Policy. 2022; 136: 609–619. https://doi.org/10.1016/j.envsci.2022.07.024
8. Coggins S, Berrang-Ford L, Hyams K, Satyal P, Ford J, Paavola J, et al. Empirical assessment of equity and justice in climate adaptation literature: A systematic map. Environ Res Lett. 2021; 16: 073003. https://doi.org/10.1088/1748-9326/ac0663
9. Eriksen S, Schipper ELF, Scoville-Simonds M, Vincent K, Adam HN, Brooks N, et al. Adaptation interventions and their effect on vulnerability in developing countries: Help, hindrance or irrelevance? World Dev. 2021; 141: 105383. https://doi.org/10.1016/j.worlddev.2020.105383
10. United Nations. The United Nations decade on ecosystem restoration: 2021–2030. 2020 [cited 8 Feb 2023]. Available: https://www.decadeonrestoration.org/
11. Erbaugh JT, Pradhan N, Adams J, Oldekop JA, Agrawal A, Brockington D, et al. Global forest restoration and the importance of prioritizing local communities. Nat Ecol Evol. 2020; 4: 1472–1476. https://doi.org/10.1038/s41559-020-01282-2 PMID: 32839542
12. Fox H, Cundill G. Towards increased community-engaged ecological restoration: A review of current practice and future directions. Ecol Restor. 2018; 36: 208–218. https://doi.org/10.3368/er.36.3.208
13. Oldekop JA, Holmes G, Harris WE, Evans KL. A global assessment of the social and conservation outcomes of protected areas. Conserv Biol. 2016; 30: 133–141. https://doi.org/10.1111/cobi.12568 PMID: 26096222
14. Paredes M, Kaulard A. Forest as 'nature' or forest as territory? Knowledge, power, and climate change conservation in the Peruvian Amazon. J Peasant Stud. 2023; 50: 2210–2231. https://doi.org/10.1080/03066150.2022.2134010
15. Arotoma-Rojas I, Berrang-Ford L, Zavaleta-Cortijo C, Ford JD, Cooke P. Indigenous Peoples' Perceptions of Their Food System in the Context of Climate Change: A Case Study of Shawi Men in the Peruvian Amazon. Sustainability. 2022; 14: 16502. https://doi.org/10.3390/su142416502
16. Food and Agriculture Organization of the United Nations. The White/Wiphala Paper on Indigenous Peoples' food systems. The White/Wiphala Paper on Indigenous Peoples' food systems. FAO; 2021. https://doi.org/10.4060/cb4932en
17. Rasmussen JB. Advancing Environmental Justice through the Integration of Traditional Ecological Knowledge into Environmental Policy. Challenges. 2023. https://doi.org/10.3390/challe14010006
18. Food and Agriculture Organization of the United Nations, International Alliance of Biodiversity, International Center for Tropical Agriculture. Indigenous Peoples' food systems: Insights on sustainability and resilience from the front line of climate change. Rome: FAO, Alliance of Bioversity International, and CIAT; 2021. https://doi.org/10.4060/cb5131en
19. International Fund for Agricultural Development. Indigenous Peoples are protecting biodiversity, one harvest at a time. 2022 [cited 3 May 2023]. Available: https://www.ifad.org/en/web/latest/-/indigenous-peoples-are-protecting-biodiversity-one-harvest-at-a-time#:~:text=80percentofthe,biodiversityinsteadoferadicatingit.

20. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Summary for policymakers of the global assessment report on biodiversity and ecosystem services. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. https://doi.org/10.5281/ZENODO.3553579

21. Zavaleta C, Berrang-Ford L, Ford J, Llanos-Cuentas A, Cárcamo C, Ross NA, et al. Multiple non-climatic drivers of food insecurity reinforce climate change maladaptation trajectories among Peruvian Indigenous Shawi in the Amazon. PLoS One. 2018. https://doi.org/10.1371/journal.pone.0205714 PMID: 30325951

22. Byskov MF, Hyams K. Epistemic injustice in Climate Adaptation. Ethical theory moral Pract. 2022; 25: 613–634. https://doi.org/10.1007/s10677-022-10301-z

23. Chakraborty R, Sherpa PY. From climate adaptation to climate justice: Critical reflections on the IPCC and Himalayan climate knowledges. Clim Change. 2021; 167: 49. https://doi.org/10.1007/s10584-021-03158-1 PMID: 34456400

