

*Traditional Ecological Knowledge in the
Governance of the Colombian Amazon in a
Post-Peace Accord Scenario*

A Social Ecological Study with Cacua People

A thesis submitted in partial fulfilment of the requirements for the degree of

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in

Sustainable Futures

by

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to

Institute for Sustainable Futures
University of Technology Sydney

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May 2022

CERTIFICATE OF ORIGINAL AUTHORSHIP

I, Paloma Vejarano Alvarez declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Institute for Sustainable Futures at the University of Technology Sydney.

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For peace in Colombia

“Let there be justice for all. Let there be peace for all. Let there be work, bread, water and salt for all. Let each know that for each the body, the mind and the soul have been freed to fulfill themselves.”

-Nelson Mandela-

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ABBREVIATIONS AND ACRONYMS

CDA	<i>Corporación para el Desarrollo Sostenible del Norte y el Oriente Amazónico</i> (Corporation for the Sustainable Development of the Northern and Eastern Amazon)
CITES	Convention on International Trade in Endangered Species of wild fauna and flora
CONPES	<i>Concejo Nacional de Política Económica y Social</i> (National Council of Economic and Social Policy)
DANE	<i>Departamento Administrativo Nacional de Estadísticas</i>
ELN	<i>Ejercito De Liberación Nacional</i> (National Liberation Army)
ES	Ecosystem Services
FARC - EP	<i>Fuerzas Armadas Revolucionarias de Colombia – Ejército Popular</i> (Revolutionary Armed Forces of Colombia - Popular Army)
IAvH	<i>Instituto Alexander von Humboldt</i> (Alexander von Humboldt Institute)
IDEAM	<i>Instituto de Hidrología, Meteorología y Estudios Ambientales</i> (Institute of Hydrology, Meteorology and Environmental Studies)
IIAP	<i>Instituto de Investigaciones Ambientales del Pacífico</i> (Pacific Institute of Environmental Research)
IK	Indigenous Knowledge
IP	Indigenous Peoples
INVEMAR	<i>Instituto de Investigaciones Marinas y Costeras</i> (Institute of Marine and Coastal Research)
IP	Indigenous Peoples
IPBES	Intergovernmental Panel of Biodiversity and Ecosystem Services
IT	Indigenous Territory
ITD	Interdisciplinarity
MDG	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
PA	Peace Accord
PNGIBSE	<i>Política Nacional de Biodiversidad y Sus Servicios Ecosistémicos</i> (National Policy of Biodiversity and Ecosystem Services)
SES	Socio-Ecological Systems
SIATAC	<i>Sistema de Información Ambiental Territorial de la Amazonia Colombiana</i>
SIL	Summer Institute of Linguistics
SINA	<i>Sistema Nacional Ambiental</i> (National Environmental System)
SINCHI	<i>Instituto Amazónico de Investigaciones Científicas</i>
TEK	Traditional Ecological Knowledge
UNDP	United Nations Development Program

ABSTRACT

The Colombian Amazon, recognized for its great biological and cultural diversity, has historically faced major pressures from human activities, resulting in biodiversity losses and cultural changes of its Indigenous Peoples.

After over 50 years of armed conflict, the 2016 Peace Accord between the Colombian government, and the FARC-EP opened a window for designing and implementing inclusive models of governance in the country. The Accord also heightened the significance of a range of dynamic, interacting elements that could produce a different picture than previously envisioned, especially for Indigenous Peoples in the Amazon region. In the frame of sustainability and conservation, traditional ecological knowledge (TEK) – that is, the system of beliefs and practices indigenous people hold about their relationships with their surroundings – has received the attention of scholars over recent decades. However, TEK's potential contribution to the governance of post-conflict areas such as the Colombian Amazon remains less explored. This research aims to understand new roles of TEK in the provision of ecosystem services (ES) and its significance for the Indigenous Peoples in the Colombian Amazon in navigating shifts of social-ecological systems in a post-conflict scenario,

Drawing from social-ecological systems theory and using a qualitative approach and a case study with the Cacia people, I investigated 1) the implications of the peace accord for the region, its Indigenous Peoples, and their knowledge, 2) the potential contribution of TEK to the regional governance of the Colombian Amazon in a post-peace accord scenario, and 3) possible transformations in the current governance system needed to safeguard TEK and the provision of ecosystem services.

In this research I found that TEK has a distinctive and powerful cross-scale role in the governance and governability of the socio ecological system it is part of, from supporting local subsistence to a tool in international negotiations around climate change and biodiversity loss. However, prevailing attitudes towards TEK provide evidence of the embedded cultural disdain Indigenous Peoples and their knowledge continue to face. This disdain restrains their agency and access to national

development, despite international initiatives such as IPBES¹, which promotes and supports the contribution of indigenous peoples and their knowledge to the integral management of national territories and their biodiversity. Such initiatives are a starting point towards the inclusion and agency of IPs in decision and policy making, and influence national governments like Colombia, in the design of its own biodiversity management policy and co-production of knowledge.

For Colombia to navigate a just transition towards sustainable, long-lasting peace, multi-diverse knowledge systems and contexts need to be explicitly considered by the state and mainstreamed into institutional practices, ensuring a desirable future for indigenous people and their globally significant territory.

¹ IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

I Introduction

In November 2016, Colombia faced a historic moment. After more than 52 years of armed conflict with the guerrilla organization FARC–EP² (*Fuerzas Armadas Revolucionarias de Colombia – Ejercito Popular*), which led to thousands of casualties, forced displacement, and severe environmental impacts, the Government and this ‘guerrilla’ organisation reached an agreement and signed a Peace Accord on the 24th of November 2016. This opportunity comprises various changes in agriculture and development policies that might have an impact on Colombian society, especially on rural communities and Indigenous Peoples, as outlined in the post-conflict scenario developed by the United Nations Development Programme and the German Agency for International Cooperation (PNUD, 2014). This scenario identified areas of priority intervention due to potential social and environmental conflicts resulting from natural resources use, among other causes. Some of these areas coincide both with national natural reserves and with those where ethnic minorities (Indigenous Peoples) are based in the Amazon region.

The Amazon region, one of the most bioculturally³ diverse regions of the planet (Dirzo & Raven, 2003; Heckenberger et al., 2007), is under increasing pressure from human activities. This has led to losses in biodiversity, and cultural changes in Indigenous communities (Cabrera-Becerra, 2004; Carrizosa et al., 2016). Deforestation and land degradation are among the main drivers of change identified by national and international institutions and NGOs (Burgos et al., 2014; Carrizosa et al., 2016; Rodríguez et al., 2014). Additionally, possible changes resulting from the post-conflict scenario could make it necessary to plan strategically for biological conservation and sustainable development of Indigenous communities that recognise their knowledge and worldviews.

² FARC – EP: *Fuerzas Armadas Revolucionarias de Colombia – Ejercito Popular* (Revolutionary Armed Forces of Colombia – Popular Army) is Colombia's largest rebel group founded in 1964 as the armed wing of the Communist Party.

³ Biocultural diversity: Diversity of life in all its manifestations: biological, cultural and linguistic (Maffi, 2005).

From an interdisciplinary (ITD) perspective, this thesis explores and applies two concepts currently used in conservation and environmental governance: Traditional Ecological Knowledge (TEK) and Ecosystem Services (ES). The thesis contributes to scholarship at the nexus of these two types of knowledge. It documents research into effective mechanisms to enhance the environmental governance of the Colombian Amazon in a post-conflict transition scenario.

1.1 COLOMBIAN AMAZON – THE CONTEXT

To understand the possible implications of the Peace Accord, from now referred as PA, on the future of the Colombian Amazon, and the role of knowledge of Indigenous Peoples and ecosystem services for a better post-conflict scenario, it is necessary to look into the social, political, and historical development and the context of the region and its Indigenous Peoples. As proposed by Geertz (1973), understanding and explaining human conduct requires acknowledgement of the context in which it occurs. Furthermore, to propose comprehensive interventions that go beyond a sole discipline and to understand complex systems such as the Amazon, requires a research approach that allows the dialogue and interaction between disciplines and knowledge systems. Such an approach is Interdisciplinarity (ITD) and has been adopted in this research.

According to (Mcgregor (2004) ITD research allows the transfer of methods from one discipline to another. In this thesis, a dialogue is bridge between the social sciences and the biological sciences, the expertise of the researcher.

1.1.1 Biological and cultural exuberance

The Colombian Amazon region is part of the largest hydrographic river basin in the world and is of great importance in a global and regional context due to its large area of rainforest and the abundance of water bodies that contribute to the regulation of the climate inside and outside the region (Poveda, 2011; Maretti et al., 2014). According to data from the Instituto Amazónico de Investigaciones Científicas – SINCHI- the region covers approximately 483,163 km², representing around 40% of Colombia's territory, which denotes its importance in the national context (SINCHI, 2016a)

Administratively, it comprises ten departments, six of them contained within the Amazon: Guainía, Vaupés, Guaviare, Caquetá, Putumayo, and Amazonas; and four partially contained: Vichada, Meta, Cauca, and Nariño (Figure I-1) (Observatorio DESC Amazonia, 2007; SINCHI, 2016b).

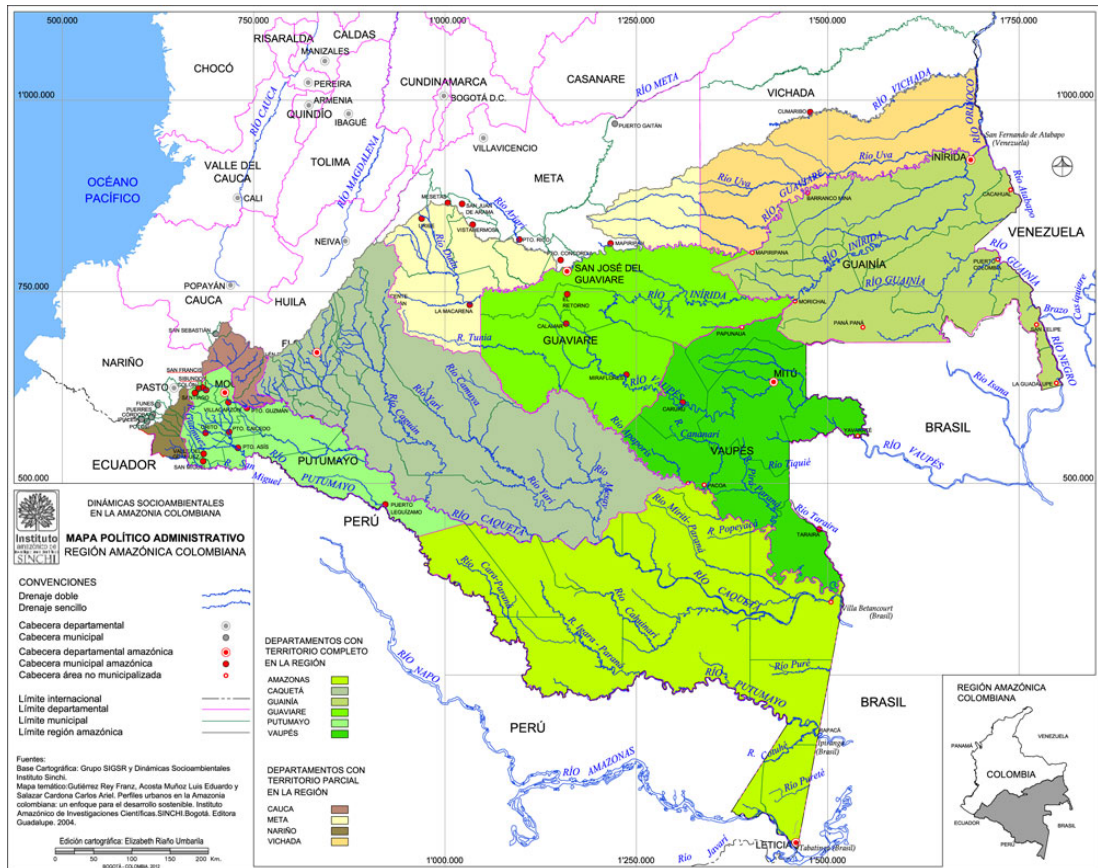


Figure I-1. Colombian Amazon region. Source: SINCHI 2016

Due to the great extension and relative isolation of the Amazon rainforest, it has remained fairly well conserved, comprising 10% of the world's biodiversity on only 0.7% of the earth's surface (CEPAL & Patrimonio Natural, 2013). Moreover, it contains more than 300 species of mammals, nearly 750 of fishes, 258 of reptiles, around 230 of amphibians, more than 600 species of birds, and more than 25,000 species of flora (CEPAL & Patrimonio Natural, 2013; Torres, 1988).

Similarly, the Amazon region also preserves the ethnic and linguistic diversity of Colombia. According to the National Administrative Department of Statistics (DANE, 2019) the indigenous population in the region is estimated to comprise 168,572 inhabitants in approximately about 62 indigenous groups, some of them at severe risk

of extinction such as the Awa, Kofan, Siona, Coreguaje, Carijona, Jiw, Muinane, Embera, Uitoto and Nukak (CNMH, 2019; Stavenhagen, 2005; Zárata Botía, 2012).

The multiple indigenous groups in the region are recognized for their invaluable cultural and historical importance, with their unique customs and traditions, knowledge and management of natural resources, and with a social organization that has guaranteed their subsistence despite the odds (Cepal & Patrimonio Natural, 2013; Lara Ponce & Vides-Almonacid, 2014; Reichel-Dolmatoff, 1976).

Most groups live in territories of collective ownership known as *resguardos*⁴, a legal category that recognizes indigenous collective property over a geographically delimited area. In this context, 'territory' has a broader meaning: it represents the traditional interaction between IP, their practices, and their connection with the world. The Colombian Constitution (1991) has granted *resguardos* the status of inalienable (i.e. cannot be transferred from its present ownership), imprescriptible (i.e. not subject to being taken away by prescription or by lapse of time) and unencumbered (i.e. not having any burden or impediment⁵) rights. According to the Territorial Environmental Information System of the Colombian Amazon⁶, there are 212 *resguardos* occupying around 26 million Ha, making up 54% of the Amazonian territory (Herrera Montoya et al., 2020)

In the history of Indigenous Peoples in the Colombian Amazon, several events are recognized to have impacted their communities and people: the arrival of colonisers, the rubber boom, the arrival of religious missions, drug trafficking, and the armed internal conflict (Carrizosa et al., 2016; Trujillo, 2014). Details on the impact of such events are provided in Chapter 4.

⁴ Resguardos: Indigenous reservation that existed since colonial times, defined in the legislation as “a legal and socio-political institution of a special nature, made up of one or more indigenous communities, which with a collective property title enjoy the guarantees of private property, own their territory and are governed for the management of this and their internal life by an autonomous organization protected by the indigenous jurisdiction and its own regulatory system ”(Decree 1071 of 2015).

⁵ Definition from the Oxford English Dictionary

⁶ In Spanish: *Sistema de Informacion Ambiental Territorial de la Amazonia Colombiana*

1.1.2 Makú – the “forest people”

According to the National Ethnographic Museum⁷ and Cabrera-Becerra (2010), in the Amazon, “there are several socio-cultural complexes located in different geographic areas, formed by ethnic groups that maintain close networks of cultural exchange”, one of them is the Great Vaupes complex. This complex is occupied by more than 20 ethnicities in which two different social groups of indigenous people are distinguished, the “river people” and the “forest people” or Makú people (Cabrera-Becerra, 2010; Mahecha et al., 1997).

The “river people” comprises 20 ethnic groups of Tukano and Arawak affiliation, living in settlements on the riverbanks and whose main activities are subsistence agriculture and fishing (Correa Rubio, 1984; P. L. Silverwood-Cope, 1972). The “forest people” or Makú, is formed by six ethnicities: the Cacua and Nukak in Colombia, Hupdu and Juhup (in the Colombian-Brazilian frontier), and Dow or Kama and Nadob (exclusively in Brazil) (Cabrera-Becerra, 2010; Mahecha et al., 1997). The term Makú has different linguistic and historical explanations; however, it has been assigned to them by external groups and is not an autonym⁸. In many cases, the “forest people” denotes a negative cultural appraisal (Cabrera-Becerra, 2004; Mahecha et al., 1997; P. Silverwood-Cope, 1990).

The Cacua are the focus of interest in this research and share with the other groups the linguistic affiliation and similar semi nomadic, hunter/gatherer socio-cultural features. Little is known about them since ethnographic research was conducted in 1972 by anthropologist Silverwood-Cope, and, more recently, a grammar study by Bolaños-Quíñonez in 2016. Justification of the Cacua case study and some of their main features of the group will be addressed in Chapter 3.

In general, despite the significant development of indigenous rights in Colombia in the last 20 years, IP struggle to exercise autonomy in their territories. Violence and armed conflict are one of the major causes for this, but other causes are weak institutional

⁷ <https://www.banrepcultural.org/exposiciones/museo-etnografico/diversidad-cultural-en-la-amazonia>

⁸ Autonym: A name by which a people or ethnic group refers to itself; a self-designation (Oxford English Dictionary)

systems in place, and persistent racism. The direct consequences of this are destruction of culture, displacement, dispossession, lack of access to education and health support for IP. These consequences added to the increasing drivers of change such as deforestation and illegal activities (Armenteras et al., 2006; Carrizosa et al., 2016) hinder the possibilities for self-determination and perpetuate conditions of injustice and inequity for IP.

1.1.3 The National Environmental System – SINA

In Colombia, decisions concerning the environment are ruled by the *Sistema Nacional Ambiental* (SINA). According to Law 99 of 1993 “SINA encompasses the set of norms, policies, rules, programs and institutions which guide and define the environmental principles of the country in environmental issues found in the 1991 Colombian Constitution”.

Table 1-1 summarizes the main institutions and actors that conform to the SINA, which is administered by the Ministry of Environment and Sustainable Development.

Table 1-1. Main actors of the Environmental National System

SINA	Institutions
Institutional SINA	Ministry of environment and sustainable development Autonomous regional corporations (26) Sustainable development corporations (7) Urban environmental authorities (6) National system of natural parks The national environmental licenses agency National research institutes ⁹ : IDEAM, INVEMAR, SINCHI, IIAP, IAVH
Territorial SINA	Local authorities such as ethnic territories, municipalities, and departments
Trans-sectoral SINA	Ministries and control bodies in environmental matters such as the delegate for environmental issues of the people’s defender office, environmental police and the environmental procurator

⁹ IDEAM: Instituto de hidrología, meteorología y estudios ambientales (Institute of Hydrology, Meteorology and Environmental Studies). INVEMAR: Instituto de investigaciones marinas y costeras (Institute of marine and coastal research). SINCHI: Instituto amazónico de investigaciones científicas (Amazonian institute of scientific research). IIAP: Instituto de investigaciones ambientales del pacífico (Pacific institute of environmental research). IAVH: Instituto de investigaciones biológicas Alexander von Humboldt (Alexander von Humboldt institute for research of biological resources).

Social SINA	Non-governmental stakeholders represented by NGOs, community-based organizations (including indigenous and Afro-Colombian organizations), universities, other research institutes and private sector
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Source: Law 99/1993

At present, SINA is under modification, revision, and debate among the different actors that compose it. Some of the critique of the current system is related to structural problems that do not guarantee the flow of information and operational coordination (Semana, 2007). This can be observed in conflicting policies such as the National Development Plan 2014 – 2018, which promoted national development through construction of fourth generation roads, natural resources exploitation such as gold and oil extraction, and development of agroindustry versus initiatives against deforestation, such as Amazonia 2020.

Ethnic territories and their traditional authorities are part of the territorial SINA. Nevertheless, as it will be discussed throughout this thesis, their roles and authorities are constantly challenged by state institutions and armed actors.

1.1.4 Motivation and impact: the Colombian Peace Accord

As briefly introduced in the previous sections, the Colombian Amazon plays a crucial role in the maintenance of the national cultural and biological diversity, and the provision of ecosystem services from the local to the global level. The Peace Accord, achieved between the National Government and FARC in 2016, is an opportunity not only for development of rural areas with ethnic approaches, attending historical social needs and inequalities, but also to promote conditions for development based on extraction of natural resources. The latter can have adverse consequences for vulnerable social-ecological systems such as the Cacia and is here where the motivation to undertake this research resides.

1.2 SYNOPSIS

The Amazon system that emerges is highly complex as it exhibits high cultural and biological diversity; an outdated and contradicting governance model; intensifying drivers of change posing threats to biodiversity, Indigenous Peoples, and provision of ecosystem services; and the feedbacks among various components of the system. In view of this complexity and the multiple challenges the region is facing in an uncertain

peace-building scenario, there is an urgent need for research and strategies that contribute to the conservation of the region's biological and cultural diversity, and to the development of the region according to principles of sustainability and peace building.

In this setting, the premise of my research is that knowledge held by Amazon Indigenous Peoples about natural resources and their management is crucial for regional planning and environmental governance. Excluding IP from planning and decision-making processes would lead to a continuation of the history of inequality, segregation, and violence, as well as the likely depletion of natural resources and loss of ecosystem services (ES).

To address these issues, I will explore the relations between two different knowledge systems: traditional ecological knowledge (TEK) and ecosystem services (ES) and their possible contributions to enhancement of the governance system in the region. To achieve this, I adopt a multi-scalar approach (local to national level), focusing on a bottom-up scenario-based analysis of changing dynamics through a case study with Cacia people in the Vaupes region.

The research questions that will guide my research are:

RQ1: What are the implications of the Peace Accord for the Amazon region, its indigenous people, and their knowledge?

RQ2: How can traditional ecological knowledge (TEK) contribute to the environmental governance of a local social-ecological system (SES) in the Colombian Amazon in a post-conflict setting?

RQ3: What improvements can be made to the current environmental governance system to provide opportunities for the inclusion of TEK and the Cacia agency?

It is my hope that the findings of my research will contribute substantially to the capacity of Cacia people and similar indigenous groups to exercise their rights and contribute to their permanence as a culture according to their own vision and interest. I also expect this research to provide insights for enhancing the current environmental

governance model of the Colombian Amazon through the incorporation of TEK as a key element in the provision of ES and the equitable distribution of their benefits.

1.3 THESIS STRUCTURE

This thesis is organised in seven chapters including this introduction. Chapter 2 presents the literature review, focusing on the scholarship on social-ecological systems (SES), knowledge systems — Western and indigenous —, nomadic peoples and systems transitions. Chapter 3 presents the research design, the case study, and methods for the data collection and its respective coding and analysis. Chapter 4 addresses the perceived impacts of the PA in the Amazon from the perspective of different actors in the period 2016 – 2019. Chapter 5 delves into the local Cacua SES and the role of TEK and ES in the system. Chapter 6 presents the relevant findings regarding the current governance system in the Amazon and its implications for the Indigenous Peoples in the peacebuilding scenario. Finally, chapter 7 brings the previous chapters together and from the SES perspective discusses the mainstreaming of TEK in the Amazon governance system.

2 Literature review

To address the Amazon complexity in the Peace Accord scenario, in the literature review I use, as a starting point the concepts of social-ecological systems (SES), regime shift, resilience, and transitions. The post-Peace Accord scenario in Colombia brings modifications to the social, cultural, economic, political, and environmental context of the region and its IPs with unpredictable and possibly unprecedented impacts. The question that arises is what mechanisms IPs in the Amazon have to assimilate these changes without compromising their survival and livelihoods.

From these four conceptual starting points, and considering the region as a complex adaptive system (multiple scales, multiple stakeholders and institutions, diverse ecosystems, and diverse relations and feedbacks among the system components) (Cilliers, 1998; Costanza et al., 1993; von Bertalanffy, 1968) socio-ecological systems (SES) theory was adopted as the overarching theoretical framework to guide my research. This framework recognizes that ecosystems are complex adaptive systems hierarchically scaled (referred to as 'panarchy') (Gunderson, 2002), with ecosystem maintenance closely interrelated with social institutions and governance, and that changes in institutions and governance can affect the system (Olsson, 2003; Ostrom, 2009).

Within this context, and through critical review of existing literature, I explore how traditional ecological knowledge (TEK) emerges as a key element to be considered in system transition processes and in regional planning for conservation, sustainable development, and, more broadly, environmental governance and its role in the provision of ecosystem (ES) services in the region. Consequently, I explore the elements that link those two core concepts (TEK and ES) and how they can inform improved environmental governance in a post-conflict scenario.

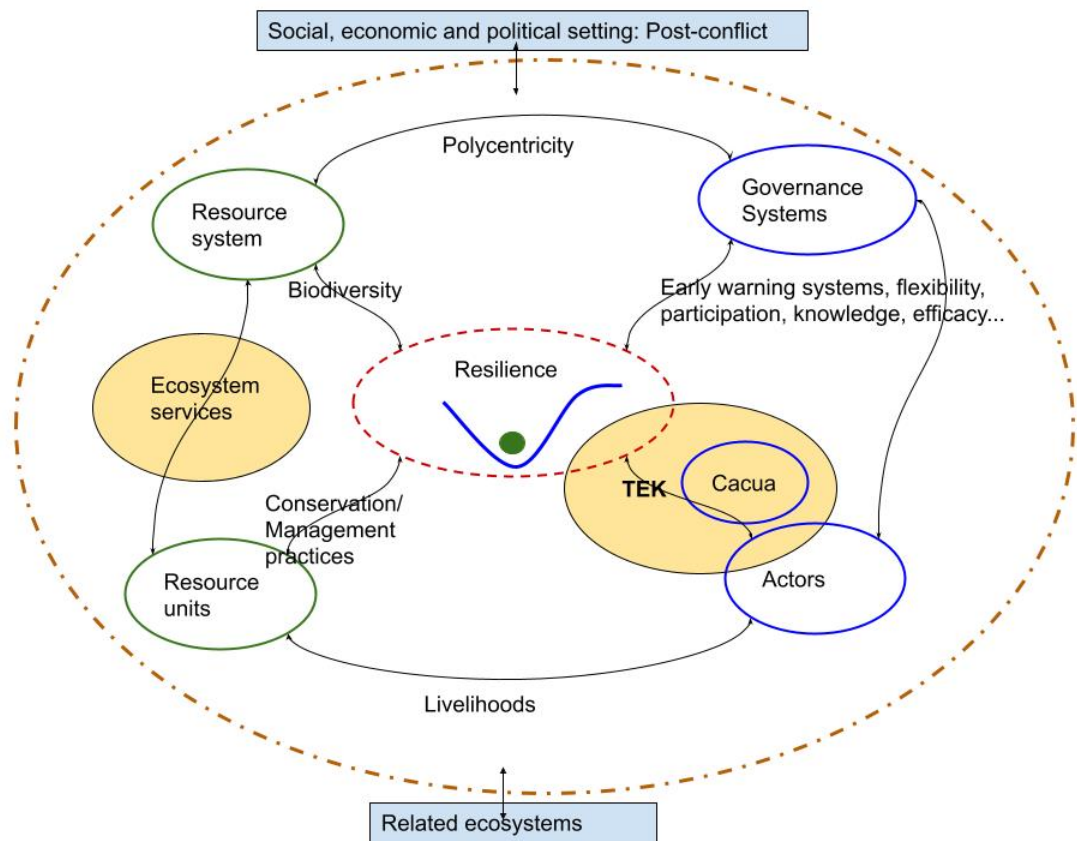


Figure 2-1. Approach to literature review (Source: own elaboration)

2.1 EXPLORING COMPLEXITY OF SOCIAL-ECOLOGICAL SYSTEMS

2.1.1 Integration of social and ecological systems

To have a better understanding of SES, it is necessary to acknowledge the general systems theory that supports the concept. The theory, proposed by biologist von Bertalanffy in 1968, initially focused on complex systems; that is, things or phenomena as wholes/units made up of different interrelated and interdependent components or subsystems interacting with the environment (Ison, 2010; von Bertalanffy, 1968). Since its introduction in the field of biology, the systems approach has been applied across many other areas of research as a response to the limitations of the traditional Western reductionist and mechanistic view, in which things are perceived as machines that can be explained by understanding the functioning of their parts in isolation (Midgley, 2000; von Bertalanffy, 1968).

From von Bertalanffy (1968), Costanza et al. (1993), and Cilliers (1998) we know that complex systems have the following characteristics:

- They are constitutive, which means that the behaviour of the system cannot be explained only by understanding the individual elements that compose it, but through understanding the way they interact
- Interactions between elements are dynamic and non-linear
- There are feedbacks between elements
- Usually, they are open systems; i.e. they interact with their environment and the system boundaries are usually defined in accordance with the purpose of the observer
- They are self-organising and adaptive
- They require a constant flow of energy to maintain their organization
- They have a history.

SES share these features. However, traditionally, social and ecological systems have been considered as heuristic conceptualisations deriving from separate disciplines, often dismissing each other (Berkes et al., 1998; Seixas & Berkes, 2002). The environmental changes and increasing impacts the planet is facing because of human activities in recent decades, such climate change, have required a change of paradigm to address environmental issues. This paradigm evolved through acknowledgement that change occurs in complex systems (Biggs et al., 2015; Folke et al., 2002; Holling, 1973, 2001; E. Ostrom, 2007; Scheffer et al., 2009; von Bertalanffy, 1968), and by shifting from a perspective where humans are separated from nature, towards a vision of interconnectedness where humans are part of it (Berkes & Folke, 1998; Glaser et al., 2008; Steffen et al., 2011).

This change of paradigm required research and dialogue from different disciplines and perspectives. Berkes & Folke first introduced the concept of SES in 1998 to refer to “humans-in-nature”. Subsequently, the concept expanded, and these authors, together with scholars such as E. Ostrom and Glaser, among others, started to examine the two systems from an interlinked perspective. A number of definitions of SES have been proposed, among them the one adopted in my research: “a bio-geo-physical unit and its associated social actors and institutions”(Glaser et al., 2008), as this definition remains simple but encompasses the main elements that make up SES, ecosystems, and human systems.

From the work of Berkes et al. (1998); Glaser et al. (2008); McGinnis & Ostrom, (2014); and E. Ostrom (2007, 2009) several key elements can be identified in an SES. Firstly, SES are the result of a process of coevolution where the biophysical environment (communities of organisms interacting and exchanging energy) and human systems (users/actors and formal and informal institutions) have adapted and are mutually shaped, becoming an integrated system of humans and nature (Martín-López et al., 2012). Secondly, SES are hierarchically organized in multiple tiers or subsystems that interact at different space-time scales, known as panarchy (Gunderson, 2002; McGinnis & Ostrom, 2014a). Thirdly, their analysis requires the integration of diverse disciplines, knowledge systems, methodologies, and data (qualitative and quantitative) (Martín-López et al., 2012; Ostrom, 2009). Fourthly, they are complex, adaptive, self-organising and context-dependent (Biggs et al., 2022; Glaser et al., 2008; Preiser et al., 2018).

McGinnis & Ostrom (2014); Anderies et al. (2004); Ostrom (2009); Berkes, Folke, & Colding (1998) concur that the SES approach seeks to develop a common language across disciplines and to acknowledge the complexity, connections, and feedback between variables of ecosystems and social systems, which allows for a comprehensive analysis. The challenge is taking this into practice, which was addressed by McGinnis & Ostrom (2014) from the initial work of Ostrom (2009), with the design of the SES framework of analysis (Figure 2-2). This is not the only existing framework for the analysis of complex adaptive systems: other modelling approaches include causal loop diagrams, quantitative correlations, separate quantitative measure and indicators (Rissman & Gillon, 2017). Yet, in recent years the McGinnis and Ostrom (2014) framework has been used widely to characterise diverse coupled systems of humans and nature: fisheries in Argentina and Mexico (Basurto & Ostrom, 2009; London, Rojas, Ibañez, et al., 2017), *ejidos*¹⁰ in Mexico (Monroy-Sais et al., 2016), and irrigation systems in New Mexico (Cox, 2014). The authors of these studies, as well as other scholars (Xavier Basurto et al., 2013; Blanco, 2011; Nayak & Berkes, 2014; E. Ostrom & Cox, 2010) concur that the SES framework facilitates a comprehensive diagnostic to address management issues involving common pool resources¹¹.

¹⁰ Ejido: Collective legal figure of land tenure in Mexico (Monroy-Sais et al. 2016).

¹¹ Common pool resources: a resource to which a large number of people have access. Overuse of the resource creates problems, often destroying its sustainability (National Research Council, 2002)

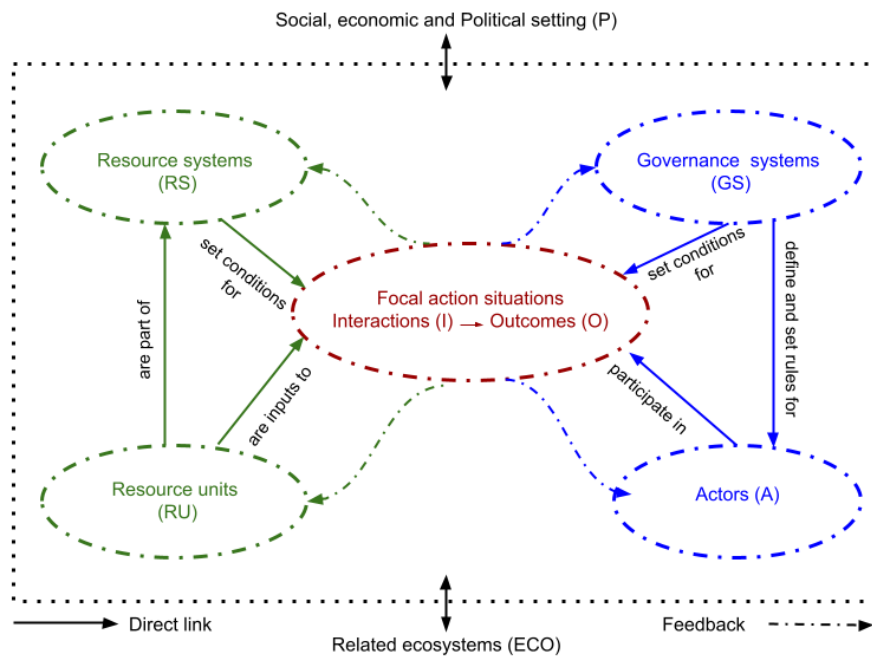


Figure 2-2. Social-ecological framework (Source: Modified from McGinnis & Ostrom 2014).

Broadly speaking, the SES framework (McGinnis & Ostrom, 2014a) guides the analysis by asking what the main interactions, outcomes, and actors related to a particular resource (or resources) are, and what the governance system that rules it is. Some of these questions have been addressed in different SES contexts. Basurto et al. (2013) found from its application in the analysis of small-scale benthic fisheries in Mexico and Chile was that it allowed the identification of unintended effects of policies. Yet, they, as well as London et al. (2017) in the analysis of coastal fisheries in Argentina, emphasize the need to adjust tiers and variables according to the particularities of a given context, and not use it as a checklist tool. In both cases, the framework has been valuable to understand the self-organizing mechanisms of the communities. This is of particular importance for the analysis of this research, as the indigenous communities have organization systems based on their worldviews and differ from the logic of the governmental schemes and thus, in the application of the framework these differences must be considered to avoid its misuse and exclude components or features that are important for the communities.

In spite of the attempts to integrate into the SES framework the social and human systems some criticism remains, especially around the social component and how it is

“weakly theorized” (Fabinyi et al., 2014a) as for various scholars the framework is in some way ecologically and institutionally biased (Crane, 2010; Fabinyi et al., 2014; Stojanovic et al., 2016) Fabinyi et al. (2014) argue that by focusing on the relations between people and environment from a livelihood’s perspective, the framework overlooks “social diversity and power”. To these authors, the origin of institutions does not depend on, nor is it motivated exclusively by environmental concerns or situations, because they also originate from socio-political and cultural influence. They also agree with Cote and Nightingale (2012) on the importance that must be given to social differences (heterogeneity) within groups (communities) and institutions, such as gender, ethnicity, age, and class — otherwise agency and power (who decides what’s desirable and for whom) are dismissed in the analysis.

Similarly, though to a lesser extent, some observations have been made concerning the integration of ecology and biodiversity in SES research. For example, Epstein et al. (2015) indicate that the framework does not address the ecological and biophysical characteristics of the system in the same measure as it does with the social and institutional components. Based on the application of the framework to a case study, these authors proposed a set of “ecological rules” to be included in the second tier of variables. Likewise, Rissman and Gillon (2017), in a review of 120 articles on SES research, found that 66% of these included social and ecological variables, whereas 33% did not consider ecological variables. In addition, interestingly, links between biodiversity and other variables were uncommon compared to associations made between social variables and governance, and resource management (Rissman & Gillon, 2017). These authors agree that while there remains a significant amount of research to be done on SES and its applicability, relevant management recommendations emerge when the social and ecological components of the system are coupled.

In this way, researchers must be aware of the shortcomings of the method, so that in the course of their own research, the diagnoses and analyses are made according to the specific context and explicit research goals (Epstein et al., 2015). This coincides with some of the final conclusions of the studies from Basurto et al., (2013) and London et al., (2017) and needs to be considered during the development of this thesis.

Although some of the studies described previously have used the SES framework in the analysis of interactions, few of them have used it to analyse socio-political transformations, which is the case of Colombia after the Peace Accord. In this respect, its use might provide a theoretical support that helps understanding of the complexity of the Colombian Amazon and its governance system, and in providing resources for self-organization to the Indigenous Peoples to guide them into a desired configuration of their choice. Additionally, few studies have incorporated the use of the SES framework with indigenous communities. A recent example is the work by Monroy-Sais et al. (2016) in ejidos in Mexico, though the authors do not make a clear explanation of the indigenous people they work with, they remark on the importance of their local knowledge in understanding resource management rules in the community. My research, with Cacua people, might be a contribution in the application of the framework in a different social, cultural and ecological setting.

