INDIGENOUS PERSPECTIVES ON SOCIAL-ECOLOGICAL SYSTEM
RESILIENCE: A CASE STUDY FROM THE PERUVIAN AMAZON

by

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Indigenous Perspectives on Social-Ecological System Resilience: A Case Study from the
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Arts at George Mason University

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Bachelor of Arts
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DEDICATION

To the Maijuna, *nui chíbàyì yì oijuna.*

ACKNOWLEDGEMENTS

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Social-Ecological System...SES
Traditional Ecological Knowledge...TEK
Maijuna-Kichwa Regional Conservation Area .... MKRCA
Maijuna-Kichwa Regional Conservation Area Social-Ecological System .... MKRCA SES
Proyecto Especial Binacional de Desarrollo Integral de la Cuenca del Rio Putumayo.......PEDICP
Community-Based Participatory Research .... CBPR
Federación de Comunidades Nativas Maijuna..FECONAMAI
Federación de Comunidades Nativas del Medio Napo, Curarayy Arabela........FECONAMNCUA

ABSTRACT

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Thesis Director: Dr. Michael P. Gilmore

Humanity is a driving force in creating change, including within social-ecological systems. Resilience thinking has emerged as a means of analyzing and influencing these changes and has the potential to be particularly useful to Indigenous Peoples. However, Indigenous perspectives are largely lacking on social-ecological system resilience. Our study provides insight into Indigenous perspectives on social-ecological system resilience through the case study of the Maijuna and Kichwa Indigenous Peoples and their ancestral lands in the Maijuna-Kichwa Regional Conservation Area ecosystem. Our study is centered on the proposed Bellavista – Mazán – Salvador – El Estrecho megadevelopment road project, a disturbance presenting the capacity to generate profound social-ecological system change. Our findings highlight the interconnections between the Maijuna-Kichwa Regional Conservation Area social-ecological system and the Maijuna and Kichwa cultures, including the impact of culture on system resilience. Additionally, we

demonstrate the present vulnerability of the system and provide priority objectives for maintaining and building resilience. By integrating Indigenous perspectives, our study bridges diverse knowledge systems and facilitates the discovery of solutions to the complex social-ecological challenges faced by Indigenous Peoples and other stakeholders working to build resilience in Indigenous social-ecological systems.

INTRODUCTION

Humanity is a driving force in creating change, with globalization connecting and profoundly influencing cultures, economies, and governance, and impacting local environments up to the level of the biosphere (Folke, 2006; Steffen, 2005; Steffen et al., 2011). These nexuses of humans and nature comprise coupled social-ecological systems (SESs) (Berkes & Folke, 1998). SESs are complex adaptive systems (Folke, 2006; Preiser et al., 2018), with interdependence of all phenomena within non-linear, dynamic processes, and where human societies are fundamentally embedded in natural systems (Folke, 2016; Folke et al., 2002). Delineation between social and ecological subsystems is entirely arbitrary (Berkes & Folke, 1998), making it unreasonable, even impossible, to analyze them separately (Folke et al., 2010). Links between subsystems include knowledge and governance (Berkes, 2017). Knowledge may involve Traditional Ecological Knowledge (TEK), the cumulative body of knowledge, practice, and belief, evolved by adaptive processes and passed down through intergenerational cultural transmission (Berkes, 1999; Berkes et al., 2003), held and practiced by Indigenous Peoples or Western modern scientific knowledge applied by government resource managers (Berkes, 2017). Governance can occur at multiple scales and includes management and policy domains (Berkes, 2017; Folke, 2016). Drivers of an SES's future include external shocks and disturbances (e.g., ecological, social, or economic), the

vision stakeholders have for the future, including hopes and fears, and the set of policies that may be established (Walker et al., 2002). In resilient systems, disturbances have the potential to generate innovation and the forging of new pathways, while in vulnerable systems, even small-scale disturbances can have dramatic consequences (Adger, 2006; Folke, 2006).

The term "resilience" is used in many fields (e.g., ecology, psychology, political science), each with a slightly different way of defining the concept (Folke, 2016). In the SES resilience literature, resilience is defined as "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker et al., 2004, p. 2). Resilience is not an inherently positive attribute (e.g., authoritarian dictatorships and salinized landscapes are resilient) (Walker, 2020), and it may prove challenging to transform a resilient system into a more desirable one (Folke, 2006; Walker et al., 2004). Resilience of SESs is described as the capacity of an SES to sustain human well-being in the face of change by buffering shocks and adapting or transforming in response to change (Biggs et al., 2015). Adaptability, the capacity of actors in a system to influence resilience through collective action (Folke, 2006; Walker et al., 2004), refers to human actions that sustain current system trajectories (Folke, 2016). The adaptive capacity of a system is its ability to maintain processes despite changing internal demands or external pressures (Carpenter & Brock, 2008; Folke et al., 2010). Vulnerability, which can be interpreted as an antonym of resilience (Robards & Alessa, 2004), is the degree to which a system is susceptible to and unable to cope with adverse effects (Adger, 2006). Vulnerable SESs

have lost resilience, implying a loss of adaptability (Folke, 2006), at which point the deliberate transformation of a system is sometimes necessary for it to provide or continue providing what is of fundamental value to society (Walker, 2020). This transformation often involves shifts in perception, patterns of stakeholder interactions (e.g., leadership, power relations), and organizational or institutional arrangements (Folke et al., 2010).

Resilience thinking provides a means of understanding and addressing the complexities of SESs (Folke, 2006, 2016; Folke et al., 2010), including the capacity of systems to adapt or transform in the face of change (Berkes et al., 2003; Folke, 2006, 2016). It has become an important interdisciplinary framework for the analysis, management, and governance of SESs (Berkes et al., 2003; Biggs et al., 2015; Folke, 2006, 2016; Folke et al., 2010; Walker et al., 2002, 2004; Walker & Salt, 2006), and has the ability to bring stakeholders, practitioners, and policy-makers from diverse domains together to find integrated solutions to interconnected social-ecological challenges (Baggio et al., 2015; Brown, 2014). As Indigenous Peoples around the world have a long history of being impacted by, adapting to, and resisting social-ecological change, resilience thinking represents a potentially useful framework for Indigenous Peoples and their allies seeking to influence change, including how to best respond to the shocks and disturbances that have damaged Indigenous lands, societies, and cultures (Berkes et al., 2003). Aspects of resilience thinking have previously been explored within the context of Indigenous SESs (e.g., see Apgar et al., 2015; Berkes & Jolly, 2001; Mulrennan & Bussières, 2018; Robards & Alessa, 2004; Rotarangi & Stephenson, 2014), however,

within the resilience literature, there is a lack of inclusion of Indigenous perspectives on SES resilience.

