

# The Indigenization of knowledge and power in the Peruvian Amazon

A case study for socio-environmental participatory monitoring processes in Aerija and Huao communities

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## LUCSUS

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## Abstract

The Amazon has always been a strategic region because of its rich variety in natural resources. Its global interest is spreading across levels and scales, influenced by the increasing demand for fossil fuels and biodiesel and the threat of climate change. Neoliberal practices continue privatizing and exploiting the Amazon's resources regardless the Indigenous communities' interests. These communities are losing control over their territory and facing socio-environmental problems while their knowledge is being neglected. This is not only a crucial issue for the Indigenous communities, but for the rest of the humanity, as they share the potential to envision other possible paradigms beyond capitalism which comprises human-environment interconnections and collective property regimes. The aim of this thesis is to be part of the current discussion on the inclusion of different knowledge in sustainability science while giving voice to the Indigenous communities. The case study is set in Atalaya, center of the Peruvian Amazon, where I carried out two participatory research workshops in Aerija and Huao Indigenous communities and thirteen interviews with members from the Subregion, CSOs, local experts and comunerxs. With a Feminist Political Ecology perspective and adopting Lukes' three-dimensional power concept, I analyze the suitability of socio-environmental participatory monitoring processes for reducing conflicts, balance power relations and foster sustainability in Aerija and Huao communities. I consider three aspects in order to discuss the suitability of a SEPM process: 1) compatibility between Indigenous knowledge and sustainability 2) Aerija and Huao socio-environmental conflicts 3) underlying power relations. The findings show: compatible characteristics between Indigenous cosmologies and knowledge with sustainability, the socio-environmental problems ranging from climate change and deforestation to livelihoods threatened, culture loss and women oppression, and the existence of uneven power relations between the communities and the State, the timber companies and the invaders, among other actors. Hence, SEPM becomes a suitable tool for Aerija and Huao acknowledging the local context, the multi-actor condition and the strengths and weaknesses of these communities. It can integrate the community knowledge, construct a shared environmental visualization and understanding of their territory, empower women in the community, and work as a management and advocacy tool for exercising more control over their territory, and potentially, foster sustainability. However, it also has some limitations and assumptions which have to be considered.

**Keywords: Sustainability, Indigenous knowledge, Power relations, Participatory monitoring, Suitability, Feminist political ecology**

**Word count: 13,967**

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“Por si no lo saben, de eso está hecha la

Vida,

sólo de momentos; no te pierdas el

Ahora”.

*(Instantes, Jorge Luis Borges, 1989)*

Por los instantes vividos, con Vosotras, con Vosotros,

Puyagene, Pasonki, Thank you, Gracias.

## Table of Contents

<b>Abstract .....</b>	<b>1</b>
<b>Acknowledgements .....</b>	<b>2</b>
<b>Acronyms.....</b>	<b>7</b>
<b>1 Introduction .....</b>	<b>8</b>
<b>1.1 Problem identification and research motivation .....</b>	<b>8</b>
<b>1.2 Aim and Research Questions .....</b>	<b>9</b>
<b>1.3 Relevance for Sustainability Science .....</b>	<b>10</b>
<b>2 Context .....</b>	<b>12</b>
<b>2.1 The Peruvian Amazon.....</b>	<b>12</b>
<b>2.2 Introduction to the case study .....</b>	<b>13</b>
<b>2.3 Aerija Indigenous Community and Ashaninka cosmology.....</b>	<b>15</b>
<b>2.4 Huao Indigenous Community and Yine cosmology .....</b>	<b>17</b>
<b>3 Theoretical Background.....</b>	<b>19</b>
<b>3.1 Conception of Sustainability .....</b>	<b>19</b>
<b><i>3.1.1 Sustainability dimensions and approach.....</i></b>	<b><i>19</i></b>
<b><i>3.1.2 Participation in Sustainability .....</i></b>	<b><i>20</i></b>
<b>3.2 Feminist Political Ecology .....</b>	<b>20</b>
<b><i>3.2.1. Political Ecology.....</i></b>	<b><i>20</i></b>
<b><i>3.2.2 Feminist Political Ecology.....</i></b>	<b><i>21</i></b>
<b><i>Local Knowledge .....</i></b>	<b><i>22</i></b>

<i>Power</i> .....	23
3.3 Socio-Environmental Participatory Monitoring .....	24
<b>4 Methodology</b> .....	<b>25</b>
4.1. Ontology and Epistemology .....	25
4.2 Methodological approach .....	25
4.3 Research methods .....	26
4.3.1 <i>Primary data collection</i> .....	26
<i>Participatory Research Workshops (PRW)</i> .....	26
<i>Interview data</i> .....	27
<i>Participant observation data</i> .....	28
<i>Audio-visual data</i> .....	28
4.3.2 <i>Secondary data collection</i> .....	29
4.3.3 <i>Key Informants</i> .....	29
<i>Subregion</i> .....	29
<i>Municipality of Atalaya</i> .....	30
<i>CORPIAA (Regional Coordinator of Atalaya Indigenous Communities)</i> .....	30
<i>OIYPA (Yine Indigenous Organization in Atalaya Province)</i> .....	30
<i>OMAAPA (Andinas and Amazonic Women Organization in Atalaya Province)</i> .....	30
<i>Local experts</i> .....	31
<i>Indigenous communities</i> .....	31
4.3.4 <i>Ethical issues</i> .....	31
4.4 Qualitative data analysis .....	32

4.5 Limitations and reflection .....	32
<b>5 Findings and Analysis .....</b>	<b>34</b>
5.1 Are the cosmologies and knowledge in Aerija and Huao linked with sustainability and sustainability science? .....	34
<i>5.1.1 Indigenous cosmology and Sustainability .....</i>	<i>34</i>
<i>5.1.2 Indigenous knowledge and Sustainability science .....</i>	<i>36</i>
5.2 What socio-environmental problems are Aerija and Huao facing? .....	38
<i>5.2.1 Environmental Dimension .....</i>	<i>38</i>
<i>Climate change .....</i>	<i>38</i>
<i>Deforestation .....</i>	<i>39</i>
<i>Biodiversity loss .....</i>	<i>40</i>
<i>5.2.2 Wellbeing Dimension .....</i>	<i>40</i>
<i>Livelihoods threatened .....</i>	<i>40</i>
<i>Fined and in debt communities .....</i>	<i>40</i>
<i>Loss of culture and transmission of knowledge .....</i>	<i>41</i>
<i>Women oppression and marginalization .....</i>	<i>42</i>
5.3 Which power relations are causing the socio-environmental problems in Aerija and Huao? .....	43
<i>5.3.1 Indigenous culture and Western culture .....</i>	<i>43</i>
<i>5.3.2 Indigenous communities and the Peruvian State .....</i>	<i>44</i>
<i>5.3.3 Indigenous communities and timber companies and invaders.....</i>	<i>45</i>
<i>5.3.4 Gender and intersectionality in the Indigenous community.....</i>	<i>46</i>



<b>6 Discussion .....</b>	<b>47</b>
<b>6.1 Suitability of a SEPM process .....</b>	<b>48</b>
<b>6.2 Limitations and reflections .....</b>	<b>51</b>
<b>7 Conclusion.....</b>	<b>53</b>
<b>8 References .....</b>	<b>54</b>

## List of Figures

<b>Figure 1. Location of case study: Atalaya Province .....</b>	<b>13</b>
<b>Figure 2. Aerija community map drawn by the comunerxs .....</b>	<b>14</b>
<b>Figure 3. Drawing representing Ashaninka cosmology .....</b>	<b>15</b>
<b>Figure 4. Huao community map drawn by the comunerxs .....</b>	<b>16</b>
<b>Figure 5. Drawing representing Yine cosmology .....</b>	<b>17</b>
<b>Figure 6. Sustainability nested model .....</b>	<b>19</b>
<b>Figure 7. Images from the PRW in Aerija and Huao .....</b>	<b>26</b>
<b>Figure 8. Posters from the workshops in Aerija and Huao .....</b>	<b>27</b>

## List of Tables

<b>Table 1. Compatible characteristics between Indigenous cosmology and sustainability.....</b>	<b>34</b>
<b>Table 2. Compatible characteristics between Indigenous knowledge and SS .....</b>	<b>36</b>
<b>Table 3. Socio-environmental problems connected with the underlying power relations.....</b>	<b>46</b>
<b>Table 4. Suitability of a SEPM process in Aerija and Huao communities .....</b>	<b>50</b>

## Acronyms

<b>FPE</b>	Feminist Political Ecology
<b>MINAM</b>	Ministry of Environment
<b>PE</b>	Political Ecology
<b>PNCBMCC</b>	National Forest Conservation Program for the Mitigation of Climate Change
<b>SEPM</b>	Socio-Environmental Participatory Monitoring
<b>SS</b>	Sustainability Science

*"The fiction of the law protected the Indigenous; the exploitation of the reality bled him".*

(Las venas abiertas de América Latina, Galeano, 1980, p.40).

## **1 Introduction**

### **1.1 Problem identification and research motivation**

The Amazon rainforest is a large basin with very important global and local environmental services such as carbon sequestration, water and air purification and high biodiversity. This basin is extended across eight Latin American countries (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela) and one European country (French Guiana, France) (WWF, 2016). The Amazon has always been a strategic region because of its rich variety in natural resources, which generates a global interest. This interest is spreading across different levels and scales, influenced by the increasing demand for fossil fuels and biodiesel and the threat of climate change (López, Beard, & Sierra, 2013). Neoliberal contradictory practices continue increasing the commodification and privatization of the Amazon region's resources while intensifying the rupture between Indigenous and non-Indigenous societies (Rénique, 2009). They range from fossil fuel extraction, hydropower infrastructure constructions, and large intensive palm oil plantations which are disrupting the ecosystems, to financial conservation schemes aiming at carbon sequestration such as the popular Reducing Emissions from Deforestation and Forest Degradation (REDD+) programs. Despite the different objectives and approaches, these practices can share some consequences such as: territorial conflicts, local communities' marginalization, power relations unevenness and livelihoods threatened (Osborne, Bellante, & Von Hedemann, 2014; Rénique, 2009).

The Amazon region is inhabited by more than 33 million people which accounts for more than 350 Indigenous groups and some voluntary isolation Indigenous communities (WWF, 2016). Each of these Indigenous communities<sup>1</sup> has their own distinctive characteristics and faces their own kind of challenges, but they also share common contemporary problems. Indigenous communities are known for their close relationship with the environment and collective property and decision-

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<sup>1</sup> I intentionally capitalize the word Indigenous to show the same respect to these communities as we usually do to continents, countries, languages and cultures.

making processes which shape their knowledge, social structure and livelihoods (Nagan, 2013). These features are contradicting with the dominant neoliberal paradigm and, as such, the Indigenous communities are being marginalized against their will. Thus, their knowledge is being neglected and they are losing the power over their territory (Rénique, 2009). It is not only a crucial issue for the Indigenous communities, but for the rest of the humanity, as they share the potential to envision other possible paradigms beyond capitalism, which comprises a fundamental human-environment interconnection and collective property regimes (Rénique, 2009).

Monitoring processes are a common instrument in land planning and management for understanding environmental changes, analyzing the source, tendencies and impacts, and envisioning potential solutions and paths (Himley, 2014; Norris, 2014). Hence, they become a necessary tool for having a holistic and dynamic understanding of changes in the territory. However, monitoring is often carried out by non-local experts using technical terminology, equipment and methods not understandable or accessible to the communities living in the territory. Conversely, Socio-Environmental Participatory Monitoring (SEPM) processes are being pushed forward from grassroots movements and organizations aiming to involve the local communities in the planning, management and the environmental decisions taken over their territory (Staddon, Nightingale, & Shrestha, 2014). The first step of participatory monitoring processes is to identify the reasons and analyze its benefits and limitations with the communities so they can decide the usefulness of this tool (FAO, 1990). Thus, SEPM becomes a relevant practice combining traditional and technical knowledge while promoting the central role of the community in the planning and management of their territory. This thesis discusses the suitability of SEPM processes as bottom-up practices for fostering sustainability in the Amazonian Indigenous communities' context.