To sum up, humans act on and respond to changes in ecological systems through institutionalised mechanisms at different levels of organization (McGinnis & Ostrom, 2014a), which in turn influence the condition of ecosystems and, therefore, their capacity to provide benefits to society (Berkes et al., 1998). The analysis of such systems is an iterative process that requires integration of ecological, biophysical, socio-cultural, and economic information at different time-space scales (Martín-López et al., 2012; McGinnis & Ostrom, 2014a).

Reflecting on the key tenets of SES theory as they emerge from the reviewed literature, the Colombian Amazon can be analysed as an SES, in which multiple ecological and social components interact at different scales but that have been addressed discretely, in part because of the need to have a baseline of information. This situation in the Colombian Amazon has changed over the last few years as a consequence of increasing SES scholarship, the failure of isolated management strategies and policies, and increasing interest in conserving the Amazonian rainforest due to its importance in carbon storage and conservation of biocultural diversity (Maretti et al., 2014; Poveda, 2011). There is evidence of concern in joint efforts to address some of the most critical drivers of change, such as deforestation and climate change, with special focus on protected areas (WWF, personal communication, 2014). So far, however, the implications of the peace accord on Indigenous Peoples in the Colombian Amazon have not been fully addressed.

To address some of these issues, part of this research will explore the mechanisms by which social and ecological systems develop and adapt to changes. For this, the concept of regime shifts and resilience will be introduced and critically appraised in the context of the Peace Accord.

2.1.2 Regime shifts and resilience in ecosystems

Complex systems maintain their organization and functioning, despite characteristics of dynamism, non-linearity, and complexity of feedback mechanisms. The theory behind this is that “complex systems organize and fluctuate around several points of equilibrium or attractors (multiple stable states), in a domain of attraction” Yet, there are cases when systems may suffer sudden and extensive modifications that alter their structure and functioning (Biggs et al., 2009b; Biggs, Schlüter, et al., 2012) and, therefore, their state changes (B. Walker & Meyers, 2004), leading them to an alternate configuration (deYoung et al., 2008; Folke et al., 2004). This can be represented as shown in Figure 2-3, where the balls represent the system, valleys the stability domains, and arrows the disturbances (Biggs, Schlüter, et al., 2012).

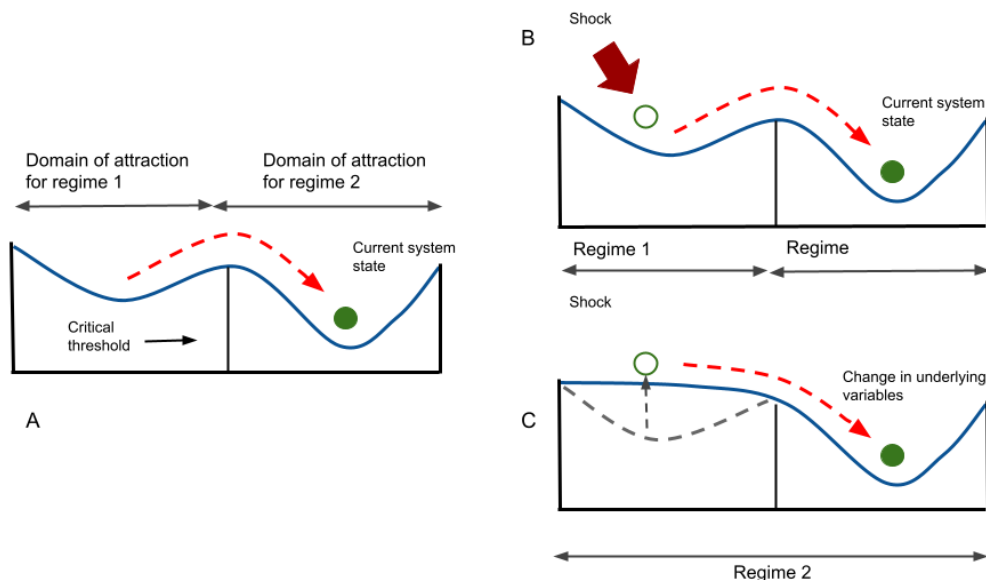


Figure 2-3. Stability domain and regime shifts – ball-in-cup model (Modified from: Biggs et al. 2012)

In ecology these changes are known as regime shifts (Holling, 1973; Scheffer & Carpenter, 2003), and occur when the thresholds of the systems, or the limits to how

much it can change and recover (e.g. pH and turbidity in aquatic systems) are surpassed (Biggs et al., 2012; Walker & Salt, 2010). These changes can be activated by large external impacts, such as extreme climate events, or by slow changes in underlying variables such as population growth rate (Scheffer & Carpenter, 2003). Given the irreversibility of some changes (Folke et al., 2004) and the significant consequences of ecosystem change for society (Biggs et al., 2012; 2009) it is important to understand what conditions activate those changes.

A vast body of literature documents cases of shifts between states in nature (Biggs et al., 2009b; B. Walker & Meyers, 2004), especially in freshwater ecosystems (Blindow et al., 1993; Finlayson & McCay, 1998; Gunderson, 2001; Post et al., 2002), and sea and coastal ecosystems (Daskalov, 2002; Hughes, 1994; Scheffer, Carpenter, & Young, 2005; Bearzi, Politi, Agazzi, & Azzellino, 2006; Norström et al., 2009), and to a lesser extent in terrestrial ecosystems (Dublin et al., 1990; van de Koppel et al., 1997; Vitousek et al., 1987). The causes and effects of these shifts are multiple, and sometimes irreversible. Most scholars agree that they occur largely as a result of human activities. In temperate lakes, for instance, the shift between clear-water and turbid-water systems occurs mainly through changes in nutrient inputs (Phosphorus and Nitrogen) (Blindow et al., 1993; Folke et al., 2004). For coral reefs the causes are diverse, such as overfishing of herbivores (Hughes, 1994; Scheffer et al., 2005) and climate change (Bellwood et al., 2004; Hughes et al., 2003), while in terrestrial ecosystems overexploitation of resources, introduction of invasive species, and land use changes are the main drivers of change (Andersen et al., 2009; Folke et al., 2004).

So, how do ecosystems maintain their characteristics and functions after perturbations? A concept closely associated with regime shift is resilience. The concept was first introduced by Holling (1973) in his theory of complex systems in ecology, as “the capacity of ecosystems to absorb/respond to perturbations or changes and still persist and recover”. Ecological resilience recognises that systems do not remain in a single permanent steady state but have multiple functional states (Holling, 1973, 1996; B. Walker et al., 2004) and focuses on maintaining “existence of functions” (Holling, 1996). The concept marked a point of separation from a conventional view of resilience, where system conditions were seen to remain close to an equilibrium steady state (J. Walker & Cooper, 2011) and resilience was the resistance to disturbance and the speed

of return to that equilibrium state (Holling, 1996; J. Walker & Cooper, 2011). Holling referred to this view of resilience as engineering resilience.

Since its introduction, the concept of resilience has extended to other areas such as psychology, organizational theory, engineering, and national security (B. Walker & Salt, 2010). Nowadays, resilience jargon is commonplace in the mainstream institutional and policy arenas, and especially in the discourse of sustainable development (Walker & Cooper, 2011). Table 2-1 summarizes some of these definitions in different fields of application.

Table 2-1. Definition of resilience in different domains of application

Discipline	Authors	Definition
Psychology	APA	“The process by which people are able to deal well with difficulties or traumatic events or sources of stress in life”
Organizations		“The ability of an organization to adapt to internal and external disturbances, maintaining its integrity as a system, re-organizing itself, and increasing its capacity by transforming challenges into opportunities for learning and innovation”
Engineering	(Madni & Jackson, 2009)	“The ability to build systems that are able to bypass accidents through anticipation, survive disruptions through recovery, and grow through adaptation”
Disaster management	(Combaz, 2014)	“The ability of individuals, communities, organisations and states to adapt to and recover from hazards, shocks or stresses without compromising long-term prospects for development”

In the different domains, resilience refers to the ability of a system to cope with change and recover from shocks (OECD, 2013), and as described previously, it is an important characteristic of ecosystems, that allows them to maintain their structure and function to deal with perturbations (Berkes & Turner, 2006; Holling, 1973). How ecosystems become resilient and maintain resilience is addressed next.

According to Luck et al. (2003), Folke et al. (2004) and Elmqvist et al., (2003), key sources of resilience are diversity of and within biological groups, diversity within species and populations, and habitat heterogeneity. Higher diversity and a larger number of species of similar functional groups increase the probability of survival of

one of them after invasions or directional disturbances (Chapin et al., 1997, 2000a), and the continuity of key processes (Gunderson, 2001). Also important is species abundance, especially of those involved in water and nutrient dynamics, and trophic interactions, or those that have a crucial role in ecosystem renewal or reorganization (Folke et al., 2004). Nevertheless, unwanted regime shifts can occur when forces act upon them and the resilience of the system has been altered (Andersen et al., 2009; Folke et al., 2004). This situation has occurred in many ecosystems as a consequence of human activities that diminish biodiversity, such as overexploitation of natural resources (Walker & Salt, 2010).

For this reason, understanding ecological resilience becomes key in environmental management. However, the measurement of resilience in practice remains challenging. The first step, as suggested by (S. Carpenter et al., 2001) is defining “*resilience of what, to what*”. This means defining the system state that is going to be studied and the specific perturbations of interest that might affect it. In this case the “*of what*” would be the Amazon SES resilience to the social-political transition the Peace Accord brings.

The purpose of this section was to highlight how ecosystems do not merely exist in a single, perennial equilibrium state but may rather ‘flip’ between multiple stable states, and that their components or variables exhibit thresholds that, if surpassed, affect their capacity for self-organization and recovery. This conceptualisation is made more complex with the recognition that ecosystems do not exist in isolation: as discussed in section 2.1.1 they are articulated within social systems with multiple interactions and feedbacks. Therefore, understanding the key elements that make up the system — and determining which elements create/enhance ecological resilience in the Amazon to avoid undesired shifts — becomes a key question in a post-conflict scenario. This, together with the need to understand the preparedness of the indigenous communities to cope with this scenario, is crucial in regional planning for the future. To address this concern, resilience of SES will be explored in the next section.

2.1.3 Resilience of Social-ecological Systems

The functioning of complex systems depends on internal and external processes, dynamics, and influences. This applies to ecosystems and to social systems. As with

ecosystems, social systems are vulnerable to perturbations, either of the physical environment, such as natural disasters and scarcity of resources; or to changes in the social, political or economic setting, such as market collapse or armed conflicts (Adger, 2000a; Kaufman, 2011). Likewise, in some instances, social systems are also able to respond to these changes and reorganize themselves; in others, the stress exceeds the system's coping capacity, which can lead to disruption and/or system collapse (E. Boyd & Folke, 2012; Diamond, 2013). When communities or societies are able to cope with changes or disruptions, reorganising themselves, avoiding shifts towards undesirable states, without compromising their identity and livelihoods, or steering towards desirable states – decided by them-, they are said to be resilient (Berkes et al., 2008; Walker & Salt, 2012). Social resilience, coupled with ecological resilience, allows an SES to deal with system changes and perturbations.

The mechanisms thought to confer resilience on a community are diverse. Some scholars agree that a key element is the acknowledgement of change and uncertainty (Berkes et al., 2002), and thus anticipation to possible disturbances, which can be achieved by collaborative planning (Kaufman, 2011) or by having in place early warning systems when approaching thresholds (Boyd & Folke, 2012). Closely connected to these attributes is having functional and adaptive institutions, defined here as the set of formal and informal rules that shape actions and behaviour of people that come together in order to access and manage certain resources (Boyd & Folke, 2012; Tengö & Belfrage, 2004). Institutions can be represented by informal systems such as taboos in indigenous communities (Tengö & Belfrage, 2004) or governmental institutions at a range of scales (local to global).

Adaptive institutions are only one of many attributes to consider in the resilience of social systems, but as it was argued in section 2.1.1, as the SES theory considers social systems to be coupled with ecosystems, ecological and social resilience need to be addressed within that framework of interconnectedness. In this context, the resilience of an SES is conceptualised as the capacity of the SES to manage, function, and persist in the presence of changes, by either bouncing back or flipping to a more desirable stable state (Biggs, Rhode, et al., 2015). However, a discussion of the key elements that create or enhance the resilience of an SES requires exploration of some critical aspects such as latitude, resistance, and panarchy.

As complex systems, SESs are dynamic and tend to organise and move within a metaphorical basin of attraction (discussed in section 2.1.2), yet they are continuously disturbed and affected mainly by actions and decisions of actors and to a lesser extent by ecological dynamics, occurring at different scales (Biggs, Rhode, et al., 2015; B. Walker & Salt, 2012). According to Walker et al. (2004, 2006), and Olsson (2003), with reference to the ball-in-the-cup model (Figure 2-3) latitude (or the width of the basin) represents the maximum amount of disturbance the system can tolerate before losing its ability to reorganize, while resistance (or the depth of the basin) is the ease or difficulty of changing the system. Panarchy, in turn, refers to the hierarchical nested cross-scale and temporal organization and interaction of the social and the ecological components of an SES. Panarchy is of special interest when analysing an SES as emphasised by some authors (Berkes et al., 1998; Biggs, Schlüter, et al., 2015; Davidson, 2010; Walker et al., 2004), the social component dominates SESs through individual or collective human actions from the local to the global scale, and therefore multiple scales and interactions need to be considered.

The influence of the human component on a SES applies not only in terms of negative impacts that actions might have; but also in terms of collective organization to avoid and manage those impacts (Davidson, 2010; Garmestani & Benson, 2013; Walker & Salt, 2012). In this context, the work from Biggs et al. (2015) provides a set of key social and ecological principles to the creation/enhancement of resilience of SESs:

1. Maintain diversity and redundancy. The first principle gives emphasis not only to diversity of genes, species, and habitats (introduced in Section) but also to diversity of cultural groups, livelihoods, and institutions (e.g., taboos and rituals). The importance of diversity and redundancy lies in that they allow for a broader range of system responses in face of change and disturbance (Elmqvist et al., 2003; Rosenfeld, 2002; Sundstrom et al., 2012).
2. Manage connectivity. This principle refers to the exchange of material between components of the system, such as migration of species in the ecological system, and the interaction and exchange of information between social actors across scales.

3. Manage slow variables and feedbacks. In SES, there are variables of slow change (slow variables) that usually control other variables that change at faster rates (fast variables) (Walker & Salt, 2012). Examples of slow variables within the social system are changes to institutional arrangements and enforcement of environmental regulations (P. R. Brown et al., 2012), while examples of ecological slow variables are mean annual precipitation (Biggs et al., 2015) and levels of soil organic matter (Walker et al., 2012). Feedbacks are the responses or changes in a SES through changes in a variable, which in turn affect that variable.
4. Foster an understanding of social-ecological systems as complex adaptive systems. For Biggs et al. (2015) and Fabinyi et al. (2014), it is important to embrace complexity and uncertainty, and work to develop a culture of mental models that acknowledge diverse learning behaviours.
5. Encourage learning and experimentation. This principle refers to the co-production of knowledge and collaboration in governance and decision-making processes, which is also referred to by Folke et al. (2005), Fabinyi et al. (2014), and (Teng et al., 2017) among other scholars, as a key element in the understanding of SES, and also in governance and decision-making processes.
6. Broaden participation. Leitch et al. (2015) as well as scholars such as Berkes et al. (2007) and Walker et al. (2002), agree on the importance of stakeholder involvement in co-management and governance, proven to be critical in the success of designed and implemented strategies.
7. Promote polycentric systems of governance. This principle refers to the conceptualisation of governance systems as functioning through the interaction of multiple autonomous governing bodies, interacting horizontally (Carlisle & Gruby, 2019). According to Ostrom (2005), polycentric systems have the capacity to compensate for failures at different levels.

While these principles have merit, unless carefully managed there may be adverse consequences. For instance, in the case of diversity and redundancy, (Galaz, 2012) argues that high institutional diversity and redundancy might imply high management

costs and might also create power conflicts and overlap of tasks, making coordination and operationalization difficult. Also, in the case of social and ecological connectivity, though it can promote movement and viability of species in certain areas, it can also facilitate the spread of disturbances such as invasive species and diseases. In social systems, connectivity has been criticised as promoting the “homogenisation of knowledge (Biggs, Schlüter, et al., 2012).

Similarly, negative feedback within an SES might result in “resilience traps”, or the system being locked into adverse configurations — meaning that the system becomes “too resilient” to leave that attractor basin into a better regime. Common examples are poverty and lock-in traps. In such cases, self-reinforcing mechanisms cause poverty to persist, or the system to be locked in unsustainable trajectories, due to, for example, use of natural resources until depletion, which occurs in societies highly dependent on forest resources (Allison & Hobbs, 2004; Anderies et al., 2006).

In the case of collaboration and co-production of knowledge and participation, bringing together multiple actors with diverse worldviews and interests may generate inadequate understanding and intensify social conflict, and therefore, produce negative perceptions and social outcomes (Cundill et al., 2015). This can be especially true where power dynamics influence learning and participation processes (Berbés-Blázquez et al., 2016; J. C. Young et al., 2013).

Acknowledging these criticisms and that SES are complex systems with unique characteristics, such as non-linear dynamics and feedback, unpredictability, uncertainty, and self-organization, their governance represents a challenge. This is the particular case with the Colombian Amazon and its indigenous groups. The sociopolitical transition that the Peace Accord represents for these communities in Colombia requires an approach in which the conditions for desirable transformation are enabled rather than allowing unplanned transitions to potentially chaotic regimes. This means anticipating and preventing undesired shifts, and identifying those elements (e.g., species, ecological processes, institutions, networks, others) that play a key role in the SES to allow communities to develop appropriate systems of governance that support them to respond positively to social and environmental changes without compromising their survival and livelihoods. In particular, it may be problematic that the promotion of SES resilience at a scale that satisfies the needs of

Indigenous People may not align with the demands for resource development at wider scales.

In this context, my line of argument is that traditional ecological knowledge (TEK) can become a key element in the process of sociopolitical transition. Appropriate incorporation of TEK into decision-making can safeguard the provision of ecosystem services not only for indigenous groups but also for other actors. In this research, TEK, as a lens in the analysis of SES, will support the identification of boundaries and thresholds as well as the monitoring of key variables of the system; and will foster the creation of capacity to adapt to changes that help to retain the identity of the system.

To demonstrate the validity of this argument, the following sections will explore the relations between TEK and ecosystem services (ES) in the Colombian post-conflict setting.

2.2 WAYS OF KNOWING

“When any group-within a large, complex civilization significantly dominates other groups for hundreds of years, the ways of the dominant group (its epistemologies, its ontologies, its axiologies) not only become the dominant ways of that civilization, but also these ways become so deeply embedded that they typically are seen as “natural” or appropriate norms rather than as historically evolved social constructions”

[Scheurich & Young, 2014, p. 139]

In this section, I will explore two systems of knowledge representing different epistemologies and worldviews — indigenous knowledge and scientific (Western) knowledge. I will focus on the concepts of Traditional Ecological Knowledge (TEK) and Ecosystem Services (ES), and their use in biodiversity conservation and governance. A discussion about philosophical theories of knowledge, or epistemology, is beyond the scope of this section. Instead, the section below will consider the most accepted definitions and characteristics for the concepts of knowledge, knowledge systems, scientific/Western knowledge, and indigenous knowledge. Nevertheless,

along this thesis I address the frequent divide and common hierarchy of knowledge systems and the favouring of positivist approaches over indigenous views.

The first part of this section provides a general presentation of the main features of both knowledge systems and their differences, as well as their shared characteristics. The second part will focus on TEK and ES.

2.2.1 Indigenous Knowledge and Western Science

From an anthropological perspective, the study of knowledge focuses on how knowledge is constructed through practice and intellectual exercise (Barth, 1995). In this perspective, understanding the historical context, space, and institutions where knowledge is generated and stored, and how it is transmitted and shared are fundamental. This understanding directly relates to the way in which environmental degradation is perceived and addressed by different social groups or actors, as it depends on various elements such as their cultural background, worldviews, and history (Petzold et al., 2017). Hence, awareness and comprehension of different knowledge systems — how they are developed, and knowledge is held and how they compete and complement each other — is key in taking appropriate management actions to tackle complex environmental issues.

Knowledge is commonly defined as “the theoretical or practical understanding and familiarisation of a subject, acquired through experience or education” (English Oxford Dictionary, 2017). For Zermoglio et al. (2005), the notion of knowledge goes beyond familiarity and incorporates the concept of reality (ontology). They conceptualise knowledge as a shared construction of reality by a group, which guides their behaviour and explains their surrounding world. Accordingly, systems of knowledge can be understood as “sets of propositions held either formally or not, that are consistently used to claim the truth” (Feyerabend, 1987) for “the multiple ways of defining reality” (Banuri & Marglin, 1993). These two conceptualisations emphasise the importance in understanding what is considered as knowledge in both systems (Harris, 2007; UNEP, 2012):

- a) What is real and what is true?

- b) Who is considered as knowledgeable?
- c) How knowledge is acquired, stored, and communicated?
- d) How does knowledge explain the relationships between humans and nature?
- e) How is knowledge used by different groups to respond to environmental challenges?

Knowledge production in both systems — indigenous and Western science — differs in many respects. Essentially, Western science is based on the culture, history, and philosophies of Western thought and the production of knowledge is primarily positioned on the positivist paradigm of research. This means that reality or truth exists independent of the observer (Creswell, 2007) is value free, and is the result of an application of the scientific method (Chilisa, 2012), the characteristics of which include replicability and validation through academic peer review by an established community of recognized experts (Zermoglio et al., 2005). The process entails enquiry, systematic observation, quantitative data collection, and experimentation to formulate and test hypotheses (Gadgil et al., 1993b), to produce and document generalizable information (Fabinyi et al., 2014) regardless of the context (Ellen et al., 2000; Semali & Kincheloe, 1999) or gender (Prakash, 1999). Additionally, it is characterized by being objective, reductive, deterministic, instrumentalist, and cumulative (Agrawal, 1995; Banuri & Marglin, 1993) and fragmented when addressing natural phenomena (e.g. botany, medicine, pharmacology, etc.) (Semali & Kincheloe, 1999). Some of its major representatives are Aristotle (383–348 BCE), Francis Bacon (1561–1626) and John Locke (1632–1704); and their legacy in the development of the Western/scientific knowledge dominates the current academic research tradition as to what is generally considered legitimate.

Indigenous Knowledge (IK), on the other hand, occupies a contrasting position. Indigenous Peoples (IP) are diverse and express their worldviews in equally diverse ways (e.g., customs, traditions, knowledge). Consequently, before exploring what characterises IK, consideration is necessary of who are IP and what is their relationship with the Western world.

Indigenous Peoples live, or have lived, on most continents and are among the most vulnerable and disadvantaged people (Toledo, 2001; UN, 2013; UN-DESA, 2009). They have suffered the processes of imperialism and colonisation, or subjugation at

different moments of their history (Chilisa, 2012). This historical situation has placed them in a discriminatory position; not only to their position in society but also to the knowledge they hold. Due to this subjugation by the Western world, providing a definition of Indigenous Peoples from a Western perspective seems inappropriate, and what has been agreed is that Indigenous Peoples have the right to define and determine their identities according to their own worldviews and beliefs (UN, 2013). Nonetheless, Indigenous Peoples are recognised by their self-identification as indigenous or tribal, by remaining distinct culturally and institutionally, and for being culturally attached to an ancestral territory (Chilisa, 2012; Semali & Kincheloe, 1999; UNEP 2012). This element is important as it determines in great measure their identity.

Due to this history of subjugation, Western culture usually associates the terms 'aboriginal' and 'indigenous' with the primitive (Davis, 2010; Ellen et al., 2000; Semali & Kincheloe, 1999). Indigenous Peoples have been seen not only as groups at the lowest level in an artificial hierarchy of civilization progress (Boas, 1938); but their knowledge has also been subjugated in regard to Western knowledge (Akena, 2012; Chilisa, 2012). Thus, knowledge generated and held by IPs is often marginalized and believed to lack validity (Banuri & Marglin, 1993; Davis, 2010; Maurial, 1999). Still, for scholars such as Ellen et al. (2000) and Semali and Kincheloe (1999), Chilisa (2012) and Berkes et al. (2000), indigenous Knowledge is legitimate and needs to be incorporated in research, resources management, and policy-making processes. This is one of the key propositions of Escobar (2014) in reference to the creation of spaces (or an ontology) to think, discuss, research, and practice forms of knowledge different to Western knowledge and what he calls pluriverse.

Indigenous Knowledge can be described as the awareness and understanding of Indigenous Peoples about themselves and the world, as a result of their daily experiences in their territory (Chilisa, 2012; Semali & Kincheloe, 1999). It comprises knowledge about their history, language, culture, and the way they use natural resources. Contrary to Western knowledge, indigenous knowledge systems entail an epistemology and a worldview based on beliefs such the sacredness of the land, reciprocity among all species; and recognise the possibility of multiple realities rather than a single truth (Chilisa, 2012; Ellen et al., 2000; Semali & Kincheloe 1999). The main features of Indigenous Knowledge, according to Semali and Kincheloe (1999), Elle et

al. (2000), UN (2013), Maurial (1999), Mander et al. (2006), Atran & Medin (2008), and Gadgil & Berkes (1998) Berkes (2008) are summarised in Figure 2-4

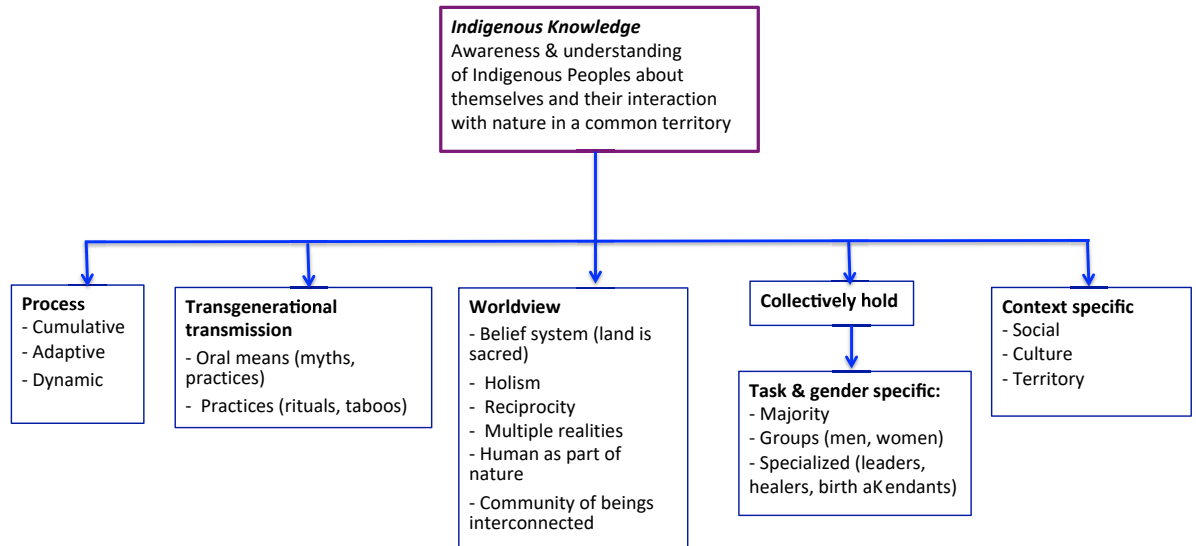


Figure 2-4. Main features of indigenous knowledge.

Source: this research, using as references: Semali and Kincheloe, 1999, Elle et al., 2003, Berkes, 2008, UN, 2013, Maurial, 1999, Mwdine, 1999, Maudi & Tauli-Corpus, 2006, Atran and Medin, 2008, Gadgil and Berkes, 1991.

Indigenous Knowledge distinguishes itself with its holistic and context-specific nature (Chilisa, 2012; Ellen et al., 2000; Semali & Kincheloe, 1999). It is said to be holistic as natural phenomena are approached as a whole, as for many IP there is no separation between humans and nature (Ellen et al., 2000; Maurial, 1999). Moreover, it is considered to be context-specific, not only in terms of territory (place-based), but also in terms of social organization and culture (Ellen et al., 2000; Semali & Kincheloe, 1999; Sillitoe, 2006); and thus, as pointed out by Feyerabend (1987) and Abdullah & Stringer, (1999) among other authors, IK makes sense within its own context. Knowledge held by IP reflects the relation with their territory throughout history.

Such relationships are a significant feature of Indigenous Knowledge, as the relation of Indigenous Peoples with their territory defines in part who they are and where they belong, and therefore disintegration of their culture starts when their ancestral territory is lost. This feature is also a difference with Western knowledge and can be a source of critique in the integration of both knowledge systems. While in the Western system the objective is to produce knowledge that allows generalisation and

transferability far from the place of production, in indigenous systems knowledge is linked directly to a specific context.

Another difference between Western and Indigenous Knowledge is the means of transmission. As many Indigenous Peoples do not have written language, their knowledge is transmitted from one generation to another by oral means — through myths, stories, and songs, and practices such as rituals and taboos (Maurial, 1999, Semali & Kincheloe, 1999; Elle et al., 2003). Furthermore, it is collectively produced and owned, but there are differences in the types of knowledge held by different groups within the communities; which is to say, it is task- and gender-specific (Elle et al., 2003). This means that there are differences in the knowledge held by, for example, healers and leaders and by women and men, youth and elders, and so on (P. L. Silverwood-Cope, 1972).

One could argue that the ontological and epistemological differences (Table 2-2) are sufficient to keep both knowledge systems apart. However, an increasing number of scholars — e.g. Berkes (2008), Agrawal (1995), Folke (2004), Ellen et al. (2000), and Bohensky & Maru (2011) — argue that besides the differences there are also similarities and complementarities. They suggest that integrating the knowledge Indigenous Peoples have about the environment and the management of natural resources, or what has been called traditional ecological knowledge (TEK) (Berkes, 2008; Berkes et al., 2003), with scientific knowledge, is key in addressing complex environmental issues.

Table 2-2. Summary of differences between Western and Indigenous Knowledge systems

Key aspects	Western knowledge	Indigenous knowledge
Ontology	Single reality, independent of observer that can be objectively investigated	Multiple realities socially constructed based on the relations between beings and the nonliving
Epistemology	Knowledge can be tested empirically, is objective, compartmentalised, and acquired through scientific method. Is value-free	Knowledge is holistic and relational. Values and beliefs are essential parts

Communication and management	Documented, academically peer-reviewed in journals	Generational transmission by oral means and practice
Scale of knowledge and understanding	Claims universal validity, regardless of locality/context	Embedded in a particular community and bound by space and time
Learning	Individual enterprise	Communal

One similarity is that both systems are based on observations of the environment and attempt to make sense of it (Berkes & Kislalioglu, 2009). Moreover, Berkes and Kislalioglu (2009), Ellen et al. (2000), and Chilisa (2012) suggest that Indigenous Peoples accumulate vast amounts of information about species and natural events as a result of years of observation. This information can be seen as analogous with long-term data sets in Western science. What is probably more important is that both systems deal with complex problems, though the way they approach them differs (holistic vs. fragmented). Both approaches are seen as opportunities to make knowledge more robust when integrated, as, in the process, it expands participation to a broader set of actors: in this particular case, Indigenous Peoples with a history of subjugation, creating trust, commitment and sustainability of process and strategies (Boillat & Berkes, 2013; Kunseler et al., 2015). Furthermore, it enriches knowledge in disciplines such as botany and zoology (Posey, 1985).

What needs to be considered in bringing together both knowledge systems is their different epistemologies to maintain their integrity, but also to avoid the subjugation of one over the other (S. Jackson et al., 2014; Rathwell et al., 2015). In the context of my research, the question that arises is how TEK and ES can be brought together to inform planning and decision making on environmental governance beyond the local level in the post-conflict scenario in Colombia, and what are the benefits of doing so. These questions will be addressed in the following sections by presenting and reviewing the development and application of both concepts, and their possible roles in the post-conflict Colombian context.

2.2.2 Traditional ecological knowledge (TEK) in environmental governance

Scholarly interest in traditional approaches of Indigenous Peoples to the management of natural resources in their territory—including fauna, flora, soil, water, and others—has increased in the last decades (Atran & Medin, 2008; Berkes, 2008; Cristancho,

2005; Posey, 1985). The study of these relationships has its origins in the field of ethnoecology and ethnobiology (Berkes, 2008; Reyes-García & Aguirre, 2007; Toledo, 2001) in part motivated by the potential of discovering useful species for medicine or pharmacology (Balick, 2007; Posey, 1985; Schultes, 2007), and in part to understand the relations and management strategies for conservation of biodiversity (Alcorn, 1993; Berkes, 2008; Bohensky et al., 2013; Gadgil et al., 1993b). From there, the concept of TEK developed; and presently TEK is recognized as key in the maintenance of biodiversity, sustainable development, and construction of peace (Alcorn, 1993; Berkes, 2008; Buckles, 1999; IFAD, 2003; Toledo, 2001). Its inclusion into international programmes and policies is ongoing.

The working definition of TEK in this research is the one provided by Berkes (2008): “TEK is a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationships of living beings with one another and their environment.” In this definition, TEK represents a subset of all the knowledge Indigenous Peoples hold about different subjects, and specifically refers to knowledge related to natural resources. Also, the different components and nested layers that shape TEK are recognized. On the first layer, and encompassing the other layers, are the social institutions that support Indigenous Peoples’ lives (e.g., cooperation, rules and norms); these in turn determine the resource management systems of the communities, which are tightly linked to the local knowledge of flora and fauna (e.g. behaviour and distribution of species). This knowledge is transmitted culturally through generations and reflects Indigenous Peoples’ worldviews and cultural beliefs (Figure 2-5).

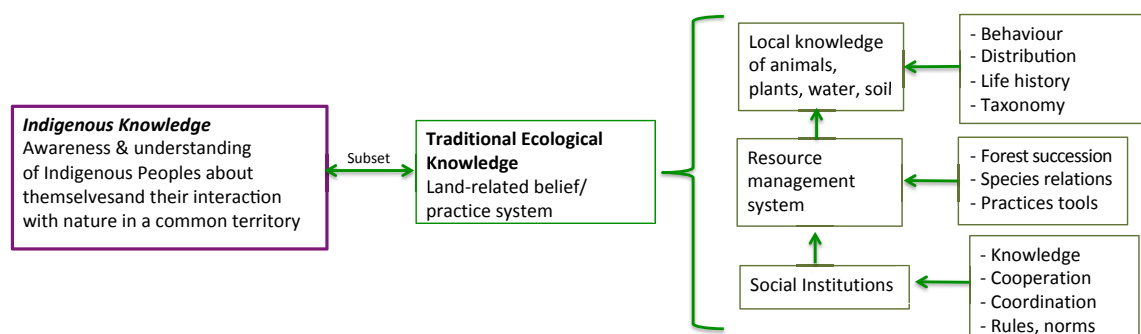


Figure 2-5. Traditional Ecological Knowledge System.
(Source: Modified from Berkes 2008.)

TEK is acknowledged to be central in development contexts and strategies (Al-Roubaie, 2010; Ellen et al., 2000), especially at the local level in management and conservation initiatives involving natural resources and the livelihoods of communities (Alcorn, 1993; Berkes et al., 2007a; Jones et al., 2010). Some experiences in Latin America have found it to be essential in gathering more comprehensive information for taking appropriate management strategies, which was the case in marine protected areas in Brazil (Gerhardinger et al., 2009). Similarly, inclusion of TEK in fisheries has been a key source of information and management alternatives for reducing fishing impacts on the Huave Lagoon System in Mexico (Espinoza-Tenorio et al., 2013). In Ecuador, a study of the impact of TEK on the use of a common forest in the locality of Loma Alta demonstrated that the synergy between TEK and “Western” knowledge resulted in greater support for ecosystem services and biodiversity (Becker & Ghimire, 2003). Other case studies where TEK is key in management and conservation practices can be found in Donovan & Puri (2004), Long et al. (2003), Moller et al. (2004), Tengö et al. (2007), Watson et al. (2003).

These studies provide theories and methods for the joint harnessing of TEK and “Western” knowledge, or what has been called the coproduction of knowledge. From the Western science perspective, Among the arguments supporting the key role of TEK in natural resources management and conservation, is the “interdependence between indigenous people and nature” (Cristancho, 2005. p. 3). This can be interpreted as the expression of Indigenous Peoples’ worldview of unity with the environment, which has allowed them to understand, acquire, and accumulate knowledge of phenomena of interest over long-term (Berkes & Kislalioglu, 2009), such as rain/dry seasons, species migration, and phenology of important plant species. This idea of complementarity between knowledge systems is supported by Moller et al. (2004), who argue that although indigenous monitoring methods might seem inexact from a Western perspective, they include observations over long time periods, they are inexpensive, and sometimes are indicators of environmental transformation.

In the Ecuadorian case mentioned previously from Becker & Ghimire (2003), the synergy between TEK and Western science was possible due to the adaptation of both systems to allow data transfer and communication between them. Scientific knowledge was incorporated in the community by using oral traditional institutions; and scientists adapted their conventional written reports to the indigenous context by

using oral presentations and videos. Similarly, TEK has proven to be effectively incorporated and to influence formal decisions of the government in marine protected areas in Brazil, when considered in bottom-up approaches (Gerhardinger et al., 2009), versus the traditional centralised top-down approach of the government.