Given this gap in the literature, this paper – belonging as a shared product to the Maijuna, Kichwa, and cited authors – explores Indigenous perspectives on SES resilience through a case study of the Maijuna and Kichwa Indigenous Peoples and their ancestral lands located within the Maijuna-Kichwa Regional Conservation Area (MKRCA) ecosystem, referred to as an SES hereafter as the MKRCA SES. Our case study is centered on the proposed Bellavista – Mazán – Salvador – El Estrecho megadevelopment road project, which has the capacity to generate profound social-ecological change throughout the MKRCA SES. Specifically, this study explored the Maijuna and Kichwa peoples' perspectives on the MKRCA SES, including the place of culture within the system, and how the proposed megadevelopment project may impact the MKRCA SES and its resilience.

Case Study

The MKRCA SES

The Maijuna and Kichwa peoples live in the northeastern Peruvian Amazon, in the Department of Loreto, within the Napo-Putumayo corridor, a region containing the ancestral lands of their peoples (see Fig. 1). With a population of approximately 600, the Maijuna are one of the smallest and most vulnerable Indigenous groups in Peru (Gilmore et al., 2010). There are four Maijuna communities: Sucusari (Orejones) along the Sucusari River, Nueva Vida and Puerto Huamán along the Yanayacu River, and San Pablo de Totoya (Totolla) along the Algodón River (Gilmore et al., 2010). The Maijuna

are legally and officially represented by the *Federación de Comunidades Nativas Maijuna* (FECONAMAI). The Kichwa represented in this study live in 16 communities along the Napo River, with a total population of approximately 2,300: Berlín, Cerro de Pasco, Cruz de Plata, Fortaleza, Morón Isla, Nueva Argelia, Nueva Libertad, Nueva Unión, Nuevo Antioquía, Nuevo Floresta, Nuevo San Roque, Puerto Arica, San Antonio de Lancha Posa, San Francisco de Pinsha, San Lorenzo, and Tutapishco (Chirif, 2010). These communities are legally and officially represented by the *Federación de Comunidades Nativas del Medio Napo, Curaray y Arabela* (FECONAMNCUA). Several of the Maijuna and Kichwa communities have been recognized as *Comunidades Nativas*, or Native Communities, by the Peruvian government and have been granted title to land surrounding their communities (see Fig. 1).
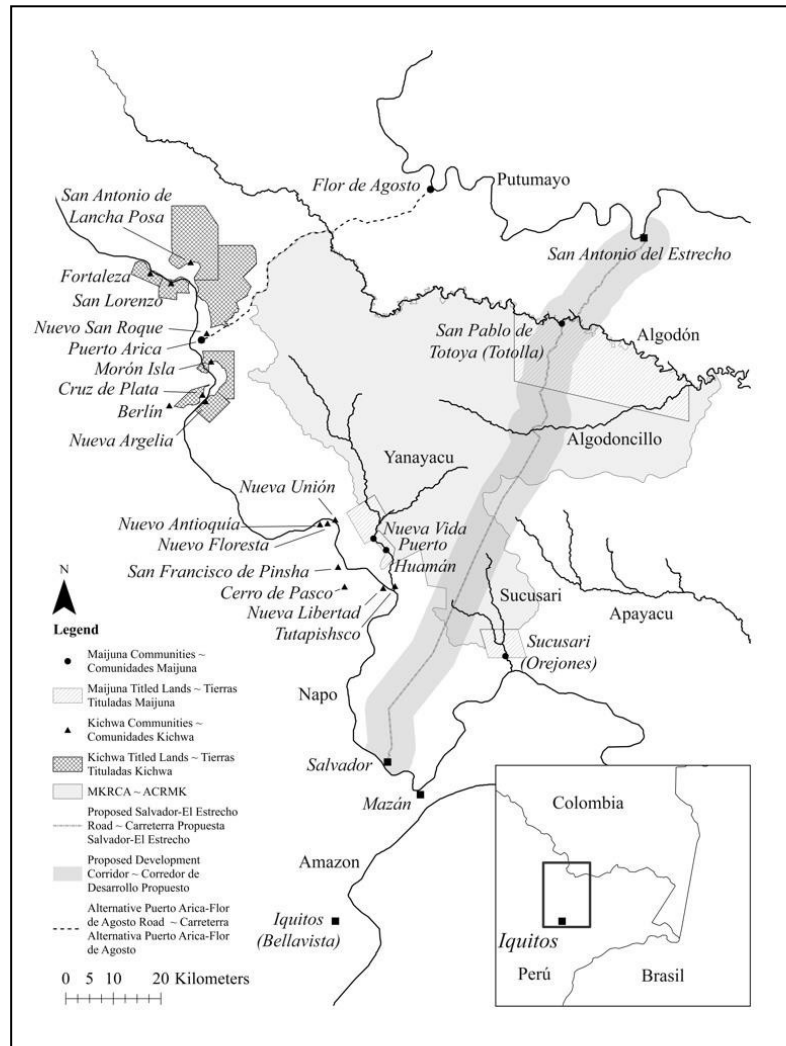
Figure 1: Map of Study Area (produced by Brian Griffiths).

In 2007, the Maijuna initiated the process of pushing for the creation of a regional

conservation area to protect their ancestral lands, which the Kichwa later joined.

Established in 2015, the MKRCA (see Fig. 1) is co-managed by the Regional

Government of Loreto and the Maijuna and Kichwa peoples (Ministerio del Ambiente,

2015; Young & Gilmore, 2017). It protects 391,039.82 ha of their ancestral territory and

is comprised of intact and undisturbed primary rainforest. It contains extraordinary

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biological diversity: populations of rare and threatened species; a variety of habitat types (e.g., upland forests, periodically flooded forests, previously unknown and unique high terrace forests); and the intact headwaters of several rivers supplying the Napo and Putumayo Rivers (Gilmore et al., 2010; Young & Gilmore, 2017). Additionally, the MKRCA ecosystem contains some of the highest aboveground carbon stocks in Peru (Asner et al., 2014), making it important in the fight against global climate change and critical for local climate regulation and regional resilience to El Niño (Baker & Spracklen, 2019; Marengo et al., 2018).