## **1.2 Aim and Research Questions**

The aim of this research is to be part of the current discussion on the inclusion of different knowledge in Sustainability Science (SS) while giving voice to the Indigenous communities. It attempts to become another case of how Indigenous knowledge can be combined with SS to move towards a more endogenous and local-based sustainable development, from the communities and for the communities. This thesis focuses on the socio-environmental problems faced by the Indigenous communities living in the Peruvian Amazon and the underlying power

relations. Through its analysis with a Feminist Political Ecology (FPE) lens and adopting Lukes' (1974) concept of three-dimensional power I analyze the suitability of SEPM processes, combining local and technical knowledge, to reduce conflicts, balance the power relations over their territory and promote sustainability in the long term. Therefore, considering the field research done in the Aerija and Huao Indigenous communities, the research question is:

**Can a socio-environmental participatory monitoring process contribute to reduce the socio-environmental conflicts and balance the power relations to foster sustainability in Aerija and Huao communities?**

In order to discuss the suitability of a SEPM process I consider some aspects based on its nature and characteristics. Firstly, I analyze the compatibility between Indigenous knowledge in Aerija and Huao with sustainability. Secondly, the nature of the conflicts faced by these communities to be addressed by a SEPM process. And thirdly, the uneven power relations to be balanced by a SEPM process. These issues can be framed in the following sub-research questions:

**RQ<sub>1</sub>: Are the cosmologies and knowledge in Aerija and Huao linked with sustainability and SS?**

**RQ<sub>2</sub>: What socio-environmental problems are Aerija and Huao facing?**

**RQ<sub>3</sub>: Which power relations are causing the socio-environmental problems in Aerija and Huao?**

### **1.3 Relevance for Sustainability Science**

Sustainability Science was born to understand the complex nature–society interactions with a holistic perspective acknowledging the interconnection among the social, economic and environmental dimensions (Kates et al., 2001; Clarck & Dickson, 2003). Since then it has been incorporating several characteristics, principles and tools to achieve this goal. Some are its problem-based focus, working across levels and scales considering the underlying assumptions and power relations, fostering participation among actors to include different ways of knowing and a systems thinking approaches to acknowledge positive and negative feedbacks (Kates et al.,

2001; Miller, 2012). Science and technology were pushed forward in doing the transition from just a theoretical discipline to an interdisciplinary field of work putting the knowledge into action. It was agreed that this new field should be *salient* (relevant to the problems we are facing and useful for proposing solutions), *credible* (objective, consistent and with robust evidences and arguments) and *legitimate* (aware of diverse cultures and contexts) (Cash et al., 2003, p.1). Besides, SS combines academia and activism and is being considered and valued from the academic to civil society spheres (Van Kerkhoff & Lebel, 2006). However, SS is not yet a panacea.

Lately, some studies are being critical with the dominance of Western or scientific knowledge in SS (Lin & Liu, 2016; Whyte, Brewer, & Johnson, 2016; Herman, 2015; Kealiikanakaoleohaililani & Giardina, 2015). There is an increasing demand from Indigenous research to either integrate Indigenous knowledge with SS or make SS have a stronger Indigenous perspective. Therefore, this research aims to contribute to SS by increasing the cases that attempts to connect both fields. However, I have to mention that this research is being done by a non-Indigenous person. Hence, more research from the Indigenous people is needed to enrich and legitimize this field, and fulfill the final target of a real integrative and participatory SS.

## 2 Context

### 2.1 The Peruvian Amazon

The Peruvian Amazon accounts for approximately 60% of the national territory and it is inhabited by 13.4% of the total population (MINAM, 2015). The Indigenous communities are recognized as the main occupants of the Amazonian forests; they form 54 Indigenous communities which translate into more than 330.000 inhabitants (MINAM, 2015).

The Peruvian Constitution of 1993 formally recognized the rights and freedom of all its citizens and the 169 Convention for the Indigenous and Tribal Peoples (1989), ratified in 1995, acknowledged the Indigenous rights to their land, territory, culture, health and education. Since 1974, due to Native Communities Law, the State has been recognizing communal title deeds but with significant limitations. Firstly, the Indigenous communities were not considered subjects of law. Secondly, only part of their territory was recognized (neglecting their nomad way of life and being blind to the rainforest reality) while the rest was framed as “free land” and mostly ending up in the hands of timber or fossil fuel extractive companies. Thirdly, the forested areas were not owned but given as transfer agreement for its exploitation and could be taken back if not done satisfactorily. And fourthly, all the bureaucratic process, technical processes and experts has to be financed by the communities, leaving them in an in-debt situation (IBC, 2014). Since then, there has been some improvements like the Forestry and Wildlife Act (2010) which acknowledges that every forest and wildlife ecosystem under private and communal lands does not belong to the State (art.4) and in 2011 the Right to Prior Consultation to Indigenous or Native Peoples’ Law, obliging to consult the communities for any project or plan that may affect their territories and livelihoods. Nevertheless, for most communities their territory has not been completely recognized yet and the aforementioned laws are not fully implemented, threatening the Indigenous livelihoods (IBC, 2014).

On the other hand, the Peruvian State shares a neoliberal ideology, adopting market logic, privatizing natural resources and promoting private investments (IBC, 2014; Rénique, 2009). Under the idea of “development” and economic growth, activities such as fossil fuel extraction, mega dam constructions and palm oil cultivations in the Peruvian Amazon are being fostered and pushed forward as national interests (IBC, 2014; Gutiérrez-Vélez et al., 2011; Rénique, 2009). These activities lead to socio-environmental impacts in the communities: from invasions or land grabbing to ecosystem disruption and food insecurity (Territorio Indígena y Gobernanza, 2015).

However, the Amazon is agreed by the international sphere to be a strategic region for climate change mitigation (IPCCC, 2014). Hence, the State through the Forest Investment Program is promoting forest conservation with projects such as REDD+, Pro-Bosques or the National Forest Conservation Program for the Mitigation of Climate Change (PNCBMCC), by providing financial value to the forest because of their carbon storage (MEF, 2015; MINAM, 2011). These projects have also consequences in the Indigenous communities, mostly related to the power over the decisions taken in their territory (IBC, 2014).

The Peruvian government is having a contradictory role regarding the Amazon and the Indigenous communities. Their formal efforts are not reflected in the consideration and acknowledgment of the different communities' needs and interests (IBC, 2014). However, the government is working on an approach to a governance model, fostering decentralization and integrating participatory processes at different levels (Jaramillo & Wright, 2015). This government declares to seek the engagement of the civil society in decisions and policies related to development and environmental management (Himley, 2014). This research takes advantage of this political motivation in participatory processes while acknowledging the real context of the Indigenous communities.

## **2.2 Introduction to the case study**

The research question and case study selection was agreed with CESAL. CESAL is a development NGO working in the Peruvian Amazon in areas related with environment, education, participation and climate change. This study is part of the project "Strengthening democratic environmental governance at all three levels of government and citizen participation for increased resilience and adaptation to climate change for women and indigenous populations in Peru", financed by the Spanish Cooperation Agency AECID. It was in CESAL's interest to do a research about the Indigenous communities' socio-environmental challenges and the suitability of a SEPM process to contribute to a more endogenous sustainable development. CESAL is currently working with seven communities in Atalaya province to strengthen the democratic environmental governance combining top-down and bottom-up approaches. Due to time and resources constraints this research had to set the boundaries into two Indigenous communities: Aeriya and Huao. They have been chosen because, firstly, they share the same legal state as both are entitled communities, i.e. legal owners of their territory. Secondly, they belong to different Indigenous groups: Aeriya is



Ashaninka while Huao is mainly Yine. And thirdly, their territory has a different degree of accessibility: Aerija is close to the road which leads to the main city (Atalaya) while Huao can only be accessed after a one-hour journey in boat through Ucayali River. These two different variables allowed me to have a better understanding of their specific context.

Aerija and Huao are located in Atalaya province, center of the Peruvian Amazon (Figure 1). Atalaya is one of the most important cities in the Ucayali region; it is the base for the communication between State institutions and organizations representing the Indigenous communities (MINAM, 2015). In the province of Atalaya there are mainly four Indigenous groups which belong to the Arawak linguistic family: Shipibo, Ashaninka, Asheninka and Yine. This province has 90% of its territory covered by forest, 5% is hydrology and 5% is a non-forest area (MINAM, 2015). Hence, its economic activities are completely based on natural resources; mainly timber and fossil fuels. The area is being disrupted by a series of drivers like national economic growth and climate change, and pressures such as deforestation, agriculture expansion (from subsistence to intensive use) and legal and illegal mining. Both, drivers and pressures are contributing to the threatening of the Indigenous livelihoods (MINAM, 2015).



Figure 1. Location of the case study: Atalaya Province (Google Earth, 2016).

## 2.3 Aerija Indigenous Community and Ashaninka cosmology

Aerija is an entitled community (Aerija owns and has the rights over the territory) with a population over 230 people organized in 39 families. The populated area comprises 540Ha but their territory has a total area of 3,092Ha (Ministerio de Cultura, 2016). It is located by a road that leads to the city of Atalaya and near to Ucayali River (*Figure 2*). Aerija was founded in 1964 when the Adventist missionary Ramon grouped together Indigenous families from the area to Christianize them (PRW-A<sup>2</sup>). During the 90s Aerija freed from the Adventists due to cultural clash but decided to keep living as a community. Currently, they sustain themselves with subsistent productive practices but some of them also have “non-traditional” jobs such as drivers, workers in Atalaya’s sawmill or teachers in the city. There is a shift in their traditions that is influencing their livelihoods (PRW-A).



**Figure 2.** Aerija community map drawn by the comunerxs<sup>3</sup> (taken by author, 2016).

Aerija belongs to the Ashaninka Indigenous group. The Ashaninka have their own cosmology which explains the connections among themselves, with nature, and the spiritual world (*Figure 3*). It is important to briefly explain it to understand its connection with sustainability and the construction of their territory. According to the Ashaninka cosmology, their territory is divided in

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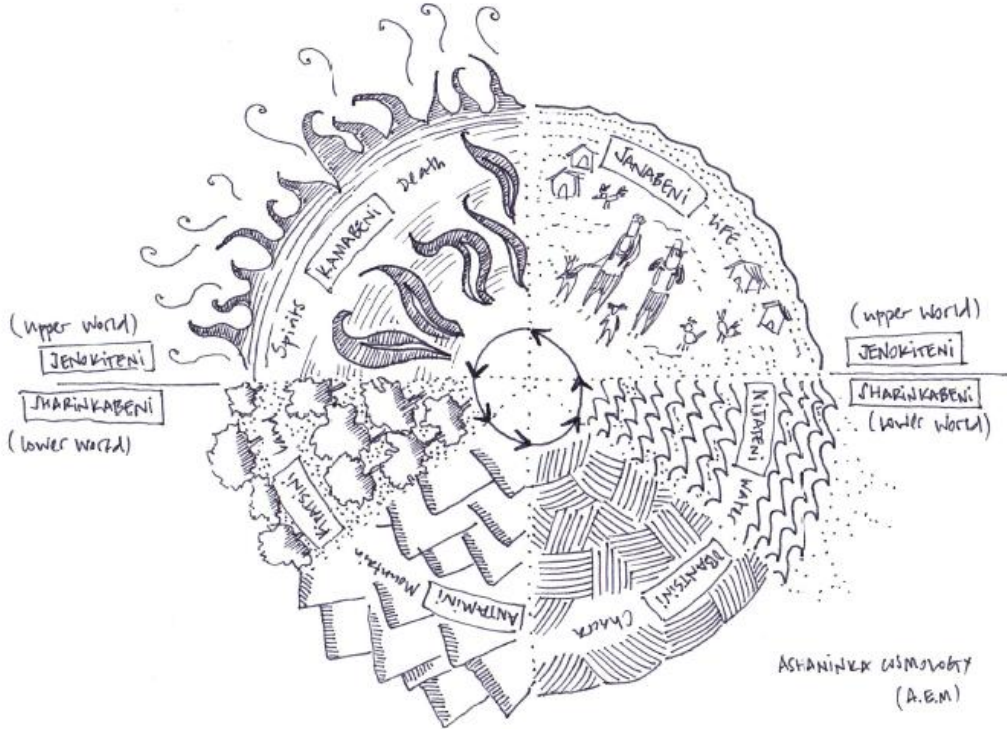
<sup>2</sup> PRW-A refers to the information coming from the key informants who participated in the workshop in Aerija (Key informants, p.29). It follows the same logic throughout the text to show the source(s) of the information.

<sup>3</sup> Comunerxs refers to the men and women in the community: comuneros (male) and comuneras (female).

two worlds: Jenokiteni (the upper world) and Sharinkabeni (the lower world). Both worlds have different spaces which are intertwined between them.

- Jenokiteni integrates two main spaces: Kamabeni and Janabeni. Kamabeni is the spiritual and death domain, the place that awaits them after death, and it has the function to control the behaviors of the different beings and regulate the spirits. Janabeni is the life domain and it purifies behaviors and gives and controls lives. So, the upper world mainly integrates the life, death and spiritual spheres (PRW-A; CILA, 2012).
- Sharinkabeni has four different interacting spheres: kipatsini (the land), antamini (the mountain), obantsini (the chacra<sup>4</sup>) and nijateni (the water). Each of these spheres combines the material and spiritual world through its elements. For instance, nijateni refers to the combination of all the alive and death, real and unreal beings through the water (nija) (PRW-A; CILA, 2012).

Ashaninka cosmology (Figure 3) has the interconnectedness between the human and the environment worlds and between the death and live spheres in its core.



5  
**Figure 3:** Drawing representing Ashaninka cosmology (interpretation by author, 2016).

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<sup>4</sup> Small-size crops for self-consumption.

## 2.4 Huao Indigenous Community and Yine cosmology

Huao is an entitled community with a population of approximately 100 people organized in 20 families. The populated area comprises 550Ha but their territory has a total area of 10,330Ha (Ministerio de Cultura, 2016). It is located in the bank of Urubamba River and it can only be accessed through one-hour journey by boat (Figure 4). Huao was founded in 1975 when the chiefs Linorio Lopez and Felix Rodriguez grouped together Indigenous families in this area to work for them in the rubber extraction under slavery conditions (PRW-H). During the 90s Huao freed from this form of oppression and decided to keep living as a community integrating different Indigenous families. Huao's comunerxs are completely dependent on their forest, crops and river as they do not have "non-traditional" occupations (PRW-H). Huao is currently summing efforts for being part of the National Forest Conservation Program for the Mitigation of Climate Change (PNCBMCC).