What is recognised from a range of case studies, and acknowledged by various scholars, is that cultural diversity plays a key role in conservation of biological diversity (Alcorn, 1993; Berkes, 2008; Gadgil et al., 1993b; Maffi, 2005), and thus, the knowledge Indigenous Peoples hold is an important source of information to understand and co-design collaborative conservation and management strategies. One example of the increasing recognition of TEK and other types of knowledge at the policy level is the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) launched in 2012. This panel, formed by experts around the world, seeks to assess the global status and trends of biodiversity and ecosystem services, and the connections with human wellbeing. As a result, among the task forces established by the panel is the indigenous and local knowledge task force. Among the aims of this task force is the promotion of effective engagement with indigenous and local knowledge holders and the strengthening of participation in the deliverables of the platform (“Indigenous and Local Knowledge | IPBES,” 2017).

Despite the recognition of TEK in conservation and the attempts to include it in international policies, in some indigenous communities it seems to be disappearing due to modification of socio-political contexts impacting on the areas in which Indigenous Peoples live as well as on their cultural settings (Cabrera-Becerra, 2004; Cristancho, 2005; Loh & Harmon, 2014a). Among the causes are migration, urbanization, colonization and globalisation of communications (Loh & Harmon, 2014a), and exploitation of natural resources in their lands (Ulloa & Coronado, 2016a). These pressures on Indigenous Peoples and TEK may increase in post-conflict scenarios, where national policies have the potential to promote development from a Western perspective, and therefore to create scenarios of cultural change, where Indigenous Peoples might be disadvantaged.

For these reasons, though my research does not intend to make general claims based on local findings, one of my interests is to understand how existing TEK can be articulated with the knowledge produced by modern Western science, to better inform

what is already known about environmental governance in a post-conflict scenario in Colombia. So far, I have introduced the role of TEK in management and conservation of biodiversity, and now I will attempt to establish the links between TEK, biodiversity and ES in the following section, by addressing the concept of ES in more detail.

2.2.3 The ecosystem services (ES) approach

1997 and 2005 saw landmark publications, from Daily, Costanza et al. and the Millennium Ecosystem Assessment, respectively, on the close links between ecosystems and societies. These landmark publications were not the first addressing this topic, but they made a difference as they were oriented to raise awareness of the public and policy makers regarding the dependency of people on ecosystems for food, fresh water, wood, fibres, materials, fuel and cultural and spiritual significance (Daily, 1997; Gómez-Baggethun & de Groot, 2007; MEA, 2005) as well as the need to protect ecosystems. These benefits that societies obtain directly or indirectly from ecosystems and biodiversity were popularised as Ecosystem Services (ES).

The ES concept has since gained global prominence, with considerable research devoted to better understanding ES and its applications and uses in natural resource management (NRM). Since its publication, the ES framework has been used to guide environmental policies and initiatives, such as IPBES, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, which was established in 2012. The panel, composed of experts from 126 member states, aims to support policymakers with data on biodiversity, ecosystems, and the benefits they provide to people at the regional and global level (IPBES, 2017). As State member of the panel, Colombia has adopted ES as a guiding policy for natural resources conservation and management, and, in 2012 launched the National Policy for the Integral Management of Biodiversity and its Ecosystem Services (PNGIBSE in Spanish).

Debate about the definitions, classifications, valuation approaches, and other aspects of ES continues to this day, and ES remains a contested concept from different perspectives. One of the recurring themes is the monetization of Es, which can be seen as unethical and anthropocentric (McCauley, 2006; Sagoff, 2008). Nevertheless, valuation has shown to be useful in trade-offs and providing transparency in decision-making processes (Costanza et al., 2017). The most well-known and recent critique was sparked by the introduction of the concept of Nature's Contributions to People (NCP)

as a substitute for ES in the IPBES framework (Diaz et al., 2018; Díaz et al., 2015). One of the main claims for this was that ES did not fully capture diverse knowledge systems, worldviews and stakeholders. Responses were immediate and the claims were counter-argued with peer-reviewed publications in which the contested topics are addressed (Braat, 2018; Kadykalo et al., 2019). It is not the purpose here to debate or contest the concept, but to address it as a concept that has contributed to the conversation between science and policy for biodiversity conservation. Additionally, it has become a tool for organisation and negotiation for local communities whose territories and practices are overlooked by governments (Sangha et al., 2017).

In synthesis, ES has become an established concept in the global policy arena due to its emphasis on human wellbeing, and its use in natural resources management (NRM) and conservation as per the strong connection that has been established between ES and biodiversity (genes, species, ecosystems). Significant theoretical and empirical research has been carried out on linking and explaining the effects of biodiversity in the functioning and provision of ES (Balvanera et al., 2006; Costanza et al., 2007; Haines-Young & Potschin, 2010; Hooper et al., 2005; Yapp et al., 2010). Some of these links are more obvious than others, such as the role of wetlands in coastal protection (Alongi, 2008; Barbier et al., 2008; Costanza et al., 2008), or terrestrial ecosystems in carbon sequestration (Bonan, 2008; Lorenz, 2013). Nevertheless, human activities have altered biological communities and ecosystems at all scales, from local to global (Hooper et al., 2005), and the scientific consensus is on the importance of effective biodiversity planning, management and conservation strategies for the provision of ecosystem services.

Modern NRM systems have been reviewed in light of traditional practices of indigenous communities (Berkes et al., 1994, 1994; Berkes, 2008; Gadgil et al., 1993b; Hill et al., 2020; Maffi, 2005; Pretty et al., 2009), showing the key role of TEK in biodiversity preservation and sustainable use, and arguably in the provision of ES (Figure 2-6). However, this role and the connections between IPs and nature are often dismissed from public national and international policies and IPs continue to be discounted (Sangha et al., 2018, 2019).

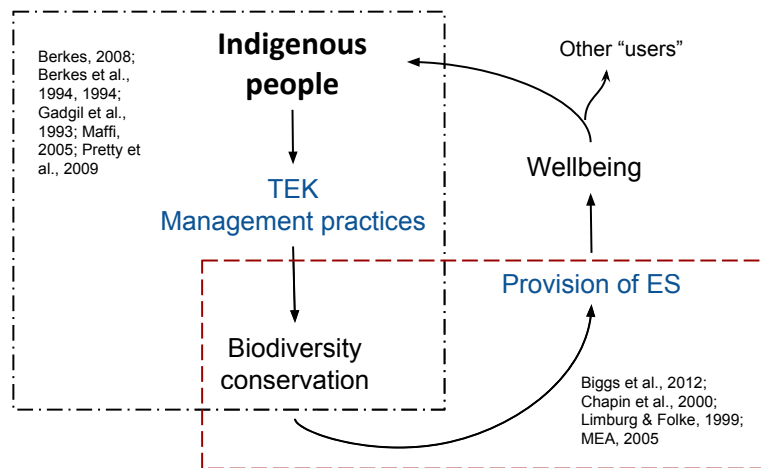


Figure 2-6. Theoretical relation between TEK and SE (Source: own elaboration).

Culture, traditional knowledge and practices of Indigenous Peoples in the conservation and propagation of local plants and animal species have shown to be fundamental for biodiversity and crucial in food security, medicine and restoration (Thaman et al., 2013). According to the IPBES reports on the regional assessment on biodiversity and ES for the Americas (Rice et al., 2018), Europe and Central Asia (Rounsevell et al., 2018) and Asia (Karki et al., 2017), those connections between IP and ES are under threat due to land loss to colonial expansion and land appropriation, habitat fragmentation, overexploitation and pollution among other causes. The notorious consequence of this for IPs is the deepening of inequality.

The study of specific relations between TEK and ES is a core motivation of this doctoral study, and the literature review (per the paragraphs above) has confirmed that there are still major knowledge gaps. When these gaps are placed in the perspective of the Colombian post-conflict scenario, there emerges a clear case for further study. It requires both a theoretical and empirical understanding of the context in which nomadic groups of Indigenous Peoples have developed, with special reference to Colombia and Cacia people; and also of the implications of the Peace Accord for them. These contextual dimensions will be addressed in the following sections.

2.3 NOMADIC PEOPLES, LAND AND CONFLICTS

Before agriculture, the practice that transformed civilisation around 11,000 years ago, humans used to subsist by gathering plants, hunting animals and herding

(Brockington, 2006; Standage, 2010). This behaviour implied temporary settlements and frequent movement (Brockington, 2006; Gilbert, 2014). Following the development of agriculture as the principal production system of food and the establishment of permanent human settlements, many groups remained mobile. This lifestyle is referred to as nomadism and designates a social organization and cultural identity of indigenous/aboriginal groups, whose survival depends on periodic or cyclical movement (Brockington, 2006; Gilbert, 2014; Matthews, 2013). Within nomadic peoples there are many different groups, but it is possible to differentiate three main ones distributed around the globe: hunters-gatherers, pastoralists, and peripatetic groups (Brockington, 2006; Gilbert, 2014; R. B. Lee & Daly, 1999). These groups, besides sharing a mobile lifestyle, share the historical struggle for survival and maintenance of their identity, due to the restriction of use of their ancestral territories, state control and policies, and conflicts over land and property rights as “modern” societies establish and expand (Brockington, 2006; R. B. Lee & Daly, 1999; Tidwell & Zellen, 2016).

Processes of displacement and sedentarisation have occurred in many regions around the world (Reyes-García & Pyhälä, 2017) (e.g. Colombia, Tibet, Australia) for various reasons (e.g. national programs or internal conflicts), bringing a range of social consequences, including addiction to drugs and alcohol, deterioration of mental health, diseases, violence and prostitution (Cabrera-Becerra, 2004; Lu et al., 2009; Rapoport, 1978). Nevertheless, the ecological consequences of the loss of this type of social organization remain less clear. Undoubtedly, one of the major losses would be to the traditional ecological knowledge of nomadic people, including all practices associated with it, such as the identification, classification and management of plants and animals.

In this respect, Lu et al. (2009), based on a sedentarisation process promoted by the Chinese government of Tibetan pastoralists, suggest that pressures over resources might increase, and immediate habitat loss and fragmentation are highly likely to occur due to economic development activities such as construction works for infrastructure. Similarly, Cabrera-Becerra (2004) suggests that sedentarisation of Colombian groups in the Amazon might alter the composition of the forest, as it has been reported by some researchers (Posey, 1985) that patches of specific plants (e.g. palm trees) occur as a consequence of management practices by indigenous groups.

Additionally, though natural resources management is better known in agriculturalist societies than in nomadic societies, their mobile lifestyle and the absence of agriculture have been associated with the conservation of natural resources by some scholars, especially in Kenya, Tanzania and Australia. According to Adams & McShane (1992) and Århem (1985) the role of the Maasai and their cattle in maintaining the grassland ecosystem for antelopes in the Serengeti is fundamental to avoiding bush and woodland overgrowth. In Australia (Lewis, 1989) has shown the importance of periodic fires in the distribution and abundance of animals and plants in Aboriginal societies. Nevertheless, there is a need for more research on this topic.

2.3.1 Hunters/gatherers, their territory and fate

As briefly introduced above, until approximately 11,000 - 12,000 years ago humans used to be nomadic hunters/gatherers (Gilbert, 2014; Lee & Daly, 1999). Nowadays, some of these groups are still found in Australia (e.g. Spinifex people or the Pila Nguru), Tanzania (the Hadza), Malaysia (the Batek), North America (some Inuit communities), Namibia (the San), Kenya (the Maasai) and Colombia (the Nukak) (Franky Calvo & Mahecha, 2012; Gilbert, 2014; Lee & Daly, 1999).

Although one of the best-known characteristics of these groups is their mobility for subsistence, there are other elements that distinguish them, such as their social organization and worldview. The predominant unit of social organization of these groups is the band (Cabrera-Becerra, 1999; Cashdan, 1991; Lee & Daly, 1999), which consist of groups of around 20 people, both children and adults, cooperating in an egalitarian system (an absence of hierarchy) in a territory based on common property (Lee & Daly, 1999; Woodburn, 1982). These two last features are fundamental expressions of their worldview of sharing and reciprocity, and being one with the environment (Arce Ruiz, 2005; Chilisa, 2012; Gadgil et al., 1993; Lee & Daly, 1999; Semali & Kincheloe, 1999).

Hunter-gatherer societies are complex systems based on deep knowledge of the biophysical and social environment. On one side, they have lived under traditional codes and traditions, most of the time without intervention from formal government institutions; and on the other side, they have come to understand and know the environment they are part of, using it without depleting it (with some exceptions) (Lee & Daly, 1999; Niamir, 1995; Standage, 2010). Social controls and regulations (e.g.,

taboos) have shaped the way they manage the environment, and are the foundations of their identity, passed through generations expressed in songs, dances, stories, rituals, paintings, and other forms of expression (Berkes, 2008; Fowler & Tuner, 1999).

Like most of the nomadic groups, hunters and gatherers have been under threat due to loss of their traditional lands as a consequence of expanding areas for development (Balee, 2015; Lee & Daly, 1999; Tidwell & Zellen, 2016), and paradoxically, for protection of biodiversity through the creation of national parks, which constrain their mobility and traditional activities (Gilbert, 2014). In addition, in many societies nomadic groups are still subjected to ongoing discrimination, as nomadism is considered either a non-productive or a primitive form of society (Davis, 2010; Gilbert, 2014; Mahecha et al., 1997). One question that arises from this situation is: how are these groups and the knowledge they hold being accounted for in current development policies and other governmental mechanisms?

Few examples exist of how indigenous groups of hunters-gatherers have participated in managing their own territories when conflicting interests meet. One example is the case of the Beaufort Sea, under Canada's Oceans Action Plan, in which integrated coastal management was addressed specifically from a perspective of inclusion and participation of Indigenous Peoples (Berkes et al., 2007). This experience, supported by the work of Moller et al. (2004), showed that combining Indigenous Knowledge of nomad communities, with science increases the understanding of the marine environment and assists the monitoring and management of wildlife populations in the area.

In the case of South American hunters-gatherers, the role of TEK in conservation is less known; probably as a result of the historical isolation of these groups, their "shy and elusive nature" (Silverwood-Cope, 1972 p. 1), the difficulties to reach them, and in some cases due to national policies to avoid contact with the communities. In the particular case of Colombia, the most likely reasons are the small number of hunters-gatherers groups remaining, their geographical isolation, and the armed conflict that limited research in some areas of the country for many years. In this context and considering the implications of the peace accord in Colombia, this research is an opportunity to contribute to providing new insights on the role of nomadic community

TEK in conservation, regional planning, and the national governance system in a peace-building scenario.

2.3.2 The hunter/gatherers of the Amazon – the Cacua people

Amazon indigenous groups are not exempt from the scenarios of transformation described previously despite the region having remained relatively well-preserved due to its isolation, difficult access and in some cases illegal armed groups (as has been the case in Colombia due to the presence of the FARC, and other armed groups). Current national policies and illegal activities are creating conflicts over the land and ancestral territories, with serious consequences for Indigenous Peoples¹².

In terms of existing research about Amazon indigenous communities in Colombia, there is an extensive literature on Tukano and other groups (sedentary groups), thanks to the work done by Correa (1987, 1996); Franky & Mahecha (2013); Jackson (1983); and Reichel-Dolmatoff (1976, 1982, 1997), among many other researchers. Their work covers symbolism, cosmology, linguistics, history, ethnography, ethnoecology and use of territory. Likewise, for the Makú groups (nomadic groups), briefly introduced in Chapter 1, the researchers Cabrera-Becerra (2004, 1999, 2010); Franky Calvo & Mahecha (2000, 2012); Mahecha et al., (1997); Politis et al. (1997); and, Silverwood-Cope (1972), have done much of the sociocultural investigation. Thanks to their work we know about the social organization, where these groups are located, what are their linguistic filiations, their relations with Tukano and other indigenous groups, their cosmology, use of the forest, and some of the challenges they face.

Within the Makú group, Nukak people have been of special interest as they were the last nomadic group to be contacted. This occurred in the late 80s, encouraging research to study them and avoid their acculturation as a consequence of their sedentarisation and contact with outsiders. In contrast, less is known about the other groups; in particular the Cacua people. Most of the information is available from the few remaining dispersed notes made by explorers during the colonialism period, from the beginning of the 1970's with the ethnography work of the anthropologist Silverwood-Cope, "*A contribution to the ethnography of Colombian Makú*", some notes from the

¹² *Uncontacted' Amazon Tribe Members Reported Killed in Brazil*. The New York Times, SEP 10, 2017.

<https://www.nytimes.com/2017/09/10/world/americas/brazil-amazon-tribe-killings.html>

missionary who arrived in the area (Cathcart, 1973), more recently from the work of Bolaños Quiñonez (2016), and some reports from one NGO, Sinergias, working with them on health issues (Sinergias 2019).

Silverwood's work provided the first and most detailed ethnography for the group; and Bolaños-Quiñonez's work (2016) contributes not only by offering a written record of Cagua language, a keystone element in preservation of culture, but because it provides updated information of their location and general social setting. However, as over four decades have passed since Silverwood's work, and Bolaños-Quiñonez's work focuses on grammar, many elements about the community in the present are unknown including key features such as their identity, livelihoods and vision for development.

2.3.2.1 Cagua people and post-conflict governance

According to (Bolaños-Quiñonez, 2016) Cagua people are members of the small Cagua-Nikak language family, with approximately 250 people occupying two villages – Wacará and Nuevo Pueblo - in the department of Vaupés. While in Wacará settlement around 180 people live and in Pueblo Nuevo there are roughly 45 individuals, in other settlements in the forest 10 to 15 people could be found living in their own settlement or in villages with Tukanoan communities (Bolaños-Quiñonez, 2016).

Wacará village is reported to have been established in 1970 by the missionaries Marilyn Cathcart and Lois Lowers from the Summer Institute of Linguistics (SIL), initially with fewer than 20 people both adults and children that lived in the vicinity. Later, more bands living in the forest joined the settlement and from 123 people in 2009 it grew to 183 in 2015 (Bolaños Quiñonez, 2016).

Unlike Wacará, Nuevo Pueblo has lacked the religious influence of missionaries, and has a higher contact with Tukanoan groups, forming a more dependent relation with them in terms of exchange of goods (Bolaños Quiñonez, 2016; Silverwood-Cope, 1972). Both authors remark on the apparent subjugated relation between Cagua and other indigenous and non-indigenous groups; and Silverwood-Cope's appreciation of this regarding non-indigenous people was that "*for white people the Indians are spiritually, economically and technologically inferior*". This reflects the historically overpowered position of Indigenous Peoples in relation to the non-indigenous.

Cacua people, like many other indigenous groups in Colombia no longer exist in total isolation and face increasing social and environmental pressures to which they need to adapt, such as climate change, development policies driven by global markets, or the implications of the Peace Accord. In particular, the significance of the Accord is unclear regarding the present and future of their knowledge systems, livelihoods, identity, and the resources they manage is not clear.

From the work from Cabrera-Becerra (2004, 1999) and (Franky Calvo et al., 2000, 2010) we know the negative consequences that sedentarisation and contact with outsiders have had on the Nukak Makú: demographic decline, the emergence of new diseases, disappearance of their material and immaterial culture, among others. Similarly, in the last two years, the highest levels of suicides among the 27 indigenous communities of Vaupés¹³ have been reported (El Espectador, 2016; Semana, 2016), and as explained by the local general practitioner, is a result of the clash of two different cultures: the “white” and the “Indian”. The high rate of suicide is indicative of the potential impacts that unplanned transitions might have on indigenous groups like the Cacua.

Although the government has established “*Planes de Vida*” (Life Plans) as planning tools for local management of indigenous territories in line with their social, spiritual and cultural characteristics, the support they provide for the implementation of the strategies formulated is scarce. Additionally, these measures clash with other national policies and initiatives also promoted by the government. Such is the case of the last statutory project proposed by the government to regulate the right of IPs to prior consultation (Semana, 2017). The project aims to regulate and accelerate the approval of those projects that are delayed due to unsatisfactory agreements with the communities. This means that the government would be entitled to decide the fate of projects regardless of communities’ opinion.

This is just one example of the future pressures that indigenous communities are facing and the question that emerges is how the Cacua and other indigenous

¹³ In Mitú the suicide rate is 38 for every hundred thousand inhabitants, compared to the rest of the country that is 4,9. <https://www.elespectador.com/noticias/salud/vaupes-y-su-epidemia-de-suicidios-indigenas-articulo-646414> [visited: July 2016]

communities of hunter-gatherer tradition can develop in a post-conflict scenario that opens the possibilities of progress, based on Western thought and action. Therefore, empowering communities and creating agency not only to cope and adapt with changes but to influence their future, becomes one of the objectives of this research, and TEK becomes a key element in this process.

2.4 MANAGING TRANSITIONS - THE PEACE-BUILDING SCENARIO IN COLOMBIA

The Peace Accord between the National Government and FARC was signed on September 26th, 2017. This marked the beginning of a long process that has gone through many obstacles and still has a long way to go. Subject to a plebiscite (a direct vote of all members of the electorate to decide whether it was accepted or not¹⁴), the agreement was rejected on October 2nd 2016¹⁵. Further negotiations between the Government, FARC, and opposition parties were carried out and the Peace Accord was eventually signed in its final version on the 24th November 2016.

The details of the Accord are addressed in chapter 4; however, some of the general implications are of particular importance as they are directly linked to the governance and management of natural resources in Colombia's current post-conflict or peace-building situation. The impacts on natural areas where the FARC were located, some of which have been revealed recently, include higher rates of deforestation, in the Caquetá and Guaviare departments (Clerici et al., 2020; Semana, 2017). In addition, the Accord presents opportunities to promote extractive policies for natural resources as a driver of national development, such as the recent consent from the Government to allow exploration of oil deposits using fracking (El Espectador, 2017). Yet, if effective management and governance of natural resources is promoted in the post-accord setting, there is potential to create employment and sustainable livelihoods, conserve natural capital, and consolidate peace (Lujala & Rustad, 2012; UNDP, 2013).

¹⁴ Oxford English Dictionary

¹⁵ ("Plebiscito 2 octubre 2016 - República de Colombia," 2016)

To address the need for effective management towards a just transition from conflict to post-conflict/peace-building scenario, I will first introduce transition theory and its relevance to the Colombian context in the face of the Peace Accord.

2.4.1 Transitions - Conceptual foundations

Transitions are defined as “*processes in which society changes in a fundamental way over a generation or more*” (Rotmans et al., 2001, p. 1), and can occur gradually (Martens & Rotmans, 2005) or abruptly (Scheffer, 2009). Its conceptual foundations lie in biology and population dynamics (Rotmans et al., 2001; Scheffer, 2009), yet, the concept has extended into other areas to explain social, ecological and economical changes (Martens & Rotmans, 2005; Scheffer, 2009; Scheffer, Bascompte, Brock, Brovkin, Carpenter, Dakos, Held, van Nes, et al., 2009).

Current interest in the topic lies in research and strategies that allow for sustainable transitions (Olsson et al., 2006; Rauschmayer et al., 2015). Among the models of intervention proposed for systems in transition is “transition management”. This is a model of governance that is founded on complex systems theory (Rotmans & Loorbach, 2009), and that considers and incorporates anticipation, adaptive institutions, integration of knowledge, iterative participation and strategy development with the purpose of deliberately intervening to promote change (Kemp & Loorbach, 2006; Shove & Walker, 2007).

Nevertheless, there are some critical points for the discussion about managing transitions, as pointed out by Shove and Walker (2007). On one side, and considering the uncertainty and unpredictability that accompany complex systems, it is difficult to define many of the elements that suppose deliberate management (e.g., actors involved, resources to consider, shared vision, tipping points), but even if the elements of the system are “under control”, how can the transition be ensured to go in the desired direction? It is known that ecological and social systems have tipping points at which they experience abrupt changes (Jax, 2014; Scheffer et al., 2009), and not only identifying such tipping points is challenging, but also once the system has reached them, the direction that it might take remains difficult to predict.

This relates directly to the normative question of who should be involved in the design of the vision or trajectory of the transition, so as to ensure the process is inclusive.

Participation and engagement from various actors is known to be a key element in enhancing the capability of systems to cope with changes, yet it also represents challenges in achieving agreements due to the different perceptions, interests and power (Berkes et al., 2002). Besides, how is it decided who are to be involved in the process? When addressing transitions these elements need to be considered in addition to an awareness of the power relations that might underlie the practice.

Despite the scepticism about managing transitions of SES due to their complex nature, when facing transitions, preparedness is needed. This means, exploring the possible alternative configurations of the system (desirable and undesirable), the elements that support those configurations, and developing diverse strategies from multiple perspectives that enable coping with changes and movement towards desired states. Some of those strategies have been discussed in section 2.1.3 such as building knowledge that considers different systems and paradigms, broadened participation and promotion of adaptive institutions. In the particular case of Colombia, knowledge held by Indigenous Peoples in the Amazon represents an incredible stock of cultural capital, and its potential for navigating transitions requires exploration. It might provide key elements for the identification of social and ecological tipping points, to design early warning systems, and to design governance models that bring together divergent values and interests.

The following section explores this potential role of Indigenous Peoples by presenting the potential implications of the Peace Accord.

2.4.2 Environmental governance in post-conflict scenarios - the Colombian case

Ample scholarly evidence has demonstrated that civil wars or internal conflicts in countries have a strong link with the environment, either because natural resources are the cause of the conflict, because they are affected by the conflict, or because they have the potential to support and promote peace after the conflict (Brown et al., 2011; Lujala & Rustad, 2012). Jensen and Lonergan (2012) argue that following conflict situations, the natural resources of a nation become a critical asset for recovery of the economy, employment, livelihoods and development.

The role of natural resources in conflicts and peace building has been documented by the UNDP (2009) in a series of case studies in Sudan, Sierra Leone, Angola, Cambodia,

Rwanda, Peru and Ecuador among other countries (Table 2-3). Within the range of resources, forests appear to be the most affected resources system in initial stages of post-conflict transitions, as institutions and government are weak and have not established authority to control activities such as illegal logging (Wallace & Conca, 2012). According to Shankleman (2012) the extractive sector becomes the first foreign direct investment because investments are usually agreed directly between investors and governments, often under weak law and regulations, and large-scale projects operate in isolation from the rest of the post-conflict context, without much consideration of it, and frequently they have the entire infrastructure necessary to operate (e.g., power generation and water treatment).

There is consensus that if effective governance systems are not in place, this situation may trigger or sustain conflict (.).

Table 2-3. Civil wars linked to natural resources.

Country	Duration	Resources
Afghanistan	1978-2001	Gems, timber, opium
Angola	1975-2002	Oil, diamonds
Burma	1949-	Timber, tin, gems, opium
Cambodia	1978-1997	Timber, gems
Colombia	1984-	Oil, gold, coca, timber, emeralds
Congo, Dem. Rep. of	1996-1998, 1998-2003, 2003-2008	Copper, coltan, diamonds, gold, cobalt, timber, tin
Congo, Rep. of	1997-	Oil
Côte d'Ivoire	2002-2007	Diamonds, cocoa, cotton
Indonesia – Aceh	1975-2006	Timber, natural gas
Indonesia – West Papua	1969-	Copper, gold, timber
Liberia	1989-2003	Timber, diamonds, iron, palm oil, cocoa, coffee, rubber, gold
Nepal	1996-2007	Yarsa gumba (fungus)
PNG – Bougainville	1989-1998	Copper, gold
Peru	1980-1995	Coca
Senegal – Casamance	1982-	Timber, cashew nuts
Sierra Leone	1991-2000	Diamonds, cocoa, coffee
Somalia	1991-	Fish, charcoal
Sudan	1983-2005	Oil

Source: UNDP 2009

In the particular case of Colombia, historically, multiple socio-environmental conflicts have been associated with natural resources: banana plantations in the Uraba region, gold mining and water in the *paramos*; the rubber and the coca “booms” in the Amazon, and finally oil extraction as one of the main extractive activities in the region (Ulloa & Coronado, 2016a).

Under this panorama, the PA and the peace-building process become of great relevance for the country’s natural and cultural capital. The incorporation of environmental considerations in the planning and implementation of the agreement

are essential, not only to preserve diversity (cultural and biological), but also to promote sustainable models of development, and moreover to achieve peace. Among the specific aspects to consider are (UN, 2014):

1. Some of the areas for the implementation of actions (e.g., development of infrastructure, substitution of coca crops, agricultural development) are planned to occur in areas under a protected category or use regulation.
2. The implementation of the “integral rural reform” involves land reintegration to victims of the conflict and the development of the rural sector.
3. The extractive sector needs to be especially considered to avoid transfer of social and environmental conflicts into the areas with mining potential.
4. Institutions need to be prepared to attend and respond to the implications of the Accord, meaning planning, implementation, and monitoring of actions. Yet, the annual budget assigned to the National Environmental System SINA has been decreasing during recent years, making it difficult to attend all the requirements.

This implies that concerted planning processes are required to strengthen the governance system at the technical, political and financial level, and promote local models of sustainable development based on the nation's immense natural capital (Aguilar et al., 2015; Ulloa, 2012; Ulloa & Coronado, 2016a; UN, 2014). This may be achieved if diverse values and active participation from local organizations and communities are brought into the discussion.

Indigenous Peoples play a key role in the relationship with natural ecosystems and their conservation in this transition. They have been suffering for decades, not only from historical segregation but also from the consequences of the war. Yet they have fought to maintain their culture and livelihoods (Ulloa, 2012). Thus, the transition process can be considered an opportunity for fostering a transition of the ways management and governance are carried out, and also for how Indigenous communities are involved. While some analyses have addressed the adverse impacts of the Peace Accord on the conservation status of the Amazonian forest since it was signed (Armenteras et al., 2019; Clerici et al., 2020; Guio, 2018; Krause, 2019; Negret et al., 2019), less has been done to understand its implications for IP and TEK. This is significant considering the indigenous territories in Colombia have been severely

affected by the internal armed conflict and IP are often ignored as victims in peacebuilding processes (Maldonado & Martínez, 2016).

Here I argue that TEK, as it operates in a SES, is key in the management of this transition towards social-ecological systems that match people's visions and contribute to the provision of ecosystem services from the local to the national level. This is an area of knowledge that still requires further investigation.

2.5 SUMMARY AND RESEARCH FOCUS

In summary, my proposed research aims to understand the role of TEK in the provision of ES and its possible roles in managing shifts of social-ecological systems in a post-conflict scenario for the Indigenous Peoples in the Colombian Amazon. My literature review raised and highlighted a number of questions and knowledge gaps that merit investigation. Specifically, what are the connections between TEK and ES?; and, how can TEK and ES be harnessed in conjunction to better inform environmental governance in the Colombian Amazon's post-conflict scenario? Much of the reviewed literature on TEK emphasises its key role in conservation of biodiversity and management of natural resources, and the importance of incorporating TEK into research and decision-making processes. Moreover, the literature supports the argument that TEK contributes to the maintenance of biodiversity through traditional management strategies of natural resources. Biodiversity is in turn one of the enhancing factors of resilience in SES. Arguably, by strengthening traditional knowledge systems, which contribute to biodiversity conservation, resilience of SES is enhanced and thereby the provision of ES. Nevertheless, a knowledge gap exists as to the role of TEK in navigating and creating/enhancing resilience to avoid undesirable/foster desirable regime shifts. Therefore, my contribution to knowledge will be focused on the role of TEK in securing the equitable provision of ES in SES under social-political transitions (Figure 2-7), through the following guiding research questions:

- RQ1: What are the implications of the Peace Accord for the Amazon region, its Indigenous People, and their knowledge?

- RQ2: How can traditional ecological knowledge (TEK) contribute to the environmental governance of a local SES in the Colombian Amazon in a post-conflict setting?
- RQ3: What improvements can be made to the current environmental governance system to provide opportunities for the inclusion of TEK and the Cacua agency?

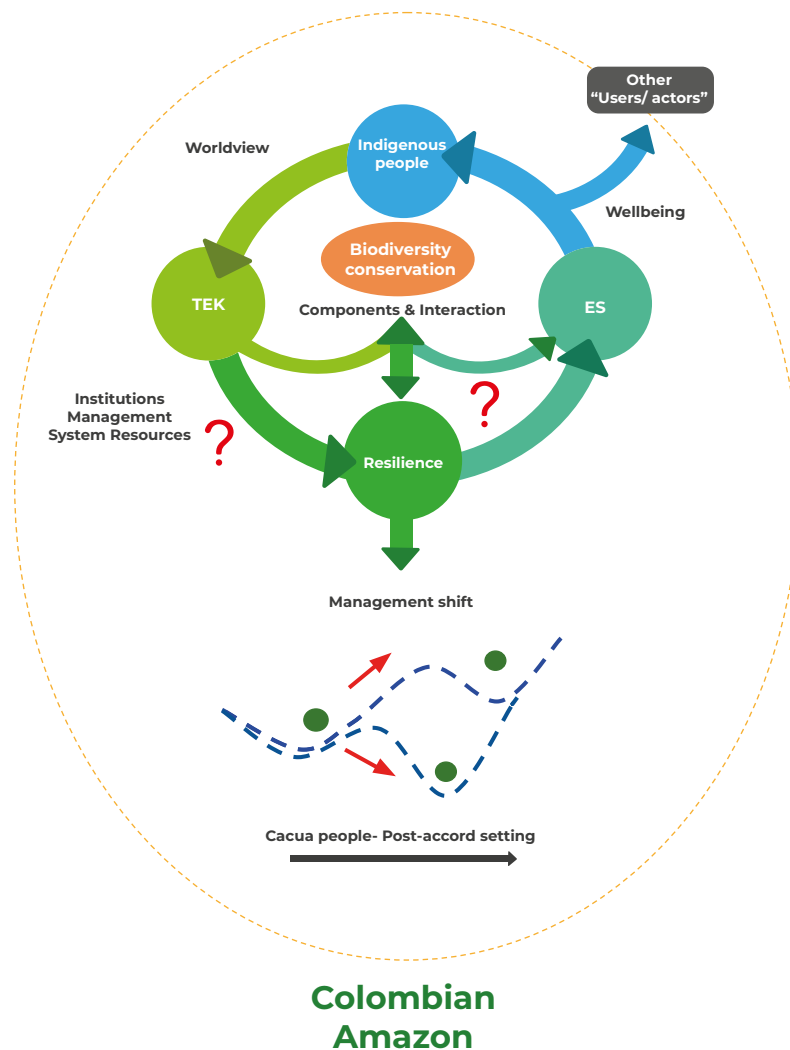


Figure 2-7. Research Focus (Source: Own elaboration)

3 Research design



3.1 INTRODUCTION

The need for greater consideration and incorporation of TEK in the environmental governance of the Colombian Amazon in a post-Peace Accord agreement scenario was established in Chapters 1 and 2. In the current chapter, the process followed to answer the research questions that surfaced from the literature review is presented. This includes a general guiding framework, data requirements, the methods, and techniques to obtain and analyse that data, and the ethical considerations during the process.

To explain how the research questions were addressed, the first section of this chapter presents and discusses the research design and justifies the methods and techniques selected to answer them. The second section looks into the details of the methods for data collection including interviews, field visits to the Cacua settlement (Wacarâ), workshops and observations made during the field trips. The third section details the analysis of the data collected, from its systematisation to final analysis and structure that make up the results and analysis chapters.

3.2 RESEARCH APPROACH

In this section, the process followed to answer the research questions is described. This includes a general guiding framework, data required, the methods and techniques to obtain and analyse that data, and the ethical considerations and the steps forward in the investigation.

By adapting Hammersley's framework (Hammersley, 2016) to this research, I aim to address the following aspects:

- A. The big picture (or focus) of the research, meaning the general topic or phenomena of interest; in this case environmental governance in post-conflict scenarios.
- B. The study (or the case) refers to the specific phenomena of interest located in a certain place and time, which in this research corresponds to the role of TEK and ES in the governance of the Colombian Amazon in a post-peace accord setting.
- C. The theoretical, epistemological, and ontological perspectives inform the selection of the methods and techniques for the data collection and analysis, and the production of evidence.
- D. The claims that can be made about the study based on the produced evidence, and
- E. The conclusions that can be drawn about the big picture.

This chapter focuses on section C of Hammersley's framework: the selection of methods and techniques to collect the data to produce evidence, and its justification.

The figure below (Figure 3-1) is an adaptation by Hopwood (2017)¹⁶ of Hammersley's paper "Understanding ethnographic accounts" (1998). I have further adapted Hopwood's figure to summarize my own research methodology. The ethnographic account has been selected as appropriate for this research as it aims to study the daily actions of Cacua in their territory. Through diverse approaches, such as participant observation and unstructured interviews, I interpret meaning and actions and its implications in the community (Hammersley & Atkinson, 2019).