The Maijuna and Kichwa rely on their ancestral lands, including the MKRCA, to sustain and nourish their communities. They employ a variety of subsistence strategies (e.g., hunting, fishing, swidden-fallow agriculture, gathering forest products) and generate income by selling game meat, fish, domesticated animals, and a variety of agricultural and non-timber forest products (Gilmore et al., 2010). The protection of the MKRCA ecosystem helps ensure the survival of the Maijuna and Kichwa peoples, including their cultural traditions and subsistence-based lifestyles, which are dependent on an intact and healthy ecosystem (Gilmore et al., 2010).

Road Development in the MKRCA SES

The MKRCA SES faces potential forced change due to a proposed megadevelopment road project. The Bellavista – Mazán – Salvador – El Estrecho project is a binational development venture aimed at connecting the Peruvian and Colombian Amazon in support of development and national security (Gilmore et al., 2010). The *Proyecto Especial Binacional de Desarrollo Integral de la Cuenca del Rio Putumayo*

(PEDICP), an institution focused on the socio-economic development and integration of this border region, is the entity managing this megadevelopment project. The fourth and final phase of this project, the Salvador – El Estrecho road, includes the construction of an approximately 140 km road between the Peruvian towns of Salvador, located along the Napo River, and San Antonio del Estrecho (El Estrecho), located along the Putumayo River (see Fig. 1). The road is to be accompanied by a 10 km wide development corridor, an area that will be primarily focused on oil palm plantations (Gilmore et al., 2010; Gilmore & Young, 2012). The road and development corridor pass directly through the heart of the MKRCA, as well as Maijuna titled lands.

Road development is the driver of a multitude of detrimental ecological, social, and cultural changes (e.g., see Alamgir et al., 2017; Barber et al., 2014; Gallice et al., 2019; Kleinschroth & Healey, 2017; Laurance et al., 2009; Oliveira et al., 2019; Wemple et al., 2018), and for Indigenous groups living in remote areas, road development can have irreversible impacts (Alamgir et al., 2017). Roads facilitate easier access to Indigenous ancestral lands by outsiders and the subsequent deforestation, degradation, and colonization of their territories over time, which damages their cultures, livelihoods, and community wellbeing (Alamgir et al., 2017; Clements et al., 2018; Gallice et al., 2019; Laurance et al., 2009). Furthermore, roads have decimated some Indigenous populations and cultures due to introduced diseases and voluntary or forced migration (Alamgir et al., 2017). While studies have shown roads can provide Indigenous Peoples with greater access to markets and increased economic opportunities (Adam et al., 2012; Clements et al., 2018), more often than not, for small community stakeholders, road

development does not increase market access beyond their region and instead pushes communities further into poverty (Oliveira et al., 2019).

The Maijuna and Kichwa are adamantly against this proposed megadevelopment project and have been struggling for years to prevent the detrimental changes it would spark in the MKRCA SES (Gilmore et al., 2010). Despite this stance, the Peruvian government has not properly consulted the Maijuna or Kichwa on the project (Young & Gilmore, 2017), as required by national law (Ministerio del Ambiente, 2011). Information on the project is made difficult or impossible to find, which further marginalizes and disempowers the Maijuna and Kichwa, and maintains patterns of oppression (e.g., colonialism, cultural imperialism) that have threatened the resilience of Indigenous SESs for centuries, devastating Indigenous ancestral lands, endangering Indigenous cultures, and silencing Indigenous Peoples.

METHODS

Methodological Approach

Research design, data collection, and analysis procedures were informed by Indigenous research methodologies discussed by Chilisa (2012) and constructed around community-based participatory research (CBPR) methods (Chilisa, 2012; Israel et al., 1998; LaVeaux & Christopher, 2009) within a case study framework (Creswell & Poth, 2018; Stake, 2005; Yin, 2018). Case study is a qualitative approach in which a real-life, contemporary bounded system (a case) is explored over time through detailed, in-depth data collection involving multiple information sources (Creswell & Poth, 2018). The system may be represented as a concrete unit (e.g., individual or organization) or an intangible entity (e.g., relationship or process) (Creswell & Poth, 2018). Case study is common in SES analysis (de Vos et al., 2019; Partelow, 2018), and, in the context of this research, the MKRCA SES represents the case relationship or process (Creswell & Poth, 2018) – given that it is a spatially and temporally bounded system.

CBPR is a subset of action research, a form of research uniting theory and practice with the goal of taking action to create change (Chilisa, 2012; Mayan, 2009). Key principles of CBPR salient to this study include facilitating collaborative partnerships, integrating knowledge and action for mutual benefit of all partners, and promoting a co-learning and empowering process that addresses social inequalities(Israel et al., 1998). LaVeaux and Christopher (2009) recommend applying an additional set of principles when conducting CBPR with Indigenous communities including

acknowledging historical experiences with research, recognizing tribal sovereignty, understanding tribal diversity and its implications, interpreting data within the cultural context, and utilizing Indigenous ways of knowing. Based on this approach, our study situated the Maijuna and Kichwa as research partners, placed Indigenous concepts on par with Western ones, and accepted that knowledge resides within a unique cultural context (Chilisa, 2012; LaVeaux & Christopher, 2009). Additionally, as part of the participatory and community-based nature of this project, and at the request of the Maijuna and Kichwa, we provided assistance in developing a joint Maijuna-Kichwa community position statement regarding the megadevelopment project.

Positionality

Research is personal, and the lived experiences of researchers and interpretations of these experiences greatly influence our values, research questions, ways of knowing, and knowledge we construct (England, 1994; Hoskins, 2015). Thus, our identities have affected the research process, including how data was collected, what information was found to be relevant, and how it was analyzed (Hoskins, 2015). However, our methodological approach and close ties to the MKRCA SES allowed for engagement with the Maijuna and Kichwa in a manner that is socially, culturally, and ethically appropriate and sensitive to the wishes of their peoples.