24. Petzold J, Andrews N, Ford JD, Hedemann C, Postigo JC. Indigenous knowledge on climate change adaptation: A global evidence map of academic literature. Environmental Research Letters. 2020. https://doi.org/10.1088/1748-9326/abb330

25. Bertilsson J, Soneryd L. Indigenous peoples and inclusion in the green climate fund. Environ Sociol. 2023; 9: 233–242. https://doi.org/10.1080/23251042.2023.2177091

26. Ford J, Maillet M, Pouliot V, Meredith T, Cavanaugh A, Lwasa S, et al. Adaptation and Indigenous peoples in the United Nations Framework Convention on Climate Change. Clim Change. 2016; 139: 429–443. https://doi.org/10.1007/s10584-016-1820-0

27. Grosse C, Mark B. A colonized COP: Indigenous exclusion and youth climate justice activism at the United Nations climate change negotiations. J Hum rights Environ. 2020; 11: 146–170. https://doi.org/10.4337/jhre.2020.03.07

28. Gustafsson M-T, Schilling-Vacaflor A. Indigenous Peoples and Multiscalar Environmental Governance: The Opening and Closure of Participatory Spaces. Glob Environ Polit. 2022; 22: 70–94. https://doi.org/10.1162/glep_a_00642

29. Intergovernmental Panel on Climate Change. Sixth Assessment Report. Glob Warm 15˚C An IPCC Spec Rep impacts Glob Warm 15˚C above pre-industrial levels Relat Glob Greenh gas Emiss pathways, Context Strength Glob response to Threat Clim Chang. 2021. https://doi.org/10.1017/9781009325844.001

30. Carmona R. Climate change governance and Indigenous Peoples participation: an analysis from the Chilean case. Env Polit. 2024; 33: 114–137. https://doi.org/10.1080/09644016.2023.2180911

31. Carmona R, Carril F, Yon R. The Recognition of Indigenous Peoples in Latin American Climate Governance: A Review of Nationally Determined Contributions. Weather Clim Soc. 2023; 15: 195–210. https://doi.org/10.1175/WCAS-D-22-0059.1

32. Satyal P, Byskov MF, Hyams K. Addressing multi-dimensional injustice in indigenous adaptation: the case of Uganda's Batwa community. Clim Dev. 2021; 13: 529–542. https://doi.org/10.1080/17565529.2020.1824888

33. Paredes M. Representación política indígena. Un análisis comparativo subnacional. 1st ed. JNE MINCUL IEP. Lima: IDEA Internacional; 2015.

34. Callirgos JC. Neoliberal discourses and ethnonormative regime in post-recognition Peru: redefining hierarchies and identities. Cult Stud. 2018; 32: 477–496. https://doi.org/10.1080/09502386.2017.1420088

35. Ministerio de Cultura del Peru. ¿Cómo somos? Diversidad cultural y lingüística del Perú: Cartilla Informativa. Lima; 2019. Available: https://centroderecursos.cultura.pe/sites/default/files/rb/pdf/CartillainformativaAILI23.05.19.pdf

36. Ojo-Público. Los retos de los pueblos indígenas para tener sus propios representantes en el Congreso. 2022. Available: https://ojo-publico.com/3395/los-retos-del-los-pueblos-indigenas-para-tener-cuotas-en-el-congreso

37. Merino R. Rethinking Indigenous Politics: The Unnoticed Struggle for Self-Determination in Peru. Bull Lat Am Res. 2020; 39: 513–528. https://doi.org/10.1111/blar.13022

38. Guevara Gil A, Cabanillas Linares C. Mineralizing the Right to Prior Consultation: From Recognition to Disregard of Indigenous and Peasant Rights in Peru. Glob jurist. 2020; 20. https://doi.org/10.1515/gj-2019-0019

39. Schilling-Vacaflor A, Flemmer R. Mobilising Free, Prior and Informed Consent (fpic) from Below: A Typology of Indigenous Peoples' Agency. Int J Minor Gr rights. 2020; 27: 291–313. https://doi.org/10.1163/15718115-02702008

40. Schilling-Vacaflor A, Flemmer R, Hujber A. Contesting the hydrocarbon frontiers: State depoliticizing practices and local responses in Peru. World Dev. 2018; 108: 74–85. https://doi.org/10.1016/j.worlddev.2018.03.019

41. Rondoni C. Extractivism and Unjust Food Insecurity for Peru's Loreto Indigenous Communities. Sustain (Basel, Switzerland). 2022; 14: 6954. https://doi.org/10.3390/su14126954