¹⁶ <https://prezi.com/xjflibwziv5f/hopwoods-interpretation-of-hammersley-framework/>

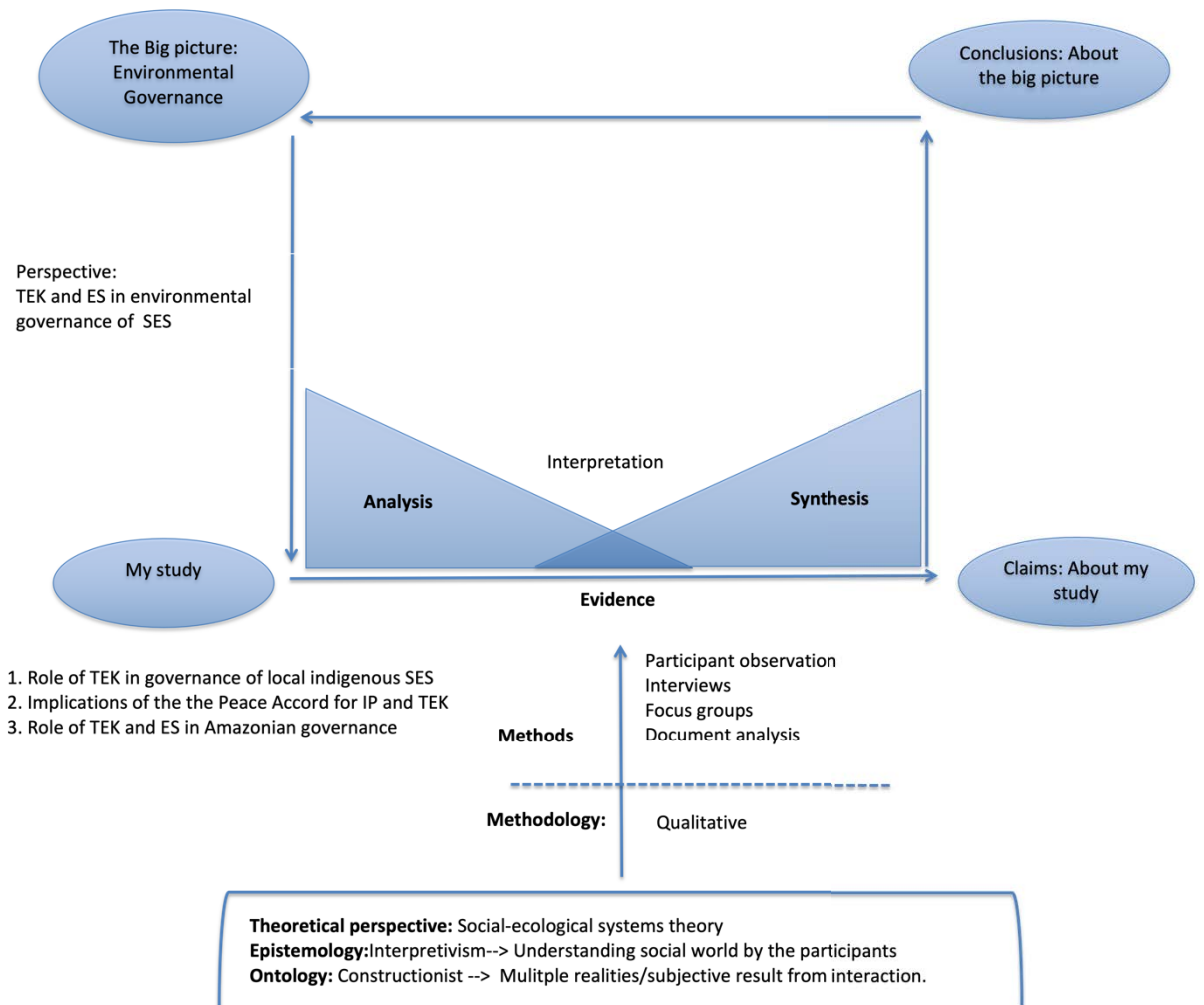


Figure 3-I. Research framework for this study (Source: own elaboration)

3.2.1 Research approach – A qualitative perspective

To decide which methodology, methods, and tools would be appropriate to address the topic of interest and the research questions, we must first consider the ontological, epistemological, and theoretical standpoints that would allow us to comprehend and encompass the views and meanings of the participants, Indigenous Peoples and non-indigenous people.

The ontological stance of this research is situated in constructionism, a worldview that allows us to explore and understand diverse realities and worldviews, or pluriverses (Kothari et al., 2019), such as those from Indigenous Peoples and other participants in different sectors such as academia, government, and NGOs. Under constructionism, we acknowledged that reality is the result of the interactions between individuals, their beliefs, practices and environment, rather than existent phenomena separated from

the world and the participants (Bryman, 2012), and that as a researcher we seek to understand the subjective meanings and interpretations of the multiple views relayed by participants about certain phenomena (Creswell, 2014).

Under constructionism, the epistemological position of this research is interpretivism, which focuses on the understanding of the social world and its phenomena through interpretation of the participants views (Bryman, 2012; Creswell, 2014), which was one pillar of this research. It meant that to form new knowledge I acted as an insider and worked in a collaborative manner with the participants to collate their interpretations of the phenomena with those of interest in this research.

These considerations led to the identification of grounded theory as the preferred strategy of analysis of this research. By doing so, I sought to let theories emerge through an iterative process of comparison and interpretation of the data and the participant's experiences as suggested by Bryman (2012), Mills et al., (2006), and Charmaz (2014). Although grounded theory follows an inductive process - meaning the approach is bottom-up from data to theories - instead of deductive reasoning (Bryman, 2016; Richards, 2014), it still incorporates some deductive categories of coding and analysis inherent to the researcher and their knowledge, and the supporting theories and frameworks used in this research, such as the McGinnis and Ostrom framework (2014).

3.2.2 Methodology

The aim of this research was to understand the views, experiences, and interpretations of the participants about TEK in the context of the Peace Accord in the Colombian Amazon. To establish a dialogue with the participants and “see through their eyes” (Bryman, 2012; Kvale, 2012) to explore shared meaning among participants (Merriam & Tisdell, 2015) qualitative research was chosen as the strategy of enquiry.

In brief, the methodology comprised a cross-scale analysis, including a social-ecological system analysis of a case study with the Cacia people, complemented with views of actors across community leaders, academia, government, and NGOs for regional and national analysis. The process was iterative, starting with a desktop phase where revision of documents occurred, followed by a fieldwork research phase involving engagement with the Cacia people and other participants.

3.2.2.1 *Methods*

Qualitative research emphasizes the interpretation of the social world by the participants. For Bryman (2012) and Creswell (2014) the role of the researcher is key in the recollection and documentation of these views and opinions by different means. Some of the means most used in qualitative research include examination of documents, observations of behaviour, and interviews with participants (Bryman, 2016).

To develop a more detailed picture and gain a deep understanding of the topic under investigation, a combination of methods was applied, and each is described next.

- *SES framework*

Social-ecological systems are complex, and such complexity makes their analysis challenging, and so, to facilitate SES analysis, frameworks have been proposed. In this research the framework developed by Ostrom (2009) and later modified by McGinnis and Ostrom (2014) was used as a heuristic model and adapted to the Cacao context. It is important to note that in this research, and given the complexity (spatial, social, and cultural) of the research area the SES model is used as a heuristic device, instead of a real delimited and quantifiable object in space.

In brief, the McGinnis and Ostrom framework considers a group of categories, or tiers of analysis, that represent multiscale ecological and social subsystems of a SES (Figure 3-2). On a first level we find seven tiers organized as: resource systems (RS), unit systems (US), governance systems (G), actors (A), and action situations (I-O), social, economic, and political setting (S) and related ecosystems (ECO). The underlying theory is that *resource systems* (environment) provide a number of *resource units* to certain *actors* who benefit from them and interact with each other based on a set of rules or a *governance system*. *Interactions* (I) between the different components of the system produce outcomes (O), which are grouped under the action situation tier (London, Rojas, Martin, et al., 2017; McGinnis & Ostrom, 2014). All these elements and interactions are influenced by external factors at larger or smaller scales, such as the ecological or the socio-economic and political context. Although the authors have proposed a total set of 56 variables on the second tier, both Ostrom (2009) and Delgado-

Serrano and Ramos, (2015) suggest that variables need to be defined according to the research questions and research context.

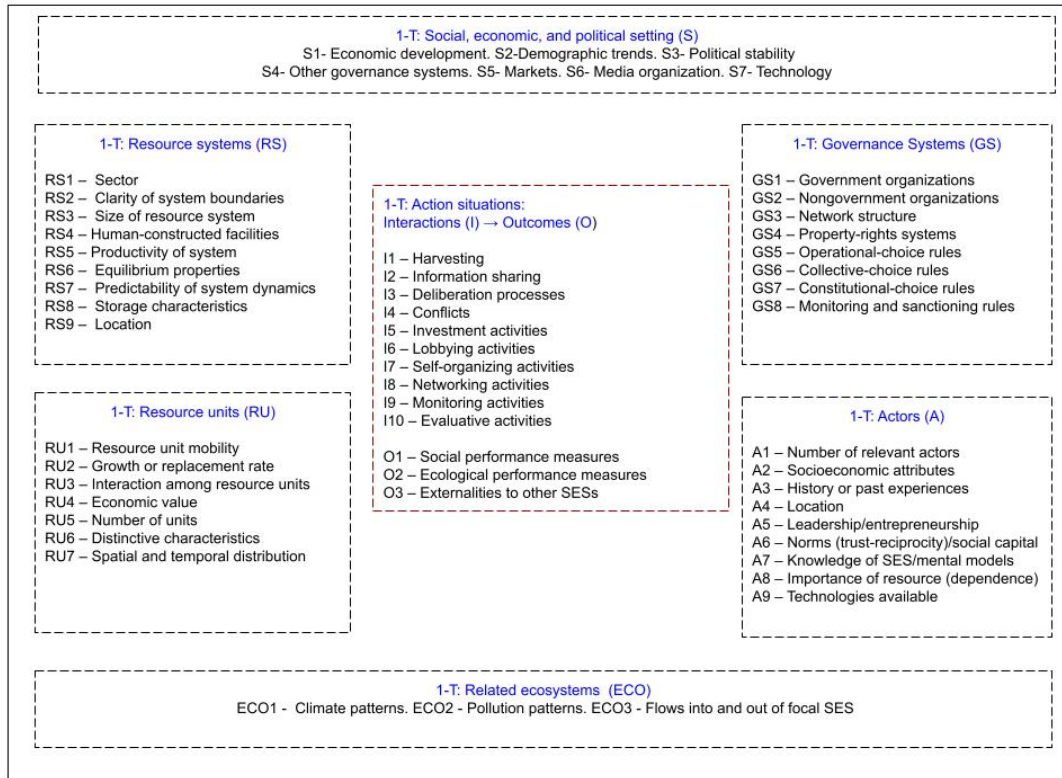


Figure 3-2: First and second-tier variables in McGinnis and Ostrom's (2014) framework

To collect the necessary information for the analysis, a case study was selected, and a series of methods including interviews, focus groups, workshops and observations were conducted to provide more detailed information to complete the components of the framework.

- **Case study**

Case study research refers to the detailed study or investigation of complex issues in a real world setting and bounded system (Creswell, 2014; Harrison et al., 2017). A program, a group, a phenomenon, or an individual can be used as a case study; and the interrelations among its elements and the context are matter of analysis (Yin, 2017). Different types of case studies can be distinguished in terms of the intent of analysis: 1) a single instrumental case study, 2) multiple case studies, and 3) the intrinsic case study (Creswell, 2007). In a single instrumental case study, such as this case, the researcher focuses on an issue or concern, and then selects one bounded case to

illustrate this issue. The Cacua people in Wacar were selected as a case study to illustrate the role of TEK in the governance of a post Peace Accord setting.

The criteria used for the selection of the Cacua as the case study considered the following elements: an indigenous group inhabiting the Colombian Amazon, preferably hunter/gatherers as they are highly dependent on their TEK; a group with some knowledge of Spanish to facilitate communication with the researcher, and an indigenous group not highly impacted by the conflict to assess how TEK has been affected by other elements (internal and external). Additionally, other Important considerations were, a little-known indigenous group, to contribute to scholarship and their cultural records for the future of the community; a group that was relatively easy geographically to contact to guarantee accessibility; and an indigenous group willing to participate in the research to increase probabilities that the research achieved its aims.

- ***Participant observation***

When carrying out a case study with a cultural group, participant observation is one of the preferred methods (A. Mills et al., 2010). Participant observation involves immersion in the social setting of the community of study, allowing for a closer contact with people (Bryman 2012). It entails recording information and notes related to behaviour and activities at the research site, combined with prepared structured and semi-structured guiding questions for the participants, who may freely provide their views on the subject of inquiry (Creswell, 2014). Observations, photographs, notes, audio, and video records were made about daily activities of the community related to management of their territory such as hunting, cultivation, and customs, and others that the community and I as researcher considered relevant.

- ***Workshops***

In qualitative research, a workshop is a participatory method usually designed as an interactive session, with participants oriented to sharing information, in order to produce knowledge about the research issue or question of interest (Ørngreen & Levinsen, 2017). For Lain (2017) and Ørngreen and Levinsen (2017) some advantages of workshops include promotion of open participation, engagement, and collaborative

discussion and feedback. The following sections contain a description of the series of workshops run with the Cacua.

- *Focus groups*

Focus groups are a form of group interviews carried out with several participants at the same time on a particular topic (Bryman 2012). In this research, a focus group was run with local schoolteachers, to explore in depth their perspectives about TEK in the education system in depth and to co-analyse the SES.

The difference between workshops and focus groups is that focus groups are usually smaller and are guided by a set of semi-structured or unstructured interviews. Both methods were chosen to address different groups and to complement their views with the data collected from observations, interviews, and documents.

- *Unstructured and semi-structured interviews*

In qualitative interviewing focus is given to the interviewee's points of view and opinions about the research issues and events of interest (Bryman, 2012). These methods are more conversational and their flexibility allows participants to explore ideas of importance that may appear to diverge from the purpose of the interview (Bryman, 2012; Creswell, 2014).

Participants and activities within and outside the community were purposefully selected considering:

- Willingness to participate
- Knowledge about community livelihoods, customs, and traditions
- Expertise in the affairs of Indigenous Peoples

To explore the views of participants, semi-structured interviews were designed. A set of questions was prepared to guide the interviews, but interviewees had freedom in how to respond. Interview questions slightly varied according to the sector the participant represented (e.g., academia, community, government). Although interviews were audio-recorded, notes were also taken on participants' views,

expressions, and reactions. When working with the Cacua, these interviews were conducted as naturally as possible and reflected their ways of expression.

When possible, interviews were conducted in person, otherwise via Skype or phone call. In each case, they started with an introduction of the research, the purpose of the interview, a request for permission to record and transcribe the interview, and a possible follow-up interview if required. Copies of the consent forms in Spanish were provided to each participant and a copy was kept for the research records.

- *Review of documents*

Documents are secondary sources of data, produced by government, private sources (NGOs), or other entities, researchers, or individuals (Bryman, 2012). To complete the dataset required for the interpretation and analysis, a selection of documents from a range of sources were accessed and reviewed. This included national policies, reports from NGOs, social organizations, and individuals, on topics such as national development, Indigenous Peoples, territorial planning, and conservation of biodiversity.

3.3 DATA COLLECTION

Data for this research was collected during a period of 12 months of fieldwork in Colombia (March 2018 - March 2019). While most of the visits concentrated in Wacar for the work with the Cacua, interviews involved trips to Bogota, Puerto Inrida, Cali, and Leticia, to reach and interview experts working in different parts of the region.

3.3.1 Case study scale: The Cacua socio-ecological system analysis

- *Study area*

For the case study analysis, the research focused on the Cacua group (details in Chapter 5 of this thesis), living in the community of Wacar, municipality of Mit (Vaupes Department) (Figure 3-3).



Figure 3-3. Location of the case study – Wacará settlement (Source: own elaboration)

- **Socialization of the project**

The initial step involved establishing contact with the Captain¹⁷ of the community to request permission to carry out the research. An initial meeting in Bogota was conducted to provide details on the research and to obtain consent to visit the community for a formal presentation to other members of the community. After the Captain's approval, the meeting took place on the 20th of April 2018 in the settlement of Wacará (Vaupes).

To ensure understanding of the purpose of the research, its potential implications for the community, and gain community consent to participate, communication at this meeting was in Spanish, with translation to the Cacia language by one of the community leaders. Additionally, it was agreed that as acknowledgment for their participation in the research, the community would be assisted in the preparation of a draft "*plan de vida*"¹⁸. Written consent to participate was obtained from the Captain on behalf of the community and a copy was provided to them.

¹⁷ Captain: local leader and authority at the community level.

¹⁸ Plan de vida: Indigenous Life Plan is a planning instrument that is built from a participatory process of self-diagnosis and the exercise of project development. It is an instrument of politics and self-government.

The data collection process and activities carried out are summarized in the table below.

Table 3-I. Data collection schedule

Field visit	Date	Main activities	Data collected
1	April 17-29 2018	Signed consent from the captain of the community Socialization of the project with the community Familiarization and participant observation	RS: Location and settlement characterization (infrastructure, water, and sanitation, energy sources, etc.).
2	June 1-24 2018	Document revision Workshop on plant species Interviews and recruitment of participants Participant observation	S: Demographic information RU: Plants species used by the community Importance of resources G: Government and non-government organizations, property rights system, choice rules.
3	October 5-28 2018	Second workshop on plants Workshop on animal species Ecological calendar workshop Participant observation (bushwalk and cassava bread preparation) Focus group with school teachers	A: Knowledge systems, norms, and importance of resources AS: Ecological calendar G: Education A and AI: Interactions between the community and other actors
4	January 20-29 2019	Workshop with women about cultivation grounds (<i>chagra</i>) Workshop with men about hunting grounds and territory Interviews and informal talks with community members and other participants	RU: plant and animal species A: relevant actors interacting with the community GS: Gender-based norms and rules
5	February 2-March 8 2019	Final interviews Delivery of poster and draft of the "Plan de Vida" Closure	GS: local rules and norms

RS: resource systems. RU: resource units S: Social, economic, and political setting. G: governance systems. A: actors. AS: action situations (McGinnis & Ostrom, 2014).

- **Participant observation**

After authorisation, observations, photographic records, notes, audio, and video records were made about daily activities of the community related to the management of their territory such as hunting, cultivation, customs, and others that emerged as relevant during the data collection. Researcher participation in collective activities

organized by the community, such as preparation of garden crops, and informative meetings, afforded further opportunities for data collection.

- *Focus groups*

To address the impacts and perspectives of formal education in the community and to identify the potential tensions and overlapping of education systems as suggested by Regalsky and Laurie, (2007) a single-focus group was carried out with the community's school teachers. This focus group addressed the challenges of education in the community from the teachers' perspective, and their role and relations with the other members of the community, including students and parents, and their engagement in schooling (Lea et al., 2011). At the time of the field work, two of the teachers providing schooling in the community were Cacia (pre-school grades), while the other four teachers, including the director, were from other no-Maku ethnicities. This is important, since as explained in earlier sections there is a common perception of Maku groups as underdeveloped groups.

This activity was complemented with the researcher observations during fieldwork.

- *Workshops*

I carried out six workshops with the community. These workshops were conducted in Spanish with translation to Cacia with the help of one of the community members and lasted about four hours each.

In the first two workshops together with the community, we aimed to explore TEK regarding flora species the community use for a range of purposes such as food, medicine, or materials, and associated knowledge such as phenology. It also considered the perceived conservation status of these species (abundant, scarce, or locally extinct), the reasons for a given status, and possible alternative solutions when endangered.

In the third workshop we explored the animal species of importance to the Cacia and the associated knowledge they hold about these species.

The fourth workshop was an attempt to construct an ecological calendar. This calendar links the natural cycles with the indigenous daily and ritual activities throughout the year. While these first four workshops were carried out with the co-participation of women and men together, the subsequent two workshops involved women and men separately according to their traditional gender-based roles in the community.

The fifth workshop was led by women, who through a colour illustration described their work in the garden crops (*chagra*), providing details of the species and different uses.

The sixth workshop involved men and cartography to represent their territory and their knowledge and understanding of game, hunting grounds, and local boundaries (Figure 3-4).



Figure 3-4. Community workshops. Left: Crop fields workshop with women. Right: hunting and fishing workshop with men (Photos: P. Vejarano Alvarez, 2019).

- **Interviews**

Semi-structured interviews were carried out with three members of the community and two institutional representatives that have established connections with them through a range of projects. The shy nature of the Cacua resulted in a low number of

individual interviews, yet the interviewed participants have been involved in the captaincy of Wacará and are recognised as leaders with extensive knowledge about the community. The interviews with community members were in a place and time convenient to participants. The help of a translator was used when required by the researcher or the participants.

The purpose of the interviews was to understand, from their perspective, aspects of their daily lives related to TEK and the system, and perceived changes regarding their community, livelihoods, and TEK over time.

- **Document review**

Primary data were complemented with a review of written documents where available. At the community level, very little printed information remains stored and of easy access. According to one of the community leaders, some information has been lost due to the mismanagement of documents and computers donated to the community in the past. The available and reviewed documents I could access included a handwritten draft of a “*plan de vida*” from around 1995, a book, *How we became Cacia people* (1997), written by the captain of the community (Figure 3-5) and a regional “*Plan de vida*” made in 1995 and 2011 by the indigenous associations the community was part of during those years.

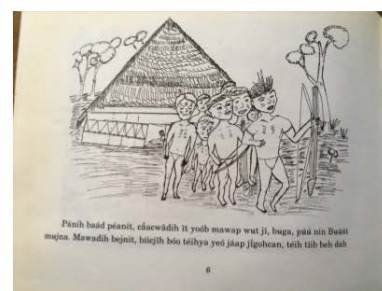
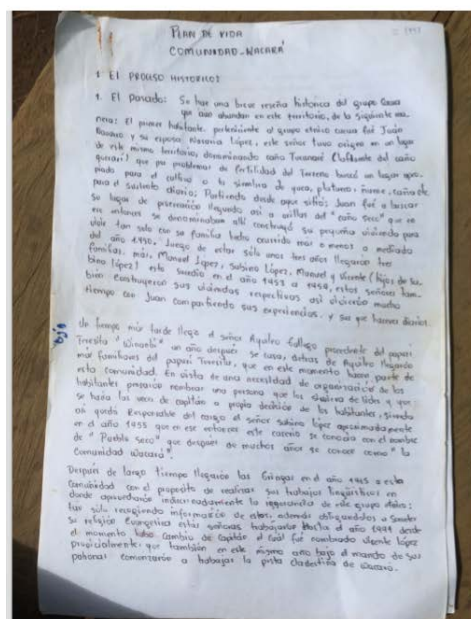


Figure 3-5. Secondary data sources about the Cacia. (Left: *Plan de vida* 1995. Right: Book “*How we became Cacia*” - 1997)(Photos: P.vejarano Alvarez 2019)

Other documents available included the final report on health in early childhood by the NGO Sinergias (2019) and a summary word document designed by the school director (Mejía Gómez, n.d).

3.3.2 Regional and national scales

- *Interviews*

I purposefully selected participants through snowball sampling (Reed et al., 2009), and based on the general criterion of their knowledge of the region and experience with Indigenous Peoples in the Colombian Amazon.

Interviews, which lasted between 40 minutes and 2 hours, examined participants' perceptions of the different impacts of the Peace Accord in the region, its indigenous people, and the role of TEK in this peace-building transition scenario. Identification for those participants that agreed to be named can be found in Appendix A.

In total, 29 interviews were recorded. Each interview was coded with a number and a set of three letters according to the sector they represented (Table 3-2): COM: Indigenous communities, IOR: Indigenous organizations, NGO: Non-governmental organization, IND: independent expert/participant, ACA: Academia, GOV: Government.

Table 3-2. Codification for participants interviewed

Participant	Duration interview	Participant	Duration interview
COM1	1:02:38	IND1	0:53:00
COM2	1:52:14	ACA1	2:13:13
COM3	00:56:32	ACA2	1:47:30
COM4	1:38:08	ACA3	0:59:13
IOR1	2:10:03	ACA4	1:32:15
IOR2	1:40:57	ACA5	1:46:21
IOR3	1:09:43	GOV1	0:38:25
NGO1	1:12:58	GOV2	2:16:38
NGO2	1:26:03	GOV3	1:07:15
NGO3	1:10:17	GOV4	2:09:24

NGO4	0:52:00	GOV5	1:22:05
NGO5	0:50:00	GOV6	1:16:17
NGO6	0:53:13	GOV7	1:25:50
NGO7	2:15:24	GOV8	1:18:00
NGO8	0:54:27	Total hours	39:29:21

- *Document review*

Information gathered from the interviews was completed and contrasted with the review of public documents and media releases, such as the Peace Accord document, policies on cultural conservation, national laws, and national magazines such as *Semana* magazine, and *El Tiempo* and *El Espectador* newspapers¹⁹.

3.4 DATA ANALYSIS: CODING AND INTERPRETATION

Given the complexity of the system, for the analysis I considered various scales and boundaries, from local to national levels. Therefore, each chapter was approached slightly differently in the analysis, addressing the main interests and issues at given scales.

For all chapters, I directly transcribed the interviews in Spanish and later analysed them using NVIVO12 software. In the transcription process I strived to preserve the fidelity of the spoken language of the interviewees (Spanish). Interviews were then coded and interpreted as relevant themes emerged from recurrent or significant quotes/passages from the interviews, and that were emphasized or highlighted by the participants as suggested by Boyatzis (1998) and (Saldana, 2015). Details are provided below.

3.4.1 Case study

To answer RQ2, the process was guided by McGinnis and Ostrom's SES framework (2014), which entailed the identification and description of the different components,

¹⁹ Revista *Semana* (<https://www.semana.com>), *El Tiempo* (<https://www.eltiempo.com>), *El Espectador* (<https://www.elspectador.com/noticias/>)

tier variables of the SES, and analysis of the links among them. Adjustments or modifications were made following the context, data availability, and emerging results.

The coding followed a series of inductive and deductive coding cycles, meaning some of the codes were selected a priori and aligned to McGinnis & Ostrom's categories, while other codes emerged from the interpretation process of the data collected through interviews, observations, notes, workshops, and documents. A detailed list of codes is provided in the corresponding chapter (Chapter 5).

With the information available from the data collected, a characterisation model of the Cacia SES was developed. The analysis of the SES focused on the elements that impose pressure on TEK and the Cacia, as well as those that allow them to persist in changing conditions.

3.4.2 Regional and national analysis

To answer RQ1 and RQ3, I used the data gathered from the 29 semi-structured interviews with key stakeholders from government, NGOs, academia, indigenous organisations and communities (including the Cacia), and the independent expert/participants.

For RQ1, (Chapter 4) the participants' responses considering the perceived impacts of the Peace Accord in the region, its Indigenous Peoples, and the role of TEK in the peace-building transition scenario were examined. This information was complemented and contrasted with the revision of public documents and media releases, such as the Peace Accord document, policies on cultural conservation, national laws, and national magazines.

For RQ3 the same set of interviews as for RQ2 was used, but the enquiry was oriented to analyse the context of governance and governability in which TEK is embedded.

For Chapters 4 and 6, addressing RQ1 and RQ3 respectively, codes were grouped according to repetitive patterns and the resulting group labels were used to inform the structure and headings for each chapter. The final coding is provided in the corresponding Chapters 4 and 6.

3.5 ETHICAL CONSIDERATIONS

In this research I complied with all the ethics requirements from the Australian Code for the Responsible Conduct of Research, and UTS and ISF obligations stipulated. An ethics application was prepared accordingly, for approval by the UTS Human Research Ethics Committee. The human ethics application was submitted before undertaking the stage one assessment and was approved (Application #: ETH17-2084, date: 24/10/2016). After the National Statement on Ethical Conduct in Human Research (2007), the following issues were considered, among others:

Chapter 2.2: Oral or written consent obtained from each participant, after research and purposes are adequately and comprehensively explained.

Chapter 3.1: Maintaining clear and accurate records of research data and primary materials and ensuring that these are securely stored (digital and written notes with backups when possible).

Chapter 4.7: As working with Indigenous Peoples, methods and techniques applied aim to provide representation and voice to them. The relationships formed with the community must be genuine, transparent, reflective, respectful, and reciprocal.

3.6 CHALLENGES FACED

Several challenges were faced during the first year and throughout the development of my research, from the literature review, the research design, to the field work and the final analysis and writing of this thesis.

Carrying out interdisciplinary research is a challenge when working in areas outside the field of personal expertise. I believe my personal background in natural sciences (biology) may have subtly influenced my interpretations of the experiences and perceptions of the interviewees. I have observed a conscious awareness of this possible bias throughout my research, especially during the data collection and analysis phases.

Also, as a biologist, I found myself confronted with my own positivist position, and had to immerse myself in the field of social sciences, exploring and learning about analysis of qualitative data, social constructions and interpretations. This was not an easy task and in the process of embracing constructionism, even my writing style – from third person to first person- needed to adapt to this new approach.

In terms on how my background and experience could have influenced my research and what I would do differently now, I think a major element would be adopting a co-participatory design of my research, or at least of the field work and the data collection.

Regarding field work and data collection specifically, among the main challenges I faced was the language barrier as I do not speak Cacia and required the help of a translator from the community. Trust bonds needed to be built, not only with the translator but also with the entire community, so they were comfortable to participate and cooperate in the research without holding back information.

Flexibility was key as some activities such as workshops and interviews would take longer than initially planned or would not always meet their daily activities. All activities were intended and designed to be respectful of the worldviews and values of the community and to promote a horizontal cooperative relational approach.

Regarding the general planning, limited resources for the fieldwork did not allow visits to all departments in the Amazon region, thus Putumayo and Caquetá were left out. However, this shortcoming was addressed by interviewing experts working or with experience in those areas.

In general, a robust set of data was collected even though the methodology was not implemented in full, which would mean visiting all Amazon states and obtaining detailed information of certain species uses.

In the following chapters, the data collected from the fieldwork and its analyses will be presented, starting with the perceptions about the Peace Accord for TEK and IP in the Amazon (Chapter 4) addressing new configurations of the system, boundaries and actors, followed by the role of TEK in a local SES – the Cacia SES- (Chapter 5), and the current governance system in which TEK is embedded (Chapter 6).

4 The Peace Accord for the Indigenous Peoples of the
Colombian Amazon

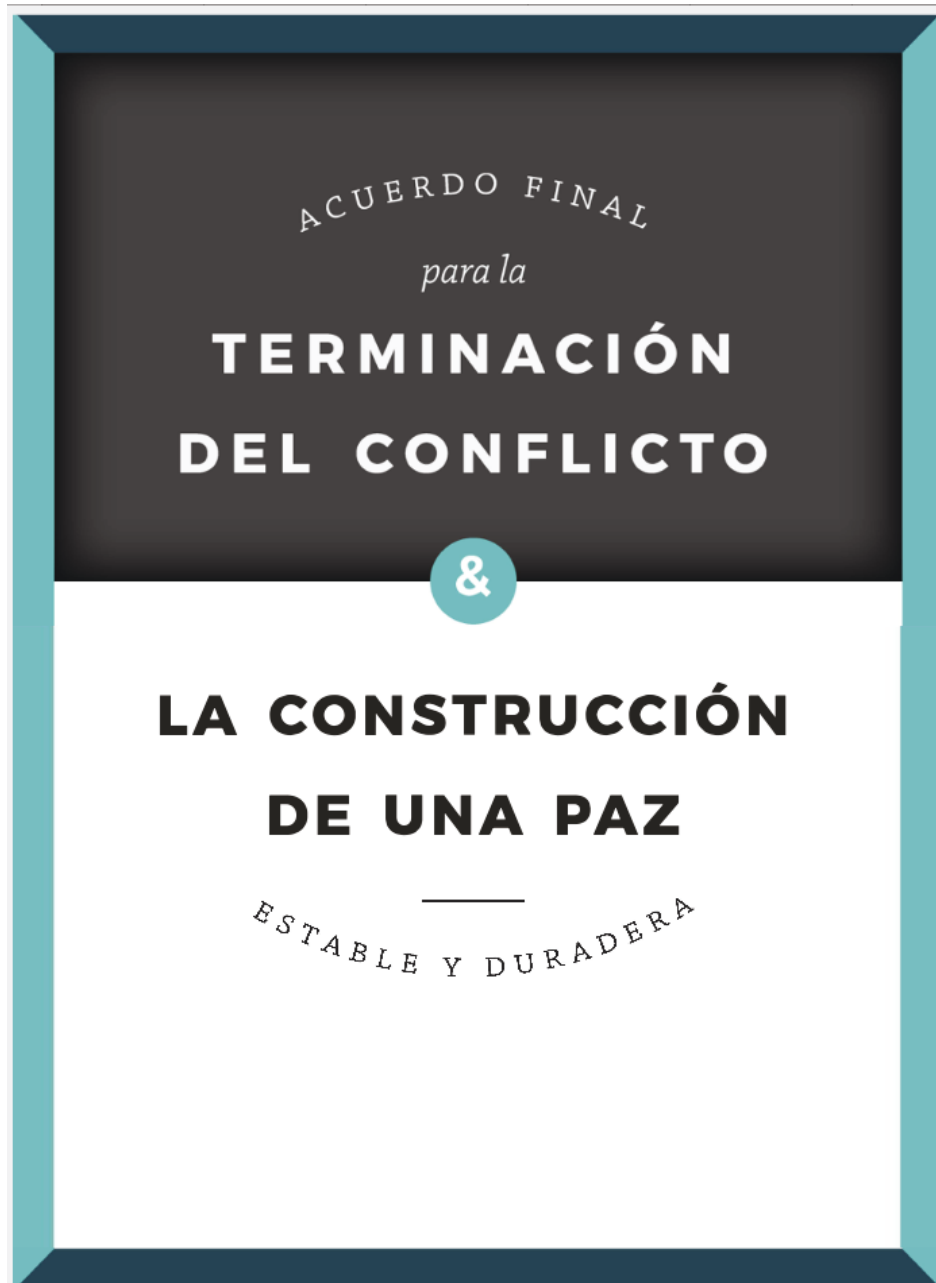


Figure 4-1. Cover page of the Peace Accord document (2016)

4.1 INTRODUCTION

In this chapter, the impacts the Colombian Peace Accord signed in September 2016 between the Colombian government (under the presidency of Juan Manuel Santos) and the guerrilla FARC-EP, has had in the Amazon region²⁰ are analysed.

The literature review, as detailed in Chapter 2 of the thesis, raised a number of questions that merit investigation. Specifically, what are the connections between TEK and ES?; and, how can TEK and ES be harnessed in conjunction to better inform environmental governance in the Colombian Amazon's post-conflict scenario? Much of the reviewed literature on TEK (Alcorn, 1993; Berkes, 2008; Boafo et al., 2016; Gadgil et al., 1993b; Gómez-Baggethun et al., 2012; Tengö & Belfrage, 2004) emphasises its key role in biodiversity conservation and management of natural resources and the importance of incorporating TEK into research and decision-making processes. Also, the literature supports the argument that TEK contributes to the creation and maintenance of biodiversity through traditional management strategies of natural resources (Berkes, 2008; Fernández-Llamazares et al., 2021; Gadgil et al., 1993b). This is of particular importance in the Amazon, where research has shown that TEK not only maintains but has contributed to the richness of the Amazonian diversity, therefore, the weakening of TEK is also a weakening of biodiversity. Farming and management practices of Indigenous Peoples over centuries have enriched and modified the Amazonian forest composition (Balee, 2013). Some of the findings include the creation and enhancing of fertile soils, known as Amazonian Dark Earths (ADE) or Terra Preta, influencing the regional species richness (de Oliveira et al., 2020; Levis et al., 2017). Also, the dispersal of domesticated plants and the enrichment of edible plant communities (Levis et al., 2017; Montoya et al., 2020).

Biodiversity is in turn one of the enhancing factors of resilience in SES. Arguably, by strengthening traditional knowledge systems, which contribute to biodiversity conservation, the resilience of SES is enhanced and thereby the provision of ES. Yet, a knowledge gap exists as to the role of TEK in navigating and creating/enhancing resilience to avoid undesirable/foster desirable regime shifts, specifically in the context of the Peace Accord signed in Colombia.

²⁰ Frame of analysis November 2016 to August 2019.

In this chapter, using the theory of socio-ecological systems, I analyse the Amazon region as a complex social-ecological system to understand the role of TEK in navigating the transition scenario of peacebuilding considering the impacts the peace accord has had. I argue that desired and undesired states may result from the complex interactions between actors and elements of the system, affecting IP and TEK (Figure 4-2).

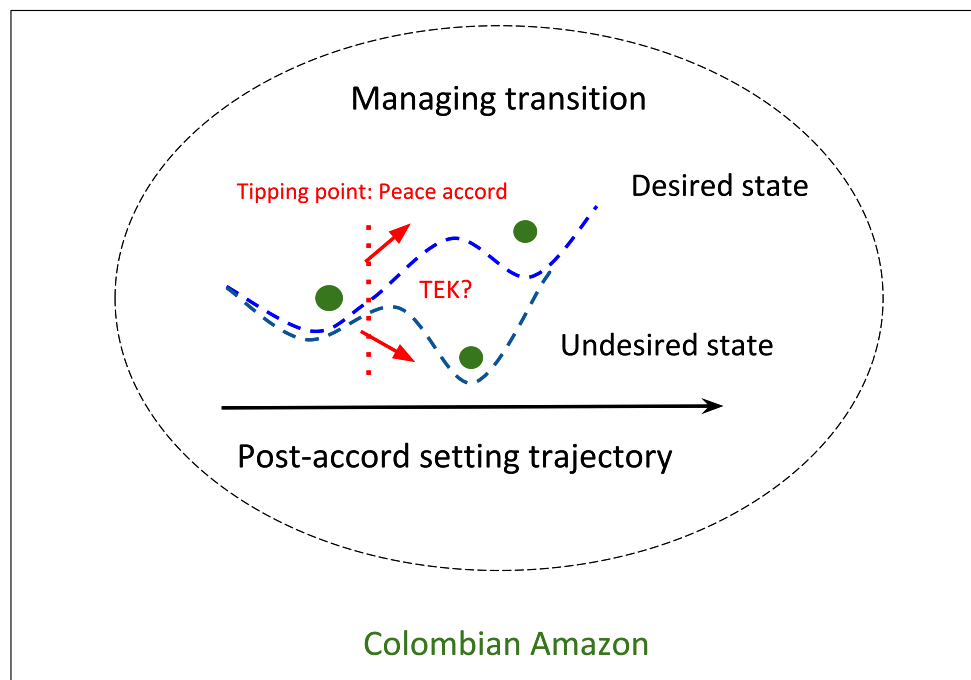


Figure 4-2. Chapter focus (Source: own elaboration)

Social-ecological systems are complex systems where multiple actors and interests interact in (diverse) ecological landscapes (Berkes & Turner, 2006b; Ostrom, 2009). Understanding the complexity of social-ecological systems is crucial for the governance of natural resources. This means understanding what resources are at stake, the interests that motivate decisions about those resources and the actions of the range of actors, the dynamics and interactions among these actors, the institutional system that supports them, and the elements that foster equilibrium or change (Biggs, Schlüter, et al., 2015; Bodin & Tengö, 2012; Ostrom & Cox, 2010). Under this complexity, governance of natural resources represents a challenge. They become more contested when internal armed conflicts have previously determined the use and access to certain resources and the dynamics of social groups (Dudley et al., 2002; Gorricho, 2018).