**Figure 4.** Huao community map drawn by the comunerxs (taken by author, 2016).

Huao belongs to the Yine Indigenous group. According to Yine's cosmology (Figure 5), their cosmos is formed by three interlinked spaces: Upper space, land space and lower space.

- The upper space contains: Galnachine gogne or the place for the birds, Goyakalune gwiyawaka or the place where the gods live, Goyakalgogne or Goyakalu's sky and Tengogne tengognepotute or the place above all skies. These spheres may also contain



land and forest. These spheres are home to spirits and they contact them through ceremonies.

- Land space is formed by Kagonchi gwiyawaka or Kagonchi's place and Yine gwiyawaka or where Yine communities and every human being live. Kagonchi is the wise and old person from the community who guards the community wisdom. He is able to travel and connect through the different spaces, possessing and transmitting the wisdom.
- The Lower space is divided into Gipnachine gwiyawaka or the death's place, Mtengatwenu or the world underneath the earth and Gitokga gogne or the world underneath the water. This space is where the death souls, spirits and beings like mermaids, the great boa and numerous fish live. (PRW-H; CILA, 2012).

Likewise Ashaninka cosmology, the interconnectedness between the human and the environment world and between the death and live sphere is a key principle in their system of beliefs (Figure 5).

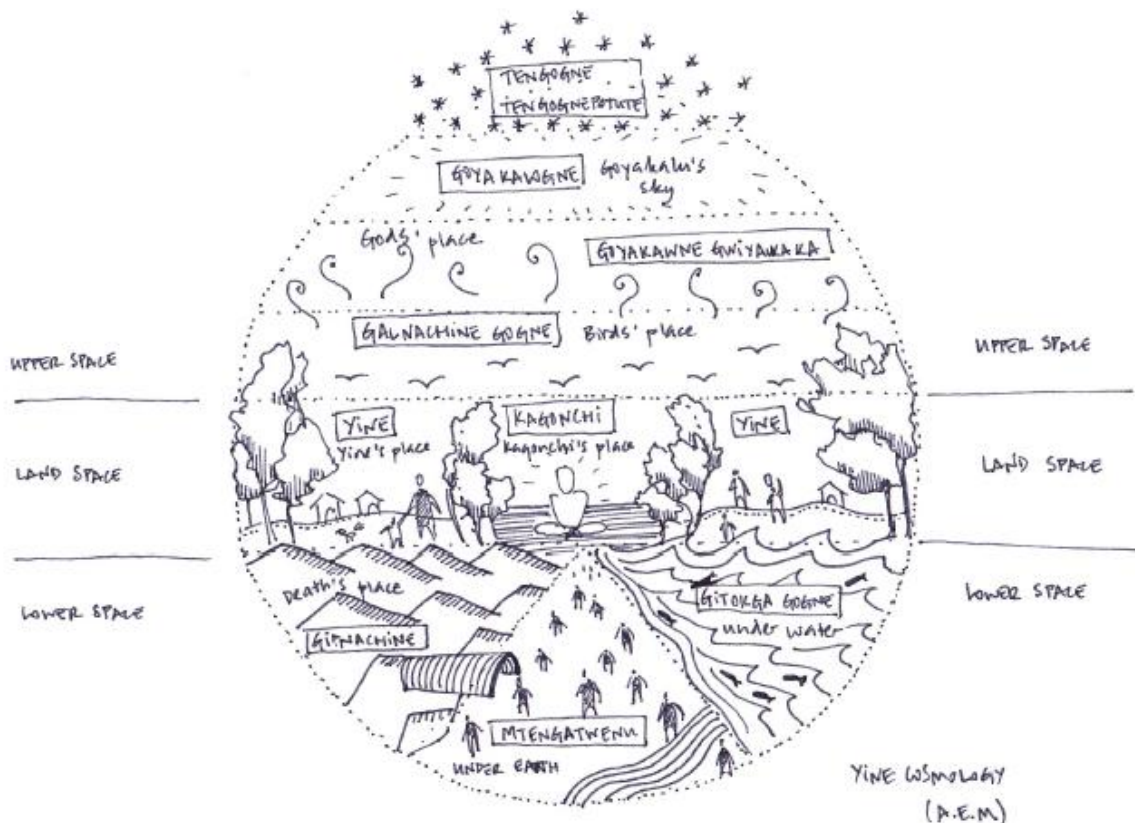


Figure 5. Drawing representing Yine cosmology (interpretation by author, 2016).

## **3 Theoretical Background**

### **3.1 Conception of Sustainability**

Sustainability is a relatively emergent concept being used by a wide range of actors, with specific interests, in visioning the current and future development path. Its broad use can make it ambiguous and interpretative (Giddings, Hopwood, & O'Brien, 2002) and, therefore, it becomes significant to define what conception of sustainability this thesis adopts.

#### ***3.1.1 Sustainability dimensions and approach***

Sustainability emphasizes the need of a new framework which combines the environmental, economic and social dimensions (WCED, 1987). I am taking a nested model approach in conceptualizing how these three spheres are interconnected. This model considers that economy can only exist if there is a society, and society is completely dependent on the environment, therefore, the economic sphere is nested in the society which is simultaneously nested in the environment (Kuhlman & Farrington, 2010; Giddings, Hopwood, & O'Brien, 2002). It is not that the three spheres are just connected, but they are dependent and feeding from the environment dimension. Hence, I follow Giddings, Hopwood, and O'Brien (2002) proposal of combining society and economy into the wellbeing dimension, emphasizing that economy should move towards improving communities' livelihoods but acknowledging the environment's limitations (*Figure 6*). This standpoint gives more importance to the environment and society instead of being economic-focused and it also shows a better understanding of the complex relations between society-nature as it acknowledges a deeper integration between dimensions.

I am also taking the strong approach of sustainability which shares similar principles to the nested model. Strong sustainability, in opposition to weak sustainability, considers that the environment dimension cannot be substituted by the economic or social (wellbeing) dimensions (Dietz & Neumayer, 2007). Furthermore, it acknowledges the functions and characteristics which make the natural dimension essential for human wellbeing and non-human life (Ekins, Simon, Deutsch, Folke, & De Groot, 2003).



**Figure 6.** Sustainability nested model. It combines the social and economy dimension in the wellbeing dimension, simultaneously nested in the environment dimension (adapted from Giddings & O'Brien, 2002).

### ***3.1.2 Participation in Sustainability***

Participation is an essential issue for sustainability and a relevant topic for this research. Sustainability requires a participatory framework which fosters the active involvement of the different knowledge, groups and perspectives of the society (Kates et al., 2001). Hence, it defends that society should have more representation and power in all processes, from the co-production of knowledge (Miller, 2012; Kates et al., 2001) to the decisions taken, such as the management of natural resources in a community (Waas, Hugé, Verbruggen, & Wright, 2011). An increase in public participation leads to a more connected and informed society (Van Kerkhoff & Lebel, 2006) while integrating and empowering the excluded or vulnerable groups (Donaghy, 2011), like the Indigenous communities in the Peruvian Amazon (Jaramillo & Wright, 2015).

## **3.2 Feminist Political Ecology**

### ***3.2.1. Political Ecology***

Political ecology (PE) emerged during the 70s promoting the combination of ecology and political economy fields (Robbins, 2012; Watts, 2000). PE studies the human-environment problems, considers the specific political and economic context, connects the local level to the global system across scales and analyses the underlying power relations which are working as driving factors (Paulson & Gezon, 2005). Furthermore, it is also related with social justice and sustainability as it attempts to give voice to the most marginalized groups and channel action while envisioning

alternative and more endogenous futures (Turner II & Robbins, 2008). Since its origins PE has manifested different definitions and areas of interests and integrated ideas from the feminist, poststructuralists and postcolonial waves. Still, the common standpoint shares three main principles (Bryant & Bailey, 1997):

1. Environmental changes are non-neutral. The environment is also politicized and cannot be understood without considering the socio-economic and political context.
2. There is an uneven distribution of the environmental costs and benefits, reinforcing the existent inequalities. Every environmental change is going to have consequences on the human subsystem, but it will not affect every group of the society in the same way.
3. Environmental conflicts are a product of the underlying power relations between actors. It is an issue about control, knowledge and power imbalances.

More precise, this thesis shares Watts' (2000) ambition. PE strives to understand the connections between the environment and society delving into the knowledge and power relations concerning the access, use and ownership of natural resources and its implications for the local livelihoods (Watts, 2000, p.257). Hence, it analyzes environmental conflicts through the struggles over knowledge and power in the community (Watts, 2000, p.263). However, these conflicts do not affect all community groups equally; conflicts, livelihoods and landscapes are gendered and as such they must be considered (Harcourt & Nelson, 2015). Therefore, I adopt a Feminist Political Ecology (FPE) lens as theoretical perspective during the field research and when analyzing and discussing the findings.

### ***3.2.2 Feminist Political Ecology***

FPE takes a feminist and intersectional perspective when exploring conflicts related to the access, use and control of natural resources; looking at the gender roles, knowledge and practices (Rocheleau, Thomas-Slayter, & Wangari, 1996). Gender considers, reflects and analyses the social and power relations which make men and women act, behave and have different relations with the environment in a community (Agarwal, 1992). These differentiations in gender roles are neither equally recognized nor valued, forcing women into a marginalized and oppressed situation. Furthermore, an intersectional approach helps to reflect on different social categories which, connected to gender, constitute other types of oppression or marginalization like age,



Indigenous group or social class (Arora-Jonsson, 2014). Hence, it is essential to take an intersectional perspective when collecting data and discussing the findings in order not to marginalize any gender or cause other types of power blindness. FPE shares PE's common principles while acknowledging the other underlying forms of oppression existent in the society, putting gender as the main social category (Harcourt & Nelson, 2015). FPE authors such as Rocheleau, Nightingale, Harcourt, Di Chiro, or Walsh<sup>5</sup> take an active role as researchers when analyzing local-scale environmental conflicts. Their communal experiences and networks creation work as knowledge co-production in this research field. Hence, FPE is not only a theoretical approach but it becomes a mean for giving voice and denouncing injustices which mostly affect the marginalized groups across regions, combining the activist role with academia (Harcourt & Nelson, 2015). According to FPE, environmental conflicts come from knowledge marginalization and power imbalances (Harcourt & Nelson, 2015). Thus, I will delve into these two categories.

### ***Local Knowledge***

FPE emphasizes the importance of local knowledge and communal participation for solving environmental conflicts. Local knowledge refer to the people who possess the different kinds of wisdoms fed from their daily experiences, closely connected with their environment and transmitted through generations (Nightingale, 2015). Knowledge is gendered due to the different assigned roles and experiences that men and women live in a community caused by the uneven power relations in a community (Rocheleau, 2015). However, this makes the gendered knowledge complementary, becoming essential to take a gender perspective when doing this type of research. Conversely to the dominant Western approach which imposes specific and more technical forms of knowledge (Turner II & Robbins, 2008), FPE defends that local knowledge needs to be respected and scaled-up for conflict-solving. The people, their knowledge and their participation has to be actively considered for the sustainable development of the communities with the involvement of other actors and knowledge (Nightingale, 2015). However, there is the challenge not to reproduce the on-going practice of local knowledge appropriation without letting them have an active and fair part in the process (Di Chiro, 2015).

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<sup>5</sup> Harcourt and Nelson (2015) gather the work of these authors in the book *"Practising feminist political ecologies: moving beyond the green economy"* (reference list).

## ***Power***

Power is also a critical dimension when analyzing environmental conflicts through a FPE lens. Moreover, power becomes additionally relevant when perceiving how the dominant groups also impose its knowledge system (Bryant & Bailey, 1997). I adopt Lukes' (1974) concept of three-dimensional power which enables me to make a deeper analysis of the underlying power relations. The one-dimensional view considers the direct power of A over B and analyses the behavior adopted when there is an observable conflict. Thus, it refers to decision-making power and is exercised when A makes a clear and visible decision that affects B. The two-dimensional view acknowledges that power can be also exercised by "nondecision-making" or also known as "agenda-setting". Hence, A can exercised power over B or B can obey A through different ways such as threats, authority or not showing interest in B's demands. Finally, the three-dimensional builds on the previous views acknowledging that power can be exercised by making and not making decisions, and manifested where there is a real or potential observable conflict or non-observable (latent) conflicts such as manipulation, bribery, authority, corruption or even ideologies (Lukes, 1974, p.28). This view takes a collective approach looking how political systems or groups prevent claims and demands being heard and becoming political problems. Hence, it is the subsystems, institutions or groups who exercise power-to (targeting an effect) and power-over (targeting a group) over marginalized groups through the domination of social and cultural structures and behavioral patterns by making or not making decisions resulting in real or potential observable and latent conflicts (Lukes, 1974, p.26). Regarding FPE, this field analyzes power relations between different groups in terms of control and access to their environment (Bryant & Bailey, 1997, p.39). Bryant and Bailey (1997) also make the distinction between "power-to" which refers to controlling natural resources, and "power-over", which refers to controlling the groups which have access to those resources. The consequences of exercising these powers are: the marginalization of a group which is suffering environmental degradation consequences, whose access to their environment is being limited and their voices and knowledge are not being considered. In terms of FPE, I am analyzing the underlying power relations, framed in Lukes' three-dimensional view, exercised by the State, institutions or private companies to the Indigenous resources and over the Indigenous communities through their actions and non-actions.