Participants

Participants (*n*=42), recruited through purposeful sampling (Creswell & Poth, 2018), identified as Maijuna or Kichwa; were currently living in Maijuna or Kichwa communities; and were comprised of community leaders, including elected board

members of FECONAMAI and FECONAMNCUA, Elders, and other civically engaged community members. August 2019 focus groups consisted of Maijuna (*n*=29) and Kichwa (*n*=3) participants, and the January 2020 session consisted of Maijuna (*n*=26) participants. Both men (*n*=28) and women (*n*=14) participated, with an average participant age of 46.2 years, and a range of 21 to 68 years. Field sessions were conducted in Spanish with portions translated into Máíjɨ̀kɨ̀, the traditional language of the Maijuna. A bilingual team member provided translation between Spanish and English, with Maijuna Elders conducting Máíjɨ̀kɨ̀ translations.

Data Collection

Data was collected in August 2019 and January 2020 in the Maijuna community of Nueva Vida over the course of two, multi-day workshops. All aspects of the study were approved by George Mason University's Institutional Review Board, project #1449708-1. Before joining the study, prior informed consent was obtained from all participants. Participants were provided with consent forms in Spanish, and oral translations were provided in Spanish and Máíjɨ̀kɨ̀. All participants were given the opportunity to ask questions of the researchers. Data sources included participant observation and focus groups (Mayan, 2009), including documents produced during the focus group process, such as focus group worksheets and discussion group worksheets. Focus groups consisted of three to seven individuals and contained participants with different identities and backgrounds (e.g., gender, age, positional leadership roles, native language, community and familial membership). Maijuna and Kichwa participants were

in separate focus groups to allow for each Indigenous group's data to remain independent.

The primary objective of the first field session was to investigate the research inquiry discussed above. The workshop included several days of focus groups and discussion of how to best represent the perspectives of the Maijuna and Kichwa in an official community position statement (Newsom & Haynes, 2017). Focus group questions explored the Maijuna and Kichwa's perspectives on their ancestral lands, views on the megadevelopment project, and vision for the future of their lands. Each session was dedicated to a single question/set of questions and involved time thinking and/or writing about the question individually, discussing and writing about it in focus groups, and presenting the results to the entire workshop. Results were discussed as a whole and responses documented on a collaborative discussion group worksheet. Between field sessions, a draft community position statement was written using data from discussion group worksheets.

The primary objectives of the second field session were to employ peer debriefing and member-checking to increase credibility and validate the data (Chilisa, 2012) from the August session and to hold additional focus group sessions. As a part of this process, study participants reviewed, revised, and finalized the community position statement. Additional focus group questions explored Maijuna perspectives on their culture, relationships between their ancestral lands and culture, and whether the government should recognize these relationships. The final community position statement was translated into Máíjɨ̱kì and Kichwa. A literature review (Mayan, 2009) focused on road

development in the Peruvian Amazon was conducted to identify data based on Western

modern science to serve as support for the perspectives of the Maijuna and Kichwa. This

data was utilized to develop a fact sheet to augment the position statement. Our plan is

for the community position statement to be shared with relevant Peruvian government

authorities and other key stakeholders in the next 12-18 months to help the Maijuna and

Kichwa influence change in the MKRCA SES.

Data Analysis

Data was analyzed using qualitative thematic analysis methods as described by

Miles et al. (2020). Focus group worksheets and discussion group worksheets were

evaluated during data analysis, with participant observation drawn on in the final phase of

analysis and integrated into results. Responses were transcribed, translated from Spanish,

and the analysis conducted in English. All coding was completed using

HyperRESEARCH qualitative software version 4.5.0. Once data saturation (Miles et al.,

2020) was reached, themes were finalized and quotes selected to best illustrate those

themes. Key themes included (a) Connections Between Land, Society, and Culture in the

MKRCA SES, (b) Colonization, Land Dispossession, and Environmental Destruction,

and (c) Exclusion from Political Processes. At the end of the study, we plan to share the

original data and final analysis with the Maijuna and Kichwa in a culturally and

linguistically appropriate format (Chilisa, 2012).

RESULTS

This study provides a window into the perspectives of the Maijuna and Kichwa on the long-standing connections and interdependencies between their cultures and peoples and the MKRCA ecosystem, and also provides insight into how the resilience of the MKRCA SES may be impacted by the proposed Bellavista – Mazán – Salvador – El Estrecho megadevelopment road project.

Connections Between Land, Society, and Culture

When asked about the importance of their lands and culture, one Maijuna group replied, "Ancestral land is necessary for the practice of culture…and to value different natural resources in our territory." Another group shared, "Our lands are very important because we survive from them, and at the same time we keep our culture alive in the community and continue to value traditional Maijuna customs."

To the Kichwa, their ancestral lands are important because they "have natural resources…food, medicine, the market, mineral licks." Several Maijuna echoed this sentiment: "The forest is our survival, like a market for our family consumption"; "Our mother earth is important because we find traditional medicines, such as *chiric sanango*, *ajo sacha*, *uña de gato*"; "Our ancestral land is very important because our ancestors left us many rich resources, such as plants – medicinal, vegetables, *ayahuasca*, *chiric sanango*, *pei*, *ajo sacha*." According to another Maijuna group, "The land is important to do our planting of yuca, plantains, and for the reforestation of different felled trees, *aguaje*, *chambira*, and other species." As specified by one Maijuna group, ancestral lands

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are important "to protect our culture, native language, traditional dances, and stories." According to another Maijuna group, "The culture and traditions or customs are very important for us to continue maintaining and practicing so as not to lose our cultural identity in our Maijuna communities."

When asked about their vision for the future, the Kichwa stated they wish "to continue making use of our ancestral territories, to have an abundance of resources…and to give added value to our resources." As detailed by one Maijuna group,

> Our vision for the future is to commit ourselves to taking care of the territory that belongs to us and we will have enough. To have more abundant animals, plants, timber, fish, birds, primates, caiman, etc. To continue to maintain the headwaters with great care so as not to contaminate them. The Maijuna people in their communities have to consume, in a sustainable manner, all of the species they have in their environment.

In echo, another Maijuna group stated they hope their "sons and daughters…manage the forest rationally" and that they will continue to "recover and preserve their culture." To the Maijuna, "The wise men and women are the key people because they are the ones who have the ancestral knowledge in the Maijuna communities," and "The MKRCA is our bank where we educate our children." The Maijuna shared, "We will fight to defend our territory where our grandfathers and grandmothers lived, where they had their Maijuna cultural celebrations, such as *pijuayo verde* and *yuca verde*, consumed *ayahuasca*, and also made *chambira* crafts and [pottery]." As another Maijuna group emphasized,

Our ancestral lands are important because our families live here and our ancestors

lived here for many years, then they died defending their territories, just as those

of us who live today are protecting nature for the good of our families.