In the first part of the chapter, a brief history of the different conflicts in the Amazon region affecting indigenous people will be introduced. This section is followed by the general implications of the Peace Accord, in terms of the different impacts it has had, both positive and negative, from the perspective of the different actors, and the role of TEK in this scenario of implications. The chapter closes with the discussion and conclusion sections.

4.2 A BRIEF HISTORY OF THE ARMED CONFLICT IN THE AMAZON REGION AND THE PEACE ACCORD

“The ignorance and invisibility of Amazonian societies or, at best, their distortion, has been the norm in the modern world. From the earliest arrival of the conquerors to the present day, Amazonian settlers have been stigmatized as the antipode of civilization, considered as a mass for the dissemination or imposition of religious ideas arising in Christian Europe, or as a labour force to satisfy the world demand for the products of the forest and its rivers”
“(Zárate Botía, 2012. p.59)”

This quote of Zárate Botía, a sociologist and historian of the National University of Colombia, summarizes what has been the history of Indigenous Peoples in the Amazon since the arrival of colonizers. Occupation of the Amazon is recorded to have occurred around 10,000 years ago (Pineda-Camacho, 2011; Zárate Botía, 2011) and though the theories about the occupation process are beyond the scope of this discussion, it is important to consider that until the arrival of Europeans, indigenous communities developed, interacted and lived in balance with the forest.

Social and environmental conflicts in the region go back centuries in history, this research focused on those associated to European presence in the continent, which is most available in the documentation. From colonization (1500) to the rubber boom (1850-1930) and coca bonanza (1960 - 2000), through to the present (2019), the region, its native people, and resources have been at the hands of multiple actors and interests. These have influenced and transformed them and the region (Carrizosa et al., 2016; Trujillo, 2014; Pineda-Camacho, 2011; Zárate Botía, 2011; Gómez, 1998).

Contact between the first Spanish and Portuguese colonizers with the Amazonian indigenes dates back to the 16th century (Zárate Botía, 2011). Expeditions along the Black River and other tributaries of the Amazon (Carrizosa et al., 2016), the attempts to delimit borders between countries and sovereignty over the newly discovered land, naturalist expeditions, religious missions (Cabrera-Becerra, 2015), and the pursuit of gold and other natural resources have had consequences for native people resulting in slavery, loss of their traditions, and death due to spread of new diseases (Carrizosa et al., 2016; Trujillo, 2014; Pineda-Camacho, 2011; Zárate Botía, 2011; Gómez, 1998).

Later, in the late 19th century and mid-20th century, in response to the increasing demand for rubber in international markets of Europe and North America (CNMH, 2014), its extraction and commercialization became one of the most prosperous businesses and fostered the use of indigenous labour. Indigenous groups were exploited in slavery conditions, and in many cases they were “hunted” and taken away from their communities to be forced to work in the rubber plantations (Carrizosa et al., 2016; CNMH, 2014; Mahecha et al., 1997; P. L. Silverwood-Cope, 1972). This situation caused the reduction of their populations and the disruption of many of their customs.

By mid-1900 catholic and protestant missionaries arrived in the country with the purpose of evangelizing indigenous groups and removing them from “savagery” (Carrizosa et al., 2016; CNMH, 2014; Trujillo, 2014). Their influence in the communities also led to the loss of some of their traditional practices, especially those related to magic. However, missions also played an important role in providing health services to remote communities and in visualizing the abuses committed in the rubber plantations, so the national government would take interest in the matter (Cabrera-Becerra, 2015). The author highlights the role of some of these missions, such as the Summer Institute of Linguistics (SIL), in describing and recording many of the languages and the customs of these indigenous groups, but also as their role as drivers of cultural transformation through the introduction and imposition of religious values over their own practices (Cabrera 2013).

Following this period until the present day, the communities have been victims of internal conflicts between various armed groups (guerrillas of FARC and ELN, paramilitary forces, and drug traffickers) and the marginalization and absence of the

Colombian Government (Carrizosa et al., 2016; Trujillo, 2014; Zárata Botía, 2011). Since the 1980s coca cultivation has rapidly expanded; and together with illegal extraction of natural resources (wood and gold mining primarily) it has become one of the main drivers of land grabbing, forced displacement and violence in the region (CNMH, 2014; Ramírez, 2011). In addition, the national Government’s policies on megaprojects for infrastructure, agroindustry and extraction of resources (oil) contravene indigenous rights over their ancestral territories and create social conflict²¹ between the communities and the government over land use and property rights (Zárata-Botía, 2012).

Figure 4-3 summarizes the major historical and socio-economic events that have influenced and defined the relations between the indigenous and non-indigenous world in the Colombian Amazon. It provides an overview of the causes and its impacts on Indigenous Peoples and the trajectory to the present time (post Peace Accord setting).

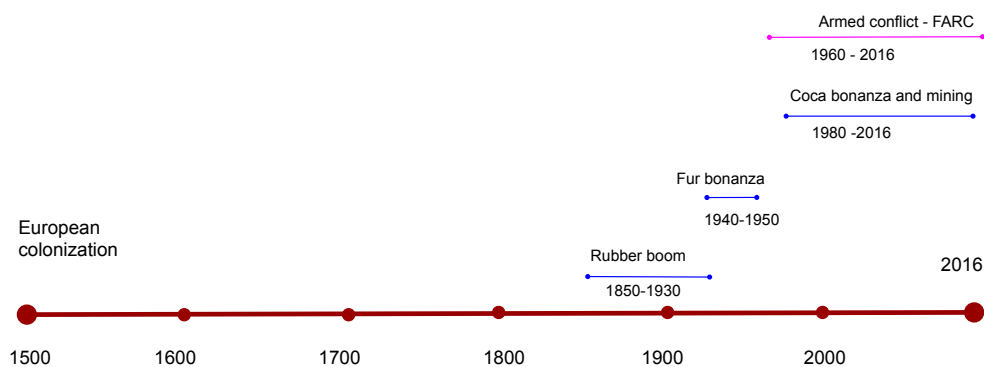


Figure 4-3. Timeline indicating main sources of socio-economic conflict in the Colombian Amazon during the last 500 years between Indigenous peoples and non-Indigenous peoples (Source: own elaboration).

While colonization and the rubber boom resulted in slavery and human traffic, loss of traditions, and in many cases death due to spread of new diseases (Carrizosa et al., 2016; Trujillo, 2014; Pineda-Camacho, 2011; Zárata Botía, 2011; Gómez, 1998; Limeira-DaSilva, 2021), coca cultivation and expansion in the 80’s and illegal extraction of natural resources (wood and gold mining primarily) became one of the main drivers of land grabbing, forced displacement and violence in the region (CNMH, 2014; Ramírez, 2011).

²¹ Conflict: “Any relationship between opposing forces whether marked by violence or not” (Deloges & Gauthier, 1997).

To date, mining (legal and illegal) as coca cultivation continues to be one major pressure in the Amazon. Although not the only mineral of interest, gold mining is most widespread in the region and usually associated to an increase of crime (Tropenbos, 2012). As a strategy during the armed conflict and the mining potential of the region, the State relaxed the requirements for the extractive sector with favourable concessions for the mining industry (Coronado & Barrera, 2016). To the increasing mining titling, illegal mining is added. Informal and illegal small-scale mining occurs in various parts of the Amazon: the presence of rafts and dredgers in the Caquetá, Puré, Cahuinarí, Querarí, Putumayo and Cotuhé rivers and coltan and tungsten mining in southern Guainía are an example of it. The social and environmental impacts of mining in the Amazon are of great concern, especially high levels of mercury in fish species and people (Ldrovo et al., 2001; Núñez-Avellaneda et al., 2014).

Indigenous communities such as the Huitoto, Jiw, and Nukak, have been in the middle of several armed groups (guerrillas of FARC and ELN, paramilitary forces, and drug traffickers)(Franky Calvo et al., 2010). The impacts of this exposure have been made worse through the combined effects of marginalization by the government and the absence of the Colombian Government (Carrizosa et al., 2016; Trujillo, 2014; Zárata Botía, 2011).

Despite all these issues, indigenous people have endured, subsisted, and adapted. As Tobón (2016) suggests, every indigenous group responds differently to the challenges that war represents, and culture becomes a powerful component of political resistance in the midst of the armed conflict. Such is the case of the “*gente de centro*”²² where their cultural representation of combatants and non-combatants makes a firm distinction between themselves and the “men of war”, positioning them as a society not involved in confrontation (Tobón, 2016). As for other groups, the strategy used to avoid being victims of the conflict has been to hide deep into the Amazon forest, where contact with non-indigenous groups is limited (Franco García, 2012).

Through the lens of social-ecological systems, the Peace Accord could be seen as a system “tipping point”. As explained in chapter 2, social-ecological systems are

²² Refers to the Indigenous Peoples Muinane, Andoke, Muina (Uitoto) and Nonuya extend into the territory of the middle Caquetá River (Japurá to Brazil).

complex systems that maintain themselves in certain equilibria or “basins of attraction” (Biggs et al., 2022; Biggs, Schlüter, et al., 2015), yet there are situations in which they undergo changes that may alter their structure and functioning (Biggs et al., 2009, 2018). Points at which a system experiences abrupt changes have been called “tipping points (Jax, 2016; Scheffer, Bascompte, Brock, Brovkin, Carpenter, Dakos, Held, Nes, et al., 2009). Identifying such tipping points is challenging and once the system has reached them the direction the system might take in the future becomes difficult to predict. Systems may ‘bounce back’ to their original state; this type of system behaviour is commonly termed resilience (engineering). However, many alternative system states are possible. While some changes may foster a more desirable state of the system, if major changes occur in structure and function, negative effects can be produced, and the system can become trapped in an undesired state. In the particular case of the Colombian Amazon, the Peace Accord signing could be a metaphor for a system tipping point: A moment to rethink and redesign the state's relations with this region and its indigenous inhabitants to move forward to create a ‘desirable’ positive future state. On the contrary, there is a risk that the system could become trapped in an undesired configuration in which the situation of the indigenous inhabitants deteriorates.

The Revolutionary Armed Forces of Colombia – Army of the People (Fuerzas Armadas Revolucionarias de Colombia – Ejército del Pueblo, FARC – EP), officially founded in 1966 after the *Marquetalia*²³ army operation, was the biggest, leftist, armed group operating in the country for over 60 years (CNMH - UARIV, 2015; Molano Bravo, 2014). Its presence and actions in the national territory impacted the dynamics of the country for many years and in diverse ways (casualties, displacement, kidnapping and drug traffic) (CNMH - UARIV, 2015; CNMH, 2013).

Several attempts at negotiating peace treaties with this guerrilla group were made in the past, during the presidencies of Belisario Betancur in 1982 (Acuerdo de la Uribe),

²³ Marquetalia operation (may 1964) was a military attack over Marquetalia settlement, also called “Independent Republic of Marquetalia” occupied by peasant families and communist members of the liberal party who had fled from the violence in other part of the country, and under the command of Manuel Marulanda – Tirofijo. The attack was an offensive from the president Guillermo Leon Valencia against these “independent republics”. (Molano 2014)

Virgilio Barco (1989), Cesar Gaviaria (1990), and Andres Pastrana (1999), with unsuccessful results (Fajardo de la Espriella, 2016; Molano Bravo, 2014). Publicly, a new process began with the confirmation of the talks between the government of President Juan Manuel Santos and the FARC in September 4/2012, followed by the signature of the so-called "General Agreement for the termination of the conflict and the construction of a stable and lasting peace" on August 26 that same year in Havana (Cuba)²⁴. After a failed plebiscite in October of 2016, which led to a modification of the original peace accord document, the final agreement was signed in November 2016.

The "Final agreement for the termination of the conflict and the construction of a stable and lasting peace" is the original name for what is referred in this research as the Peace Accord (PA). The document of 310 pages, contains the following points with their corresponding stipulations, which intend to contribute to the transformations necessary to lay the foundations for a stable and lasting peace²⁵: 1. Towards a New Colombian Countryside: Comprehensive Rural Reform, 2. Political Participation: Democratic Opening to Build Peace, 3. End of the Conflict, 4. Solution to the illicit drug problem, 5. Agreement on the Victims of the Conflict, 6. Implementation, Verification and Endorsement.

Most of the points are directly related to Indigenous Peoples in some way. Point four for example states the importance of acknowledging "the ancestral and traditional uses of the coca leaf, as part of the cultural identity of the indigenous community and the possibility of using crops for illicit use, for medical and scientific purposes and other lawful uses that are established" (p.100). Nevertheless, most indications are specified in the Ethnic chapter 6.2 of the accord (p.206). In this, territorial development plans, solution to illicit drugs, and return to land of ethnic peoples at risk of physical and cultural extermination or at risk of extinction as well as the territories of ethnic peoples in a situation of confinement or displacement are addressed. This was possible thanks to the Ethnic Commission for Peace and the Defense of Territorial Rights formed by indigenous organizations with other ethnic groups (ONIC 2019)²⁶. However, this only

²⁴ <https://www.portalparalapaz.gov.co/publicaciones/806/linea-de-tiempo/>

²⁵ Final Peace Accord document: <https://www.jep.gov.co/Normativa/Paginas/Acuerdo-Final.aspx>

²⁶ <https://www.onic.org.co/comunicados-onic/3056-capitulo-etnico-en-el-acuerdo-final-de-paz>

happened in the final phase of the dialogues due to the insistence of the indigenous organizations requesting they were allowed to present their vision at the negotiating table. One day before the signing of the first text of the agreement, some of its proposals were inserted, which were collected in said chapter (Betancur 2016).

From this perspective, the PA is seen as an opportunity to vindicate the territorial, cultural, linguistic, and political rights recognized for Indigenous Peoples since the constitution of 1991 (details in chapter 6). The PA explicitly acknowledges the autonomous management of their territories, and the importance of the TEK in doing so. Thus, the PA has enormous potential to strengthen the mechanisms and processes already in the Constitution.

The implementation process has been and continues to remain strained. Firstly, the plebiscite convened by the Government to endorse the agreement narrowly failed to endorse the proposal (50.2% of people voted against the proposal). This situation forced the Government to invite the opposition (who had led the 'NO' campaign) for further negotiations, and a final agreement was reached and signed in November 2016. Despite the involvement of the opposition in the final agreement, the peace-building process continues to face several challenges since the election of a new government (August 2017), headed by former president Alvaro Uribe and the current president Ivan Duque, strong opponents of the Accord. As a consequence, the implementation of some of the crucial points of the Accord, such as the Special Tribunal for Peace (JEP) and the substitution of illegal crops, are proceeding slowly and are facing obstacles (Kroc 2019, 2021).

Moreover, after three years of the signing of the Accord, some of the FARC commanders of the former guerrilla who participated in the negotiation and the Peace Accord process, in an unexpected move, decided to withdraw from the agreement and join some of the dissidents of this armed group. In a recorded statement²⁷ on 29th August 2019, they announced their intentions to return to arms and the armed conflict, in a possible union with the armed group National Liberation Army (Ejército de Liberación Nacional – ELN). While the former commanders alluded the inadequacy of

²⁷ <https://www.youtube.com/watch?v=mQ4j7mi8Hvo>

the government to guarantee their security and the lack of commitment to meet the agreement as one of the reasons for their return to the guerrilla, for the government they were still involved on illegal activities. This was later questioned by the Truth Commission on a report in which it was determined a smear campaign was carried out to hinder the Peace Accord (Comision de la Verdad, 2022).

In this political scenario of polarization, some institutions, especially the UN verification mission, are trying to meet the obligations of the Accord (UN 2018). Others are seeking to slow down the process, placing the country on an uncertain path. Therefore, a deeper understanding of the various current and future implications of the Accord for the Colombian Amazon, its Indigenous Peoples and their ecological knowledge has become a crucial issue.

The long-lasting conflict has had a differential impact in the region, meaning it has affected and has been perceived in dissimilar ways by different actors within the Amazon territory (Franky Calvo et al., 2010; Guio, 2018; Tobón, 2016). For this reason, the analysis presented here, which covers a temporary “snapshot” from the signing of the PA in 2016, to the date of data collection, March 2019, was guided by the likelihood that, given the complexity of the situation and the range of actors involved, perceptions of the process, outcomes and future of the Peace Accord and the region would differ. These differences should be accounted for and will likely influence the reorganization of the SES.

4.3 THE PEACE ACCORD: AN ONGOING DYNAMIC PROCESS

The Colombian Amazon has historically been under pressure from a range of human activities that have threatened biodiversity and caused cultural changes of local indigenous communities. Since the signing of the Peace Accord between the government and the guerrilla FARC-EP after over 52 years of armed conflict, some of these pressures have dramatically increased. Deforestation, land grabbing, and illegal occupation, especially in areas of high cultural and biodiversity importance are examples of increasing pressures (Krause, 2019; Murillo-Sandoval et al., 2020; Pereira et al., 2021) This situation forces us to reflect about the current and potential implications of the Peace Accord, and the role that indigenous communities and their

traditional ecological knowledge play in the development of their communities and the region.

Internal armed conflicts affect and transform natural resources and environmental governance (Gorricho, 2018). These impacts include site damage due to use of explosives, construction of fortifications, logging, and hunting of local fauna (Westing, 1992), and over-exploitation of natural resources to finance armed groups activities (J. E. Austin & Bruch, 2000). Armed conflict can also limit the possibilities of conducting fieldwork research, especially in conservation, due to risks to the security of researchers and the lack of availability of research funding (Amano & Sutherland, 2013). Also important, violence against the indigenous population has severe impacts on their social organizations, breaking their social cohesion and fragmenting their culture (CNMH, 2019; Stamatopoulou, 2018; UN-DESA, 2009). In Colombia, the cultivation of coca for illegal purposes has been identified as one of the most visible triggers of social and environmental disruption due to deforestation (Davalos et al., 2011; Negret et al., 2019), health impacts (Solomon et al., 2007) and the displacement of people and violence in many regions of the country (CNMH, 2019). Yet, the role and relations of coca with illicit purposes in the reconfiguration of the Amazonian socio-ecological system in this new scenario of the Peace Accord are not clear and will be addressed later in this chapter.

The Peace Accord has reportedly had a variety of impacts all over the country, closely associated with the historic presence of the FARC in the territory, the absence of the government, and the occupation of the region by new actors (Betancur-Alarcón & Krause, 2020; PARES, 2018). Understanding what the situation is in the Amazon region is critical for indigenous people such as the Cacua. These changes may present a major opportunity to rethink the management of the territory, where indigenous communities could exercise their autonomy, as established in the Constitution, and their unique ecological knowledge could play an important role in management. However, the extent and impact of change from the perspective of the Indigenous Peoples and other actors is uncertain. Evidence from other locations around the world (Rustad & Lujala, 2012) suggests that a range of threats to the Amazon and its people could emerge in the wake of the Peace Accord signing. This chapter explores the local perceptions of threats to the Indigenous Peoples and TEK in the context of the cessation of armed conflict. From the experiences in other locations and the reports by

the PNUD (2014) one could anticipate that the management of these threats may require changes in the system of governance of the region, which in turn may rely on recognition and maintenance of diverse knowledge and life systems, such as those of the indigenous world. To achieve such change may require support for strengthening indigenous people’s cultural and political processes and the associated ecological knowledge, which has shown to be crucial in the creation, maintenance and conservation of the Amazon forest in other contexts (Paneque-Gálvez et al., 2018). The Peace Accord forces a reflection on its current and potential implications, and the role that indigenous communities and their traditional ecological knowledge may play in the development of their communities and the region.

4.4 METHODS

To examine the implications of the Peace Accord for the Amazon region, its indigenous people, and their knowledge, a two-pronged approach was used. Results from the interviews conducted were contrasted with the review and analysis of public documents and media releases, such as the Peace Accord document, policies on cultural conservation, national laws, and national magazines.

Codes were grouped according to repetitive patterns and the resulting group labels were used to inform headings for the chapter. As a result, the most relevant themes covered key aspects such as a governability, deforestation, power alliances, illicit crops, research opportunities, and how this particular social-ecological system is responding to a new situation. Relevant themes emerged from quotes from the interviews, and that were emphasized or highlighted by the participants. In the table below, the complete list of codes for this chapter is presented:

Table 4-1. List of codes chapter 4

NODE	CODES	EXAMPLE
Peace Accord as an opportunity	- Re-thinking/designing future	<i>“Well, hoping that the accord works, because we don’t know what’s going to happen, it would be the opportunity for the state to strengthen its presence in the territory” (NGO2)</i>
	- Research (scientific discoveries)	<i>“Now we see lots of expeditions happening (Colombia BIO for example)... Research institutes (SINCHI, Humboldt, INVEMAR, etc) have worked in the middle of the conflict, in difficult areas, and now those possibilities multiply. The landscape and the possibility of being in the territory are back, and the post-conflict is positive in that sense” (NGO3)</i>

Peace Accord as a risk	- Increasing deforestation rates	<i>"In 2015, one year before the signing of the Peace Accord, 124,035 hectares were deforested, according to Ideam²⁸. A year later, the figure had increased to 178,597 hectares, 44% more than the previous year. But, 2017 was devastating: 219,973 hectares of forest were razed. The Amazon concentrates 65% of national deforestation with 144,000 hectares of rainforest loss". (Semana sostenible 2018)</i>
	-- Governability vacuum	<i>"Since the peace agreement was signed, paramilitary groups are starting to enter from Puerto Asis, along the Putumayo River, to Leticia, because there is a coca and weapons corridor that they are handling, and they take him out to Brazil, and that's where they pass them, through their reservations, and their boys serve as coca loaders" (NGO6)</i>
Peace Accord as business as usual	- Old and new actors – same situation	<i>"No ... in Apaporis, Amazonas, Putumayo River, and Caquetá, that area has not felt the impact of the Peace process at all. What happens is that in that area the guerrilla did not demobilize, they are there, I mean, they have always been there". [IOR2]</i>
	- Neo-liberalism and extractivism	<i>"The post-conflict implies an important risk for most of the Indigenous Peoples because of threats that come in like extractivism, because the idea is that now we are going to be able to do agribusiness and employ them (IP), then for example the Nukak reservation is the one that is most at risk of being devastated, deforested and handed over to illegal agroindustry and even with an environmental argument of sustainability: "production will be done and will contribute to development" (GOV6)</i>
	-Cultural disdain	<i>"So, when we refer to the ritual or spiritual it is undervalued or the effect that this has on the management and the relationship with the world is not recognised. Then, it doesn't count as knowledge" (GOV2)</i>

4.5 RESULTS – IMPLICATIONS OF THE PEACE ACCORD

Table 4-2 summarises the range of perceptions from the interviewed participants about the Peace Accord in the period 2016-2019. The findings suggest that the signing of the Peace Accord has been a complex process in which multiple actors and interests have intervened in its implementation. In the Amazon, the exit of the FARC from the territory historically occupied by them has had effects not only on a territorial reorganization but also on political power with both positive and negative effects.

Among the positive aspects of the Peace Accord identified was the window of opportunity for the recognition of the Indigenous Peoples as victims of the conflict and as key actors in the peace-building process; and the possibility of scientific exploration in what were previously banned territories due to the presence of the FARC. On the negative side the increase in deforestation rates and governability vacuum were the main threats identified. The PA was also identified as business as usual meaning that it had no real impacts in the territory. The actors might have changed, but the conflict and their situations remain. Even the change of government and its extractive policies

²⁸ Instituto de Hidrología, Meteorología y Estudios Ambientales (Institute of Hydrology, Meteorology and Environmental Studies)

are considered a continuation of historic disdain and the Peace Accord has no effect on their life systems and territories, hence business as usual.

Table 4-2. Summary table of the Peace Accord impacts - Perceptions of participants 2016-2019

POSITIVE ASPECTS	Recognition of Indigenous Peoples as victims and possibilities for a better future Opportunities for scientific research
NEGATIVE ASPECTS	Increased deforestation Governability vacuum
NO IMPACTS	Business as usual

(Source: this research)

In the following sections, each of these perceptions is addressed in depth, explaining and analysing what each of them means.

4.5.1 Moving to a “desired” system state: The Peace Accord as an opportunity

“The main thing is to understand peace as an opportunity, as a great lever of change to do what we have not managed to do in fifty years of war. The energy of peace is required to launch the transformation of the conditions that have kept alive the conflict”

- Sergio Jaramillo-

High Commissioner for Peace

(Peace Accord, p. 34)

This quote from the High Commissioner for Peace, Sergio Jaramillo, summarizes the sentiment of the Colombians who voted in favor of the Peace Accord in the plebiscite. The signing of the accord was a historical moment and represented a window of opportunity to cease the armed conflict and resolve some of the most critical issues in the country, including reparation to historically marginalized groups such as indigenous people. To date, the Peace Accord has resulted in a range of positive impacts. These include the recognition of indigenous people and their historical hardships including the possibilities for land restitution, and the potential to explore and do research in areas previously inaccessible.

4.5.1.1 *Recognition of Indigenous Peoples and their knowledge - a better future?*

“Indigenous groups have suffered historical conditions of injustice, the product of colonialism, enslavement, exclusion and having been dispossessed of their lands, territories, and resources... they have also been severely affected by the internal armed conflict and therefore the maximum guarantees for the full exercise of their human and collective rights must be promoted within the framework of their aspirations, interests, and worldviews”

[Peace Accord, Chapter 6.2 p. 206].

The armed conflict in Colombia has had a major impact on indigenous communities, leaving many of them caught in the crossfire. Some communities have been able to develop resistance strategies to deal with the armed actors, and as mentioned previously, a key asset in developing these strategies has been culture (Tobón, 2016). On the other hand, other groups, more vulnerable due to their cultural features such as the Nukak and Jiw people, have been severely affected (Franky Calvo & Mahecha, 2011; Franky Calvo et al., 2010). The nomadic nature of these people is reflected in their requirements for territory. Territories are becoming increasingly constrained due to the occupation by different social and armed groups. This dynamic has forced nomadic peoples to reduce their mobility, confining them and pushing them to settle in nearby towns (Franco Calvo & Mahecha, 2011; Zimmermann, 2018). How severely the conflict has impacted Indigenous Peoples has recently been addressed in the framing of the Peace Accord, which is presented by the government and FARC as an opportunity to recognize the violent acts that have been committed against Indigenous Peoples, and the possibility of exercising their rights and political participation in the peacebuilding process.

As briefly explained earlier, incorporation of Indigenous Peoples in the Peace Accord text occurs in different sections (1.2, 3.1, 4.1, 6.2), emphasizing the recognition of ethnic and cultural diversity and their associated values and practices in Colombia's development strategies and projects, and the need to protect them and allow their return to land. Some of the sections are more explicit, such as section 1.2 on development with a territorial approach in which it seeks to ensure *"The protection of multi-ethnic and multicultural wealth so that it contributes to knowledge, to the organization of life, to the economy, to production and the relationship with nature"* (Peace Accord, p. 21).

Also, as victims of the armed conflict, indigenous people are included in section 5.1 about the integral systems of truth, justice, repair, and non-repetition (Peace Accord, p. 184, 189).

In the particular case of the Amazon, occupation of indigenous land by new settlers and armed actors that came after the coca economy (which established laboratories, airstrips, traffic routes, and land mines) caused displacement, isolation, recruitment, and attacks on the local population (CNMH - UARIV, 2015; Echeverri, 2009) in some cases with severe consequences such as for the Jiw and Nukak people in Guaviare (Franky Calvo et al., 2010). As expressed by participants from academia (ACA1, ACA4) and non-governmental organizations (NGO6) the situation of the Nukak and the Jiw is precarious. Both groups have been identified in the Auto 004/2009, issued by the Constitutional Court, as two of the indigenous groups at risk of collective physical or cultural extinction. According to participant [ACA1]:

“In this scenario, with so many interests in an area of great ecological importance due to its soils, water sources, oil... so you have a recently contacted group [the Nukak], that didn't have another group as reference or counterpart, and which had direct contact with the colonisation, in a very short period, and directly suffered the conflict... because the groups that have greatly suffered the conflict in that area are the Jiw and the Nukak. They lost their territories rapidly due to all those interests. And that process, together with the fact they don't have a territory where they can freely move and have some clarity and make decisions about their future is very hard”.

[ACA1]

In this scenario, for these two indigenous groups with nomadic and semi-nomadic practices, the Peace Accord meant the possibility of the removal of land mines, and return, restitution, and re-settlement of their territories. As it is explicitly expressed in section 6.2.3.d: *“The demining and cleaning program for areas of the national territory will be developed in consultation with ethnic peoples and their representative organizations. Priority will be given to the cases of the Jiw People located in the municipality of San José del Guaviare in Guaviare, the Nukak in the department of Guaviare, in the municipalities of Mapiripán and Puerto Concordia in Meta”.* (Peace Accord, p.208).

When consulted about the implications of the accord for the Indigenous Peoples, experts from academia, NGO's and government agreed that this could be the moment for them to return and receive the aid they require, as expressed by participant [NGO6]:

“Undoubtedly [the Accord] has represented a positive impact, at least there has been a massive influx of organizations and institutions that have said: it is time to recover the Nukak territory, it is time to make a process of return, of ordering, of public investment to attend the peasant peoples so they do not become victimizers of the territorial displacement of the indigenous people”.

[NGO6]

However, these positive initiatives emerging from the Peace Accord do not yet extend to all Indigenous Peoples present in the region – they are limited to only the Jiw and the Nukak. According to the Land Restitution Unit (URT), in May 2019 a lawsuit was filed in which more than 500,000 hectares are being claimed in favor of 15 Indigenous Peoples located in Guaviare and Vaupés (URT 2019). The demand seeks to recover 260,000 hectares of the territory of groups living in the reservations Arara, Bacati, Caruru, and Lagos de Jamaicuru, lost during the armed conflict due to the presence of illegal armed actors and the coca economy (Semana 2019). The process, advised by FAO, also seeks to add 240,000 hectares, to develop actions that prevent future appropriation from settlers (FAO 2019).

Indigenous cultures and practices are deeply rooted in territory and, therefore, the possibilities of the land restitution process presented by the Peace Accord are highly significant for IP. One expert, working in Guaviare and Amazonas, suggested that access to land is crucial: *“I think there are two things that are critical: one is the access to the territory, that is, for IP not having land is fatal, that ends completely with many things, it has a very serious impact...”* [ACAI].

The implications of the recovery or, on the contrary, the loss of the territory is crucial for IPs and TEK. The connection of IPs to the land has deep spiritual roots, that translate in cultural, social, economic connections, and identity (Berkes, 2008; Gadgil et al., 2000; UN-DESA, 2009), consequently, guaranteeing not only access but also

ownership is foundational for the maintenance of cultural practices and conservation of knowledge. In this context, the PA is an opportunity.

While the Peace Accord was seen as a great opportunity for the land restitution process, it was not the only potential positive outcome. Some participants from NGOs, academia, and government, share the view that the Peace Accord opened a window of opportunity to recognize and repair the damage that war has had on Indigenous Peoples, and also the time to rethink the future and co-design inclusive models of governance where Indigenous Peoples, their knowledge, and life systems are recognized and valued. These views are summarized in the following:

“This is the opportunity to recognize the complexity of the rights and autonomy of Indigenous Peoples and it is another strategy that is required”
[GOV6].

“I do believe that indigenous groups in the Amazon have an immense knowledge and inventory about the territory. And this knowledge is very relevant to understanding the functioning and dynamics of the forests. There is no discussion about it, the discussion is that the knowledge they have is for their subsistence and permanence as culture”
[NGO1].

However, contrasting views were expressed by interviewees representing indigenous associations. One NGO participant with experience in TEK and governance in the Amazon “post-conflict” situation suggested that the Peace Accord represents nothing more than an opportunity to access funding:

“The post-conflict becomes a trend. Here we make forest management proposals, and we keep doing them but under the post-conflict slogan. The truth is that the scenario hasn’t changed much and the post-conflict becomes almost a thematic obligation, but it is also a nice option to see how we have acted in the country in the past and throughout history. Conflicts continue and will continue to exist. And it is better to use the post-accord concept...” [NGO3].

Similarly, for participant IOR₁₃ the Peace Accord has not meant anything special beyond a “*change in the use of the language and the adoption of new concepts*” entering the territory that can be used to access funding for projects. For another participant, IOR₂, the Peace Accord has not had any positive impact, and the situation remains the same with armed actors still present in the territory and with “*displacement and crossfire occurring*”. This difference in perceptions may be explained by the fact that as described previously, the conflict has had differential impacts in the territory (with more severe impacts in certain areas such as Putumayo, Guaviare, and Caquetá), which are being addressed first in the implementation of the Peace Accord.

Engagement with the Cacua suggests that many communities that have not been severely impacted by the armed conflict may not know or understand what the Peace Accord is or means, and its possible implications. They frequently asked me, the interviewer, for clarification of the meaning of ‘post-conflict’ and ‘Peace Accord’. One NGO representative suggested that this confusion may be due to their linguistic and geographic isolation: “*indeed isolation limits them because they learn a very limited Spanish, from groups with bad Spanish: guerrillas, military, ex-prisoners, merchants. With also a very limited understanding and access to information*” [NGO6]. A possible explanation for this, is that the Cacua, unlike the Nukak or the Jiw, or other groups in departments such as Putumayo are not in an area strongly and directly impacted by the conflict. The context and details about the Cacua are addressed in depth in chapter 5.

The process of implementing the Peace Accord and the opportunities it offers to indigenous people are complex and differential. Return and restitution of land have been further complicated in that areas formerly occupied by the FARC are now subject to disputes between different actors with multiple interests. Due to the dissidents who did not recognize the Peace Accord and the presence of the land mines in the territory, the guarantees necessary for the return of land have not been granted. Also, as expressed by one participant, the region is undergoing a power and territorial reorganization and new armed groups are filling the gap left by the FARC: “*the dissidence of the FARC changed their performance to be a mercenary group with a territorial vision of power, with very complicated alliances with drug traffickers, with paramilitaries, with groups of politicians, with peasants*” [NGO6]. Consequently, parks and indigenous reserves have been occupied. This and other drawbacks of the accord will be discussed in detail in section 4.5.2.

4.5.1.2 Research opportunities

“As a research institution, we asked ourselves how knowledge contributes to the post-conflict, how it can be helpful. So, what we did was to identify at the national level hot spots at which there was a convergence of armed conflict events, and the state of biodiversity in those places, so that at the time that peace would be signed, be able to recommend management elements, taking advantage of the window of opportunity that could be opened” [GOV6].

Armed conflicts are a challenge for the countries that face them, not only because of the negative effects on their population, infrastructure, and economy but also because of the limitations they impose on the development of science (Dixit, 2012). In Colombia, one of the ecologically mega-diverse countries on the planet, the presence of the FARC (and other armed actors) has resulted in limited biological research due to a lack of access to certain areas for security reasons.

Besides the (apparent) positive impact of the Peace Accord on Indigenous Peoples in terms of justice and land restitution, it also has provided an opportunity for the exploration of the territory in the form of biological expeditions, as has been reported by (Figure 4-4. Also expressed by participants from the government [GOV6, GOV8] and NGO [NGO3], the Peace Accord provided an opportunity to explore formerly banned territories and to carry out new inventories of fauna and flora that have resulted in new species for science being reported. For them, research has been done in difficult areas and the Peace Accord expanded the possibilities of doing research and opened a window of opportunity. Such is the case of the Colombia BIO expedition:

“Now we see a lot of expeditions happening, Colombia BIO for example. Research institutes (SINCHI, Humboldt, INVEMAR, etc.) have worked in the middle of the conflict, in difficult areas, and now those possibilities multiply. The landscape and the possibility of being in the territory are back, and the post-conflict is positive in that sense” [NGO3].

After the signature of the Accord, the Colombia BIO program, led by COLCIENCIAS, the Institute of Science and Technology in Colombia in association with research institutes such as SINCHI and HUMBOLDT, carried out 21 biological expeditions in

the country which resulted in approximately 200 new registered species for the country. These included plants, birds, insects, bats, and new species of lizard (COLCIENCIAS 2019).

MEDIOAMBIENTE | 7/11/2017 6:31:00 AM



Las especies de la paz

Las expediciones Colombia Bio, promovidas por Colciencias, que se han podido realizar gracias al fin del conflicto, han descubierto 88 nuevas especies de fauna y flora en el país. Presentaron los hallazgos en el II Foro de la Biodiversidad



Translation: "The species of peace. The expeditions Colombia Bio, promoted by Colciencias, which have been carried out thanks to the end of the armed conflict, have discovered 88 new species of fauna and flora for the country"

© Descubierta en las selvas de Panamá en la década los ochenta, la serpiente 'mantodes phantasma' no se había registrado en Colombia y habita el cerro Tacarcuna en el Chocó. Foto: Guido Fabián Medina/Instituto de Investigaciones Ambientales del Pacífico

Figure 4-4. Sample of publication related to research opportunities during the post-conflict (Source: Semana 2017)

In the case of the Amazon, the Apaporis expedition was carried out with local indigenous people, in which, after a year of work there were over 8,000 records within which, 36 new species for science. In total 1,149 species of flora were identified, 43 amphibians, 34 reptiles, 249 butterflies, 101 fish, 38 mammals, 250 arachnids, 41 bats, 131 ants, 23 myriapods, and 273 birds (Figure 4-5).