42. Vila Benites G, Bebbington A. Political Settlements and the Governance of COVID-19: Mining, Risk, and Territorial Control in Peru. J Lat Am Geogr. 2020; 19: 215–223. https://doi.org/10.1353/lag.0.0135

43. Bille Larsen P. "El Perro del Hortelano." Rev Antropol. 2021; 105–128. https://doi.org/10.15381/antropologia.v0i8.19810

44. León, A. y Zúñiga M. La sombra del petróleo Informe de los derrames petroleros en la amazonía peruana entre el 2000 y el 2019. Lima; 2019. Available: http://peru.oxfam.org

45. O'Callaghan-Gordo C, Rosales J, Lizárraga P, Barclay F, Okamoto T, Papoulias DM, et al. Blood lead levels in indigenous peoples living close to oil extraction areas in the Peruvian Amazon. Environ Int. 2021; 154: 106639. https://doi.org/10.1016/j.envint.2021.106639 PMID: 34103202

46. Ministerio de Cultura (Peru). Base de Datos de Pueblos Indigenas u Originarios. 2022 [cited 12 Oct 2022]. Available: https://bdpi.cultura.gob.pe/pueblos/shawi

47. Ministerio del Ambiente (Peru). El Perú y el Cambio Climático. Tercera Comunicación Nacional del Perú a la Convención Marco de las Naciones Unidas sobre el Cambio Climático. Lima; 2016.

48. Dupuits E, Cronkleton P. Indigenous tenure security and local participation in climate mitigation programs: Exploring the institutional gaps of REDD+ implementation in the Peruvian Amazon. Environ policy Gov. 2020; 30: 209–220. https://doi.org/10.1002/eet.1888

49. Zavaleta-Cortijo C, Ford JD, Arotoma-Rojas I, Lwasa S, Lancha-Rucoba G, García PJ, et al. Climate change and COVID-19: reinforcing Indigenous food systems. Lancet Planet Heal. 2020; 4: e381–e382. https://doi.org/10.1016/S2542-5196(20)30173-X PMID: 32777205

50. Tubino FJ, Flores A. La interculturalidad crítica como política de reconocimiento. 1st Ed. Lima; 2020.

51. Walsh C. Interculturalidad crítica y educación intercultural. Construyendo Interculturalidad Crítica. La Paz: Instituto Internacional de Integración del Convenio Andrés Bello; 2010. pp. 75–96.

52. Tubino F. La interculturalidad crítica latinoamericana como proyecto de justicia. Forum Histoiae Iuris. 2019. pp. 3–12.

53. Dussel E. Eurocentrism and Modernity (Introduction to the Frankfurt Lectures). Bound 2. 1993; 20: 65. https://doi.org/10.2307/303341

54. Quijano A. Coloniality of Power and Eurocentrism in Latin America. Int Sociol. 2000; 15: 215–232. https://doi.org/10.1177/0268580900015002005

55. Tubino Arias FJ. Del interculturalismo funcional al interculturalismo crítico. Red Internacional de Estudios Interculturales. Universidad Católica de Chile; 2004. pp. 1–9.

56. Dussel E. Transmodernidad e interculturalidad. Astrágalo Cult la Arquit y la Ciudad. 2016; 21: 31–54. https://doi.org/10.12795/astragalo.2016.i21.02

57. Fairclough N. Critical discourse analysis the critical study of language, second edition. Critical Discourse Analysis The Critical Study of Language, Second Edition. 2013. https://doi.org/10.4324/9781315834368

58. Dijk TA Van. Critical Discourse Analysis. Handb Discourse Anal. 2015; 466–485. https://doi.org/10.1002/9781118584194.CH22

59. Fairclough I. Evaluating policy as argument: the public debate over the first UK austerity budget. Crit Discourse Stud. 2016; 13. https://doi.org/10.1080/17405904.2015.1074595

60. Fairclough N. Analyzing discourse: textual analysis for social research. London: Routledge; 2003.

61. Bacchi C. Problematizations in Health Policy: Questioning How "Problems" Are Constituted in Policies. SAGE open. 2016; 6: 215824401665398. https://doi.org/10.1177/2158244016653986

62. Hajer M, Versteeg W. A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. J Environ policy Plan. 2005; 7: 175–184. https://doi.org/10.1080/15239080500339646

63. Levasseur K, Paterson S, Carvalho Moreira N. Conditional and Unconditional Cash Transfers: Implications for Gender. Basic income Stud. 2018; 13: 1–9. https://doi.org/10.1515/bis-2018-0005