To the Maijuna, "It is very important to maintain our culture and customs because we are

the guardians of our ancestral forests."

Colonization, Land Dispossession, and Environmental Destruction

The Maijuna and Kichwa are vehemently against the construction of the

megadevelopment project and the changes it could bring to their communities. As the

Maijuna clarified, "We are not against development, we are against unsustainable

development." On the colonization and dispossession of their lands, the Kichwa stated,

"We do not want [outsiders] to invade us." According to one Maijuna group, "Many

outsiders are going to enter and take possession of our territory." Additionally, the

Maijuna shared, "We are not in agreement [with the road] because there will be land

negotiations by the local and central government." The Maijuna see colonization as a

significant threat "because outsiders are going to invade our ancestral territory…and we

[will] lose our ecosystem, damaging our culture, and we will experience problems such

as narcotrafficking and illegal activities, assaults and violence, corruption." They add,

"We do not want more deforestation and degradation within the MKRCA," and

underscore that as "The road passes through the MKRCA, it can destroy our forest,

animals, timber trees, and spoil the environment, causing disease and violence (conflict)."

The Maijuna suggested a lack of food will eventually be a problem, saying, "There will

be suffering by the Maijuna and over time they will not find animals for their daily consumption."

Exclusion from Political Processes

When asked whether their peoples had been consulted by the government on the megadevelopment project, all focus groups responded that no official government consultation had taken place. When asked to clarify about a reported consultation, participants stated it was said to have taken place in San Pablo de Totoya, possibly as far back as 2001, but, according to the Maijuna, it was falsified. Responses varied on why there had been no proper consultation to date by the government as required by law.

One Maijuna group expressed, "The government does not care because…it only wants our Maijuna and Kichwa territory," with another Maijuna group stating this was "because the government is not interested in the Maijuna and Kichwa Indigenous Peoples, the government is only interested in entrepreneurs to negotiate lots of land." According to another Maijuna group, the government "wanted to make their own ambitious projects, and perhaps they do not think that there are people living in this territory." While another Maijuna group maintained, "The [government] has not come because they think that they are going to be denied by the communities, but the [government's] obligation is to reach out to the Maijuna and Kichwa peoples for consultation."

The Kichwa maintain the government "never took into account those who made use of that part of the forest," and to the government, "Indigenous Peoples are a nuisance." In the eyes of the Maijuna, "The [government] ignores the existence of

Indigenous Peoples." When asked about the importance of the government recognizing the relationship between Indigenous Peoples and their lands, one Maijuna group stated,

> The government needs to know where Maijuna territory is so that it does not build the road where my Maijuna and Kichwa brothers live. The government does not think that Maijuna people live in this territory, they think that only animals live here.

According to another Maijuna group, "The government and other people must acknowledge our land and our culture…The government does not listen to our requests, they do not know where the Maijuna live." As stated by one Maijuna group, "We are the old original guardians and to be respected." According to another Maijuna group, "Ancestral lands are considered to be the heritage of the Maijuna peoples, it is important for the communities to have the government recognize the lands and one's culture."

The Maijuna and Kichwa are united in the view that their rights have been violated. The Kichwa asserted, "The ancestral rights of Indigenous Peoples are not being respected," and "The law of prior consultation and ILO Convention 169 are not being applied." According to the Maijuna, "The government must recognize and value our land and culture for having the relationship between man and nature because we continue to practice and value the Maijuna culture and also, we have rights as native people." When asked about their recommendations regarding a consultation process the Maijuna stated,

> The [government] does not know where Maijuna territory is and where the four Maijuna communities live, we are forgotten by the state, that is why we ask

government representatives to visit our communities, so that they understand that there are people living in our ancestral territory.

According to the Maijuna, "When you want to do public investment work, you want it to have been through prior consultation." Ultimately, both the Maijuna and Kichwa want the government to "observe prior consultation so that they listen to and consider our concerns so our rights are not violated."

Our study has revealed important findings regarding the interconnections between the Maijuna and Kichwa people, their traditional cultures, and the MKRCA ecosystem. The Maijuna and Kichwa confirmed they are strongly opposed to the megadevelopment project, as it threatens the resilience of the MKRCA SES, and that their peoples are being excluded from important political processes. In the following discussion section, we aim to make meaning of these results and provide recommendations for future research and practice.

DISCUSSION

As resilience thinking approaches often engage in analysis from outside a system (Crane, 2010), Indigenous perspectives are largely lacking in the SES resilience literature. In neglecting to engage Indigenous perspectives, resilience scholars are missing a fundamental component essential to the analyses of Indigenous SESs: the experiences, TEK, and worldviews of the Indigenous groups living in these complex systems. Incorporating Indigenous perspectives into SES resilience analyses helps to bridge diverse knowledge systems and facilitates the discovery of solutions to the complex social-ecological challenges faced by the stakeholders of Indigenous SESs.

In the MKRCA SES, resilience thinking approaches can help facilitate effective collaboration among stakeholders, including full participation of the Maijuna and Kichwa peoples in the conservation and management of the MKRCA ecosystem, and support the Maijuna and Kichwa as they pursue their vision for the future. Thus, our study integrated and emphasized the unique cultural lenses applied by those living within the MKRCA SES in an effort to magnify their voices and demonstrate the significant and valuable evidence their perspectives provide for the analysis, management, and governance of the MKRCA SES. Our study presents two distinct findings based on knowledge co-produced with the Maijuna and Kichwa peoples: (a) the vital place of culture within the MKRCA SES and MKRCA SES resilience, and (b) two priority objectives for maintaining and building resilience within the MKRCA SES.

Perspectives on the Place of Culture

Our study provides further evidence of the long-standing connections and interdependencies between the Maijuna and Kichwa peoples and the MKRCA ecosystem, including the place of culture within the MKRCA SES. As demonstrated by the voices of the Maijuna and Kichwa shared above, their peoples are dedicated to conserving their lands, resources, and cultures for current and future generations, as these are fundamental to the survival, wellbeing, and identity of their peoples.