Colombia registra 36 posibles nuevas especies para la ciencia en la región Amazónica

MIPutumayo · 2 julio, 2019



Posible nueva especie para la ciencia
Nombre Científico: *Coeruleptychia sinchi*

29

Mitú, Vaupés. 2 de julio de 2019.
Luego de año y medio de investigaciones el Instituto SINCHI y Colciencias presentaron los resultados de la Expedición Colombia BIO Apaporis 2018. Tras documentar 8.114 registros, fueron identificadas 2.335 especies de flora y fauna, de las que 36 son posibles nuevas especies para la ciencia, 228 son registros nuevos para el país, 18 se encuentran en alguna categoría de amenaza y 62 son especies endémicas, es decir que se considera que solo existen en Colombia.

“El objetivo que nos planteamos con Colciencias era propiciar condiciones para conocer, valorar, conservar y aprovechar de manera sostenible la biodiversidad del país. Al desarrollar esta expedición ampliamos el conocimiento que tenemos de la biodiversidad, un insumo fundamental para incrementar el inventario de la fauna y flora

Translation: “Colombia registers 36 possible new species for science in the region”

Figure 4-5. Publication of the results of Colombia Bio for the Amazon region (Source: minputumayo.com)

In an interview with one of the leaders of the Colombia BIO program, the importance of these expeditions was seen not only in terms of the generation of new knowledge for science, about new species registered and what their potential uses might be, but also in terms of the approach to the research. The expeditions were designed to consider and incorporate traditional knowledge, through the figure of Indigenous Peoples as co-researchers, in areas of collective or indigenous territories. This is relevant since ethnic groups are traditionally involved in research as “the baquiano”³⁰. In the participant’s words: “it allowed to establish a dialogue and a generation of shared knowledge with the local inhabitants, who participated in the expeditions” [GOV8]. What made a difference in this opportunity was the recognition that there is relevant knowledge and information handled in the territory - local knowledge-, and co-investigation and co-creation of knowledge was produced.

This is important as one common view, expressed by ten participants - regardless of whether they were from academia, government, NGO, or indigenous associations - was

²⁹ <https://miputumayo.com.co/2019/07/02/colombia-registra-36-posibles-nuevas-especies-para-la-ciencia-en-la-region-amazonica/?fbclid=IwARok6G2ovmycft12dpxIuviZ3ZW7yfnjmLxIvHSYZbMMaP7PNbfi2xni7Bg>

³⁰ *Baquiano*: term used to refer to a person who knows the roads and shortcuts of a land, its physical characteristics and the language and customs of its population, to which it usually belongs. By extension it applies to anyone who is particularly skilled and skilled for a task.

the existent cultural disdain for what is ‘indigenous’. The reference to traditional (ecological) knowledge was commonly seen as magical or invalid, especially by some sectors of academia and governmental institutions. This perception is portrayed in this quote from NGO₃ participant: *“Traditional knowledge has never been believed because it is seen as charlatanism, source of error, primitive, wrong...”*.

The aspects concerning TEK in the governance system will be specifically addressed in Chapter 6 of this thesis. However, the interviews suggest that TEK has a relevant role in the generation of information for better decision-making, as has been documented in other contexts (Berkes et al., 2007a; Berkes, 2008; Bofo et al., 2016; Folke et al., 2004) . This is crucial in the planning and management of SES and despite the attempts to be included in certain initiatives it still faces barriers posed by the hegemonic scientific knowledge system and state institutions.

4.5.2 Moving to an undesired system state: negative aspects of the Peace Accord

Results from the interviews and literature (Clerici et al., 2020; Krause, 2019; Pereira et al., 2021) suggest the signing of the Peace Accord has resulted in less desirable outcomes including increased rates of deforestation, a regional governability vacuum or gap, entry of new actors into the region, and the establishment of illicit activities and development of road infrastructure. These elements, their causes, relations, and effects will be addressed in the following sections.

4.5.2.1 Increasing deforestation rates

“In 2015, one year before the signing of the Peace Accord, 124,035 hectares were deforested, according to Ideam³¹. A year later, the figure had increased to 178,597 hectares, 44% more than the previous year. But 2017 was devastating: 219,973 hectares of forest were razed. The Amazon concentrates 65% of national deforestation with 144,000 hectares of rainforest loss”.

[Semana sostenible 2018].

³¹ Instituto de Hidrología, Meteorología y Estudios Ambientales (Institute of Hydrology, Meteorology and Environmental Studies)

Deforestation of tropical forests represents a threat to cultural and biological diversity and thus to the well-being of human societies that benefit directly and indirectly from them. In the case of the Colombian Amazon region, part of the largest tropical forest on the planet, not only its role in the regional and global water cycle and carbon sequestration is crucial (Piotrowski 2019), but also its role in the permanence of a number of indigenous groups (approximately 70) and their cultural practices, which are linked to the forest. Conservation and management of this social-ecological system are a challenge, particularly after the signing of the Peace Accord.

Deforestation is an issue driving SES change through tropical forests such as the Amazon (FAO 2011). Data from the Institute of Hydrology, Meteorology, and Environmental Studies on land clearing suggest that the Amazon in Colombia is no exception with four major spots of deforestation in the Andean-Amazon transition, specifically in the *departments* of Putumayo, Caquetá, and Guaviare (Ideam, 2019). At least six articles published in national environmental and Amazonia-related magazines have identified this deforestation process as an issue linked to the Peace Accord. A sample is provided in the figure below.



Figure 4-6. Sample of published articles associated with deforestation during the post-conflict in Colombia. Source: various³²

The reports by Botero (2018) and Armenteras et al. (2019) suggest that despite the historical land clearing process (i.e. before the Peace Accord) occurring in some areas of the territory, such as north of Caquetá and Guaviare, the loss of forest has accelerated since it was signed. Also, according to the Monitoring of the Andean Amazon Project (MAAP 2019), deforestation in the region reached about 478,000 hectares of forest between 2016 and 2018, just after the peace agreement.

These documents and key informants attribute forest cover loss to these main influences, which often are connected to one another:

1. Expansion of the agricultural frontier, especially for extensive livestock

³² From top-down, left-right: 1. <http://www.semillas.org.co/es/revista/el-posconflicto-y-los-impactos-de-la-minera-en-la-amazona-oriental-colombiana>, 2. <http://smbyc.ideam.gov.co/MonitoreoBC-WEB/pub/alertasDeforestacion.jsp?o.48860485942707643>, 3. <https://es.mongabay.com/2018/05/colombia-la-selva-tras-conflicto-farc/> 4. <https://sostenibilidad.semana.com/medio-ambiente/articulo/deforestacion-en-colombia-despues-del-acuerdo-de-paz-con-las-farc/41088>

2. Planting of illicit crops (coca), and
3. Illegal logging, mining, and infrastructure (roads)

One NGO participant summarised these views as follows:

“We work on the identification of the drivers of deforestation that include land grabbing, the extension of livestock, the presence of illegal crops, the existence of illegal roads and the extension of legal roads to the llano, the monoculture initiatives, which are not only palm but also plantain for example...” [NGO6]

In general, key interviewees from the government and NGOs have agreed that the Peace Accord has accelerated the rates of deforestation in the Amazon, but that is only the symptom of a more complex process of land occupation as a consequence of a governability gap/vacuum created by the exit of the FARC from certain areas historically controlled by them, and the inability of the government to fill that gap. This concurs with the results of Murillo-Sandoval et al., (2020) and what they have called “gunpoint conservation” to the control over resources exerted by the FARC. Implications of these are addressed in the following section.

4.5.2.2 Governability vacuum – new actors in the territory

“The guerrilla was the authority, the regulator, they acted as the State. If you go to sites where they were present such as Caquetá, Putumayo, and Vaupés you could see they were the ones applying justice, they exerted the governance. When all this process [Peace Accord] started it created a gap. And the problem is that the state has no capacity to fill that gap and occupy those areas”
[GOV2].

What this quote refers to is that as a consequence of point 3.1 of the Peace Accord, the demobilization and relocation of FARC members in the so-called Transitional Normalisation Zones (Zonas Veredales Transitorias de Normalización – ZVTN) the FARC members - except some dissidents - abandoned the territory they had historically occupied. In these areas, they used to exercise control, administer justice, limit, and define the use of resources, and also move the local economy through the

cultivation and trafficking of coca, or mining. According to the investigation done by the Peace and Reconciliation Foundation (PARES): *“the areas of former control of the FARC instead of being taken over by the State have become centres of expansion of illegal armed groups that dispute among themselves enclaves of the illegal economy such as gold or extortion to citizens and merchants”*.

This is confirmed by participants NGO1 and GOV2, who explained that once the FARC left these areas, external actors entered the stage and took over the region and the illegal activities, the main drivers of deforestation being the land usurpation for livestock activities (motivated by the expectation of land valorisation) and income generation:

“In Vaupes there are some areas like Apaporis, Caqueta, and Guainia, where the guerrilla banned or regulated mining, by setting limits or allowing or not certain practices (e.g. mercury). But once they leave the areas there’s no control over” [NGO1].

“What is seen in the Apaporis every day? that armed actors are coming down (dissidences and others), with coca, who are establishing mobilization routes to get their things out ... they are trying to recruit, and very soon they’ll begin to make themselves felt” [GOV2].

The importance of this is not to justify or portray the FARC as a conservation organization, but to highlight the necessity to analyze and understand the new relationships that are being woven between new actors in the territory, their motivations, and the use they are doing of the resources. Also, the presence of enforcing state institutions such as the Army does not guarantee decrease of deforestation rates. In a research carried in Colombia out by Prem et al. (2020) military presence showed to have a negative impact on forested areas, with an increase in deforestation compared to other areas without military bases.

As expressed by participant NGO6:

“There is something that calls my attention a lot, and that is that today, after the Accord in the Amazon region, the dissidence of the FARC, not only is dissidence but

change their performance to be a mercenary group with a territorial vision of power, with very complicated alliances with drug traffickers, with paramilitaries, with groups of politicians, with peasants” [NGO6].

For participant IOR3, from an indigenous association in Guainía, there is a great concern about achieving the commitments of the Peace Accord because indigenous associations have no trust in the government to meet what was settled, and it has created new issues:

“Where is the process going? We don’t know how long it will last because the government will not comply [with the Accord conditions]. Now, in a short time how is the impact of that politically here in the region? Negatively, negatively. People are getting back together; they are changing the strategy, but they are strengthening the guerrillas again. The front here did not surrender, they changed their strategies, they have a social policy and armed politics, and a percentage of the FARC dissidents are in indigenous territories.” [IOR3]

The presence of illegal armed actors such as the FARC or paramilitary groups weakens local political organizational processes, in the indigenous case their Associations of traditional indigenous authorities (AATIs). As the FARC left, the territorial control began to be disputed and control seized by other (illegal) actors as indigenous organizations and authorities did not have the time to prepare and strengthen themselves to assume territorial control.

A clear understanding of the actors and the new institutions that are shaped by and occupy positions in a SES is key for the design and implementation of policies and/or strategies that can meet the new and changing ecological, economic, and social forces (Berkes et al., 2003). The next section will examine issues for IP that have historically suffered the consequences of the armed conflict and have been historically excluded and marginalized despite inclusive legislation.

4.5.3 No change in system state: The Peace Accord as “business as usual”

“For me, the peace accord has had no impact on the Indigenous Peoples. Because our peace was lost when the colonization arrived. From that moment we no longer have peace because at all times our territory, our knowledge is in the process of displacement, of invisibility. So, for us to talk about peace, despite the Accord having been signed, from our resistance, it does not exist”. [IOR3]

As presented in the previous sections, the implementation of the PA has been seen by different actors as a generator of both positive and negative impacts. However, for other actors in the region, the PA represented nothing more than a continuation of a historical “business as usual” situation that has existed since the colonial period in Colombia.

Unlike participants from academia, NGOs and government, for interviewees from indigenous associations in the Amazonian territory, conditions have not changed much. The main reasons mentioned by them are 1. the presence of the dissidents and the occupation of the territory by new actors; 2. the change of government (in open opposition to the PA) and, 3. the historic cultural disdain for what is indigenous. These views are addressed next.

4.5.3.1 Old and new actors – same situation

“Since the accord was signed, paramilitary groups are starting to enter from Puerto Asis, along the Putumayo River, to Leticia, because there is a coca and weapons corridor that they are handling, and they take them out to Brazil, and that's where they pass them, through their reservations, and their boys serve as coca loaders”
[NGO6]

One major claim made by the participants from the indigenous organizations interviewed in this research is that there haven't been any changes in the territory since the signing of the PA. For participants IOR2, IOR3, and GOV2 the groups that did not demobilize are just re-organizing:

“No ... in Apaporis, Amazonas, Putumayo River, and Caquetá, that area has not felt the impact of the Peace process at all. What happens is that in that area the guerrilla did not demobilize, they are there, I mean, they have always been there”.

[IOR2]

“Now, what is the impact of that [Peace Accord] politically here? Negative. The people are re-arming themselves, they are changing the strategy, but they are again strengthening the guerrilla. Here in Guainia, the group did not hand over the arms. And they changed their strategy. Now they have their civilian and armed policy. And 40% of the body of the FARC dissidents is in indigenous territories” [IOR3]

“The year before last one I was in the Apaporis, precisely for the signing of the agreements and there was the dissidence in a community where I had a meeting. They never told me anything, like about 200 guerrilleros from the first front, but emphatically said “we are the dissidents” [GOV2]

According to the report by the Fundación Ideas para la Paz (FIP 2019) about the dynamics of FARC dissidents, several guerrilla groups are operating in the departments of the Amazon region:

1. Front 1 operating in Vaupes, Caquetá and Guaviare
2. Front 7 and Front 14 operating in Caquetá
3. Front Acacio Medina operating in Guainía, and
4. Front 48 operating in Putumayo.

Motivated by political, territorial and resource control, some of the activities carried out by these groups include ambushes, threats, forced recruitment, kidnapping, activation of explosive devices, extortion, installation of antipersonnel mines, homicides, deforestation, and drug trafficking (FIP 2019). These actions are directed both against the civilian population (recruitment, extortion, homicides) and against the military forces (anti-personnel mines, ambushes).

Drug trafficking and the coca economy continue to be, though not the only, one of the main drivers of social-environmental conflicts in the area, with some zones more affected than others:

“In Putumayo, the guerrilla operated with great force. In the Amazon from Leguizamo to Tarapaca, in that sector due to the presence of the guerrilla, the drug trafficking strengthened with illicit crops, laboratories, clandestine tracks, plus illegal mining”. [IOR2]

Yet, as reported by international agencies such as Amazon Watch (2022) and Global Witness (2020), the illegal economy of coca is not the only cause of the presence of armed groups in the territory. As mentioned in section 4.5.2.2 alliances between the dissidents of the FARC with other illegal groups that try to seize the lands of protected areas or indigenous reservations to establish activities such as livestock and speculate about land prices have increased deforestation and the danger to those who want to defend their territory. The most recent case of violence against an indigenous leader in the Amazon was the killing of the Murui Muina leader (Huitoto people) in the indigenous reservation of Bajo Aguas Negras in Caqueta by illegal armed groups (COICA 2019).

So, what seems to be happening is that after the signing of the Peace Accord and its implementation, some of the actors interacting in the territory are changing, but not the conditions in terms of economy, security, and stability for the local people.

When asked about new possibilities for development entering the territory under the umbrella of the Peace Accord, some of the participants agreed that nothing has happened either. One of them expressed decisions are made at the national level without considering the region, and also that the only visible things occurring are small campaigns or ‘shows’ with the slogan of peace:

“It [the Peace Accord] has not had repercussions here. Neither positive nor negative. That is why one of the slogans of the Amazon is: Amazonas is also Colombia. Because they do everything there and forget about us over here.” [IOR1]

“I’ve seen programs that have been done here in the city hall, they come and make a show, put up a poster, something about young people for peace...I once opposed to that, because they come, use the dance groups, maybe give them a snack, take the photos, collect the banners, leave and that’s it” [IOR1]

The difference between perceptions among participants is partially explained by the area they are from. For those living in areas with little impact from the conflict, the implication of the PA is not so evident, while for those who have been more impacted, things are happening such as opportunities for scientific research in areas previously vetoed, or new conflicts with new actors.

Adding to the current situation of re-organization of old and new armed groups in the territory, the change of government in August 2018 has created difficulties in the implementation of what was agreed in the Accord. Not only as being in opposition to its implementation, for the new cabinet two of the drives for development are resource extraction and opening the economy for businesses. It is necessary then to recognize 1. the potential opening of mining and extractive plans and projects, and 2. A possible increase in illegal mining derived from the governability vacuum. One could argue then, that the State and its contradictory policies and plans is also a driver of deforestation. These contradictions are further discussed in chapter 6.

Furthermore, in the opinion of participant ACA2, the winning party (Centro Democrático) has declared intentions to sabotage the Peace Accord: *“Those from the Centro Democrático are radical saying they are going to sabotage and tear the agreement to shreds and do as minimal as possible only because the international community is watching and to obtain some money”* ACA2. This statement is based on the declarations of one of the party leaders during a party’s convention in 2017 when declared *“The first challenge of the Democratic Center will be to shred that damned paper they call the final agreement”*³³

4.5.3.2 Change of government: neo-liberalism and extractivism

Adding to the new dynamics and challenges that are being established in the territory with the arrival of new actors occupying the gap left by the FARC, the new government does not seem committed to put in place the legislation Indigenous Peoples, their rights and autonomy in the management of their territory. What they seem to do is to

³³ Public declarations of former ministry Luis Fernando Londoño during the Centro Democrático convention in 2017.

hinder and delay processes as the Constitution cannot be changed. An example of this is the National Development Plan (2018-2022), in which the driving policies of the new established cabinet, (strongly opposed to the Peace Accord during the campaign for the plebiscite) are reflected. One of these driving development forces is the extractivism³⁴ with activities such as fracking:

“The mining and hydrocarbons sector is an important factor for the economic, environmental and social development of the country, playing a relevant role in the production of raw materials, attracting significant amounts of direct foreign investment and generating royalties, taxes and economic considerations to in favour of the Nation, which provide solutions to great needs, in the regions and for the country in general” [PND 2018-2022].

For Krause (2020) one immediate effect of this contradiction between peacebuilding and an extractive model of development in the post peace accord scenario has been the increased deforestation in the region. Although this contradiction is not exclusive to the context of the PA but a historic clash between worldviews, the PA and the governability vacuum created fostered this situation. Resource extraction and violence have been strongly linked with serious consequences for Indigenous Peoples around the world (UNEP, 2009), and Colombia is not the exempt (CNMH, 2019; Gedicks, 2003)

Furthermore, the National Development Plan (PND), was not consulted with the representatives of the Indigenous Peoples as is established in the law, through the prior and informed consultation. As a consequence, in an official statement of the OPIAC (Organization of the Amazonian Indigenous Peoples of Colombia) of October 2018, the leaders of this organisation requested the government of President Duque to generate the necessary mechanisms to guarantee the Prior Consultation, a right that the Constitutional Court defined as fundamental for indigenous and ethnic peoples of the country actively participates in administrative and legislative decisions that affect its territories, to consolidate the new National Development Plan.

³⁴ Extractivism – large-scale mining and the oil and gas industry in particular – as the basic development model promoted in the Latin American governments for their economies (Lang 2013).

Bogotá D.C 30 Octubre 2018

EN EL PLAN NACIONAL DE DESARROLLO 2018-2022: LA CONSULTA SE RESPETA

La Organización Nacional de Los Pueblos Indígenas de la Amazonía Colombiana informo en rueda de prensa, y conocimiento de los medios de comunicación, la opinión pública y al país en general, como el Gobierno Nacional una vez más está vulnerando los derechos de los pueblos Indígenas en esta ocasión con los seis departamentos de la Amazonía. Desde la Opiac nos levantamos y sentamos un precedente sobre la necesidad de reforzar y garantizar el Derecho Fundamental a la Consulta Previa.

Hacemos un llamado al Gobierno Nacional y a la sociedad en general, para decirles que los pueblos indígenas estamos ahí, existimos, estamos aportando al mundo, a la humanidad a través de los conocimientos, las prácticas ancestrales, los voces de los amazónicos merecen ser escuchadas y no solamente usados para decir que en la Amazonía, hay biodiversidad, conservación, y riqueza, pero a la hora de implementarse dinámicas para que se ejerzan los derechos no tenemos voz.

Translation:

In the National Development Plan 2018-2022: Respect the prior consultation.

The national organization of the Indigenous Peoples of the Colombian Amazon (OPIAC) informed in a press conference to the media, public opinion and the country in general as the national government is once again violating the rights of Indigenous Peoples. From the OPIAC we rise and set a precedent on the need to strengthen and guarantee the fundamental right of prior consultation.

Figure 4-7. Communication of the National Organization of the IP of the Colombian Amazon (OPIAC) regarding the no consultation of the National Development Plan by the Colombian government (2018)

Leaders and government reached a final agreement, yet, what was seen by some of the participants was the “lack of interest” of the government, summarised as follows by participants NGO6 and IOR3:

“Yesterday I was sent the picture of the meeting board for the prior consultation of the national development plan of this government. And we said: nobody cares, because there was not one of the supposed government representatives sitting in this giant event where they should be. This is disdain” [NGO6].

“One asks, where is this going, if at this moment the government itself is not complying financially to develop social programs, how will it be with other programs? Only the name remains. And is very clear from the national development plan, that this government did not take (the Indigenous Peoples) into account to developing that policy, so one says: “what do you expect from them”? [IOR3]

This exclusion from consultation is partly explained by the cultural disdain and marginalisation to which Indigenous Peoples have been historically subjected and that has emerged as a key issue in this research to be addressed in the following section. The other possible explanation is the interest of the government to keep control over

the natural resources without having indigenous authorities to monitor them or with whom to agree.

4.5.3.3 *Cultural disdain*

"I believe that in Colombia the disdain for the indigenous is deeply marked. There is a lot of racism, and classism associated with the idea that Indigenous Peoples are poor, incapable, and curiously, well not curiously, that is a political agenda of non-recognition of Indigenous Peoples as full citizens and capable of self-determination". [GOV6].

Part of the perceptions of the participants regarding the lack of changes in the region and for its Indigenous Peoples since the signature of the Peace Accord has to do with the historical disdain for these groups. In their words, the ethnic chapter (section 6.2 of the PA) was only included after strong discussion given by the national leaders and not by a real motivation to acknowledge the traditional landowners, as expressed by participant [IOR3]:

"What is indigenous in the peace agreement at the beginning was not a matter of respect, if there is anything in the accord, it is not because the government or the guerrillas have valued the territory they are in, it is because of the work of the indigenous movements, the resistance because we have not yet found peace. There isn't and there never will be". [IOR3]

From fieldwork and interviews, what started to emerge is the existing cultural disdain for what is indigenous, a term that is still associated with backwardness and obstacles to development. Such disdain and discrimination have its roots in colonization and religion, and sometimes pseudo-science, where IP's and their worldviews and livelihoods are seeing and claimed as inferior (Baker, 2021; Boas, 1938). According to participants from academia [ACA1, ACA3], NGOs [NGO6, NGO4], and government [GOV2, GOV6], there is a cultural disdain for what is indigenous. These views can be summarised in the following quotes:

“We do not accept a holistic vision, we do not accept an integral vision, intuition, and we want to demonstrate things with rationality, measuring things. Also because of very strong prejudices against Indians”. [NGO4]

“The regulations that recognize other rights, and other ways of doing things in Colombia, are centralist, oppressive, and also have the full burden of normative that believes that only regulations create reality, which is a source of permanent conflicts with Indigenous Peoples, and that over time ratifies that cultural rupture in which the dominant society sees Indigenous Peoples as dirty, unhealthy, ignorant peoples”. [GOV6]

In fact, this can be associated as one of the causes of the real and effective lack of recognition of the indigenous people as government/authorities of their territories, as stipulated in the constitution.

Interestingly, the view of one of the participants from an indigenous association from Leticia is that peace will not be achieved in the long term as the harm that has been done to the IP cannot be separated from the harm done to their territory. Therefore, reparations need to encompass not only the individuals but the territory:

“Peace is not you and me sitting and signing a paper and there we fix everything. No, that’s not. The guerrillas must know, the government must know that there was harm to an indigenous territory, and by affecting that indigenous territory there was a blockage of thought that will charge the wrong they did to that thought. To cure that we have to sit in a dialogue, not one night, not three days, it may take as well 2 years 3 years, this has the same connotation because it is from the very spirituality [we need to] fix the damage that was done to the territory... All that must be fixed in the mambadero³⁵, dialoguing, doing traditional healing, dances of healing, healing to prevent it from happening again. But if I tell this to the president, he will say I’m stoned”. [IOR2]

³⁵ Mambadero: It is a masculine and highly ritualized space where men gather to consume the mambe (toasted and pulverized coca leaf mixed with the ash of Yarumo leaves) and the ambil (semiliquid tobacco) (Ruiz et al., 2007).

What this scenario is showing us is that the Indigenous Peoples, regardless of whether the Peace Accord can be fully implemented, face the historical barrier of the cultural disdain to which they are subject to, that reflects on their political status. What becomes necessary, then, is to understand the role of TEK in this dynamic scenario and how it can contribute to the management of the system to avoid undesirable impacts such as increased deforestation and loss of their territory and to propose new governance mechanisms that effectively include Indigenous Peoples and their knowledge in national policies and development. These issues will be brought to the fore in subsequent chapters of the thesis (Chapters 5 and 6).

In the table below, the different impacts the Peace Accord has had on the Colombian Amazon and its Indigenous Peoples are summarized.

Table 4-3. Summary table of impacts of the Peace Accord

Peace section	Accord	Impact of the implementation	Effect	Consequence
3.1 Cease-fire, surrender of weapons, and exit of concentration areas		Governability vacuum:	- Occupation of areas by new actors with multiple interests:	- Increased deforestation rates, especially in Putumayo, Caquetá and Guaviare.
		The government hasn't been able to fill the governability gap in areas previously occupied by FARC	- Illegal land grabbing and occupation - Illegal activities - Areas for livestock - Control of routes for drug trafficking - Road infrastructure and development	
		Indigenous traditional authorities in the territory are not prepared to assume control		
		Access to vetoed areas	Research opportunities	New species registered for science Co-production of knowledge with IP
4.1 Illegal crops substitution program		Peasants saw it as an opportunity to access resources, benefits, and aids.	- Unintentionally increase of coca-growing areas	- Increased deforestation rates
		Some areas are within indigenous reservations	- Conflict with IP	- Social conflicts in these areas, where new groups are trying to take control over the drug trafficking business

6.2 Ethnic chapter: The demining of areas of ethnic groups such as the case of the JIW and Nukak in Guaviare. Their settlement, return, and restitution of territories.	In this regard, there is not much happening since the areas have been occupied by new actors and the situation of these ethnic groups is alarming.
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4.6 DISCUSSION

Armed conflicts around the world have significant impacts on indigenous people through casualties, forced migration, and damage to infrastructure and natural resources which extend to social, political, and economic institutions (Gates et al., 2012; UN-DESA, 2009; UNEP, 2009). For Indigenous Peoples in many countries, this has meant forced recruitment into the army and militia, the militarization of their territory, cultural damage, occupation of their land, forced displacement, and loss of their means of livelihoods (Stamatopoulou, 2018). Due to the adverse impacts of armed conflicts on Indigenous Peoples, Peace Accord processes become opportunities for Indigenous Peoples rights to be protected and for their autonomy to be exerted (Candelaria, 2018; Sieder, 2011).

The Peace Accord, signed in Cartagena in November 2016, has had a significant impact on the country. Especially for those peoples that have been strongly affected by the conflict and are now part of the post-Peace Accord scenario. The Peace Accord not only explicitly recognized IP as communities severely affected by the armed conflict, but also as actors with a fundamental role in the construction of Peace.

The analysis of the Colombian Amazon, as a social-ecological system in a post-peace accord scenario, shows a complex network of resources and actors interacting and adjusting to the new situation. In this dynamic scenario of constant changes, the traditional ecological knowledge held by indigenous communities in the region has the potential to be an important factor in addressing the challenges these communities face. However, for TEK to become a valuable asset in the survival of these communities a number of issues will need to be overcome. Among these 'tokenism' in processes that seek to engage indigenous people and a general cultural disdain and discrimination in policy circles for indigenous culture are important as they are embedded in the institutional environment surrounding the Peace Accord implementation. These

issues have been identified as important for Indigenous Peoples in other contexts around the world (Von der Porten & de Loë 2014). Published studies have addressed labour (Biddle et al. 2013), education (Poblete 2003) the justice system (Cunneen 2006), and indigenous groups with ethnic differences such as some hunter-gatherer minorities (Woodburn 1997).

In this chapter I sought to analyse the Colombian Amazon in the post-Accord setting as a social-ecological system (SES), that is, a system where nature and people are coupled and interact in complex dynamic ways at different spatial and temporal scales (Chapin et al., 2006; Berkes 2007, Biggs et al., 2015, Martín-López et al 2017). Through the interviews with key stakeholders in government, NGOs, and academics, and documents related to the Accord process, the complexity of this SES was revealed. Of the elements making up an SES, some were shown to have relevance in the analysis of the Colombian Amazon and its complex dynamics in a post-peace accord scenario. Specifically, the system *boundaries*, the changing roles and range of *actors* entering the territory, and the *state* of the system, which is currently undergoing a process of *re-organization*, were significant and will be discussed in the following sections.

4.6.1 Boundaries of the Amazonian SES

One of the principal challenges in analysing an SES is to determine the system boundaries, meaning the spatial, institutional, or other limits, which focus the analysis of stakeholders, resources at stake, and system states. We know that SES, like any complex system, is open and interact hierarchically across scales (from global to local) (Cash et al., 2006; Chapin et al., 2006; Martín-López et al., 2017). As argued by Dallimer and Strange (2015) and Martín-López et al. (2017), in most cases the physical boundaries of a system do not match the institutional and socio-political boundaries. This means there may be governance or political elements at regional, national, and global scales that influence and determine the functioning and interactions of the system at a local scale (Cash et al., 2006; Ostrom, 2009).

Understanding the influences of the Peace Accord on the Indigenous Peoples of the Colombian Amazon required a shifting outward and inward of the system boundaries. In the case of this research, we can see from the data that there are elements playing an important role in the system with dimensions that go beyond the geographical

boundaries of the Colombian Amazon but that certainly affect it, and that this situation will likely persist into the future. An example of this is the extractive and illegal economies, particularly the coca economy which has grown rapidly and expanded since the 1980s (Echeverri & Niño 2011). Though the coca economy is a key determining factor in the system re-organization, issues such as global markets (demand, prices, international black market) are not part of this analysis. The scope of this research considers only what is directly related to the implementation of the Peace Accord, such as illegal crops substitution (section 4.1 of the Peace Accord document). It is important though to understand that the illicit drug trade extends across scales and has created complex global issues, including human rights violations, environmental problems, and armed conflicts (Steinberg 2004). Indigenous territories are influenced by external demand for illicit drugs, transforming their livelihoods and culture. This dynamic is present not only in the Colombian Amazon but also in other contexts around the world, such as in Afghanistan and Pakistan (Allam 2004), Laos (Westermeyer 2004), and Bolivia (Sanabria 2004). Drug trade impact is not limited to production, but also to eradication policies which represent a hazard and can transform indigenous territories and disturb national stability, especially when agri-chemicals such as glyphosate are used in drug crop production (CNMH 2015, Ramirez 2011, Tobon 2016). In the Colombian Amazon, as in other global contexts (Allan 2014), the cultivation of coca is associated with the traditional use of these plants (Pineda 1975, Tobon 2016). This activity though has been impacted by the global market and demand for coca, since the profits obtained per hectare cultivated with coca can be significantly greater than agricultural production gains (De Rementeria 2011).

Findings from this research also suggest that the Colombian Amazon should not be regarded as a uniform region in relation to the effects of the Peace Accord. Although the broad geographical scope is the Amazonian region and its 6 main states (Amazonas, Caquetá, Guainia, Guaviare, Vaupes, and Putumayo), the effects of the Peace Accord have unfolded differently within each of these departments. For example, interviews conducted with Indigenous associations and NGOs suggest that Putumayo, Caquetá, and Guaviare have been more severely affected by the presence of new actors entering the territory to take over the power gap left by the FARC since the Peace Accord was signed. This situation is reported by participants to be associated with coca cultivation, which according to UNODC (2017) represents the areas where coca crop production is more extensive, being in Putumayo 29,589 ha, Caquetá 11,793

ha, Guaviare 4,923, compared to 116 ha in Amazonas, 105 ha in Vaupes, and 31 ha in Guainía.

Given the complexity of the system, as it further has emerged from the current chapter, my subsequent analysis will require an inward refocusing of the boundaries. This will be the subject of Chapter 5, where a case study with the Cacua People in Wacará will be presented. By changing the scope of analysis, as suggested by Midgley et al. (1998), Cash et al (2006) and Young (2006), actors and institutions, knowledge, and temporal contexts will change, and therefore need special consideration. These elements will also be addressed in later chapters of this thesis and will open the way for a reflection on environmental governance in the post-peace accord (Chapter 6), understood as decisions and the management of a territory that result from a network of actors at all levels, where the boundaries open from the local to the global level.

In summary, as we have seen, within the boundaries of the system we find multiple actors, with diverse interests, and new interactions and power relations being established and determining new system dynamics. This component of the system is addressed next.

4.6.2 Actors

The second element making up an SES with immediate relevance to the Colombian Amazon is the actors in the system. The SES approach emphasizes the intricate relationship between human and ecological systems. Under this framework, multiple actors can be identified to be involved at different levels, according to their role, use of the resources, and interests (Ostrom & Cox 2010). This includes not only the parties who are direct users or beneficiaries of the resources but also those who use or benefit from resource use indirectly (McGinnis & Ostrom 2014). Also, the approach emphasizes the self-organization of SES, which means systems respond to and accommodate changes.

For the Amazon, the signing of the Peace Accord has meant some changes in the actors, their roles, and the interactions among them. As expressed by the participants NGO1 and GOV2 and according to reports by several national (FIP 2018, PARES 2018) and international organizations (KROC 2019) in the post-Accord period as a consequence

of the absence of a plan from the government to occupy the areas of conflict, gaps left by the FARC when they demobilized and relocated in the ZVTN as part of the Accord, were quickly filled by other illegal actors (Figure 4-8). Among these illegal actors are FARC dissidents, paramilitary groups, and drug traffickers, in association with politicians and big landowners, who are exerting power over Indigenous Peoples by different means.

According to FIP (2018b), the FARC dissidents are using the territories as corridors of mobility, land, and river routes (cross-borders with Brazil and Peru) for drug and weapons trafficking, and operation of illegal economies (cocaine, mining, and fine wood). In addition, deforestation of the indigenous reservations in Guaviare seems to be the result of massive appropriation of land, by a range of actors (merchants, ranchers, drug traffickers, and politicians) who hire locals for the work of slash and burning, and installation of pastures (Botero 2018).

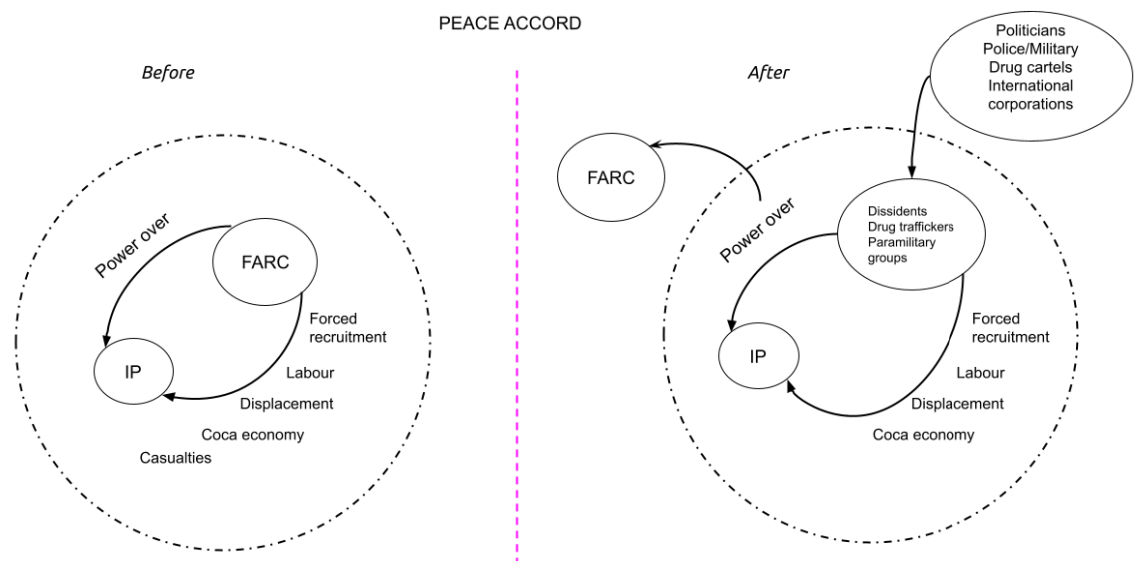


Figure 4-8. Illegal actors in the Amazonian SES before and after the Peace Accord (IP: Indigenous Peoples) (Source: own elaboration)

In this scenario of new and old actors (FARC dissidents, paramilitary groups, politicians), the Indigenous Peoples, who are the landowners of almost 55% of the total

Amazonia territory, in 185 indigenous reservations or *resguardos* (SIATAC 2019), and who would be expected to be key actors in the development of the region, continue to be marginalized victims of violence and negligence. As argued by Ramirez (2011), a combination of the absence of the State and the low population density of indigenous groups that show physical and cultural deterioration, loss of their ancestral territories, and the disdain of the mestizo³⁶ population, have been the causes for the armed conflict to thrive in the region. It becomes necessary then to reflect on the different relationships established between actors within and outside the physical boundaries of the system.