### **3.3 Socio-Environmental Participatory Monitoring**

This research uses Socio-Environmental Participatory Monitoring (SEPM) concept, also known as community-based monitoring. SEPM has been defined as a situated and embodied practice by which different groups of the society come together to combine and share their knowledge, strengthen the human-environment relationship and measure socio-environmental variables of their territory (Himley, 2014; Norris, 2014; Staddon, Nightingale, & Shrestha, 2014). SEPM does not have a clear origin as it has been developing naturally in small communities for adapting to environmental events. However, in 1990 FAO published a document with methods and tools for establishing participatory monitoring during the life of a project. This process should follow seven steps: discuss the reason for monitoring so the community can decide if they agree with this process, review objectives and activities, develop monitoring questions, establish direct and indirect indicators, decide on the tools, decide who will do the monitoring, analyze and present the results (FAO, 1990). Lately SEPM processes has eluded the cooperation-project sphere and are being pushed forward by communities, NGOs and CSOs in biodiversity conservation programs as an alternative to expert-led monitoring processes (Danielsen et al., 2000).

SEPM is in common grounds with sustainability and FPE as it attempts to combine different knowledge and share power in the understanding, planning, management and decisions-taking over a territory to improve the local livelihoods. On the one hand, it recognizes and values the plurality of knowledge, from a more scientific and systematic to a more traditional and experience-based fashion, all being socially constructed (Staddon, Nightingale, & Shrestha, 2014). Scientific knowledge is universally accepted, especially in fields related with environment and climate. However, there is still the need to recognize the value of local knowledge in environmental planning and management practices (Norris, 2014) as the people from the communities are the ones experiencing the changes and consequences. On the other hand, it seeks to balance power relations through a participatory approach where the communities have the role in environmental decisions to co-lead a common decided path of their territory (Agüera-Cabo, 2006). Hence, it is vital to integrate SEPM with a gender and intersectional perspective to incorporate the gendered knowledge, experiences and practices; and let all groups in the community be involved and empowered in the process (Arora-Jonsson, 2014). Furthermore, SEPM creates a network between different groups and interests, co-producing knowledge, promoting social relations and fostering a new way of thinking and interacting with their environment individually as within the society (Staddon, Nightingale, & Shrestha, 2014).

## **4 Methodology**

### **4.1. Ontology and Epistemology**

This research adopts critical realism as the ontological perspective. Critical realism considers that there is an objective reality coming from the natural order, but the interpretations of such reality is socially constructed and shaped by the context and interactions (Archer, Bhaskar, Collier, Lawson, & Norrie, 1998). This perspective is usually adopted by political ecologists as it helps to show the ecological disruption of an area (objective reality) and the underlying power structures that is causing it or reinforcing it (social world) (Turner II & Robins, 2008; Collier, 1994). In this research, the deforestation and biodiversity loss in the Indigenous territory is the empirical reality while the socio-environmental conflicts and underlying power relations are the social construction. Therefore, reality has to be considered according to its context and the perceptions and actions of the social actors involved. This research also acknowledges the existence of different epistemologies, identities, beliefs, knowledge, and human-environment connections as it attempts to recognize and value the Indigenous epistemology in this case.

### **4.2 Methodological approach**

The research design is based on the case study method through a depth analysis of a single case (Bryman, 2016). This is the most popular method used by political ecologist as it allows to analyze the constructed reality combining different scales and levels; from the specific context to the macro structures which are influencing the access to natural resources and causing the marginalization or conflicts (Neuman, 2014; Turner II & Robins, 2008). The case study is set in Aerija and Huaq communities, and the unit of analysis is the knowledge marginalization and underlying power relations that are causing their socio-environmental conflicts. Subsequently, with this approach, I can discuss if the suitability of SEPM process in this specific context.

### **4.3 Research methods**

This thesis uses qualitative and participatory research methods with a gender and intersectional perspective. The data collected is mostly from primary sources and to a lesser extent from secondary sources. To check the authenticity and credibility of the data collected; I have used the triangulation technique, comparing the information from different sources such as interviews with people from different entities, observation, published articles and official documents (Bryman, 2016). The methods and key participants mapping for gathering the primary data were decided in collaboration with CESAL.

#### ***4.3.1 Primary data collection***

##### ***Participatory Research Workshops (PRW)***

This method is used to gather primary data and promote a process of auto-diagnosis from the community concerning their territory and the changes and conflicts they perceive. In these workshops the participating community is divided into 3 to 6 simultaneous focus groups and they tackle the local problems through an integrative and participatory approach (Quintana Peña, 2006). Focus groups are used for allowing the individuals to construct the ideas or meanings together (Bryman, 2016). I have used three qualitative methods adapted to the context:

- Question matrix and first ideas: method used for analyzing the characteristics of the community (CIMAS, 2009). Each focus group covered a different topic asking them to consider a gender perspective, and presented it to the group at the end. The topics were: 1) Cosmivision, identity and history, 2) Territory, 3) Social organization, 4) Culture and traditions, 5) Environment, 6) Livelihood.
- Community mapping: In three different groups they drew the perception of their territory landscape, natural resources and management, using lines and polygons (Geilfus, 2002).
- Philips 10/10: Each focus group debates about the same topic during 10 minutes and, afterwards, the spokesperson presents the conclusion to the general group (CIMAS, 2009). This method was used to gather information about changes perceived in the climate, environment and territory management. The time limitation and final oral presentations allow a higher participation so more voices can be heard.

I have carried out two participatory research workshops (February, 2016) integrating the three same methods; one in Aerija and one in Huao (*Figure 7*). Both of them had duration of 4 hours and were announced one week in advance by a letter to the community chief and by local radio broadcast. The message informed about a voluntary participatory research workshop related to climate change and territory. Every comunerx who wanted to participate in the workshop could be part of it. There were 32 participants (16 women and 16 men) belonging to different class age and same Indigenous group (Ashaninka) in Aerija's workshop. There were 33 participants (17 women and 16 men) belonging to different class age and different Indigenous group (mainly Yine but some Ashaninka) in Huao's workshop. Social class did not seem to be a significant category in the communities as they could nearly all be identified as famers and hunters, belonging to low income and non-formally educated class. All the participants were able to understand Spanish, although the older ones had more difficulties and less confidence in expressing themselves. The division in focus groups helps to handle this issue by forming smaller groups letting them more time to express themselves and, in some cases, being translated by the group peers.



**Figure 7.** Images from the PRW in Aerija and Huao (taken by author, 2016).

### ***Interview data***

I have carried out thirteen semi-structured interviews following a flexible interview guide with open-ended questions (Bryman, 2016) to collect information from State institutions, civil society organizations, and local experts. Semi-structured or in-depth interviews create an atmosphere of confidence with the interviewee as there have been already introductory meetings with the same person. It starts with a generic topic which leads to more specific issues but without the researcher taking a marked leading role (Bryman, 2016; Quintana Peña, 2006). This data has been used to complete and contrast the information gathered from the workshops. It was in my interest to gather data across levels and with potentially different interests. The interviews took

place during February and March 2016 with key informants in Atalaya belonging to different entities and with different interests: members from Atalaya's sub-region and municipality, Indigenous organizations (CORPIAA, OIYPA, OMAAPA), Aerija's and Huao's comunerxs, and local experts. The time ranged from 45 minutes to 1 hour.

### Participant observation data

Being three months immersed in Atalaya context allowed me to gather participant observation data from the daily activities, meetings, interviews, focus group and field visits (Bryman, 2016). This data helped me to complete, corroborate and contrast the information from the previous methods and integrate the perception of the social context (Quintana Peña, 2006).

### Audio-visual data

I have used posters from the workshops (Figure 8) and photographs, audios and videos taken from the workshops, interviews, and daily activities (CIMAS, 2009). This information was suitable to, afterwards, analyze it with the data from the other methods and also use it as proof of the workshops. All posters were given back to the communities.

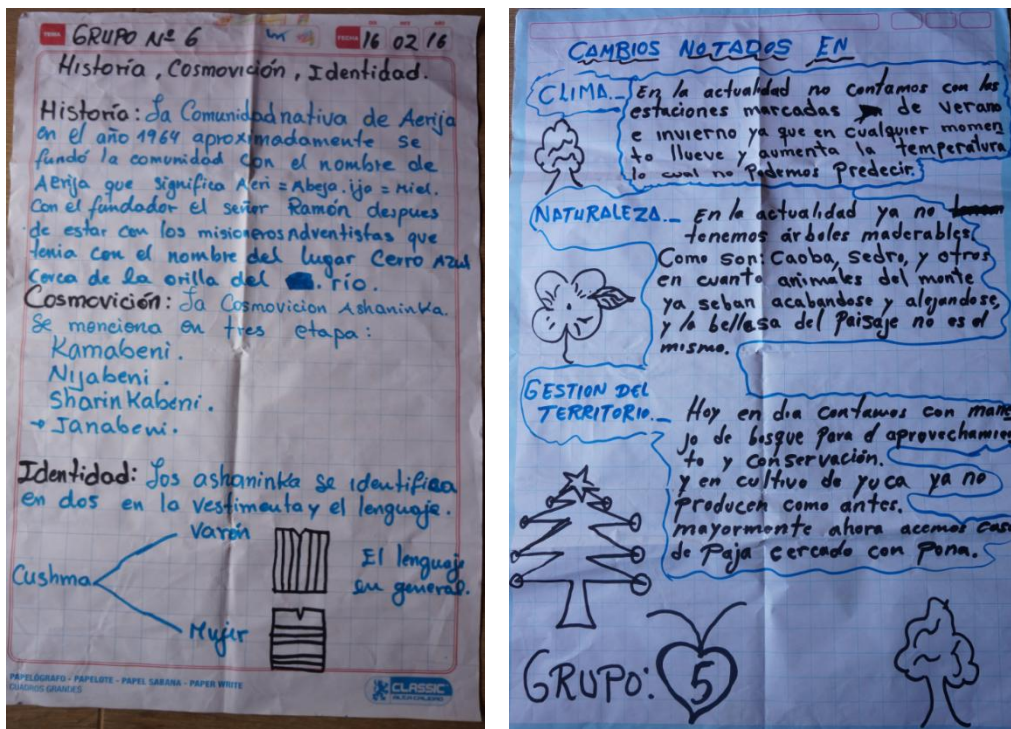


Figure 8. Posters from the workshops in Aerija and Huao (taken by author, 2016).

### **4.3.2 Secondary data collection**

The secondary data adds a more formal and academia perspective to this research, drawing from previous cases studied, and connecting the particular case to the general debate. I have done a systematic literature review through LUBsearch database using these keywords: “indigenous cosmology/knowledge”, “sustainability”, “Amazon”, “territorial conflicts”, “participatory monitoring” (Bryman, 2016). I have selected the articles according to the information shown in the abstract and being more relevant for this research. I have prioritized those which were peer-reviewed and closer to my case study area. The languages selected were English, Spanish and Portuguese. I have intentionally looked for Indigenous and feminist authors for being more coherent with my research, although not many were found. I have also used official documents from the Ministry of Environment, Culture and Agriculture of Peruvian’s Government, accessed from their official webpage, aiming to contrast my data with the official version and connect the local context with the broader level.

### **4.3.3 Key Informants**

The key informants (Bryman, 2016) ranged from State institutions (sub-region of Ucayali or the environmental department of Atalaya), Indigenous organizations (CORPIAA, OIYPA, OMAAPA), local experts, and the comunerxs from Aerija and Huao. Thus, they belong to different sectors and levels, with different interests, and across power relations: from the most marginalized (the Indigenous communities) to the most dominant (Subregion) group. In addition I adopted a gender and intersectional perspective when conceiving the actors mapping. I have classified the key informants according to the group or entity they belong to:

#### ***Subregion***

It is Ucayali’s regional government office, located in Atalaya. The Subregion has a climate change and forest department. They are involved in the planning and realization of actions concerning the forests sustainable management with the communities. I have interviewed two members from this institution:



- Subregion-1<sup>6</sup>: Director of the Forest and Climate Change department (February 2, 2016).
- Subregion-2: Project coordinator (March 3, 2016).

### ***Municipality of Atalaya***

The municipality has an environmental department since last year. This department consists of only one person and is lacking material resources. It deals with issues like water sanitation, waste and parks and gardens management.

- Municipality: Director of the Environmental department (February 12, 2016).

### ***CORPIAA (Regional Coordinator of Atalaya Indigenous Communities)***

Ashaninka Indigenous organization. They focus on issues like territoriality, climate change, gender, and youth involvement. Aerija and Huao communities are involved in different projects with CORPIAA.

- CORPIAA: President of CORPIAA (March 3, 2016).

### ***OIYPA (Yine Indigenous Organization in Atalaya Province)***

Yine Indigenous organization. They focus on issues like territoriality and entitlement rights, climate change and gender.

- OIYPA-1: President of OIYPA (February 11, 2016).
- OIYPA-2: Vice president of OIYPA (February 11, 2016).

### ***OMAAPA (Andinas and Amazonic Women Organization in Atalaya Province)***

Women and intersectional organization aiming the promotion of gender equality, women empowerment and gender violence awareness. It gathers women across communities, age and Indigenous group.

- OMAAPA: President of OMAAPA (February 11, 2016).

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<sup>6</sup> This is the mode I cite the key informants in the text, according to the group they belong to.