From the perspectives of the Maijuna and Kichwa, their cultures are a vital part of the MKRCA SES and are profoundly interconnected with the MKRCA ecosystem, including the sustainable management and protection of this region. These relationships are maintained and passed down intergenerationally through cultural processes reliant on the use of the MKRCA ecosystem itself. The Maijuna and Kichwa see themselves as the "guardians of [their] ancestral forests," and view their ability to continue practicing their cultures as a means of protecting the MKRCA ecosystem from sources of change that threaten the entire MKRCA SES, including unsustainable resource extraction and development. Due to these connections and dependencies, it is impossible for the Maijuna and Kichwa to fully separate the concepts of nature and culture, as they are interwoven throughout all aspects of their worldviews and lifeways. Therefore, just as it is unreasonable to analyze coupled social and ecological subsystems independently (Folke et al., 2010), based on the perceptions of the Maijuna and Kichwa, analyses of cultural subsystems cannot be separated from those of the SESs within which they occur.

Additionally, it is difficult for the Maijuna and Kichwa to comprehend the inability of outsiders (e.g., politicians, scientists, NGO personnel) to appreciate the critical roles their cultures play in the MKRCA SES, including the conservation and adaptive co-management of the MKRCA ecosystem. They see this lack of understanding as a major threat to the resilience of their cultures, and thus the MKRCA SES as a whole. The non-linear, dynamic, co-evolving relationships between the MKRCA ecosystem and the Maijuna and Kichwa cultures make their resilience co-dependent – a vulnerability in one subsystem represents a threat to all subsystems. Therefore in the MKRCA SES, ecological and social subsystems rely on the cultural processes of the Maijuna and Kichwa to maintain their resilience, and vice versa.

Perspectives on MKRCA SES Resilience

Our study also indicates that the resilience of the MKRCA SES is significantly threatened by the impending megadevelopment road project and the social exclusion of the Maijuna and Kichwa peoples. As demonstrated by their viewpoints on the megadevelopment project, the Maijuna and Kichwa feel strongly that the construction of this project will lead to the dispossession, colonization, and environmental destruction of their ancestral lands, including the MKRCA, irreparably harming their peoples, their cultures, and the MKRCA ecosystem. These fears are well-founded based on the impact of previous road development in Peru and tropical regions worldwide (e.g., see Alamgir et al., 2017; Gallice et al., 2019; Laurance et al., 2009; Wemple et al., 2018). From the standpoint of the Maijuna and Kichwa, the lack of prior consultation by the Peruvian government regarding this project is a major violation of their rights as Indigenous

Peoples and demonstrates the continued exclusion of their peoples from political processes, negatively impacting their autonomy and reducing overall system resilience.

As confirmed by our Maijuna and Kichwa participants, the degree to which their peoples rely on the MKRCA ecosystem for subsistence, the complex interdependencies between their cultures and the MKRCA SES, and the deeply entrenched repression and disempowerment of their peoples within society all contribute to the vulnerability of the MKRCA SES. The continued social and cultural marginalization of the Maijuna and Kichwa represents a threat to the adaptability of their peoples to large-scale social-ecological disturbances, and thus the adaptive capacity of the MKRCA SES. Social change is essential for the resilience of SESs (Folke et al., 2010). Thus our analysis shows that, while the prevention of the megadevelopment project will help maintain resilience within the MKRCA SES, based on the experiences of the Maijuna andKichwa, the inclusion of their peoples in all aspects of Peruvian social life, including key political processes, and the recognition of the importance of their lands and cultures by external stakeholders are necessary to build system resilience to future forced change.

Future Research

Rotarangi and Stephenson (2014) offer the theory of "resilience pivots" through which they assert that changes in a cultural group's SES must be congruent with community values. While we are hesitant to embrace a distinct theory of "cultural resilience" that may dissociate cultural subsystems from co-occurring SESs, our study provides support for the concept of resilience pivots when applied to the resilience of cultural subsystems. Our analysis suggests that, in the eyes of the Maijuna and Kichwa,

the retention of their ancestral lands, including access to natural resource use, active intergenerational transmission of TEK, and participation in adaptive co-management of the MKRCA ecosystem may be resilience pivots for both the Maijuna and Kichwa peoples. Future research should further explore the concept of resilience pivots within the context of the MKRCA SES, noting that independent analyses should be conducted with both the Maijuna and Kichwa given the distinctiveness of Indigenous cultures. Considering the uniqueness of both SESs and Indigenous cultures, studies incorporating Indigenous perspectives should be conducted in other Indigenous SESs to further explore the concept of resilience pivots, as well as the co-dependencies of social, ecological, and cultural subsystems within SESs and the impacts these have on SES resilience.

Practice

In light of the current vulnerability of the MKRCA SES and the Maijuna and Kichwa's vision for the future, deliberate transformation of the system is urgently required for it to continue providing what is of fundamental value to their peoples. As resilience thinking is about anticipating change (Walker & Salt, 2006), with SES stakeholders using resilience analyses to seize the opportunities disturbances provide to reevaluate current circumstances and trigger social action (Folke et al., 2010), the Maijuna and Kichwa and their allies should utilize the window of opportunity (Folke et al., 2010; Olsson et al., 2006) presented by the megadevelopment project to generate collective action to push for transformation within the MKRCA SES. In the past, the Maijuna marched in the city of Iquitos (see Fig. 1), the capital of Loreto, to protest the megadevelopment road project, and during our research workshops, the Maijuna and

Kichwa discussed forming alliances with other local Indigenous groups and finding ways to fight together in solidarity to prevent the construction of the road and to protect their ancestral lands. Based on the findings in our study, to build MKRCA SES resilience, future transformation actions should target the national and regional governments and focus on shifting perceptions of Indigenous cultures by government actors, especially those involved in the co-management of the MKRCA ecosystem, and addressing the inequitable power relations that marginalize the Maijuna, Kichwa, and other local Indigenous groups and threaten the self-determination and autonomy of their peoples.

Furthermore, resilience scholars and other stakeholders utilizing resilience thinking approaches for the analysis of Indigenous SESs should learn from and embrace the unique cultures, worldviews, and knowledge of the Indigenous Peoples living within these systems, and advocate for and support their inclusion in all aspects of system management and governance. They should seek to incorporate local Indigenous perspectives into both their SES analyses and resilience-building interventions. Resilience thinking approaches can, thus, align resilience building objectives with the appropriate cultural context and help to empower Indigenous Peoples and assist them in influencing change.