64. Galappaththi EK, Perera CD, Dharmasiri IP, Ford JD, Kodithuwakku SS, Chicmana-Zapata V, et al. Policy responses to COVID-19 in Sri Lanka and the consideration of Indigenous Peoples. Environ Sci Policy. 2023; 144: 110–123. https://doi.org/10.1016/j.envsci.2023.03.008 PMID: 36949900

65. Chicmana-Zapata V, Arotoma-Rojas I, Anza-Ramírez C, Ford J, Galappaththi EK, Pickering K, et al. Justice implications of health and food security policies for Indigenous peoples facing COVID-19: a

qualitative study and policy analysis in Peru. Health Policy Plan. 2023; 38: ii36–ii50. https://doi.org/10.1093/heapol/czad051 PMID: 37995268

66. Ministerio de Agricultura y Riego (Peru). Plan de Gestión de Riesgos y Adaptación al Cambio Climático en el Sector Agrario Período 2012–2021. 2012.
67. Ministerio de la Mujer y Poblaciones Vulnerables (Peru). Plan Nacional de Acción por la Infancia y la Adolescencia 2012–2021—PNAIA 2021. 2012. Available: http://www.mimp.gob.pe/webs/mimp/pnaia/pdf/Documento_PNAIA.pdf
68. Ministerio de Agricultura y Riego (Peru). Estrategia Nacional de Seguridad Alimentaria y Nutricional. 2013. https://doi.org/10.1017/CBO9781107415324.004
69. Ministerio del Ambiente (Peru). Estrategia Nacional ante el Cambio Climático. 2015.
70. Ministerio de Agricultura y Riego (Peru). Estrategia nacional de agricultura familiar 2015–2021. 2015.
71. Ministerio de Agricultura y Riego (Peru). Plan nacional de seguridad alimentaria y nutricional 2015–2021. 2015. Available: http://minagri.gob.pe/portal/download/pdf/seguridad-alimentaria/plan-acional-seguridad-2015-2021.pdf
72. Ministerio del Ambiente (Peru). Estrategia Nacional sobre Bosques y Cambio Climàtico. 2016. https://doi.org/10.1017/CBO9781107415324.004
73. Ministerio del Ambiente (Peru). Lineamientos para la Gestión Integrada del Cambio Climático (RM No. 090–2016). Lima; 2016. Available: http://www.minam.gob.pe/wp-content/uploads/2016/04/RM-N°-090-2016-MINAM.pdf
74. Ministerio del Ambiente (Peru), Ministerio de la Mujer y Poblaciones Vulnerables (Peru). Plan de Acción en Género y Cambio Climático. Lima; 2016. Available: https://www.minam.gob.pe/cambioclimatico/wp-content/uploads/sites/11/2015/12/PLAN-Género-y-CC-16-de-JunioMINAM+MIMP.pdf
75. Ministerio de Salud (Peru). Aprueban la Política Sectorial de Salud Intercultural. El Peruano. 1 Apr 2016: 582230–582240. Available: https://busquedas.elperuano.pe/normaslegales/aprueban-la-politica-sectorial-de-salud-intercultural-decreto-supremo-n-016-2016-sa-1363166-6/
76. Ministerio de Desarrollo e Inclusión Social (Peru). DS N° 003-2016-MIDIS: Aprueba la Estrategia de Acción Social con Sostenibilitad. El Peruano. 2016. pp. 587316–587345.
77. Ministerio de Desarrollo e Inclusión Social (Peru). Lineamientos para la gestión articulada intersectorial e intergubernamental orientada a promover el desarrollo infantil temprano—DS N° 010-2016-MIDIS. 2016.
78. Ministerio de Desarrollo e Inclusión Social (Peru). Plan sectorial para contribuir con la reducción de la Desnutrición Crónica Infantil y Anemia en niñas y niños menores de 36 meses, 2017–2021. 2017.
79. Ministerio de Salud (Peru). Plan Nacional para la reducción y control de la anemia Materno Infantil y la Desnutrición Crónica Infantil en el Perú: 2017–2021. 2017. Available: http://www.minsa.gob.pe/
80. Ministerio de Desarrollo e Inclusión Social (Peru). Plan Multisectorial de Lucha contra la Anemia. 2018. Available: http://www.midis.gob.pe/dmdocuments/plan-multisectorial-de-lucha-contra-la-anemia-v3.pdf
81. Ministerio de Agricultura y Riego (Peru). Plan Nacional de Agricultura Familiar 2019–2021. El Peruano. 2019. pp. 10–38.
82. Gobierno del Peru. Contribuciones determinadas a nivel nacional del Perú. 2020.
83. Ministerio del Ambiente (Peru). Plan Nacional de Adaptación al Cambio Climático del Perú: un insumo para la actualización de la Estrategia Nacional ante el Cambio Climático. Http://WwwGobPe/Minam. 2021. Available: http://www.gob.pe/minam
84. Ministerio de Desarrollo e Inclusión Social (Peru). Política Nacional de Desarrollo e Inclusión Social al 2030. Lima; 2022. Available: https://cdn.www.gob.pe/uploads/document/file/4090334/PNDISal2030.pdf.pdf
85. Gobierno del Peru. Perú: Tercer Informe Bienal de Actualización ante la Convención Marco de las Naciones Unidas sobre el Cambio Climático. Lima; 2023.
86. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006; 3: 77–101. https://doi.org/10.1191/1478088706qp063oa
87. Ministerio de Cultura (Peru). Política nacional para la transversalización del enfoque intercultural. Minist Cult. 2015.
88. Ministerio del Ambiente (Peru). Ley Marco sobre Cambio Climático LEY N 30754. 2018.
89. Ministerio del Ambiente (Peru). Decreto Supremo que aprueba el Reglamento de la Ley N° 30754, Ley Marco sobre Cambio Climático. El Peruano. 2019. pp. 2–21.