### ***Local experts***

Peruvian experts working in Atalaya and with the communities. They are involved in the management of natural resources and education with the communities.

- LE-1: Forest engineer, working at an NGO related with environment, forest and Indigenous communities in Aerija and Huao (March 8, 2016).
- LE-2: Forest engineer, previously working for the sub-region but now for the same NGO (March 8, 2016).
- LE-3: Teacher of primary education in Indigenous communities (March 10, 2016).
- LE-4: Teacher at the bilingual Indigenous University in Atalaya (March 10, 2016).

### ***Indigenous communities***

Comunerxs belonging to Aerija and Huao.

- C1: University teacher and comunero from Aerija (February 16, 2016).
- C2: Comunero from Huao (February 18, 2016).
- PRW-A: Participatory Research Workshop with Aerija comunerxs (February 16, 2016).
- PRW-H: Participatory Research Workshop with Huao comunerxs (February 18, 2016).

### ***4.3.4 Ethical issues***

I have considered the following ethical issues throughout the research process (Bryman, 2016). Before each interview and the participatory research workshops I explained the aim of the research and the use of the data gathered. Hence, I asked for their voluntary participation and informed consent. I always asked if it was possible to either record or videotape the interview/workshop and if I could take pictures along the process. In every case the key informants gave their consent. In order to avoid causing any nuisance to my key informants I have ensured their confidentiality and anonymity so they could speak freely about the topic without being influenced by their position or entity they are working for. This research will be translated

into Spanish and sent to CESAL and all the key informants as a compensation for their collaboration.

#### **4.4 Qualitative data analysis**

The qualitative data has gone through a consecutive process of transcribing, transcription, analyzing and codification in order to simplify and comprehend its meaning (Bryman, 2016). Once the primary data was collected, audio-recorded, filmed or written down; it has been transcribed. After the transcription into digital format I have made the translation from Spanish into English. The citations have been translated word by word avoiding losing or weakening its meaning. I have carried out a thematic analysis based on my subresearch questions (knowledge, socio-environmental problems, and power relations) to simplify and classify the data. The codification of each transcript was done using these three categories, and classified in three different colors, for simplifying and making more comprehensible the data. Subsequently, I have analyzed the topics more mentioned in each category, giving them a higher importance when discussing the findings. The different topics were:

1. Knowledge: cosmology, gendered knowledge, traditions and transmission.
2. Socio-environmental conflicts: deforestation, territory, agriculture, climate change, invasion, debts, youth involvement and gender violence.
3. Power relations: territory control, invaders, companies, State and corruption.

#### **4.5 Limitations and reflection**

There have been some limitations and assumptions during the research process. Firstly, the research methodology chosen analyses the specific context of Aeriija and Huao but should not be extrapolated to every Indigenous community in Atalaya Province as it does not account for general representativeness.

Secondly, considering the data collection, I am assuming that the key informants are representative of the general group and their statements are true and well-meaning. As I was going with the NGO CESAL, respected in the communities and Atalaya, the process was easier and

created a confident atmosphere. Still, I have intentionally selected interviewees with diverse interests to be able to grasp different perspectives and inconsistencies in the same issues.

And lastly, regarding the data from the communities; the volunteer nature of the workshops implied a not very high level of participation. Other contributing factors are the large territory area where just a few families live in the “center” of the community (the ones that would more easily come to the workshop) and the fact that spending one day participating in the workshop translated into a day of not hunting, fishing or recollecting food from their chacra. Besides, the even proportion of participating women can make us think that it was not considered as a “serious or relevant topic” by the community as, otherwise, many women would not have been allowed to participate by their husbands (as explained in some of the interviews). Regarding the participation nature, it was quite even between both genders, but it was the elderly the ones who would be less involved. Still, they would participate in their focus groups but not present their results to the rest of the group. Aerija was less motivated by the workshop and the active participation was uneven while in Huao all the participants were active, interested, and willing to be heard about the problems they are facing in their territory.

## 5 Findings and Analysis

### 5.1 Are the cosmologies and knowledge in Aerija and Huao linked with sustainability and sustainability science?

*“It is essential to understand the importance of the forests and the human groups living there, with all their knowledge in conservation and coexistence with the forests” (Subregion-1)<sup>7</sup>.*

The analysis of the first finding aims to highlight the connection between the Indigenous cosmology and knowledge in Aerija and Huao with sustainability and SS using primary (workshops and interviews) and secondary data.

#### **5.1.1 Indigenous cosmology and Sustainability**

In the core of the Indigenous cosmologies (*Table 1*), there is the interconnectedness between the human beings, other living-beings and the environment; and between the death and life spheres (Whyte, Brewer & Johnson, 2016; Herman, 2015; Kealiikanakaoleohaililani, & Giardina, 2015; Heckenberger, 2013). Every being and non-being, as an entity or collective, is part of a complex interrelation web connecting the past with the present and the future, constructing a genealogical relationship (Lin, & Liu, 2016; Alessa et al., 2015). Hence, the Indigenous peoples comprehend the world with a holistic and cyclical perspective where not only everything is interconnected but the inherent complexity of these connections needs to be acknowledged (Herman, 2015; Montoya, & Young, 2013). This can be seen in the construction of Ashaninka and Yine cosmologies; the interconnection of the life and death spheres through different spaces which mainly refer to the land, water, and mountain or forest (explained in the background section). As comunero C1 said: *“in our cosmovision we are connected with the environment, our ancestors, the other beings and the spiritual world”*. Leading from this, they refer to a reciprocal responsibility in the human-environment link where humans would have the role of stewardship or caretaking (Whyte, Brewer & Johnson, 2016; Heckenberger, 2013). In Aerija workshop they stated: *“Nature gives us*

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<sup>7</sup> Subregion-1 refers to the first key informant interviewed from the Subregion: Director of the Forest and Climate Change department (4.3.3 Key informants, p.31). It follows the same logic throughout the text to show the source(s) of the information.

but also takes away from us and we know where is that limit so nature doesn't get to that situation", and a comunera in Huao said: "The Indigenous peoples love their territory, their forests and we take care of it".

Likewise, sustainability (Table 1) takes a holistic perspective integrating the social, economic and environment spheres (WCED, 1987). It does not deal only with the present but seeks intergenerational justice where the needs and rights of the future human beings will not be threatened by the current situation (Kuhlman, & Farrington, 2010). It recognizes the importance of a healthy environment for supporting human and other beings, promoting its sustainable management, conservation and protection. Hence, from an anthropocentric perspective, it gives to the humans the responsibility to take care of the diverse ecosystems and biodiversity (Clarck & Dickson, 2003).

Thus, we can draw some similarities between Ashaninka and Yine cosmologies and sustainability, as summarized in Table 1. Meanwhile sustainability is a relatively recent concept; the cosmologies have been penetrating in the imaginary of millions of mindsets influencing the culture, knowledge and traditions across generations. Hence, the combination of both perspectives can be a symbiotic relation, improving the livelihoods in Aerija and Huao while fostering a more sustainable path.

**Table 1.** Compatible characteristics between Indigenous cosmology and sustainability. Each row shows a similar feature, i.e. interconnectedness and spheres integration.

Indigenous Cosmology	Sustainability
Interconnectedness	Spheres integration
Holistic and cyclical	Holistic
Genealogical relationship	Intergenerational
Reciprocal responsibility	Anthropocentric responsibility
Stewardship, Caretaking	Protection, Conservation

Source: Author, 2016 (built from primary and secondary data).

### 5.1.2 Indigenous knowledge and Sustainability science

Indigenous knowledge (Table 2) is place-based, highly connected to their land and context. The knowledge is constructed by and for the community, and so there is a communal participation in the way it is produced and transmitted (Herman, 2015; Heckenberger, 2013). Regarding Aerija and Huao, in the workshops and interviews they stated that the knowledge belongs to the whole community and it is passed from grandparents to their grandchildren through oral and visual tradition since generations (OMAAPA; CORPIAA; C1). It is believed to belong to their ancestors, being the *sabixs*<sup>8</sup> in charge of this transmission. As the president of CORPIAA said: *“my grandmother was a sabia of the community, a very intelligent woman and used to tell us stories and sing songs with beautiful lyrics, a way to transmit the knowledge”*.

Their knowledge emanate from traditions and daily practices, constantly feeding from the communal experience. This shows a strong connection between the culture and the environment (Herman, 2015; Heckenberger, 2013); where nature is not seen as a resource to be controlled but as an entity to take care of for their coexistence. Besides, gender roles lead to a clear differentiation in their daily activities influencing the knowledge they produce and transmit to the new generation. In Aerija and Huao, women deal with agriculture, cooking, taking care of the children and elders, and handcraft activities while men are responsible of activities such as logging, hunting and fishing (RPW-A; RPW-H). This labor division influences their knowledge as it was shown in the participatory workshops. Women highlighted changes in their territory such as: the decrease of yield production and more extreme weather conditions affecting the health of their children. Meanwhile men pointed out issues like: the decrease in hunting, fishing and logging which lead to more distance walked and time spent to be able to feed their family (RPW-A; RPW-H). Additionally, there is specific knowledge that not only is gendered but considered taboo to the opposite gender. As one comunero said: *“there are things that don’t concern me: my mother can’t tell me issues related to women but she can tell me other things she knows. Likewise, my father can’t tell my sister men’s issues”*. They are mostly related to the use of medicinal plants like controlling women’s fertility or preparing *“piri-piri”* (RPW-A; RPW-H; C1). Moreover, it is a dynamic and cumulative knowledge as it keeps evolving with the community (Alessa et al., 2015) which also makes them responsive to change and adapt to the new local context (Heckenberger,

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<sup>8</sup> Sabixs refers to the eldest and wiser men (sabios) and women (sabias) in the community.

2013). One comunera in Huao said: “How many years have we taken care of our forest [...] doing chacras here, taking the yucca and moving to another chacra so that area sprouts again, and still sometimes we don’t know how to do it”.

Regarding SS (Table 2), it strives to analyze the root problem while considering the surrounding nature-society interactions. In its pursuit to apprehend the visible and underlying factors it ranges across disciplines, contexts, scales and levels; where the local context has a significant concern (Kates et al., 2001; Jerneck et al., 2010). It strives to acknowledge the interconnectedness between spheres, its cyclical nature and the feedback loops that may happen along the process using a transdisciplinary and systems thinking perspective (Kates et al., 2001; Miller, 2012). The diversity in actors and regions enriches the process of combining and integrating knowledge making sustainability science salient, credible and legitimate (Cash et al., 2003). It also acknowledges the importance of considering gender and intersectional relations (Jerneck et al., 2010). Moreover, knowledge attempts to be channeled into action to make a difference and foster a sustainable world (Clarck & Dickson, 2003; Jerneck et al., 2010).

Analysing the Indigenous knowledge we can also draw an analogy with the knowledge required in SS (Table 2). However, SS has a broader spectrum tackling complex problems and connecting the global to the local level while being critical and self-reflexive. Still, in its ambition to move across scales, levels and contexts makes the specific nature of Indigenous knowledge very valuable.

**Table 2.** Compatible characteristics between Indigenous knowledge and SS. Each row shows a similar feature, i.e. process-oriented and problem-solving.

Indigenous Knowledge	Sustainability Science
Process-oriented	Problem-solving
Place-based; local context	Across scales, levels and contexts
Coexistence culture - environment	Nature-society interactions
Cumulative and dynamic	Integrative and dynamic
Adaptive, response to change	Knowledge to action
Communal production	Participation and co-production
Gendered	Gender relations acknowledgement

Source: Author, 2016 (built from primary and secondary data).



## **5.2 What socio-environmental problems are Aerija and Huao facing?**

*“Without its territory the Indigenous communities become nothingness” (CORPIAA).*

This section analyses the problems faced by Aerija and Huao communities which are directly linked to their territory and livelihoods through the environmental and wellbeing sustainability's dimensions. The topics in each dimension have been structured according to the issues considered more important or were more mentioned by the key informants.

It is fundamental to highlight the importance of the territory for the comunerxs, showed in every workshop and interview. They conceive the territory as a holistic entity where the hydrography, landscape, forested areas, and human settlements are interconnected and need to be considered with an integrative perspective. Aerija and Huao are aware how highly dependent on their territory and natural resources they are as their livelihoods, culture, beliefs, traditions, and all activities are linked to it (RPW-A; RPW-H). Hence, the environmental changes and loss of control over their territory is a shared concern as it will directly affect their livelihoods. The data used comes from the participatory workshops and interviews.

### **5.2.1 Environmental Dimension**

#### ***Climate change***

The comunerxs of Aerija and Huao showed concern in the climatic variations occurring in their territory. They would mention changes like a general increase in temperature, more intense heat during the rainy season, less difference between the rainy and dry seasons in the temperature and rain patterns, and more frequency and intensity in storms and hurricanes (RPW-A; RPW-H). These same changes have also been gathered by the State's official data (MINAM, 2015). In the workshops, the comunerxs attributed these variations to climate change impacts. However, when asking what they understood or how could they define climate change there was no response.