Limitations

While this study was initially intended to be conducted exclusively with the Maijuna, at the request of Maijuna leadership, a contingent of Kichwa leaders were included in our August field session. Keeping in line with the community-driven research methods upon which our study was constructed, we chose to include the Kichwa in the

full research project. While invited to participate in the January field session, the Kichwa were unable to join us, though the community position statement was reviewed and finalized with FECONAMNCUA leadership. This accounts for the discrepancies between Kichwa and Maijuna sample size. Due to these factors, the analysis of the place of culture in the MKRCA SES is largely based on that of the Maijuna.

Furthermore, individual Maijuna participants also altered somewhat between the August and January field sessions due to a number of factors (e.g., participant illness, participants no longer living in Maijuna communities, participants being out of the community on hunts), at which time, other Maijuna community members fitting the sampling criteria were invited to participate.

Additionally, while the community position statement was envisioned as a major component of our research study and largely influenced our research design, due to factors related to COVID-19, the release of this document has been delayed until further notice. This decision was made in close consultation with the Maijuna and Kichwa to maximize its impact and potential to affect positive change.

CONCLUSION

Resilience thinking represents a valuable framework for the Maijuna, Kichwa, and other Indigenous Peoples looking to influence change, including supporting objectives aimed at ensuring the survival and wellbeing of their peoples, such as the protection and conservation of their lands, resources, and cultures. In addition to helping empower Indigenous groups by upholding and promoting the rights and autonomy of their peoples, the inclusion of Indigenous perspectives in SES analyses can help shed further light on the multifaceted relationships between social and ecological subsystems and Indigenous cultures. Increasing Indigenous participation in SES analyses and foregrounding resilience-building interventions with the perspectives of Indigenous Peoples, including their worldviews, lived experiences, and TEK, can help to build SES resilience and achieve contextually rooted, socially just outcomes in both the process and product of resilience thinking applications.

APPENDIX

Informed Consent (English)

**COMMUNITY POSITION STATEMENTS AS TOOLS FOR SOCIAL CHANGE:
AN ENVIRONMENTAL JUSTICE CASE STUDY FROM THE PERUVIAN AMAZON**

INFORMED CONSENT FORM

RESEARCH PROCEDURES
This research project is being conducted to gain an understanding of the views and opinions of the Maijuna community related to the development of the Bellavista – Mazán – Salvador – El Estrecho Highway.

If you agree to take part in this project, you will be asked to participate in two multiday meetings about the development of the Bellavista – Mazán – Salvador – El Estrecho Highway. These meetings will be conducted in August 2019 and January 2020 and will last three days each. Each day will be no longer than 6 hours in duration.

RISKS
There are no foreseeable risks for participating in this research.

BENEFITS
This study will aid the Maijuna community in creating a community position statement related to the development of the Bellavista – Mazán – Salvador – El Estrecho Highway. This will help to support the Maijuna community in the conservation of their ancestral lands and ecological and cultural resources, and the preservation of their traditional culture.

CONFIDENTIALITY
The data in this study will be confidential. Specifically, the names of those participating in this project will never be recorded, unless participants specifically request that we use their name in presentations and/or publications. Thus, information will never be connected to your name unless you desire for your name to be connected to the information you provide. In addition, we will only use photographs, video, or audio of you in a presentation and/or publication after receiving your explicit permission to do so. You will be asked to indicate your preferences at the end of the consent form.

Audio and video recordings and photographs will be digital in nature and will be stored on the computers of M. Gilmore and E. Schierbeek, both of which are password protected. Only M. Gilmore and E. Schierbeek will have access to the photographs and recordings.

PARTICIPATION
Your participation is voluntary, and you may withdraw from this study at any time and for any reason. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party. You will not be compensated for your participation in this study. You must be 18 years of age or older in order to participate.

IRB: For Official Use Only

GEORGE MASON UNIVERSITY

Project Number: 1449708-1

Institutional Review Board

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CONTACT

The research is being conducted by Dr. Michael Gilmore of the School of Integrative Studies and Elizabeth Schierbeek of the Interdisciplinary Studies program at George Mason University. Dr. Gilmore may be reached at 001-703-993-6765 and Mrs. Schierbeek may be reached at 001-269-330-2005 for questions or to report a research-related problem. You may contact the George Mason University Institutional Review Board (IRB) Office at 001-703-993-4121 if you have questions or comments regarding your rights as a participant in the research. The IRBNet number of this study is: 1449663-1.

This research has been reviewed according to George Mason University procedures governing your participation in this research.

CONSENT

This form has been read to me, all of my questions have been answered by research staff, and:

Yes   No

☐ ☐ I agree to participate in this study.

☐ ☐ I agree to be audio or video recorded, knowing that the recordings may be used for presentations and/or publications, but that my name will be withheld.

☐ ☐ I agree to be photographed, knowing that the photographs may be used for presentations and/or publications, but that my name will be withheld.

☐ ☐ I would like my name to be used in presentations and/or publications.

_____
Date

_____
Study ID

Version date: June 12, 2019

APPENDIX II

Informed Consent (Spanish)

DECLARACIONES DE POSICIÓN DE LA COMUNIDAD COMO INSTRUMENTOS PARA EL CAMBIO SOCIAL: UN ESTUDIO DE CASO DE JUSTICIA AMBIENTAL DE LA AMAZONIA PERUANA

FORMA DE CONSENTIMIENTO

PROCEDIMIENTOS DE LA INVESTIGACIÓN
Este proyecto de investigación se está llevando a cabo para comprender los puntos de vista y las opiniones de la comunidad Maijuna en relación con el desarrollo de la Carretera Bellavista – Mazán – Salvador – El Estrecho.

Si acepta participar en este proyecto, se le pedirá que participe en dos reuniones de varios días sobre el desarrollo de la autopista Bellavista - Mazán - Salvador - El Estrecho. Estas reuniones se llevarán a cabo en agosto de 2019 y enero de 2020 y durarán tres días cada una. Cada día no durará más de 6 horas de duración.

RIESGOS
No existe ni se prevé ningún riesgo por participar en este investigación.

BENEFICIOS
Este estudio ayudará a la comunidad Maijuna a crear una declaración de posición de la comunidad relacionada con el desarrollo de la Carretera Bellavista - Mazán - Salvador - El Estrecho. Esto ayudará a apoyar a la comunidad Maijuna en la conservación de sus tierras ancestrales y recursos ecológicos y culturales, y en la preservación de su cultura tradicional.