While armed groups have historically exerted power over Indigenous Peoples and used them as labour in illegal economies, such as coca or mining (CNMH 2015, Ramirez 2011, FIP 2018), the relationship with the State seems to be mediated by a double rhetoric or what Chaumeil (2017) has called the *paradox of governance*. According to this author, and also Correa (2011), the state, systematically, presents public policies of recognition of cultural and ethnic diversity while at the same time preventing their exercise. An example of this is the National Constitution (1991) under which the state has an obligation to protect ethnic diversity (article 7), cultural wealth (article 8), and proclaim the co-officiality of the languages of ethnic groups with Spanish in their territories (article 10), yet, education continues to occur in Spanish in the public education system. A more recent example is the exclusion of the Indigenous Peoples from the discussion about the National Development Plan (section 2.3.2).

The Peace Accord was signed in 2016. It still requires some time for the full implementation to occur and for researchers and other observers to be able to evaluate its impacts in the region and for Indigenous Peoples. Meanwhile, it can be concluded that the system is in the process of re-organizing itself towards a new state, however, the relations being established with the old and new actors are seen by some indigenous associations as a business-as-usual situation.

³⁶ Mestizo: term used to refer to a person of mixed European and Indigenous American ancestry. In certain regions such as Latin America, it may also refer to people who are culturally European even though their ancestors are no (Oxford Dictionary).

4.6.3 System states

The third SES aspect of importance in this analysis is the re-organization of the system in response to the Peace Accord and its implementation, as a perturbation of the current system state.

According to Biggs et al., (2015) and Berkes (2007), one of the characteristic elements of SES is self-organization, which results from both internal system interactions and the influence of external factors. In this case, the SES analysis of the Colombian Amazon is showing us that the system is undergoing a dynamic reorganization of actors and relations associated with the Peace Accord and its implementation. This reorganization is redefining the use of natural and economic resources and establishing new systems of local governance. The combined effect is that the SES is heading towards some new system state that we cannot yet portray as ‘desirable’ or ‘undesirable’. We can, however, predict an uncertain future for the system. In this scenario of multiple changes and mixed perceptions, the implications of the Peace Accord for the system were identified variously by stakeholders as 1. the system is moving into a desired system state, 2. the system is moving to an undesired system state; or 3. there has been no change in the system state, that is, ‘business as usual’ is maintained.

A desired system state could be associated with what participants from academia, NGOs, and government saw in the Peace Accord as a major opportunity to rethink the future of the nation, where Indigenous Peoples would be recognized as major actors in the region. Activities such as scientific research have already benefited from the access obtained to historically occupied areas controlled by the FARC. The Colombia Bio program and its expedition in the Amazon was a clear example of this. Also, the Peace Accord was seen as an opportunity for Indigenous Peoples in terms of their potential recognition as severely affected actors during the conflict and to have the possibility to return to their ancestral territories. Moreover, in this view of a new state taking place, Indigenous Peoples could have a role in the governance system, where TEK could provide key insights into adapting, understanding, and managing SES changes and would be a key element in fostering their organization and culture.

Several systems theorists have suggested that knowledge is one of the key elements in providing adaptability to the SES (Folke et al., (2003, 2005), and there is a growing body

of research that draws attention to the importance of incorporating indigenous and local knowledge to adapt to systems changes (Nakashima et al., 2012; Berkes et al., 1995; Watson et al., 2003). Some of the importance of this type of knowledge lies in the fact that Indigenous Peoples have a wealth of knowledge accumulated and renovated over generations, being able to provide information that goes far beyond the databases available in Western knowledge systems as studied by Berkes (2008) in Canada; and Nakashima et al. (2012) in the Arctic. Nevertheless, considering that TEK is rooted in a territory and results from the many types of practices and relationships, including highly complex symbolic and cultural systems (Escobar 2008, Berkes 2008), its incorporation needs reflection on practicalities associated with its incorporation in governance that will be explored further in Chapter 5.

This perception for Indigenous Peoples of equal opportunities and participation in the development of their territories has been shared in other global scenarios of Peace Accord processes with limited positive outcomes. It is the case of Indigenous Peoples in Guatemala, where after several peace accords, changes in their system have not eventuated, and commitments remain without realization (Poppema 2019). Poppema (2019) cites as one of the main reasons for this inertia, the historically unequal power relations between institutions and ethnic groups. This is similar to the Colombian Amazon and the historic cultural disdain towards indigenous cultures identified in this research and that will be addressed in chapter 6 of this thesis.

The re-organization of the system could also result in a configuration of poor governance of the region's natural resources, with Indigenous Peoples at the margin and being an object of violence by armed and other actors that see them as obstacles to their interests. The positive perceptions identified in this research were mixed with the perceptions that the system is undergoing negative changes such as the increase in deforestation rates and land occupation by new actors, as a result of a governability gap left by the FARC.

These undesirable outcomes of the Peace-Accord process can be explained by the strong links between natural resources and internal conflicts observed in countries. For example, Jensen & Lonergan (2012) argue that following conflict situations, natural resources become the most valuable asset for the recovery of the economy, employment, livelihoods, and development of a nation. Yet, some resources, such as

tropical forests of particular importance (i.e., the Amazon), appear to be the most affected in the initial stages of post-conflict transitions, especially when institutions are weak and governments have no established authority to control certain areas and activities (Wallace & Conca, 2012). Without effective governance systems in place, this situation may trigger or sustain conflict (Wallace & Conca, 2012; Shankleman, 2012; Lujala & Rustad, 2012) and environmental deterioration with effects on the Indigenous People dependent on natural resources, as is observed in the new scenario of post Peace Accord in the Colombian Amazon.

Similarly, Dudley et al. (2002) suggest that in some cases, territorial disputes and war keep SES in a certain state, functioning as protection mechanisms for ecosystems and wildlife, by avoiding certain activities to be carried out or by limiting the expansion of human settlements. This would explain why certain areas of the Colombian Amazon remained “protected” before the Peace Accord, where new species were registered or with potential new species reported for science during Colombia Bio (Section 4.5.1.2). This observation coincides with what has been proposed by De Jong et al. (2007) and Alvarez (2003) about areas being controlled by armed groups that exert regulation over the natural resources. As presented previously, the FARC acted as a regulator of the territory and natural resources, and its presence limited the occupation of and investment in certain areas. When the FARC left the territory a governance vacuum was created, which is being filled by new actors. From the SES perspective, this is of importance since actors define and set the rules and boundaries for the use of natural resources, creating new systems of governance.

In summary, from an SES perspective, in the Colombian context of armed conflict/absence-of-State, TEK has special relevance for Indigenous Peoples, who are fundamental actors of the Amazonian system and have experienced situations of armed conflict and militarization of their territories with severe cultural consequences (CNMH 2013). As remarked by some of the participants from NGO's, academia, and government, the post-peace Accord scenario could be the moment to rethink and redesign a governance system that considers and incorporates Indigenous Peoples and their traditional ecological knowledge. However, due to their historical colonization and subjugation, TEK continues to be disregarded and an object of disdain and marginalisation.

The situation faced by Amazonian Indigenous Peoples is not dissimilar from what Aboriginal peoples in Australia have suffered as a consequence of the British colonisation. Not only did they suffer the introduction of diseases, destruction of culture, dispossession, and oppression, but still, they have to deal with “*pervasive and overt racism in their daily lives*” (Mellor & Frith 2007). For this reason, to effectively incorporate TEK into the Colombian Amazon governance system, underlying causes and elements of this disdain and cultural roots of TEK need to be explored and will be discussed in more detail in the subsequent chapters of this thesis.

4.7 CONCLUSIONS TO THE CHAPTER

The analysis of the Colombian Amazon as a socio-ecological system, and through the lens of social-ecological systems theory, in a post-peace Accord scenario has demonstrated that the Peace Accord is having significant impacts on the system, pushing it towards a new state or “basin of attraction”. Within cross-scale boundaries, a complex set of resources and actors interacting and adjusting to the new dynamic situation is being woven. Indigenous Peoples are forced to cope with this new structure and respond as best as they can, as they have done in the past.

In this dynamic system state, the indigenous communities in the region and their traditional ecological knowledge have the potential to play a significant role in governance. Yet, Indigenous Peoples still struggle to exercise their autonomy and rights, especially those related to their territories. Also, TEK continues to be subject to cultural and institutional disregard. Changes in the hegemonic knowledge systems (Chilisa 2012), are required for the re-organization of the territory, use of resources, and the establishment of relationships between actors.

For Traditional Ecological Knowledge to be reflected in the practice of public policies, profound systemic transformations may be necessary. Such transformation will require recognition of the value of indigenous culture as a key strategic asset in the development and adaptation of the Amazonian system. To better understand those transformations and the role and potential of this knowledge requires closer analysis, to understand not only how it can strengthen Indigenous Peoples’ livelihoods, but also its role in political negotiations, and in contributing to the adaptation of larger systems where trajectories of change are uncertain, such as the Colombian Amazon in a post

Peace Accord scenario. To undertake such an analysis a shift in the scale is required. This shift will be addressed in the following chapter through an in-depth analysis of the Cacia people in Wacar in the following chapter.

Communities like the Cacia allow us to analyse the role and potential of TEK not only in their livelihoods, but also in its role in larger SES, such as for political negotiations, and its contribution to the adaptation of larger systems undergoing transition, such as the case we discuss here. These connections will be discussed in the next chapters of the thesis.

5 Life in the forest: a social-ecological case-study with Cacia
People in Wacará



*Figure 5-1. House of snakes. Place where the snakes were locked up so that the community could settle
(Photo: P. Vejarano Alvarez 2019)*

Also fundamental is that SES are dynamic and complex and are under the constant influence of internal or external forces. Such forces can cause gradual or abrupt changes to the system's configuration (Biggs, Schlüter, et al., 2015; Carpenter et al., 2006; Folke et al., 2005; Walker et al., 2004). Unlike gradual changes, abrupt events may not allow systems to prepare or adjust in time to avoid crisis or breach thresholds that may lead to system transformations (Baggio & Calderón-Contreras, 2017). Existing research in this area (Biggs, Schlüter, et al., 2015; Folke et al., 2005; Walker et al., 2004) suggests that several features contribute to the capacity of SES to absorb disturbances and recover after perturbations, also called SES resilience. While biological diversity and redundancy are key elements from an ecological perspective (Elmqvist et al., 2003a; Moran, 2010), from a social perspective different knowledge systems play a significant role in anticipating changes, the disturbance absorption, and the adaptation process of SES (Folke et al., 2010; Lee & Chen, 2021; Wyllie de Echeverria & Thornton, 2019). One such knowledge system is Traditional Ecological Knowledge (TEK): the knowledge that Indigenous Peoples hold about the environment and their livelihoods.

Traditional Ecological Knowledge has been documented as a key element in biodiversity conservation and natural resources management (Berkes, 2008; Berkes & Folke, 1998; Gadgil et al., 1993). This knowledge subsists only where Indigenous Peoples and their cultural traditions persist, allowing TEK to be passed on and shared over generations. Yet, Indigenous Peoples and their knowledge are in increasing danger around the world due to complex and diverse causes such as market integration (Godoy, 1994; Reyes-García et al., 2013); globalisation (Aswani et al., 2018), Western education (Benz et al., 2000; Turner & Turner, 2008), and increased pressure over resources due to population growth (Kodirekkala, 2017). Another cause is armed conflict and war (Gurr & Scarritt, 1989), which not only cause irreparable human casualties but also force Indigenous Peoples to leave their traditional land, jeopardising the performance of cultural tradition, limiting the opportunities for inter-generation knowledge transfer, and pushing them to migrate into cities where cultural loss and poverty occur.

The Amazon region, in its history of decades of occupation, economic booms, and armed conflict has witnessed slavery, murder, and displacement of its Indigenous Peoples (Carrizosa et al., 2016; CNMH, 2019; Zárata Botía, 2012). For this reason, the signing of the Peace Accord, as discussed in the previous chapter, poses a challenge

and opportunity in the way in which indigenous groups are recognized by the state, armed actors, and civil society. It also might represent a chance for the Indigenous Peoples of the region to participate in the construction of peace and the design of a future in line with their worldviews, where TEK plays a leading role.

5.1.1 A brief history of the Cacia people

As referred to in chapter 2, the Cacia people, also known as Kakua and Bara, are a hunter/gatherer group, of nomadic tradition, members of the Cacia-Nikak language family, inhabiting the Community of Wacará, North-east of the Vaupes department (Figure 3-3)

Due to their nomadic features and other cultural characteristics, the Cacia have traditionally been classified, with the Nukak, Jiw, Hupdah, Nadeb, and Yuhup, as Makú people (Mahecha et al., 2000). The early literature on the Makú discusses the negative connotation this designation carries: being Makú has been associated with groups with little social and technological development, and subordination to Tukano and Arawak groups (Bolaños Quiñonez, 2016; P. L. Silverwood-Cope, 1972).

The first and only known ethnographic account of the ecology, society, and cosmology of the Cacia was established in 1972 by the anthropologist Peter Silverwood-Cope. Some details are also available from Marylin Cathcart (1973) the missionary that arrived in Wacará by the end of the 60s. Since then, no further systematic fieldwork and research have taken place until 2016, when linguist Katherine Bolaños published the grammar of the group in her doctoral dissertation.

Until 1972, the Cacia people were a hunter-gatherer nomadic group moving in a vast territory in the interfluvial area of the Querari, Vaupes, and Papuri rivers (Silverwood-Cope, 1972). Today, a group of 193 Cacia (census 2018, this research) has settled in the inter-fluvial area of the Vaupes and Querari rivers (Figure 3-3). Since Silverwood-Cope's study, the Cacia have moved from nomadism to sedentarism. They are now living in small family groups as members of a larger settlement and community: Wacará. The process of sedentarisation has brought transformative changes regarding crucial elements of subsistence and development of the group, such as population growth, game availability, organization, and traditional knowledge.

Much remains to be investigated about the changes that have taken place in the livelihoods of this group over the past five decades. The focus of the current research is on their situation moving into the post-Peace Accord scenario as described in Chapter 4. In the context of the Peace Accord in Colombia, this research is an opportunity to provide new insights on the role of TEK in the resilience and adaptation of indigenous groups, as well as in conservation, regional planning, and the governance system in a peace-building transition scenario.

5.1.2 Chapter focus and structure

Given the complexity of social-ecological systems like the Colombian Amazon, the analysis presented in the current chapter ‘zooms in’ on a localized system nested within what can be considered the larger Amazonian SES: the home of a single indigenous group, the Cacua, a hunter-gatherer group living in the Vaupes region. The interest in this group is in part motivated by the limited contemporary knowledge about them, and the potential impacts of the Peace Accord on this natural resource-dependent community.

In this chapter, the role of Traditional Ecological Knowledge (TEK) as a key element in the resilience and adaptation of indigenous communities in the face of change is presented. Thus, the focus is exploring the role of TEK in the life and livelihoods of the Cacua people in the Colombian post-Peace Accord scenario.

Through the lens of social-ecological systems (SES) theory, and using as guidance McGinnis and Ostrom's (2014) framework and characterization and the structure and complexity of the Cacua system, the role and connections between TEK and other elements within this complex system of coupled people and nature are established. This process entails the identification and analysis of the critical components that make up the system, the institutional and ecological relations of the Cacua to the tropical forest they inhabit, as well as the context in which this SES is immersed. Also, an analysis of the changes and adaptations related to the encroachment of the outside world and its institutions is crucial in understanding the system and how to navigate the Peace Accord implications.

To facilitate this type of analysis, McGinnis and Ostrom (2014) have proposed a typology of elements that can be identified and categorised across multiple levels or tiers (See Chapter 3 for details). In summary, the first-tier categories are the ecological (E) and social system setting (S). Within these, McGinnis and Ostrom (2014) identify: a) Resource systems (RS), b) Resource Units (RU), c) Governance Systems (GS) and d) Actors (A). These elements interact and produce e) Actions Situations (AS). This typology, which was used to guide analysis and its elements, is used here to present findings. Details of the framework, as well as my rationale for adopting it, are provided in the methodology chapter (Chapter 3).

The chapter starts with a brief introduction and background to the history of the Cacua people, followed by a brief methodology section where the relevant elements of McGinnis and Ostrom's SES analysis framework are emphasised. The results and discussion sections are structured around the categories described in the methodology section.

In the first part of the chapter, sections 5.3.1 and 5.3.2 focus on the resource system (RS) and resource units (RU), looking at the biophysical characteristics of the area and the interrelation and co-dependency of the Cacua on the surrounding ecosystems and fauna and flora species. The second part (5.3.3) looks at the Actors of the system (A). Central to this analysis are the Cacua People, their history, and their knowledge about the SES. The analysis traces other actors with which the Cacua interact (missionaries, nearby communities, NGOs, and governmental institutions) and those actors' influence on the SES. The third part presents and explores the local governance systems in place for the use and management of the territory. This analysis gives way to the discussion section (5.4) which centres the attention on the focal action situations (AS), laying bare the struggles and challenges the Cacua currently face.

The economic and political context is only briefly introduced as it was presented in Chapter 4. *The Peace Accord for the Indigenous Peoples of the Colombian Amazon*.

5.2 METHODS

The research question addressed in this chapter was: *How can traditional ecological knowledge (TEK) contribute to the regional environmental governance of the Colombian*

Amazon in a post-conflict setting? To provide a possible answer, it was necessary to understand which aspects of TEK (species, groups of species, traditions, activities, institutions), play a key role in an SES such as the Cacua's. I also investigated what understanding of the SES dynamics exists in the community, and how TEK is formed, maintained, and shared, and the challenges the Cacua face. To do so, the McGinnis and Ostrom framework (Figure 3-2) was applied and modified according to the context and data availability, resulting in the selection of a set of relevant variables for each subsystem.

Data regarding the area of their territory and of the settlement was obtained from the regional environmental authority (CDA - 2016).

Table 5-1. Codes chapter 5 – Cacua SES

SECTION	CODES	DESCRIPTION
RESULTS	Resource system – Cacua territory	<i>The Cacua territory, its ecological and human settlement characteristics</i>
	Resource units – “We live in the richness”	<i>Species of fauna, flora, and other goods and services provided by the territory</i>
	Actors – “To understand is to respect”	<i>Description of who the Cacua are, their history, use of the system, and associated knowledge</i>
	Governance systems – “We always talk”	<i>Norms and rules from Cacua culture and other actors that are considered important and relevant for the management of the territory</i>
	Action situations	<i>Consequences of relationships between the Cacua and other indigenous groups, and non-indigenous groups</i>
	Socio-political context	<i>Peace Accord</i>
DISCUSSION	Local context – continuous challenges	<i>Internal drivers of change affecting TEK</i>
	Adaptation	<i>TEK and elements outside the SES that affect the adaptation capacity of the SES</i>
	Interconnectedness	<i>Elements influencing and connecting TEK and the SES outside the local boundaries</i>

The data collection methods used to characterise the system, its components, and interactions included participant observations, workshops, a focus group, and semi-structured interviews with community members and individuals working with the community (details in Chapter 3).

5.3 RESULTS – CACUA LIFE AS A SOCIAL-ECOLOGICAL SYSTEM

Following the structure and hierarchy of McGinnis and Ostrom's framework (2014), this results section addressed some of the elements that make up the Cacua SES, including resources, governance systems, actors, and the interactions between them. The selection of variables in each subsystem was done according to their relevance and the data available.

5.3.1 Resource Systems – Wacará and the Cacua territory

This section focuses on five variables of the nine proposed in the framework: S1 (sector), S2 (system boundaries), S3 (size of the system), S4 (human-constructed facilities), S5 (productivity of the system), and S9 (location). These are addressed below as a whole and not segregated or placed in a particular order.

The resource system refers to the forest territory of the Cacua, an area of 21,269 ha (RS3), located in the department of Vaupes, and part of the Great Indigenous Reserve of Vaupes (Gran Resguardo del Vaupes), with a multiplicity of habitats and ecosystems, from aquatic (creeks and rivers) to terrestrial, where the forest, creeks and the cultivation grounds are the most notorious and indispensable sectors (RS1). The settlement is located (RS9) at 1°14'40.2"N - 70°00'36.6"W, only accessible after a one-hour boat trip downstream from Mitú (the Vaupes capital city) and a 10 km walk from the Vaupés river to the north into the forest.

The socio-political limits (RS2) of the Cacua territory are determined by topographical features such as creeks and hills. As identified by community members: *“to the north Cerro Ramos, to the northeast Caño Pajaro, to the east Cerro Madremonte and Cerro Espina, to the south the Sardine Cachivera, and from there in line more or less straight, and parallel to the Vaupés River to Gallineta Creek to the west, and from there along the road from Macaquiño to Santa María* (Figure 5-2). These limits are associated with the mobility and traditional use of the territory by the group.



Figure 5-2. Wacará territorial and political boundaries. The red polygon indicates the area under the BanCO2 program (Source CDA 2016, unknown scale).

At the time of this research, Wacará, known by the Cacua as *Malih lab*, is the main permanent settlement in the area. It occupies nearly 12 hectares and the constructed facilities (RS4) include 33 single-family wooden houses, most of them with metal-sheet roofing. Few constructions have retained the thatch roof (Figure 5-3).



Figure 5-3. Overview of two types of houses in the community (Photo: P. Vejarano Alvarez 2019)

In addition, other structures include the health post, the house of crafts, the dormitories of teachers and interns, the “maloka” or longhouse, and the community house (Figure 5-4).



Figure 5-4. Graphic representation of Wacar settlement in 2018 made by workshop participants
(Photo: P. Vejarano Alvarez 2019)

The situation in Wacar has changed significantly compared to the first available records by Silverwood-Cope (1972) and Cathcart (1973):

“At first, the hut or group of huts where a Mak local group spends some of the year gives an impression of a temporary camp whose inhabitants have stayed longer than they had planned. The houses are simply roofs supported on four or six posts and have no walls”

[Silverwood-Cope, 1972. p.46]

“All the structures are made of sticks, with style variations in A-frame, with or without walls, and roofs with palm trees”

[Cathcart, 1973. p.105]

The settlement expansion and changes represent challenges in terms of resource use and production, such as game, water, and sanitation. They depend exclusively on rainwater and the surrounding creeks for water supply. Waste disposal has also become of particular interest due to increasing waste generation.

One community concern is managing the waste produced by the boarding school, currently disposed of, and buried in nearby small landfills. In the long term, this could become a problem due to leachates and contamination of the water bodies that supply the community. More details on the challenges sedentism has brought to the Cacua are addressed throughout the subsequent sections.

In terms of the geographical setting, Wacar is in the interfluvial region of the Vaupes and Querari Rivers, forming part of the Guyanese shield, which is characterised by mountain ranges, plateaus, and sandy plains with shallow and poor soils, prone to erosion (McConnell & Choubert, 1975; Torres, 1988). The region is defined as rain forest in sandy soils, with an average annual rainfall equal to or greater than 2500 mm, with temperatures usually ranging from 25°C to 30°C (Salazar et al., 2006).

Regarding hydrology, waters in the Amazon are classified as “blackwater” or “whitewater” according to their chemistry, sediments, and colour (W. J. Junk, 1984; Sioli, 1975). Blackwater rivers, as are most in the Vaupes area and the Rio Upper Negro basin, are characterized by their dark colour; a consequence of the sandy soils and decomposition of vegetation, creating low nutrient and high ionic environments (Janzen, 1974; Junk et al., 1989; Junk, 1984). According to Sioli (1968, 1968) and Junk (1984), blackwater rivers are less nutrient abundant than whitewater environments.

Despite the low productivity (RS5) of the system, the Cacua have managed to persist and develop, and the forest provides them with water, game, fishing, wild fruits, land for cultivation, fibre, and materials that are used for their daily activities, exchange, and commercialisation with neighbouring communities. One of the participants and leader of the community expressed this as “*we live in the richness*”. Yet, this richness is finite and, as will be revealed, some resources are becoming scarce due to a range of factors.

5.3.2 Resource Units – “We live in the richness”

Resource units (RU) refer to the elements or units provided by the system, such as fauna and flora species, water, or other goods. In this section, the focus is on the species of fauna and flora used by the community and when possible, their associated characteristics articulated through the McGinnis and Ostrom framework. In general, the number of species recorded in this research is below Silverwood-Cope records.

The first part of this section focuses on species of mammals and fishes, as they are the main sources of protein in the community, with mention to other animal groups of relevance to the community.

5.3.2.1 Game species

A total of 35 species (RU5) of mammals were recorded as being of importance and known by them (Appendix B). From this, in terms of individuals, four species were identified as the most preyed upon. These species were *Queéb* (*Cuniculus paca*), *Jiwi* (*Tapirus terrestris*), *Wehép* (*Lagothrix lagotricha*) and *Múúh* (*Dasyprocta fuliginosa*). Figure 5-5 represents some of the species of mammals and birds of importance to the community as drawn by them.



Figure 5-5. Drawing of game species of particular importance in Wacarά, picturing monkeys, tapir, birds, and others. Authors: Cacia women and men of Wacarά (Photo P. Vejarano Alvarez 2019)

The use of these species is limited to supplying households, with some sporadic trades (unquantified) with other communities, as animal protein is of high economic value (RU4), especially for neighbouring communities. The exchange of bushmeat for cassava between the Cacia and the Tukano and other riverine groups is not unusual as has been reported by Bolaños Quiñonez (2016) and Mahecha et al. (2000).

Members of the community reported increasing difficulties in finding game to supply for their families. The Cacia mainly associate this with the steady increase in their population causing increasing demand over game. Additionally, for a few participants,

current scarcity is associated with the loss of “payes” or local sorcerers and their knowledge to invoke and regulate animals’ abundance:

“Before it used to be a lot of animals here, that’s what my parents used to say. Also, there were fewer people here”. [COM1]

“It was easier before. My father used to tell me that in an hour he already had a Lapa³⁸, two lapas, today we stay until dawn, and we might bring one or none”. [COM2]

“The paye says that where the madremon³⁹ is there is hunting. So the old people, they kept her with their thoughts, with their belief, they protected her, and she was the one who took care of the animals, the animals stayed there and there was always hunting”. [COM2]

Due to game becoming scarce, fish has become a more reliable source of daily protein, which forms the base for *quiñapira*, a type of fish and chili soup that complements the *casabe* (manioc bread) diet. Perhaps one of the reasons for this, in addition to the hard work involved in hunting, is that a creek crosses their territory that gives the name to the community, which provides easy access for fishing. Photographs of two of the fish species are shown in Figure 5-6.

³⁸ Lapa: *Cuniculus paca*

³⁹ Madremon^{te}: translated as mother mountain or mother of the forest, is an entity or spirit associated with the protection of nature and animals, who punished those who attempt against them (Ocampo López, 2006).



*Figure 5-6. Fish species as main daily protein source: Caloche (top left), and Waracu (bottom left)
(Photos: P. Vejarano Alvarez 2019)*

While Silverwood-Cope recorded more than 54 kinds of fish, seven of these accounted for most of the catch; the number of fish species the community reported was now about 20. From this number 11 fish belonging to eight (8), fish families were identified (Appendix A).

In addition to the mammals and fish species described, at least six species of birds were part of the diet, including some species of hummingbirds, a trumpeter, guan species, parrots, and toucans. Insects and other arthropods (river shrimps and crabs) are also occasionally caught, and ants, termites (Figure 5-7), and beetle grubs are considered a delicacy.



Figure 5-7. A Plate of food including fish, termites (Isoptera), and cassava bread (Photo: P.Vejarano Alvarez 2019)

The total number of edible animals recorded in this research was nearly 60, which compared to Silverwood-Cope's records is about 30 species fewer (pp. 48-49). This could be due to the differences in research approach and methodology, social-ecological changes such as local species availability, or loss of TEK, as will be explored later in the chapter.

5.3.2.2 Wild and cultivated plant species

As a hunter/gatherer group, the Cacua strongly rely on wild plants for food, medicine, and other uses, but also on cultivated plant species.

Data gathered with the community identified 17 edible plants (Appendix B). This list does not include those plants used for poison or curative purposes; further research needs to be done in this field. Again, this number is lower compared to Silverwood-Cope's records, which reported at least "54 different kinds of edible forest fruits" (p. 48). A possible explanation is that most of the species the community identified are those of well-known location and phenology, leaving out plants that are consumed opportunistically when encountered on day trips as observed by the researcher, or that knowledge about species has changed over time.

Among the group of edible plants, palm trees are regarded as being of most significance, not only because of the fruits but also for other associated uses such as leaves for thatching and the harvesting of bug larvae from the palm stem. Unlike other species of edible plants such as *Ibapichuna* (*Dacryodes belemensis*), which produces fruit every two to four years, palm trees species produce fruits annually, becoming a crucial source of food. However, a common concern amongst members of the community is that they are not found close to the settlement due to the practice of cutting down the palms to access the fruits.

Although it has been suggested that hunters-gatherers are unaware of agriculture (R. B. Lee, 1992), Silverwood-Cope (1972) mentions the existence of small-scale agriculture among the Cagua, and today its practice is widespread within the community, with bitter manioc (*Manihot sculenta*) at the centre of their diet. Silverwood-Cope's records and this research account for it:

“All the Makú I came across did cultivate manioc to some degree. Some Makú had large gardens, others cultivated so little that they often ran out of manioc”.

[Silverwood-Cope, 1973. p. 45]

Women of the community identified a total of 22 cultivated species of importance (Appendix C). Of these, manioc (*Manihot esculenta*), sugar cane (*Saccharum officinarum*), pineapple (*Ananas comosus*) (Figure 5-8), plantain, and bananas (*Musa* sp.) have the greatest value, as they are used in their daily life, and are also traded within the community, with visitors, or in the settlement at Mitú with other communities.



Figure 5-8. Drawing of a pineapple cultivated by the Cacua (*Ananas comosus*) (Photo: P. Vejarano Alvarez 2019)

So far, the results have illustrated the importance and high dependence of the Cacua on the territory and forest they inhabit. In the sections that follow I will address two other elements or subsystems of the SES that have an impact on the use and management of those resources, namely actors and governance.

5.3.3 Actors – “To understand is to respect”

The subsystem “actors”, initially referred to as “users” (Ostrom 2009), seeks to identify and analyse the individuals who access, use, and have an impact on the resource system and resource units. In the case of this research, the analysis centres on the Cacua people in Wacará and their associated knowledge of the SES (A7) as they are the direct users, main beneficiaries, and decision-makers about the resources, but it also contemplates variables such as the number of relevant actors (A1), leadership (A5), and norms (A6).

Regarding variable A3, a slight modification has been introduced by incorporating the history of the Cacua as it is strongly intertwined with the history of the use of the resources (A3).

5.3.3.1 Being Cacua - Makú/no Makú

When analysing an SES such as the Cacua case study, to understand the history of use of the resources (A3). It is necessary to also understand the history of the users (Cacua)

and their relationships with the territory, and with other groups, as they are intertwined.

For this purpose, I refer to the first ethnographic accounts and notes of the Cacua provided by the anthropologist Silverwood-Cope (1972) and the missionary Marilyn Cathcart (1973). Those are the only known available ethnographic records about the Cacua. They can help us understand the motivations and changes that have taken place since the Cacua settled in Wacará, and how the SES and TEK have been impacted. From there I move to analyse other variables of the subsystem such as the number of actors (A1), leadership (A5), and norms (A6).

As mentioned in the literature review and the first section of this chapter the Cacua is one of the Makú ethnicities in the Colombian Amazon, together with the Nukak, Yuhup, and Hupdu (Cabrera Becerra, 2005; Franky Calvo & Mahecha, 2012; Mahecha et al., 1997). Makú groups in Colombia are known as nomad hunter-gatherers; nevertheless, due to major historical, social, and economic changes, some of their traits have transformed over time as will be depicted later in this chapter.

According to Cabrera-Becerra (2010) and (van Emst (2010), from the perspective of the riparian groups (e.g. Tukanom, Desano, Cubeo), the Makú are placed in the lowest level of the regional hierarchies due to their semi-nomadic tradition and subsistence economy based in hunting, which are associated by others with being *feral*. This is confirmed by Silverwood-Cope's notes and participant NGO1, anthropologist and expert working in the area and with the Cacua in the following quotes:

*“Makú were described as wild beasts of the forest by their Tukanoan neighbours
who were said to keep them as slaves”*
[Silverwood-Cope, 1972. p.1]

*“The Cacua have a problem, that by being a semi-nomad group they are on the
lowest step of the ethnological local ladder. The indigenous system in Vaupes is
hierarchical, and no matter what the Cacua do, they will always be at the bottom.
And from an organization point of view, they will be seen always like that
(inferior)”.*
[NGO1]

As a result of this social hierarchy, attributable to cosmology and culture (Cabrera Becerra, 1999), researchers such as Silverwood-Cope (1972) and Bolaños Quiñonez (2016) have reported submission or subordination as a common relationship between the Cacua and other ethnic groups in the area, with whom they have historically had contact. In the case of the Cacua, their relations with other groups, or the ‘white’, have been mediated by the interest to use them as cheap labour for Cubeo and Wanano groups, or as spiritual followers:

“Makú in sharing this view of their cultural inferiority to the river people, show a submissiveness that characterises their actual behaviour in the presence of river Indians”

[Silverwood-Cope 1973, p.99]

“We were forgotten, mainly by the other indigenous groups, we were not the worst, but because our grandparents were nomads and did not have the means to secure a house, the family, like you would say: we were unsteady”. [COM2]

Despite this type of relationship, trade would be important in terms of language and communication, as many of the Cacua were bilingual in Cubeo or Wanano (Bolaños Quiñonez, 2016), and Desano or Siriano (Silverwood-Cope, 1972). The situation changed after the arrival of the missionaries and the settling process, when contact became less frequent, especially for the younger generations, who today are monolingual in Cacua, with some limited knowledge of Spanish, despite the schooling being in Spanish. More details about the education system in Wacará are discussed in section 5.3.

Interestingly, this perceived situation of disadvantage compared to their riparian neighbours can also be linked to the acceptance of the missionaries in Wacará. As in the quote below, one of the reasons the Cacua supported the arrival and settlement of the missionaries was the possibility of improving their situation compared to communities in the surroundings.

“In those days, the Cacua called Makú, they worked for the Cubeo. The Cubeo ruled the Cacua to work the garden crops, but they don’t pay well, they pay badly, with hammocks yes but with a hole, a dress... but old, torn. The idea of my grandmother

was that when they (missionaries) came they could give us things, soap, salt, all those things. She was thinking about that”. [COM4]

A common view amongst some authors is the submission relation of Makú towards riparian groups (Cabrera-Becerra, 2010; Epps & Stenzel, 2013) “voluntary submission”. This does not seem to remain the case for the Cacua, who organised themselves in Wacará, initially under the guidance and support of the missionaries as will be presented below, and later with the occasional assistance of governmental and non-governmental organisations.

5.3.3.2 From nomadism to sedentism

For the Cacua, as for many nomads and semi-nomadic aboriginal and indigenous groups, regular mobility through their territory was key in their life system and livelihoods (Lee et al., 1999). Consequently, the process of sedentarisation, that is, leaving their constant mobility behind to settle permanently in an exclusive place, brought major challenges.

For some nomadic groups of the Colombian Amazon, sedentism is linked to the presence and activities carried out by religious missions (Lee et al., 1999). The Cacua were not spared by the spiritual crusades and their transition into sedentism started in the mid-60s with the arrival of two American missionaries from the Summer Institute of Linguistics (SIL), Marilyn Cathcart and Lois Lowers. Their arrival, narrated by participant COM4, who was a child at the time, refers to the missionaries’ intentions to move to Wacará in 1966:

“My grandfather returned and asked my grandmother: what do you think of those ladies? Two want to come (here), if we accept them, they will live here. Then she answered him: what are you waiting for? I think about my grandchildren. Don’t say no, I need them, say yes! She thought so far ahead it seems to me”
[COM4]

According to Marilyn Cathcart’s records, the population (AI) in the settlement when she arrived in 1966 appeared to have been 13 adults and six children. In the years following their arrival more families were invited and encouraged by them and the

community captain to join the settlement, reaching a population of 15 adults and 12 children in 1973 (Cathcart 1973). With more families joining the settlement and the presence of the missionaries, the mobility of Cacua started changing, becoming more permanent.

It appears that one additional reason for some of the bands to move to this location was the declining public order situation in the surrounding area. By 2000, and after the 1998 Mitú attack⁴⁰ by the FARC, the presence of guerrillas in the region was very strong (CNM 2013) and some of the isolated families living around the Querari River were told to move to bigger communities and stay grouped. This could be explained by the common practice of antipersonnel mines installed by the guerrilla groups to prevent the army from entering certain areas. One participant indicated this was the reason for moving his family to Wacará:

“Before we lived by the Querari river. We came because of the public order situation, fleeing from the guerrilla. In 2000 I was studying in Villavicencio and the captain asked me and my family if we wanted to live with them (in Wacará) so we could help each other, and not people were going to be taken for recruitment or killed. It was a risk for indigenous people here in the department at that time”
[COM1].