## **Deforestation**

Increasing deforestation and its impacts were perceived as the main threat to the territory's environment (RPW-A; RPW-H; LE-1; LE-2). There are three main sources of deforestation:

- *Micro agriculture*: Aerija and Huao comunerxs said to deforest small areas for their chacras combining different type of yields like banana, yucca or rice for self-consumption. Chacras have a mean life of two years, after that time it will be abandoned so it can be naturally reforested while the family chooses a new patch (RPW-A; RPW-H). The comunerxs do not perceive micro agriculture as a threat to their forests as it is how they have been managing their forests for generations. They would accuse the invaders and legal timber companies to disturb the ecosystem and break this human-environment balance (RPW-A; RPW-H; C2). As one comunero said: *"they do one big chacra, leave everything clear and keep destroying our forests"*. However, official data shows that micro agriculture takes an important share of deforestation increase in the area although with less harmful impacts (MINAM, 2015).
- *Timber companies*: Companies are also contributing to deforestation. They have to sign a contract with the community in alignment with the Forestry and Wildlife Law (2010) principles about the forest management plan. This plan has to be also approved by the State agency. However, the terms of the contracts are not always respected as these companies deforest a larger area than what was agreed, without leaving seed beds or even extracting protected species (Subregion-1; LE-1; LE-2). As we will see, the consequences are suffered by the local communities.
- *Invaders*:<sup>9</sup> Aerija and Huao showed their concern in an increasing problem of illegal invaders (usually individuals or small companies). In the case of Aerija, one comunero said: *"some months ago we had a conflict but it is now solved; there was an invasion of nearly 300Ha for illegal logging in our pristine forest"*. Meanwhile, another comunero from Huao's community said: *"we are suffering from many invaders in our territory. We don't know what we can do to get them out of here"*. The presence of invaders does not only mean land occupation but violating the forest management plan.

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<sup>9</sup> I intentionally use a direct translation of the Spanish word (*invasores*) to maintain the importance and intensity the comunerxs gave to this issue. However, it would be interesting to do a research on the needs and context of this group.

### ***Biodiversity loss***

Deforestation has significant consequences affecting the local fauna and flora and, subsequently, the local biodiversity (MINAM, 2015). This was also perceived by the Indigenous communities themselves. One comunera said: “there is less beauty in our forest” while others in the workshops expressed it as: “our timber species and medicinal plants are disappearing” or “maybe our sons will never see the mahogany, ocelot or pitingo when they used to live here” (RPW-A & RPW-H).

### ***5.2.2 Wellbeing Dimension***

As previously mentioned, wellbeing incorporates the social and economic dimensions required for having a healthy, fair and happy life. Hence, it does not look only at the material needs, taking a broader perspective (Kuhlman, & Farrington, 2010).

### ***Livelihoods threatened***

The environmental disturbances previously described are affecting Aerija and Huao’s livelihoods. In both workshops, they expressed to be having trouble in the access to sufficient and varied food. The lands are less fertile, the crops less productive and it is becoming more difficult to hunt and fish enough for their daily intake. Hence, they are becoming more vulnerable to climate change impacts in their territory. This is leading to a shift from subsistence productive activities to commercial activities, selling the products to be able to cope with the family’s food demand. Moreover, key informants from the Subregion and municipality agreed that they are also becoming more dependent on social protection State programs and CSO, NGO projects.

### ***Fined and in debt communities***

Aerija and Huao are the owners of their territory and the last responsible of any productive activity. According to the Forestry and Wildlife Act, any forest activity for commercial reasons has to fulfill environmental requirements like ecosystemic compensation (seedbeds), threaten species protection and type and amount of timber extracted (p.28). Thus, when the State supervises the forestry activities, if the contract has been violated, the community gets a fine. As the local experts revealed, this effort to promote a sustainable management leaves the communities in a vulnerable situation: signing contracts that do not share their system of knowledge, which are not

being respected and leaving the consequences to the Indigenous communities themselves. This is the case of Aerija, where the representatives of the community signed a contract, but the timber merchants were not managing the forest as established. Interviewees stated that these contracts tend to be abusive and with ridiculous prices for the timber as the comunerxs do not always know the real exchange value of their resources (Subregion-2; LE-2; CORPIAA). Furthermore, invaders in Aerija and Huao are deforesting big areas without taking any environmental compensation measures which can be translated into potential fines (Subregion-2; LE-1; LE-2; PWR-A; PWR-H).

### ***Loss of culture and transmission of knowledge***

Indigenous communities are suffering from a culture loss and the weakening in the transmission of knowledge, according to the interviews with CSOs and local experts. This fact is more obvious in Aerija community as it is closer to Atalaya, the main city in the area. Younger generations are losing interest in speaking their native language, taking part in traditions or getting involved with the daily activities. Some young people are looking for remunerated jobs and willing to live in the city while others are adopting their parents' roles in the community, as expressed in the workshops. The involvement of the youth in the community is a key factor for the transmission of the Indigenous culture and knowledge. The younger of the communities have the role to assimilate the ideas and knowledge and take them to the future generations (CORPIAA). Therefore, there is the concern in both communities about the lack of interest and motivation in the Indigenous struggle and wisdom among the teenagers. As the president of CORPIAA said *"I have seen a youth not interested in the Indigenous movement, customs, losing their language and tradition. This situation worries me [...] They are the future of the Ashaninka and Yine"*. And one comunero affirmed: *"There is not only culture loss but alienation. They are following another culture but without knowing the reason behind it"*. Others explain it as *"today's youth is more modern and want to see more, to leave the community. Culture, customs and knowledge is being lost because the youth does not maintain the interest [...]. We should change towards a more integrative system where they can obtain economic resources by living from their customs and traditions so they might value again the good things they have"* (LE-4). This also shows the different standpoints within the Indigenous people and the local experts.

### ***Women oppression and marginalization***

*“The biggest problem experienced by Indigenous women is gender violence”,* expressed the president of OMAAPA. Women are neither being valued nor respected, regardless the community, Indigenous group and age. It is assumed that their existence is to satisfy everyone else needs, *“women are a marginalized and enslaved group”,* said the vice president of OIYPA. Their daily activities are recollecting food, carrying the harvest or the animals hunted and fished, cooking and cleaning, taking care of the family; activities which occupies most of their time and are not being valued. In political terms, there is a weak participation of women in meetings and assemblies, banished from the decisions over their livelihoods and territory (OIYPA-2, OMAAPA, LE-3). *“The limited participation is because they think that what they will say is not right [...], and sometimes there are some men who directly say that women do not think”,* one local expert expressed. Additionally, whenever there is a training or workshop it is mostly men who participate and gain the technical and scientific knowledge.

### **5.3 Which power relations are causing the socio-environmental problems in Aerija and Huao?**

*“We stand again and again but they ignore us” (CORPIAA).*

This section analyses the power relations behind the conflicts affecting Aerija and Huao’s environment and wellbeing. In accordance with Lukes’ (1974) three-dimensional power, I am considering the power exercised from a collective (State, company, and group) to the territory and over a group (comuners) by making or not making a decision and with or without an observable conflict. Through the analysis of the data, I have classified the power relations according to the different actors involved in the conflict and across levels (*Table 3*).

#### ***5.3.1 Indigenous culture and Western culture***

Looking at the global level, we can see uneven power relations result of a dominating culture (Western culture) over a marginalized culture (Indigenous culture). There is a process of culture loss which is influencing the Indigenous culture and threatening their livelihoods, as explained comunero C1. Delving into Lukes’ three-dimensional power, this power relation is a result of the decisions made and not made, coming from ideologies, and leading to current and potential observable and latent conflicts.

Firstly, power is being exercised to the Indigenous communities targeting an effect on their territory. The neoliberal paradigm is triggering impacts to the Indigenous territory by undermining collective property, privatizing the natural resources and selling the control and access of these resources. For instance, as the Subregion’s key informants expressed, the forest will be conserved when the economic value of its conservation is higher than the value of exploiting it. This economic and utility approach is enabling the privatization, appropriation and exploitation of the Indigenous territory and giving more importance to the exchange than intrinsic value of the natural resources.

Secondly, power is also being exercised over the Indigenous communities. The comuners perceive that neither their culture nor knowledge are being recognized nor represented in the management of their territories. On the one hand, the comuners are considered by the Subregion and local experts as illiterate because of their weak scientific, technical and economical

knowledge which hinders the comprehension of the current reality. Hence, this institution is taking a dominant role in deciding how their territory should be managed (Subregion-1; Subregion-2) and how the Indigenous peoples should be trained. Consequently, some comuneros (mostly men) are being trained in technical and economic issues related to the delimitation and management of their territory through State, CSO and NGO projects. On the other hand, the comuners themselves are asking for more training in technical knowledge for increasing their yields production or increasing the economic profit from their forests (PRW-A; PRW-H; OIYPA-1; C2). However, they also value their local knowledge and traditions, defend its promotion and are concerned about the lack of involvement by community's youth (PRW-A; PRW-H; C1; C2; CORPIAA; OIYPA-2; OMAAPA).

### ***5.3.2 Indigenous communities and the Peruvian State***

There is an uneven power relation between the Peruvian state and the communities. It is product of the decisions and actions taken and not taken in observable and non-observable conflicts. It ranges from latent conflicts such as ideological power, authority and corruption, to observable conflicts like the fines imposed to the communities.

The Peruvian state has a contradictory role regarding the Indigenous communities, manifested in Aerija and Huao cases. On the one hand, it has been showing more consideration and respect toward this marginalized group. Examples of this are the formal efforts translated into official mechanisms that acknowledge the Indigenous territories, cosmologies and livelihoods like the National Strategy about Forests and Climate Change (MINAM, 2015) or the Forestry and Wildlife Law (2010). Both incorporate a participatory approach and the mandatory previous consultation principle. The state is also financing and implementing projects related to land management and productive activities which respect the Indigenous communities' views, traditions and interests, according to the Subregion (Sub-region-1; Subregion-2).

On the other hand, the State is exerting a significant power with the decisions and actions taken or the indifference and inactivity (not taking actions) they show to some conflicts. Firstly, their top-down approach is creating dependence and threatening their own-led and endogenous development model. Furthermore, the State intervention is creating a sense of disappointment and mistrust among the comuners as they and their knowledge are not involved in the process, the financial and material support is wasted and it does not reach its targets (Subregion-2; LE-1;

LE-2; LE-3). Secondly, their indifference and inactivity towards the Indigenous conflicts is having significant impacts in the Indigenous livelihoods, as the local experts said. From the Subregion, they admitted to be aware of the high degree of corruption in the approvals of forestry concessions to logging companies, the abusive contracts or their unwillingness to comply with what is stipulated (Subregion-1; Subregion-2; Municipality; LE-2). As an informant from the Subregion said: *“The State is being a promoter of informality, invasion and illegal logging. The forest is being badly exploited and the communities are getting more and more indebted”*. Hence, the State is aware of the vulnerable situation the communities have, how the comunerxs are being manipulated and deceived and still they are not taking further actions. The comunerxs perceive the State only cares for the natural resources in their territory instead of for the people living there, as expressed in the workshops.

### **5.3.3 Indigenous communities and timber companies and invaders**

The power relation manifested between the timber companies and Indigenous communities are due to the decisions and actions taken in observable conflicts (impacts from their unsustainable forest management) to latent conflicts (manipulation in the contract signing). It can be analyzed together with the invaders power relation because of the State’s role. The companies have abusive contracts but must fulfill environmental management principles while being surveilled; however, their bad conduct does not result in negative consequences for them (Subregion-1; LE-1; LE-2). Therefore, they are currently “immune” to actions against them for the impacts they are causing, just like the invaders. The combination of different reasons enables this situation. Firstly, there is a weak understanding of the Indigenous territories, with no clear delimitations. The forest is perceived to be owned by no one, being exploited without further consequences (OIYPA-1; CORPIAA; C2; LE-1). Secondly, the comunerxs possess a weak knowledge in legal and economic issues signing any contract regardless of its abusive conditions (CORPIAA; LE-1; LE-2; LE-3; LE-4). And thirdly, communities like Aerija are highly dependent and indebted, thus accepting any kind of contract that can give them some financial support (Subregion-2; LE-1).



#### ***5.3.4 Gender and intersectionality in the Indigenous community***

Delving into the community level, there is the power relation by which women are oppressed and marginalized by the men of the community, regardless of the Indigenous group and age, as stated by the presidents of CORPIAA and OMAAPA. On the one hand, this power relation constructs gender roles: how each gender should behave and what activities should perform leading to the feminization of tasks such as cooking, caring and cleaning, which take most time of their day and limits their mobility (OMAAPA; CORPIAA; OIYPA-2). On the other hand, this relation disregards and undervalues half of the people of their community, making women feel unimportant and disempowered. As a result, they do not participate and express themselves in the assemblies nor hold powerful positions in the community (CORPIAA; OIYPA-1, OIYPA-2; OMAAPA; LE-3). Additionally, as OMAAPA and CORPIAA's presidents said, this power is increasingly manifested in physical and sexual violence, affecting women of all ages: from young girls to old women. This shows how women have access to the natural resources for taking care of the community but they are not involved in the political processes regarding the control over these resources. Besides, when bringing this topic in the interviews, women would give me all the data previously expressed while men would only refer to the limited female participation, normalizing and neglecting all other oppressing manifestations.

## 6 Discussion

In the previous section I have analysed the connection between the Indigenous cosmologies and knowledge with sustainability (Table 1 & 2), classified Aerija and Huao’s conflicts through the environmental and wellbeing sustainability’s dimensions (Table 3), and delved into the power relations across actors and levels (Table 3). These were the aspects required for answering the main research question: *Can a SEPM process contribute to reduce the conflicts, balance power relations and foster sustainability in Huao and Aerija Indigenous communities?* This section discusses the suitability of a SEPM process while reflecting on the limitations and challenges for Aerija and Huao context.