CONFIDENCIALIDAD
Los datos adquiridos en este estudio serán confidenciales. Específicamente: los nombres de los participantes en este proyecto no serán registrados excepto cuando expresamente el entrevistado pida que su nombre sea usado en presentaciones o publicaciones. Por consiguiente, la información recolectada nunca será relacionada con su nombre, a no ser que usted desee que su nombre sea relacionado con la información que usted provea. Asimismo, utilizaremos fotografías, vídeo o audio de usted en una presentación y/o publicación sólo después de recibir su permiso explícito. Se le pedirá que indique sus preferencias al final del formulario de consentimiento.

Grabaciones de audio y video y las fotografías serán de naturaleza digitales y se almacenarán en las computadoras de M. Gilmore y E. Schierbeek ambas protegidas por contraseña. Solo M. Gilmore y E. Schierbeek tendrán acceso a las fotografías y grabaciones.

PARTICIPACIÓN
Su participación es voluntaria y usted puede retirarse del proyecto en cualquier momento y por cualquier motivo. Si usted decide no participar, o decide retirarse del proyecto, no hay ningún perjuicio, o pérdida de beneficios a los cuales usted tenga derecho. Su participación no le causará ningún gasto a usted o a otras personas. No será compensado por su participación en este estudio. Debe ser mayor de 18 años para poder participar.

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GEORGE MASON UNIVERSITY   Project Number: 1449708-1

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CONTACTO

Esta investigación está siendo dirigida por Dr. Michael Gilmore del School of Integrative Studies y Elizabeth Schierbeek del Programa de Estudios Interdisciplinarios perteneciente a la Universidad de George Mason. Dr. Gilmore puede ser contactado por teléfono No. 001-703-993-6765 y el Sra. Schierbeek puede ser contactado por teléfono No. 001-269-330-2005, ambos podrán responder preguntas o reportar cualquier inconveniente relacionado a la investigación. Usted puede contactar a la oficina de la junta de revisión institucional localizada en la Universidad de George Mason por teléfono No. 001-703-993-4121, en caso de que tenga preguntas relacionadas con sus derechos como participante en esta investigación. El número de IRBNet de este estudio es: 1449663-1.

Esta investigación está de acuerdo con los parámetros fijados por la Universidad de George Mason que dictan su participación en esta investigación.

CONSENTIMIENTO

Este documento ha sido leído a mí, todas mis preguntas han sido contestadas por los investigadores en este estudio y:

Sí   No

☐   ☐   Yo estoy de acuerdo en participar en este estudio.

☐   ☐   Acepto grabarme en audio o video, sabiendo que las grabaciones pueden usarse para presentaciones y/o publicaciones, pero que mi nombre será retenido.

☐   ☐   Estoy de acuerdo en que se me fotografíe, tengo conocimiento que las fotografías pueden usarse para presentaciones y/o publicaciones, pero que mi nombre será retenido.

☐   ☐   Deseo que mi nombre sea usado en presentaciones y/o publicaciones.

_____
Fecha

_____
ID de Estudio

Fecha de este documento: 12 de Junio, 2019

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APPENDIX III

Focus Group Questions (English)

1) Are your ancestral lands important to you? Why or why not?

2) Are you for or against the Salvador – El Estrecho road?

    a) If against: Why are you against the Salvador – El Estrecho road?

    b) If for: Why are you for the Salvador – El Estrecho road?

3) What are your recommendations for alternatives to the Salvador – El Estrecho road being built?

    a) In the film, community members mentioned that they wanted the government to finish the Puerto Arica – Flor de Agosto road, do you still want the government to finish the Puerto Arica – Flor de Agosto road? Why or why not?

4) Have you (Maijuna or Kichwa) been consulted by the government or any other group on the construction of the Salvador – El Estrecho road through your titled and ancestral lands?

    a) If no:

        i) Would you like to be consulted about the construction of the Salvador – El Estrecho road? Why or why not?

        ii) Why do you think you have not been consulted about the construction of the Salvador – El Estrecho road?

    b) If yes:

      i)   What did the consultation consist of and what position did the Maijuna take (i.e., did you accept or reject the proposed road)?

     ii) Do you think that this consultation was sufficient? Why or why not?

5) What is your vision for the future of the Maijuna people or Kichwa people and your ancestral lands?

6) Do you consider your culture, traditions, and customs important to you? Why or why not?

7) Do you consider your lands important for the survival of your culture, traditions, and customs? Why or why not?

8) Do you think the government and other people should recognize the importance between your lands and cultures? Why or why not?

Focus Group Questions (Spanish)

1) ¿Sus tierras ancestrales son importantes para usted? ¿Por qué o por qué no?

2) ¿Esta a favor o en contra de la carretera Salvador – El Estrecho?

   a) Si en contra: ¿Por qué esta en contra de la carretera Salvador – El Estrecho?

   b) Si a favor: ¿Por qué esta a favor de la carretera Salvador – El Estrecho?

3) ¿Que son sus recomendaciones para alternativas a la construcción de la carretera Salvador – El Estrecho?

   a) En el documental (que hizo Mike), miembros de la comunidad Maijuna dijeron que querrían que el gobierno termina la carretera Puerto Arica – Flor de Agosto. ¿Todavía quieren que el gobierno termine la carretera Puerto Arica – Flor de Agosto? ¿Por qué o por qué no?

4) ¿El gobierno o otra entidad les ha consultado a ustedes (los Maijuna o los Kichwa) sobre la construcción de la carretera Salvado – El Estrecho que iría atreves de su tierra titulado y tierra ancestral?

   a) Si no:

      i) ¿Les gustaría estar consultado sobre la construcción de la carretera Salvado – El Estrecho? ¿Por qué o por qué no?

      ii) ¿Por qué no les ha consultado sobre la construcción de la carretera Salvado – El Estrecho?

   b) En caso de "si":

    i) ¿Como era la consultación? ¿Y que dio? (¿Ha aceptado o rechazado la carretera?)

    ii) ¿Les parece que la consulta era suficiente? ¿Por qué o por qué no?

5) ¿Que es su visión para el futuro del pueblo Maijuna o el pueblo Kichwa y su tierra ancestral?

6) ¿Consideras que tu cultura, tradiciones y costumbres son importantes para ti? ¿Por qué o por qué no?

7) ¿Consideras que tus tierras son importantes para la sobrevivencia de tu cultura, tradiciones y costumbres? ¿Por qué o por qué no?

8) ¿Crees que el gobierno y otras personas deben reconocer la importancia entre tus tierras y cultura? ¿Por qué o por qué no?

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