90. Shea MM, Thornton TF. Tracing country commitment to Indigenous peoples in the UN Framework Convention on Climate Change. Glob Environ Chang. 2019; 58: 101973. https://doi.org/10.1016/j.gloenvcha.2019.101973

91. Iocca L, Fidélis T. Is There a Place for Indigenous Peoples and Local Communities in Climate Change Policy and Governance? Learnings from a Brazilian Case. Land. 2023. https://doi.org/10.3390/land12091647

92. Ford JD, Cameron L, Rubis J, Maillet M, Nakashima D, Willox AC, et al. Including indigenous knowledge and experience in IPCC assessment reports. Nat Clim Chang. 2016; 6: 349–353. https://doi.org/10.1038/nclimate2954

93. Carmona R, Reed G, Ford J, Thorsell S, Yon R, Carril F, et al. Indigenous Peoples' rights in national climate governance: An analysis of Nationally Determined Contributions (NDCs). Ambio. 2024; 53: 138–155. https://doi.org/10.1007/s13280-023-01922-4 PMID: 37819439

94. Pickering K, Galappaththi EK, Ford JD, Singh C, Zavaleta-Cortijo C, Hyams K, et al. Indigenous peoples and the COVID-19 pandemic: a systematic scoping review. Environ Res Lett. 2023;18. https://doi.org/10.1088/1748-9326/acb804 PMID: 36798651

95. Kerr E. "We are not drowning, we are fighting": A critical examination of the climate change adaptation law and policy framework in the Pacific Islands. Auckl Univ Law Rev. 2022; 28: 47–77. Available: https://heinonline.org/HOL/P?h=hein.journals/auck28&i=63.

96. Whyte K. Against crisis epistemology. Routledge Handbook of Critical Indigenous Studies. Abingdon, Oxon; New York, NY: Routledge, 2021.: Routledge; 2020. pp. 52–64. https://doi.org/10.4324/9780429440229-6

97. Stefanelli RD, Castleden H, Harper SL, Martin D, Cunsolo A, Hart C. Experiences with integrative Indigenous and Western knowledge in water research and management: a systematic realist review of literature from Canada, Australia, New Zealand, and the United States. Environ Rev. 2017; 25: 323–333. https://doi.org/10.1139/er-2016-0114

98. Makondo CC, Thomas DSG. Climate change adaptation: Linking indigenous knowledge with western science for effective adaptation. Environ Sci Policy. 2018; 88: 83–91. https://doi.org/10.1016/j.envsci.2018.06.014

99. Monfrinotti Lescura VI. El trasfondo ontológico de la modernidad occidental: Revisión crítica de la escisión naturaleza/cultura. EN-CLAVES del Pensam. 2021; e422. https://doi.org/10.46530/ecdp.v0i30.422

100. Escobar A. Territorios de diferencia: la ontología política de los "derechos al territorio." Cuad Antropol Soc. 2015; 25–38. Available: https://www.redalyc.org/articulo.oa?id=180942587002