**Table 3.** Socio-environmental problems connected with the underlying power relations. This table helps to visualize the context complexity as most problems are product of more than on power relation. Climate change and Indigenous-Western culture power relation are acknowledged but not discussed regarding SEPM’s suitability for the sake of an in-depth analysis.

Socio-Environmental Problems		Power Relations
Dimension	Problems	
<i>Environmental</i>	Climate change	----
	Deforestation	Indigenous and Western Culture. Indigenous and the State. Indigenous and Companies/Invaders.
	Biodiversity loss	Indigenous and Western Culture. Indigenous and the State. Indigenous and Companies/Invaders.
<i>Wellbeing</i> <i>(social and economic dimensions)</i>	Livelihoods threatened	Indigenous and Western Culture. Indigenous and the State. Indigenous and Companies/Invaders.
	Fines and debts	Indigenous and the State. Indigenous and Companies/Invaders.
	Culture loss	Indigenous and Western Culture. Indigenous and the State. Comuneros and Comuneras.
	Women oppression and marginalization	Comuneros and Comuneras.

Source: Author, 2016.

Hence, it becomes pertinent to connect each conflict with the power relations which are causing and reinforcing them. Table 3 helps to visualize the links and grasp the complexity of the matter, as nearly all conflicts are product of different power relations. For instance, deforestation is an

observable conflict from the uneven power relation of the Indigenous communities and the Western culture, the State, the companies and invaders, and among the comunerxs themselves. I acknowledge the importance of climate change, and Indigenous and Western culture power relation but I am not considering them for the sake of an in-depth analysis and because it is beyond the SEPM's scope and capacity.

### **6.1 Suitability of a SEPM process**

In Aerija and Huao context, the suitability of a SEPM process is framed in its capacity to tackle the socio-environmental problems while contributing to balance the power relations, to a certain extent, and promote sustainable livelihoods (*Table 4*).

Firstly, a SEPM process in Aerija and Huao can integrate the community knowledge and take a sustainable and place-based approach. Their active participation contributes to recognize their culture and knowledge by involving the community while further acknowledging the local context and people instead of reinforcing its marginalization. Furthermore, the process of monitoring in itself is compatible with the Indigenous knowledge-transmission, more based in oral activities such as informative-transect walks, songs and tales, and focus group discussions. It is essential to include a gender and intersectional perspective (mainly age as one of the most important social category) to integrate all members of the community; count with all different knowledge and make sure there is the transmission from the elders to the younger ones. Additionally, the integration of the technical knowledge ensures the data validity as it is collected under the same methods and principles, making the results comparable. SEPM also works as a tool to share the scientific and technical knowledge with the communities, knowledge demanded by Aerija and Huao's comunerxs during the workshops. This knowledge is directly put into action, potentially becoming more practical and useful for the comunerxs than the popular few-days trainings offered by the Subregion or some SCOs. This first point can be linked to several socio-environmental problems: livelihoods threatened, culture loss and women oppression and marginalization. Hence, it can start making a difference in the power relations between the communities and the state, the companies and invaders, and between the comunerxs themselves (*Table 4*).

Secondly, SEPM enhances a shared understanding and better visualization of the environment, the territory and the current reality (Staddon, Nightingale, & Shrestha, 2014). Aerija and Huao

comuners can have a better understanding and evidence of the changes occurring in their territory; the main actors and sources of the disruption, the current trends and the potential consequences. This puts them in a position where it is easier to control what is happening in their territory, when and where the timber companies are not fulfilling the environmental principles and when and where the invaders are starting to occupy their land; having the Subregion, Municipality and CSOs being aware and involved with this situation. Furthermore, SEPM also forms a collective sustainable and environmental education and enables the analysis of the impacts affecting their livelihoods, such as climate change, deforestation, and biodiversity loss or fauna overexploitation. This process and information becomes highly relevant for, subsequently, managing their territory and thinking in measures for climate change adaptation and mitigation in collaboration with the State and other actors. This second point addresses several socio-environmental problems: deforestation, biodiversity loss, livelihoods threatened, fines and debts, and women oppression and marginalization. Thus, it can also start balancing the power relations between the communities and the state and the companies and invaders, and between the comuners themselves (*Table 4*).

And thirdly, SEPM is a political tool for balancing the uneven power relations, raising the voice of marginalized groups, and fostering transparent decision-making processes (Staddon, Nightingale, & Shrestha, 2014). The comuners in the center of the process can co-design, co-lead and participate in the monitoring and planning of their territory. Not only having access to the natural resources (as the current situation) but monitoring, controlling and managing those resources while following the environmental principles. SEPM is also an instrument to recognize their communal ownership and channel their demands with evidences to the State and other actors. Hence, SEPM can be the tool for managing their natural resources and their territory, controlling how, when and where is being exploited by third actors (companies, invaders) and a mean for advocacy when the legal limits are being transgressed. Moreover, it has to be constructed with the involvement of women from different ages so it acknowledges the whole potential of the community while working as a mechanism for women's empowerment. It is not the first time that an environmental local struggle has been the mechanism to channel women struggles and female empowerment (Arora-Jonsson, 2014). Thus, this last point refers to SEPM's political nature and tackles all the power relations faced by Aerija and Huao, dealing simultaneously with many of their problems such as: deforestation, biodiversity loss, livelihoods threatened, fines and debts, culture loss and women oppression and marginalization (*Table 4*), making a move towards sustainability.

**Table 4.** Suitability of a SEPM process in Aerija and Huao communities. This table helps to visualize which SEPM features can contribute to reduce some of the conflicts and balance some of the power relations. The power relations are ranked (1 to 3) depending on the SEPM’s capacity to influence them. \*I.C. refers to Indigenous Communities.

SEPM Suitability	Socio-Environmental Problems	Power Relations
Combination of local and “technical” knowledge	<ul style="list-style-type: none"> <li>• Culture loss</li> <li>• Women marginalization</li> <li>• Livelihoods threatened</li> </ul>	<ol style="list-style-type: none"> <li>1. Comuneras vs comuneros</li> <li>2. I.C. * vs timber companies/invaders</li> <li>3. I.C. vs the State</li> </ol>
Communal understanding and construction of the territory and the reality	<ul style="list-style-type: none"> <li>• Deforestation</li> <li>• Biodiversity loss</li> <li>• Fines and debts</li> <li>• Livelihoods threatened</li> <li>• Women marginalization</li> </ul>	<ol style="list-style-type: none"> <li>1. Comuneras vs comuneros</li> <li>2. I.C. vs timber companies/invaders</li> <li>3. I.C. Vs the State</li> </ol>
Community integration in the control over their territory	<ul style="list-style-type: none"> <li>• Deforestation</li> <li>• Biodiversity loss</li> <li>• Fines and debts</li> <li>• Livelihoods threatened</li> <li>• Culture loss</li> <li>• Women marginalization</li> </ul>	<ol style="list-style-type: none"> <li>1. I.C. vs timber companies/invaders</li> <li>2. I.C. vs the State</li> <li>3. Comuneras vs comuneros</li> </ol>

Source: Author, 2016.

Summing up, a SEPM process with a gender and intersectional perspective in Aerija and Huao (*Table 4*) is suitable because it can be used to face and avoid reinforcing some of the local conflicts which are threatening their environment and wellbeing (deforestation, biodiversity loss, livelihood threatened, fines and debts, loss of culture and women marginalization), tackle the underlying power relations with the State, companies and invaders and among genders, and potentially envision inclusive ways to foster sustainability in collaboration with the State and other actors.

## 6.2 Limitations and reflections

To start with, SEPM should not be seen as the ideal solution for Aerija and Huao cases but as a suitable tool integrated with other participatory processes and policies in the socio-environmental domain. However, it is important to highlight that SEPM counts with the sympathy of important actors involved in the process such as the comunerxs, staff from the Subregion, members of CORPIAA, OIYPA and OMAAPA, and the local experts; facilitating its planning, development and instauration.

Furthermore, there is the concern among the Indigenous researchers that this type of participatory processes might be detrimental if it does not take an integrative approach when combining both knowledge and methodologies (Knudson, 2015). The Indigenous culture could end up being absorbed by the Western culture. Hence, there is the requirement to use suitable participatory methodologies to ensure the creation of spaces where all ideas, interests and positions are considered and valued in the process design and, more specially, where the comunerxs have a central role. Nevertheless, it is also important to realize that some knowledge and traditions will be lost because of this closeness between cultures among other reasons and that is not always detrimental for the Indigenous people (i.e. *pishta* and *merataki*)<sup>10</sup>.

Additionally, an active participation and involvement of the community does neither necessarily mean the co-leading of the process nor the use of the results for decisions-making while empowering the community (Staddon, Nightingale, & Shrestha, 2014). SEPM has to be endogenous and appropriated by the community to make a difference and foster a change in the power relations that are controlling their territory. There are examples of SEPM and other methods (i.e. participatory mapping) that highlight the good results in recognizing local knowledge, building hybrid governance mechanisms, resolving conflicts and promoting sustainable livelihoods across regions (Norris, 2014; Staddon, Nightingale, & Shrestha, 2014; Dourojeanni, Ramirez, & Rada, 2012; McCreary, & Lamb, 2014). Aerija and Huao share some features which facilitates the development and instauration of a SEPM: their conflicts awareness, the social organization and democratic processes for taking decisions (improving the gender and

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<sup>10</sup> *Pishta* and *merataki* are controversial traditions by which girls in the community are initiated into womanhood through ceremonies, female genital mutilation practices and marriage. There are not similar male's initiation ceremonies. Currently some families in Aerija and Huao are still performing these ceremonies but without the FGM practice, according to the workshops and interviews. Comunerxs from the workshops and interviews clearly stated their rejection to these practices.

intersectional aspects is vital), and the willingness to struggle against the current situation. Still, these questions would have to be further studied and analyzed along the instauration of a SEPM process in Aerija and Huao communities.

Moreover, an increase in territory control by the Indigenous communities does not necessarily translate into sustainable livelihoods. It is important not to romanticize or make the general assumption about the Indigenous livelihoods being sustainable *per se* or being completely coherent with their system of belief. They might have a better understanding of the human-environment nexus but be unsustainable in other daily practices. This research only focuses on two communities, and it can still be expected to be significant differences in the management of their territory. Aerija is more interested in applying a profit-oriented resource management while Huao is in the process of being part of the National Forest Conservation Program for the Mitigation of Climate Change (PNCBMCC). This fact supports the idea that the specific context is extremely relevant when speaking about Indigenous communities.

And lastly, SEPM processes can intensify and create new power relations. This has to be acknowledged especially when taking a gender and intersectional perspective. Women and other marginalized groups' empowerment can lead to new conflicts as no group is willing to give up their "pristine" share of power.

## 7 Conclusion

The Peruvian Amazon raises interest across spheres, actors, scales and levels. Some sectors value it because of the energy potential in the exploitation of its natural resources; others visualize it as “the lungs of the planet” and are combining efforts for its conservation. Among these two contradictory approaches lay the Amazonian Indigenous communities; marginalized communities even though they have rights over their territory. Aeriya and Huao communities, in the center of the Peruvian Amazon, are examples of this, emphasizing the marginalization and oppression of the Indigenous women. These communities are facing socio-environmental problems caused and reinforced by uneven power relations with different actors such as the State, timber companies, and invaders. Additionally, their cosmologies and knowledge, which share characteristics with sustainability, are being undervalued and neglected. This thesis supports the suitability of socio-environmental participatory monitoring processes to involve the comunerxs in decision-making processes over their territory by integrating the community knowledge and enhancing their active participation along the process. Hence, SEPM practices can be useful for community-based management; from having a more holistic and general perspective over their territory to taking an active part in deciding and controlling productive and conservation projects and, potentially, fostering sustainability in these communities. However, SEPM processes have significant limitations and challenges which have to be acknowledged. Some of them are the genuine integration of the community knowledge, the communal appropriation of the process leading to results in the decisions-making and control over the territory, the possibility of causing new conflicts and power relations, and actually fostering sustainable livelihoods.

Future lines of research, ideally as action research, could delve into the process of planning and instauration of SEPM processes with Indigenous communities reflecting on the limitations and challenges exposed. It could be interesting to analyze the differences between participatory monitoring processes according to its specific objective and context; from its employment in having a general overview and zoning of their territory, to taking active part in the management of agreed productive and conservation projects. This line of research-based knowledge and action would contribute to analyze SEPM processes inside and outside academia with a critical and constructive perspective to foster sustainability across contexts with and for the local communities.



## 8 References

- Agarwal, B. (1992). The Gender and Environment Debate: Lessons from India. *Feminist Studies*, (1): 119
- Agüera-Cabo, M. (2006). Gender, Values and Power in Local Environmental Conflicts: The case of Grassroots Organisations in North Catalonia. *Environmental Values*, (4): 479
- Alessa, L., Kliskey, A., Gamble, J., Fidel, M., Beaujean, G., & Gosz, J. (2015). The role of Indigenous science and local knowledge in integrated observing systems: moving toward adaptive capacity indices and early warning systems. *Sustainability Science*  
DOI 10.1007/s11625-015-0295-7
- Archer, M., Bhaskar, R., Collier, A., Lawson, A., & Norrie, A. (1998). *Critical Realism: Essential Readings*. Routledge, London
- Arora-Jonsson, S. (2014). Forty years of gender research and environmental policy: Where do we stand? *Women's Studies International Forum* 47: 295-308  
DOI 10.1016/j.wsif.2014.02.009
- Bayrak, M., & Marafa, L. (2016). Ten years of REDD+: A critical review of the impact of REDD+ on forest-dependent communities. *Sustainability* 8(7): 1-22  
DOI 10.3390/su8070620
- Bryant, R. L., & Bailey, S. (1997). *Third World Political Ecology*. Routledge, Washington
- Bryman, A. (2016). *Social research methods*. Oxford University Press, Oxford
- Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., & ... Mitchell, R. B. (2003). Knowledge Systems for Sustainable Development. *Proceedings of the National Academy of Sciences of the United States of America* (14) 8086
- CILA. (2012). *Asháninka: territorio, historia y cosmovisión [Ashaninka: territory, history and cosmovision]*. Unicef, Lima
- CILA. (2012). *Yine: territorio, historia y cosmovisión [Yine: territory, history and cosmovision]*. Unicef, Lima
- CIMAS (2009). *Metodologías participativas: manual [Participatory methodologies: manual]*. Retrieved January, 2016 from [http://www.redcimas.org/wordpress/wp-content/uploads/2012/09/manual\\_2010.pdf](http://www.redcimas.org/wordpress/wp-content/uploads/2012/09/manual_2010.pdf)

- Clark, W. C., & Dickson, N. M. (2003). Sustainability Science: The Emerging Research Program. *Proceedings of the National Academy of Sciences of the United States of America*, (14): 8059
- Collier, A. (1994). *Critical realism: an introduction to Roy Bhaskar's philosophy*. Verso, London
- Danielsen, F., Poulsen, M., Enghoff, M., Jensen, A., Balete, D., & Nozawa, C. (2000). A simple system for monitoring biodiversity in protected areas of a developing country. *Biodiversity And Conservation*, 9(12): 1671-1705  
DOI 10.1023/A:1026505324342
- Di Chiro, G. (2015). A new spelling of sustainability: engaging feminist-environmental justice theory and practice. In W. Harcourt & I. L. Nelson (Eds), *Practising feminist political ecologies: moving beyond the 'green economy'* 211 – 237. Zed Books, London
- Dietz, S., & Neumayer, E. (2007). Weak and strong sustainability in the SEEA: Concepts and measurement. *Ecological Economics*, 61: 617-626  
DOI 10.1016/j.ecolecon.2006.09.007
- Donaghy, M. M. (2011). Do Participatory Governance Institutions Matter? Municipal Councils and Social Housing Programs in Brazil. *Comparative Politics*, (1): 83
- Dourojeanni, M., Ramirez, L., & Rada, O. (2012). Indigenas, campesinos y grandes empresas: experiencia de los Programas de Monitoreo Socioambiental Comunitarios [Indigenous, peasants and big companies: experiences from Socio-Environmental Participatory Monitoring]. ProNaturaleza, Lima
- Ekins, P., Simon, S., Deutsch, L., Folke, C., & De Groot, R. (2003). A framework for the practical application of the concepts of critical natural capital and strong sustainability. *Ecological Economics* 44(2/3):165  
DOI 10.1016/S0921-8009(02)00272-0
- FAO. (1990). The community's toolbox: The idea, methods and tools for participatory assessment, monitoring and evaluation in community forestry. Retrieved January, 2016 from <http://www.fao.org/docrep/x5307e/x5307e05.htm#4>
- Forestry and Wildlife Law N° 27963. Ministerio de Agricultura [Ministry of Agriculture]. Retrieved April, 2016 from <http://www.actualidadambiental.pe/wp-content/uploads/2013/12/Ley-Forestal-y-de-Fauna-Silvestre-29763.pdf>
- Galeano, E. (1980). *Las venas abiertas de América Latina* [Open veins of Latin America]. Siglo 21, Madrid
- Geilfus, F. (2002). 80 Herramientas para el desarrollo participativo: diagnóstico, planificación, monitoreo y evaluación [80 tools for participatory development: diagnosis, planning,

monitoring and evaluation]. IICA. Retrieved January, 2016 from <http://ejoventut.gencat.cat/permalink/aac2bb0c-2a0c-11e4-bcfe-005056924a59>

Giddings, B., Hopwood, B., & O'Brien, G. (2002). Environment, economy and society: fitting them together into sustainable development. *Sustainable Development*, 10(4): 187

Gutiérrez-Vélez, V., DeFries, R., Pinedo-Va'squez, M., Uriarte, M., Padoch, C., Baethgen, W., & ... Yili, L. (2011). High-yield oil palm Expansion Spares land at the Expense of Forests in the Peruvian Amazon. *Environmental Research Letters*, 6(4): 044029  
DOI:10.1088/1748-9326/6/4/044029

Harcourt, W., & Nelson, I. L. (2015). Practising feminist political ecologies: moving beyond the 'green economy'. Zed Books, London

Heckenberger, M. (2013). Who is Amazonia? The "salt of the matter" for indigenous sustainability. *Environmental Research Letter*, 8(4): 041007  
DOI 10.1088/1748-9326/8/4/041007

Herman, R. (2015). Traditional knowledge in a time of crisis: climate change, culture and communication. *Sustainability Science*  
DOI 10.1007/s11625-015-0305-9

Himley, M. (2014). Monitoring the impacts of extraction: science and participation in the governance of mining in Peru. *Environment & Planning* 46(5): 1069-1087  
DOI 10.1068/a45631

IBC. (2014). Los papeles de la Tierra: superando los obstáculos a la titulación de las comunidades del Perú [Earth papers: overcoming obstacles to the titling of communities in Peru]. Instituto del Bien Común, Lima

IPCC. (2014). Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva

Jaramillo, M., & Wright, G. D. (2015). Participatory Democracy and Effective Policy: Is There a Link? Evidence from Rural Peru. *World Development* 66280-292  
DOI 10.1016/j.worlddev.2014.08.011

Jerneck, A., Olsson, L., Ness, B., Anderberg, S., Baier, M., Clark, E., & ... Persson, J. (2010). Structuring sustainability science. *Sustainability Science* 6(1): 69-82

Kates, R. W., Clark, W. C., Corell, R., Hall, J. M., Jaeger, C. C., Lowe, I., & ... Svedin, U. (2001). Sustainability Science. *Science* (5517): 641

- Kealiikanakaoleohaililani, K., & Giardina, C. (2015). Embracing the sacred: an indigenous framework for tomorrow's sustainability science. *Sustainability Science*  
DOI 10.1007/s11625-015-0343-3
- Kuhlman, T., & Farrington, J. (2010). What is sustainability? *Sustainability* 2(11): 3436–3448  
DOI 10.3390/su2113436
- Knudson, S. (2015). Integrating the self and the spirit: Strategies for aligning qualitative research teaching with indigenous methods, methodologies, and epistemology. *Forum Qualitative Sozialforschung*, 16(3)
- Lin, P., & Liu, Y. (2016). Niching sustainability in an Indigenous community: protected areas, autonomous initiatives, and negotiating power in natural resource management. *Sustainability Science* 11(1): 103-113  
DOI 10.1007/s11625-015-0294-8
- López, S., Beard, R., & Sierra, R. (2013). Landscape change in Western Amazonia. *Geographical Review* 103(1): 37  
DOI 10.1111/j.1931-0846.2013.00185.x
- Lukes, S. (1974). *Power: A Radical View*. Palgrave Macmillan Ltd, Hampshire (UK)
- McCreary, T., & Lamb, V. (2014). A Political Ecology of Sovereignty in Practice and on the Map: The Technicalities of Law, Participatory Mapping, and Environmental Governance. *Leiden Journal of International Law* 27(3): 595-619
- Miller, T. (2013). Constructing sustainability science: emerging perspectives and research trajectories. *Sustainability Science* 8(2): 279  
DOI 10.1007/s11625-012-0180-6
- Ministerio de Cultura [Ministry of Culture]. (2016). Aeriya. Retrieved January, 2016 from <http://bdpi.cultura.gob.pe/comunidad/aeriya-17>
- Ministerio de Cultura [Ministry of Culture]. (2016). Huao. Retrieved January, 2016 from <http://bdpi.cultura.gob.pe/comunidad/huao-17>
- Ministerio de Economía y Finanzas (MEF) [Ministry of Economy and Finance]. (2015). Programa de Inversión Forestal [Forestry Investment Programme]. Retrieved April, 2016 from [http://www.mef.gob.pe/index.php?option=com\\_content&view=article&id=2432&Itemid=101691&lang=es](http://www.mef.gob.pe/index.php?option=com_content&view=article&id=2432&Itemid=101691&lang=es)
- Ministerio del Medio Ambiente (MINAM) [Ministry of Environment]. (2015). Hacia una estrategia nacional sobre bosques y cambio climático [Towards a national strategy in forests and climate change]. Minam, Perú

- Ministerio del Medio Ambiente (MINAM) [Ministry of Environment]. (2011). Mecanismos de financiamiento para la conservación de los ecosistemas y la biodiversidad [Finance schemes for ecosystem and biodiversity conservation]. MINAM, Perú
- Montoya, M., & Young, K. (2013). Sustainability of natural resource use for an Amazonian indigenous group. *Regional Environmental Change* 13(6): 1273-1286
- Nagan, W. (2013). Protecting the economic patrimony of indigenous nations: the case of the Shuar. *Policy Sciences* 46(2): 143-159  
DOI 10.1007/s11077-012-9167-5
- Neuman, W. L. (2014). Social research methods: qualitative and quantitative approaches. Pearson, Essex
- Nightingale, A. J. (2015). Challenging the romance with resilience: communities, scale and climate change. In W. Harcourt & I. L. Nelson (Eds), *Practising feminist political ecologies: moving beyond the 'green economy'* (pp.182 – 208). Zed Books, London
- Nightingale, A. J. (2011). Bounding difference: Intersectionality and the material production of gender, caste, class and environment in Nepal. *Geoforum* 42: 153-162  
DOI 10.1016/j.geoforum.2010.03.004
- Norris, T. B. (2014). Bridging the great divide: State, civil society, and 'participatory' conservation mapping in a resource extraction zone. *Applied Geography* 54:262-274  
DOI 10.1016/j.apgeog.2014.05.016
- Osborne, T., Bellante, L., & Von Hedemann, N. (2014). Indigenous Peoples and REDD+: A Critical Perspective. Public Political Ecology Lab, Arizona
- Paulson, S., & Gezon, L. L. (2005). Political ecology across spaces, scales, and social groups. Rutgers University Press, New Brunswick
- Quintana Peña, A. (2006). Metodología de Investigación Científica Cualitativa [Qualitative scientific methodology research]. Retrieved January, 2016 from <http://www.ubiobio.cl/miweb/webfile/media/267/3634305-Metodologia-de-Investigacion-Cualitativa-A-Quintana.pdf>
- Rénique, G. (2009). Law of the Jungle in Peru: Indigenous Amazonian Uprising against Neoliberalism. *Socialism & Democracy* 23(3): 117-135  
DOI 10.1080/08854300903290835
- Robbins, P. (2012). Political ecology: a critical introduction. J. Wiley & Sons, West Sussex

- Rocheleau, D. (2015). A situated view of feminist political ecology from my networks, roots and territories. In W. Harcourt & I. L. Nelson (Eds), *Practising feminist political ecologies: moving beyond the 'green economy'* (pp.29 – 66). Zed Books, London
- Rocheleau, D., Thomas-Slayter, B., & Wangari, E. (1996). *Feminist political ecology: global issues and local experiences*. Routledge, London
- Staddon, S. C., Nightingale, A., & Shrestha, S. K. (2014). The Social Nature of Participatory Ecological Monitoring. *Society & Natural Resources* 27 (9): 899  
DOI 10.1080/08941920.2014.905897
- Territorio Indígena y Gobernanza [Indigenous Territory and Governance]. (2015). Amenazas [Threats]. Retrieved September, 2016 from <http://www.territorioindigenaygobernanza.com/industriasextractivas.html>
- Turner II, B., & Robbins, P. (2008). Land-Change Science and Political Ecology: Similarities, Differences, and Implications for Sustainability Science. *Annual Review of Environment and Resources* 33(1): 295-316  
DOI 10.1146/annurev.enviro.33.022207.104943
- Van Kerkhoff, L., & Lebel, L. (2006). Linking knowledge and action for sustainable development. *Annual Review of Environment and Resources* 31:445-477
- Waas, T., Hugé, J., Verbruggen, A., & Wright, T. (2011). Sustainable development: A bird's eye view. *Sustainability* 3(10): 1637–1661  
DOI 10.3390/su3101637
- Watts, M. J. (2000). Political Ecology. In E. Sheppard, & T. J. Barnes, (Eds.), *A companion to economic geography* (pp.257 – 274). Blackwell, Oxford
- Whyte, K., Brewer, J., & Johnson, J. (2016). Weaving Indigenous science, protocols and sustainability science. *Sustainability Science* 11(1): 25  
DOI 10.1007/s11625-015-0296-6
- World Commission on Environment and Development (WCED). (1987). *Our Common Future*. Oxford University Press, New York
- World Wild Fund (WWF). (2016). Amazon overview. Retrieved March, 2016 from <http://www.worldwildlife.org/places/amazon>