This is of special importance, since it shows how the armed conflict, directly affected the Cacua, influenced their mobility decisions, which has modified aspects of the settlement such as population growth and resources scarcity, as will be discussed later in the chapter.

Also, the presence of the missionaries was seen as an opportunity to access certain goods and services that religious groups would usually bring to the communities, such as communication systems, medicines, and food. This perception facilitated the decision to accept the two missionaries in Wacará.

⁴⁰ Mitú attack: On November 1, 1998, the FARC guerrilla entered Mitú (Vaupés). After 72 hours of fighting, 56 people died and 61 were kidnapped by the FARC (CNMH, 2013).

At present, Wacar is predominantly inhabited by members of the Cacua ethnicity, with nine intercultural marriages with members of the Cubeo group. The consolidated demographic information from Silverwood-Cope (1972), Cathcart (1973), life plans (2008 & 2011), Bolanos-Quionez (2016), and this research shows the increase in population at Wacar over time, and the age and sex distribution in Figure 5-9.

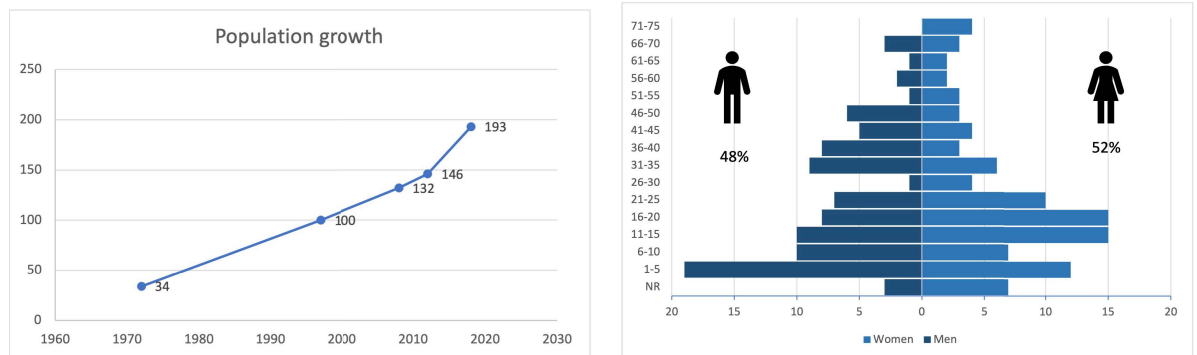


Figure 5-9. Population growth over time (left) and age/sex distribution (right) of Cacua in Wacar. (Sources: based on data from Silverwood-Cope 1971, Life plans 1995 and 2011; book “how we became Cacua 1995; and Sinergias’ report 2019)

*NR: No reported birth date

The trend in the population growth in the last 40 years is important as some issues were found to be associated with it. Firstly, resources are becoming insufficient and scarcer to sustain the growing community, posing a risk on general wellbeing, especially children’s development. Secondly, the number of elderly members is only 6% of the total population, which is of concern as they are considered the guardians of TEK and customs; and thirdly, due to interethnic marriage rules about marriage have changed to “keep women in the community so we do not disappear”:

“I think that from other communities they may know much more than us, because they still have the elderly, and they have been interested in asking them, and I think they know more than us”. [COM1]

“Before they(women) could go where they wanted. Our plan was... now many women, our girls are grown, what are we going to do so that they do not go? If we send them away our community is going to end. If someone wants our daughters, he must stay here. That is what we decided”. [COM4]

As will be addressed later in this chapter, game scarcity and traditional knowledge are of special importance for groups like the Cacua, who highly depend (A8) on the forest for their livelihoods.

Opinions regarding the impact of religious missions on Amazonian indigenous groups' culture differ amongst participants. For participant ACA4, for example, they were filling a gap produced by the state's abandonment, especially in the protection of indigenous rights during the rubber boom. This participant expresses it as *"I prefer them (the Indians) in a mission [rather] than becoming drug addicts or prostitutes. I have no problem with the missionaries, they are trying to fill a duty the State can't deliver"*. Also, for some community members, the missionaries played a positive part in their recognition, organisation, and development as a community.

"I was born here in Wacar, in 1972. And when I was born the missionaries were here and they helped a lot, they collaborated, they educated me a lot. They respected us, they taught us good things, that should not be lost"

[COM2]

Recognition of the diverse indigenous groups in the Colombian Amazon and the relationships among them is key for the development of the region. Even more so for those groups that are at a disadvantage due to cultural factors, as is the case of the Cacua. Despite the current organisation of the community and the changes they have gone through, it appears a subtle prejudice still exists among other ethnicities. In Chapter 4 of this thesis the cultural disdain Indigenous Peoples still face in Colombia is addressed in detail.

The next sections will present results on the current system of leadership (A5), organisation, and norms (A6) that govern Wacar.

5.3.3.3 Leadership and self-organization

Traditionally, indigenous leadership (A5) and organization have been associated with the abilities for spiritual guiding, the passing on of practices, and the capacity to connect with the spiritual and the non-indigenous world (Kenny & Fraser, 2012). In Colombia, it has also been associated with the vindication of their rights and subjected

to the governmental system, which does not necessarily match their traditional worldviews as will be shown.

Hunter/gatherer groups have been known for their social organisation in small kinship bands with an egalitarian system (Lee & Daly, 1999). Due to sedentism in Wacará, family bands reported by Silverwood-Cope (1972) are not obvious anymore, replaced by the captaincy system. Nevertheless, close kinship remains and manifests in the distribution and construction of the houses, which usually occurs in proximity to a parent's house.

Captaincy, the institutionally adopted term for leadership, is a position with the main duties being to serve as an interlocutor between the community, state institutions, and other organisations. As in other contexts (Del Cairo, 2011; Lee, 2011.), leadership in Wacará is strongly associated with language skills, and this position usually is filled by someone with good Spanish skills, as recorded by Silverwood-Cope (1972, p.33), and also observed in this research. Language is both a barrier and an advantage in communication and access to institutional aids, projects, participation, and agency. In terms of decisions, the captain submits for discussion and approval any proposals that involve the community, such as projects from NGOs, government, or academia. He rarely makes decisions on his own, but certainly has a significant influence on the decision-making process.

COM2's current perception about leadership is (and he clarifies when he says it, that he "does not intend to speak bad" that the captain of the community is somehow passive in taking action and developing projects for the community. This kind of 'bad talk' is not uncommon in indigenous communities according to interviewee ACA3, who argues that in that way they prevent other members of the community to make themselves patrons or accumulating power:

"Whoever accumulates power and prestige can establish himself as a patron, then it must be reduced, and how is it reduced? Through gossip, discrediting him "that is a thief, or that one steals so much, that man keeps drunk, hits the woman ..." that creates a whole discredit that fragments the communities, but by fragmenting them it allows networks and lineages to be maintained independently". [ACA3]

A common phenomenon in indigenous leadership, mentioned by some of the participants, is what they call co-opted leadership. It was described as the leaders of the communities being absorbed by the world of the white or the bureaucracy, spending part of their time away from the communities, creating disconnection from the territory:

“There is a total disconnection. You go to the territories and the houses of the leaders are surrounded by bush, their chagra as well... and they say “they are in the city, growing their bellies, they don't work when they come here”. [ACA3]

“There are some leaders who are very disconnected from their territories and there are some who are more deeply rooted and for whom traditional knowledge is very important. For others, the importance of traditional knowledge is a speech, but they already say it as repeated. But some people still have ties to their communities and their ancestors”. [NGO5]

“While there is money and political interest the system of small, co-opted elites is repeated and the people there (in the territory) in a maloka are like “abuelo a man came on a boat and said that they will be visiting us”. [NGO6]

During fieldwork, the captain spent a few months away in Bogota, engaged in work with members of the SIL translating the Bible, as he retains a strong link with the religious mission now located in the capital city. When the community was asked if this was an issue in decision-making processes, they responded it was not as long as other community member could fill the translation gap in meetings with external visitors (e.g. government or other agencies). Nevertheless, the captain's absence can often delay legal issues as his presence is required in legal matters with the local regional government.

Captaincy is not limited to communication with the Western world. Although most decisions at the household level are made by the family members, the captain also

communicates and mediates rules and norms within the community, as is the case for field cropland establishment, marriages, and community conflicts.

5.3.3.4 *Norms and rules*

In Wacar, there are no explicit norms and rules (A6) about the use of natural resources, and source allocation appears to be determined by the family needs and the natural distribution and abundance of game and plants. At present, there is no limit on what a hunter can take, or a family can harvest from the forest; however, there has been discussion on the methods, as they started facing a shortage of certain plant species due to logging. An example is provided by participant COM2:

“My wife scolded me because I wanted to knock down the ibapichuna tree [laughs]. It was raining and I said, ‘I don’t want to go up, maybe I fall’ and she said ‘you don’t want to go up?, you are going to kill [the tree], now you became an enemy of the forest’. She then said ‘I am going to do it’ and she went up and then I went up too and we took the fruits”. [COM2]

Another reported change in the use of natural resources is the use of offspring of game species, affecting their availability. As put by one participant:

“In the time of ancestors, I think they didn’t use the offspring because there were many animals, but I’m not sure if they took the offspring and kept it as a pet. Here the hunters have had offspring of danta, guara, lapas, and birds, but they always sell them...so I think we started losing more animals”. [COM1]

Such a quote can indicate a modification of TEK, as some ethnographic records explain a common practice of raising wildlife offspring as pets, which was a means to knowing and becoming familiar with the ethology of hunting prey (knowing their noises, diet, footprints, etc.) (De la Montana, 2013).

Norms for the establishment of a land crop area seem to be simple, and only require communication to the captain and to the rest of the community on the intentions to start a *chagra*. As a norm, the owner of the *chagra* shows appreciation by providing food to the participants who help in the land preparation. According to the Captain

“the person knows where they are going to have it (the chagra) and we talk to all the people (in the community) and then decide. We always talk”.

While norms regarding aspects such as work division, land crop preparation, and cultivation remain, aspects such as cosmology have been impacted by the religious influence.

In the opinion of participant NGO1, the symbolism that has traditionally supported their ecological knowledge has changed over time due to the influence of the missionaries, who implanted a belief system that partially took over some of the belief systems of traditional knowledge. As he explains it:

“Knowledge about the jungle, important ecological knowledge that let’s say has been cleaned of the symbology of other groups in the downside (of the region). For example, there is a great acknowledgment of plants, their use, and characteristics, but they don’t have the myth, the story, the symbol, for example in the Pira-Parana (region) have, where they tell you the history of why the plant has a certain shape. This symbolic part has been occupied by religion”.

[NGO1]

Although it could seem unrelated to resource use, rules and norms about marriage are important, and unlike land for cropping norms, they seemed to have changed creating conflict.

While in the past, marriage would occur from a common agreement between families, nowadays not only the young couple decides, but also it can occur without the approval of the families. This has caused single mothers to be more common among young women. According to the Captain:

“Nowadays the young decide. If the parents don’t want to give the girl but the girl wants the young man, she goes where he is. That is what’s happening in the community. Is not good but is what they want. And when the girl wants to get married, she gets pregnant”.

This situation impacts the social dynamic of the family, with consequences on resource use as the population increases and more children are required to be fed in a system that already presents a shortage.

For participant COM2 the development of the community and the survival of Cacua culture lay in learning and keeping the best of “*both worlds*”. This conception, the arrival of the missionaries, and the changes that have taken place concerning the community organization and challenges are further addressed later.

5.3.3.5 Knowledge of the SES - Living in the forest

In indigenous groups such as the Cacua, or communities with high dependency (U8) on the environment they inhabit, knowledge of the natural cycles and relations is crucial. As Escobar (2021) puts it in the case of communities on the Colombian Pacific coast, where their lives are intertwined with the mangrove world; for the Cacua their lives are intertwined with the world of their Amazonian forest.

What stood out from the workshops and observations was the vast knowledge the Cacua hold about their territory, game, plants’ locations, uses, seasonality, harvesting techniques, and ecological relations with other species, and how this knowledge is expressed in their daily practices and livelihoods, such as hunting, fishing, and medicine. It is also essential in historical records of SES changes, such as altered rain and summer seasons.

Climate variability has become a concern for small-scale food production in Wacará. Preparation and cultivation of the *chagra* are associated with what the community calls summer and winter, referring to the dry and rainy seasons respectively. During summer the land is prepared; however, participants mentioned that summer, which used to occur between January and March, is now wetter than in the past, presenting heavy rains. They also mentioned the summer season is now more intense, meaning it is hotter and drier, compared to past years. In the words of one participant:

“Before the climate was regulated, now is different. This year instead of summer, we had rains in January. In June and July there was no summer as it used to be”.

[Workshop participant]

This extensive knowledge can be illustrated with ecological calendars, which are graphic tools representing the complexity of the knowledge of environmental and cultural relationships that indigenous Amazonian societies hold, and are used as territorial planning instruments in their “planes de vida” (Cochran et al., 2015; Hildebrand von & Brackelaire, 2012; van der Hammen, 1992). In ecological calendars, not only seasonality of plant species is represented, but also the rain and summer seasons, and their associated activities such as crop garden preparation. is the first available draft representation of the knowledge about species and the natural cycles of the forest held by the Cacua.

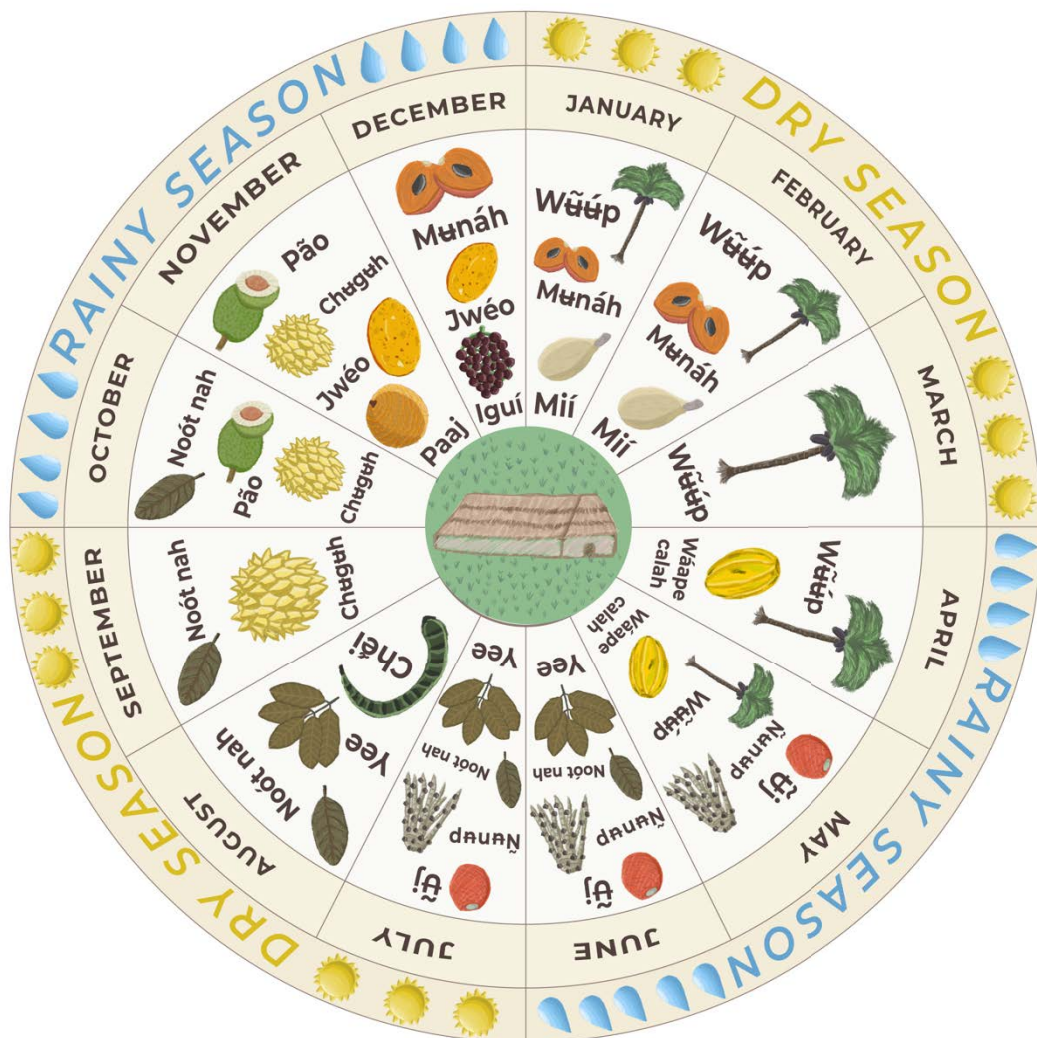


Figure 5-10. Cacua ecological calendar (Source: this research)

In common with the vast knowledge about their environment, knowledge about the long-term effects of certain practices such as overhunting or logging, and the potential shock on biodiversity, remain a cause of concern among the community. In response to the food shortage, community leaders have sought options in raising farm animals such as chickens or cultivating other vegetable crops with few results. Activities such as raising chickens are part of the sedentary life of the community, and therefore of their contemporary SES as an option, and TEK adapts to it. Projects of this type will continue to be promoted by the State and/or NGOs.

However, the knowledge about the management of their SES may not apply to components outside Wacar itself and their territory, where governmental institutions speak a different language, not only in linguistic terms but also in technical and administrative terms, where the Cacua have certain limitations.

Other actors who are present or have influence directly or indirectly in Wacar are the Secretary of Education, through the schoolteachers and the boarding school; to a lesser extent, the Secretary of Health with the hospital in Mit and the services for the community, the environmental authority (CDA); occasional NGOs; and the regional government. Relations will be deepened in the discussion section (5.4) giving relevance to the influence of the boarding school and the education system, and the regional government.

5.3.4 Governance System – “We always talk”

This subsystem refers to the specific rules regarding the use of the territory, how those rules are made, and who are involved in creating those rules (Ostrom 2009). To characterise it, seven variables have been proposed by the framework’s authors. The second-level variables addressed here are GS7: Constitutional-choice rules, GS6: Collective-choice rules, and G5: Operational-choice rules; in that order, since the collective and operational rules are restricted by the constitutional framework.

5.3.4.1 Institutional language

The rules that govern and determine the use of the territory vary along with spatial scales but are oriented by the Political Constitution of 1991 (GS7), which is considered

the *norm of norms* and determines the actions of the inhabitants of the Colombian territory.

The importance of the Political Constitution of 1991 for Indigenous Peoples is that it meant, at least in the legislation, the recognition of the ethnic and cultural diversity present in the country. Moreover, it was a major advance in the recognition of their collective property rights through the ratification of the *resguardos*. As presented in the introduction section, the Cacia territory is part of the Great Indigenous Reserve of Vaupes, and like any other *resguardo*, according to the Constitution, there is a series of functions that are to be met, among them to design policies and plans and programs for economic and social development within its territory, in harmony with the National Development Plan (NDP). This is important to address certain issues observed.

The NDP is the roadmap that establishes the government's objectives, programs, investments, and goals for the four-year period, which are to be followed by regional and local agencies. To meet the objectives of the NDP from the perspective of indigenous communities, the planning mechanism that has been proposed is the “*Plan de Vida*” (or life plan). There, in a collective and participatory manner, communities make a diagnosis of their communities' needs and formulate development projects that adjust to their needs, based on the oral nature of their culture and the revitalisation of traditions (Von Hildebrand & Brackelaire, 2012; Monje-Carvajal 2014). Life plans are entry points in the negotiation for resources with the State.

Despite the importance of life plans in the development of the communities, the process faces diverse challenges. In Wacar, language being the first one, not only in terms of Spanish but also in institutional terms, meaning the way a life plan needs to be carried out and presented. Another barrier is the availability of resources to design a life plan, as it involves certain knowledge and a series of steps to cover all the issues in a community. That is a typical constraint in many isolated communities with scarce resources and the reason why some of them adhere to regional plans that from their perspective do not fully address their issues.

In the case of Wacar, the community does not have its own Life Plan, and instead, they have been included in one developed for the communities associated with

AATICAM⁴¹, a regional association that groups the authorities of eight communities. This represents certain limitations in terms of their local organisation, especially regarding the access and management of resources they are entitled to for the development of their community. A first draft of their life plan was proposed as consideration for their participation in the research. In it, the main issues and possible solutions were addressed with the community in workshops and interviews.

At the community level (GS6), most decisions about the investment of state or private resources are made jointly. As expressed by the Captain, regarding how they made decisions he said, “*We always talk*”. Orality is crucial not only in this aspect but as in other indigenous and aboriginal groups. It is also crucial in the generation and preservation of knowledge through generations.

To receive approval or validity the community has responded to state guidelines by registering with the following positions democratically elected by vote: Captain, vice-captain, secretary, treasurer, and fiscal. There are also formal committees in charge of work, education, health, sports and recreation, and childhood and adolescence. In practice, there appears to be limited commitment of the committees to attend to their duties, which could be due to the artificial governance construction it represents for the community, and the language limitations those duties entail such as writing documents and/or projects in Spanish. Ratification or change of Captaincy members is voted annually.

Even in the absence of a community Life Plan, State and diverse institutions have been present in the community through different projects over time, before and after the PA. The projects include improvements to the school, some of the houses, installation of bathrooms and kitchens, construction of the multisport field court, and more recently BanCO₂ (2017), a payment for environmental services (PES) project led by different private and public institutions, and eight indigenous communities including Wacará. Most of these projects implemented are from the government, with public funds and from international agencies with national NGO’s as intermediaries.

⁴¹ AATICAM: Asociación de autoridades tradicionales indígenas del área de influencia de la microcentral hidroeléctrica de Mitu (Association of indigenous traditional authorities in the area of influence of the Mitu micro hydroelectric plant).

In this program of climate change adaptation and carbon footprint offsets the community is committed to conserving an area with natural forest cover in exchange for economic incentives every three months. Nevertheless, when asking members of the community involved in the project, about their understanding of climate change, it was apparent they held only a limited notion about it as a global environmental issue, and their response associated the project with conservation in exchange of money.

From the data, it could be observed that in most cases no project is rejected by the community. The reason could be that in general, projects mean resources (goods, services, or economic compensation) entering the community. As further discussed in Chapter 6, the adoption of concepts and discourses is not uncommon as an adaptive strategy in the power relations established with different actors. As explained by participant NGO2:

“You also see that when they speak in Cacua there are many words they use in Spanish such as meeting, project... because those words do not exist in their language. The word project for example is translated into money because projects are sources of money”
[NGO2]

5.3.4.2 Traditional ecological knowledge – orality and practice

Regarding the operational rules (GS5), meaning the local rules that determine who, how, and when access to natural resources occurs, they are profoundly associated with TEK and result from the interaction between the environment (seasonality, phenology, and dispersal patterns of animal and plant species), knowledge, and requirements of the families.

One operational rule, as in many hunter-gatherer groups (Brightman, 1996) is the gender division of labour where men are involved in hunting and fishing, and women oversee food cultivation and preparation. Operational rules regarding hunting, fishing, garden crops, and fruit foraging, as the main livelihoods of the community are summarised next.

- *Hunting - Nññirtawat*

Knowledge about traditional hunting techniques such as the use of the blowgun and the bow/arrow are well-preserved among men of the community, especially the use of the renowned poison called *curare*. Curare is the combination of several species of vines of the Loganiaceae and Menispermaceae families. Making it requires specific knowledge, not only of the plants but also of the preparation process itself (Hildebrand von & Brackelaire, 2012; Mejía & Turbay, 2009; Torres, 1988).

Hunting activities have changed over time and have been influenced by modernity. Before shotguns became available, hunting was mostly done with blowpipes, and bows and arrows. Nowadays, both shotguns and blowpipes are used, yet not all families own a shotgun as it requires ammunition that is expensive, making it less accessible.

The practice in the use of blowguns starts approximately by the age of 12 when kids join their parents on hunting expeditions. Nevertheless, from the age of five they can be seen practicing their hunting skills with blowguns and arrows, chasing, and hunting birds, and playing with friends nearby the settlement (Figure 5-II).



Figure 5-II. Blowgun bird hunting by kids in Wacará (Photos: P.Vejarano Alvarez 2019)

According to participant GOV5, the surviving skills of indigenous groups are remarkable in this area of Vaupes, considered very biodiverse but not very abundant, associated with the biogeography of the Guyanese shield and the low richness and higher acidity of the aquatic ‘blackwater’ environments in the Amazon biome (Hammond, 2005; Sioli, 1968; Torres, 1988).

“One is surprised by this territory all the time. Being in the Guyanese shield, having so much diversity but being so fragile and low in abundance”. [GOV5]

Hunting continues to be one of the main sources of protein and food despite the biophysical characteristics of the area. Communities’ adaptation to the natural conditions is linked to the wide accumulated knowledge hunters have about their territory, interactions between species, and knowledge that extends beyond their localities (Ingold, 1999).

- ***Fishing - Queéjmawat***

As in 1972 records (Silverwood-Cope, 1972), fishing is usually practiced with nylon lures and baits. The most common are earthworms, freshwater shrimps, wasp larvae, and a species of small sardines. Spearfishing is a new practice also used but less frequently. As well as for hunting, knowledge is key in the practice of fishing, from the selection of bait to the site and fishing technique:

“So that’s why you have your experience when you’re ready for fishing when you’re not. When the creek or the river goes down the fish gather in the puddles where is deep. Then you take the opportunity to fish there. When the river rises, they leave, and you don’t get fish. But the expert knows, he knows where good fish go, and one goes with good bait and gets it”. [COM2]

Due to the lack of refrigeration systems, game and fish are preserved through smoking. When plentiful, it is usually stored, shared with members of the family, exchanged with members of the community, or traded with the schoolteachers for money – they receive a cash salary -, or other goods such as salt, canned beans soap, or batteries.

In general, hunting and fishing are becoming arduous activities due to the increasing population of the community and the demand for food. As expressed by one of the community leaders, the community growth is impacting the available game and fish:

“Look at the community, the population is growing, increasing every year, and there is less fishing and hunting”. [COM2]

Scarcity of game was also reported by Silverwood-Cope (1972), who found it to be largely associated with the establishment of Catholic missions and population concentration (p.16).

- *The garden crops – “Wáapchi”*

“I’m convinced that in all Amazonian territories the work of women is the fundamental basis for life. They are the ones keeping those territories alive. Without women’s work, there would be no cultural practices, no dances, nothing. Why? Because women’s work guarantees food, upbringing, and education. 80% of the base of the Amazonian diet is cassava, and they have botanical and practical knowledge about that food”. [ACA3]

Chagras, garden crops or *Wáapchi* in Cacua, are itinerant food production systems of the Amazonian Indigenous Peoples (Hildebrand von & Brackelaire, 2012; van der Hammen, 1992; Viatela & Romero, 2000). As remarked by the participating expert in Amazonian cultures (ACA3), knowledge about the *chagras* is vital. In Wacará, *chagras* last approximately between two to three years; where, as in most of the Amazonian indigenous groups (Dufour et al. 2016), the Cacua sow and harvest the basic food of their diet, the bitter manioc. The *chagra* has become the basic productive system of the Cacua and reflects a vast associated knowledge about the preparation of the land, cultivation of plant species, and preparation of food.

Unlike other indigenous groups in the region such as the Yukuna (van der Hammen 1992), or Andoque (Andoque & Castro, 2013), the Cacua people in Wacará do not seem to have any ritual or cosmology associated with the garden crops. However, knowledge about seeds, cultivation, and food preparation is well preserved and passed from mothers to daughters through practice. Girls actively accompany their mothers to the *chagra* from the early age of four or five years. In the *chagra*, the manioc is collected, and taken back to the house, where the *cassava* is prepared. Knowledge about *casaba* preparation is a prerequisite for women to get married.



Figure 5-12. Left: *Cacua* mother and daughter at their *chagra*. Right: cassava bread preparation (Photos: P. Vejarano-Alvarez 2019)

Current management of the garden crops in Wacar does not differ much from other indigenous communities in the region in certain aspects such as location and species cultivated (Acosta Muoz et al., 2011). Garden crops are usually dispersed in the territory based on land availability, and while men are in charge of the clearing, burning, and site preparation women are responsible for the weeding, harvesting, and processing of the bitter manioc. Though this chore seems to be solely within the remit of the females, the initial planting of the *chagra* is made cooperatively by men and women of the community.

Garden crops are not only productive systems but also knowledge storage systems. Women in Wacar grow at least 21 species of plants in the *chagra* (Figure 5-13), bitter manioc (*Manihot esculenta*) known as *Tolit#* in *Cacua* language, being the most important, from which *casaba* (bread) and *faria* (meal) are prepared.



Figure 5-13. Drawing of crop gardens. Authors: Cacia women of Wacar (Photo: P. Vejarano Alvarez 2019)

When asked about the needs concerning the *chagra*, food, and nutrition, women mentioned that one recurring issue is the shortage of protein, which is insufficient to supply the increasing population:

“The problem has always been food because the Community is growing, and one sees and feels that it is not enough. There is always casabe and faria available, but something is needed to complement the protein. It is good to eat casabe but it is also good to eat something else”
[Workshop participant].

5.3.4.2.1 Fruit foraging – Pacahi ubwácat

“Indigenous groups understand very well that there are production cycles. Their life is linked to the flowering and fruiting sites of the plants, in chontaduro season they get satisfied with chontaduro until they can no longer do, so with guama, grape ... and when there is no more, they have a phrase: when there is we eat, when there is not, we squeeze”. [ACA3]

Amazonian forests are highly diverse (Hoorn et al., 2010), providing numerous species of fruit plants, making fruit foraging a central activity for the Cacua. According to the time of the year, children and adults collect fruits from plants such as *Noót nah* (Ibapichuna: *Dacryodes belemensis*) or *Ĥj* (Miriti: *Mauritia flexuosa*). Traditional knowledge about edible fruits seasonality and times of production, location of fruit trees, and techniques for collection and preparation are passed from one generation to another through practice. Most of the fruits collected are consumed directly, whereas juice is prepared from others.

As identified in the workshops, the negative impacts of felling trees and palm trees were acknowledged, with the main reason being *“laziness to climb them up”*. Yet, little seems to be done in practice to avoid it, and the environmental authority has had to intervene to raise awareness of the implications of this.

Silverwood-Cope’s records (1972) indicate that the practice of cutting down trees for harvesting the fruits was common under the argument that *“there are (available) juvenile plants”*. However, this is no longer the case, and the community identified this practice as one of the greatest current threats to fruit availability. Palm trees are an important source of food not only for them, but for other forest species, such as some rodents, monkeys, and parrots. These in turn are hunted by the Cacua, and whose local decline has been associated with the palm harvesting practice.

The importance of palm trees as key species in the diet of the Cacua is not surprising. Their diversity and abundance struck early explorers such as Wallace (1853) who wrote *“everywhere to rise the graceful palms, true denizens of the tropics, of which they are the most striking and characteristic feature”*. According to a global study on the abundance of palm trees in tropical forests (Muscarella et al. 2019), their abundance is significantly

higher in the Neotropics than in other locations; and they are of special significance due to the multiple ecosystem services they provide such as food, medicine, and fibres (Posey & Kristina 2002, Balée 2000; Sirens 2017), especially in locations with low soil fertility (Muscarella et al. 2019), such as the Amazon.

Despite the natural scarcity of resources and the increasing pressure over them, the Cacua have been able to adapt to the challenges sedentism has entailed, TEK being a key element in doing so. Nevertheless, other elements play an important role in community development that are profoundly embedded in the cultural context and still need to be overcome. Such is the case of their recognition by non-Makú groups, who still consider them as “*little brothers*”, or by governmental institutions that undervalue this knowledge. This aspect will be addressed in detail in Chapter 6.

5.3.5 Action Situations: Clashing systems and worldviews

Thus far, variables for four of the subsystems proposed in the McGinnis and Ostrom framework have been described separately, with some mention of interactions between them (e.g., population growth and food game availability). In this section, the interactions between the subsystems, and the outcomes of these interactions are addressed in the subsystem Action Situations.

Unlike the previous subsystems, the McGinnis & Ostrom framework's second-tier variables do not translate well to the Cacua SES case. Therefore, the subsystem will be analysed at the first-tier level, meaning a selection of the relevant interactions and outcomes affecting TEK and influencing the self-organisation of the SES.

Table 5-2 summarises some of the main changes the Cacua SES has undergone in the last 50 years.

Table 5-2. Summarized outcomes in the Cacua SES

	Past	Present
Mobility	Nomadic – sporadic settlements	Sedentary – permanent settlement
Knowledge	Traditional	Combined: Indigenous and Western

Game availability	Abundant	Scarce
Crop gardens	Common-close to settlement	Common-far from settlement
Forest weather cycles	Regular summer/rainy seasons	Variable
Organization	Egalitarian	Hierarchical
Cosmology	Indigenous	Mixed: Indigenous and evangelical Christian

5.3.5.1 Arrival of missionaries

Contact with the missionaries and becoming sedentary have had several cultural and environmental effects. On one side the cosmology associated with the forest seems to have changed among those who practice religion. As explained by participant NGOI in a previous quote, the symbolism associated with the forest has been partially replaced by the new (Christian) religious system, losing its spirituality and symbology.

The direct effect of the loss of symbolism on TEK is not yet visible, as their management practices continue and provide for their livelihoods. However, it is worth asking whether in the long term this will influence their relationship with the environment and therefore biodiversity and the provision of livelihoods. The effects of sedentism of nomad groups on local biodiversity showed deterioration and gradual abandonment of their traditional forest management strategies, expressed in the reduction of the number of species cultivated in the garden crops and replacement of the traditional game diet (Cabrera Becerra, 2005).

On the other side, despite their relative geographical isolation, exchange with the “outside” world increased and integration with the state institutional system occurred. This integration is especially revealed in education and the knowledge of young generations about their own culture.

In the past, Cacua children would take an active part in the movement of their families and would be in closer contact with the hunting and gathering activities, being taught and learning through practice. Presently they need to comply with the government

education system that disconnects them from their traditions. This situation also has been observed among Mexican (Saynes-Vásquez et al., 2013) and Balinese communities (Sujarwo et al., 2014).

The generational weakening and loss of traditional knowledge is not an exclusive phenomenon of the Cacua. As documented by (Reyes-García et al., 2013) (Benz et al., 2000), knowledge loss in communities in Bolivia and Mexico is partially the result of the establishment of schools. In Colombia, another key factor identified in this research is the cultural disdain towards what is indigenous, as addressed in detail in Chapter 4.

In addition to the cultural impacts Von Hildebrand & Brackelaire (2012), (Cabrera-Becerra, 1999) and Lu et al. (2009) associate habitat and ecosystem perturbation and depletion with the presence of missionaries and the establishment of permanent camps. Before their arrival, the Cacua were mobile family bands with small populations, but with the establishment of the settlement, and later the boarding school, the population steadily increased and concentrated, causing not only game scarcity but also pressure on the cultivable soils in the near vicinity of the settlement requiring families to travel further from their village to establish new *chagras*.

The establishment of the boarding school, managed first by the missionaries and currently by the Secretary of Education, also brought new challenges for the community as will be explored next.

5.3.5.2 *Cacua knowledge and Western education*

The disastrous effects of boarding schools on indigenous communities have been widely documented, especially in countries like Canada, United States and Australia, In these countries, as well as in Colombia the formal education system, usually administrated by the church, was designed to supress indigenous culture – native language, belief system, traditional diet- and assimilate them into Catholicism and Christianity (Hanson et al., 2020; Wilk et al., 2017) or Protestantism (Cabrera Becerra, 2013).

The situation in Wacar has changed since the arrival of the missionaries, and education for the young generations in Wacar comprises two systems, the traditional Cagua knowledge passed from parents to children by oral and practice means, and the formal knowledge received in the boarding school. As argued by Breidlid (2016) and Maurial (1999) the interaction of these two knowledge systems brings changes in the storage, transmission, and use of indigenous knowledge; and when these conditions change or disappear, one can expect TEK to undergo a decline.

Formal education in most boarding schools in remote areas in the Amazon is coordinated by the Regional Secretary of Education, under the regulations of the Ministry of Education and (supposedly) the National Policy on Native Languages (2008)⁴².

Despite the national policy, education in Wacar is delivered in Spanish by teachers from other ethnic groups. This is partially due to the Cagua language being spoken only by a small population, and the absence of members of the community formally trained as educators.

For schoolteachers, the main difficulties identified in the education process were the “*lack of interest of students and parents to assist at school*”, lack of teaching resources, the language barrier, and that “*Spanish is weak among most members of the community*”.

When asked about the reasons for the lack of motivation they referred to the language barrier as the greatest challenge:

“Here in Wacar, the challenge has been to be able to communicate with the students. That has been quite complex. I only speak Spanish. I think that if I could speak another language that they speak, such as Cubeo or Cagua, it would be very different. Maybe that’s why I can’t engage with them. They don’t understand me,

⁴² National Policy on Native Languages guidelines: 1. The conservation and use of native languages in the traditional settings, 2. Extending their use into modern settings, 3. Providing balanced bilingualism between Spanish and native languages, 4. Guaranteeing the protection of the linguistic rights of the native language speakers.

or I don't make myself understood, so it's little I can share with them. That has been a big challenge". [GOV3]

Schoolteachers expressed that even though they understand the cultural context of the community (hunters/gatherers) and try to adapt to it by not forcing students to attend school at certain times of the year, such as fruit season, or when children are taken for hunting with their parents, they haven't "*found the appropriate strategies to engage and motivate students and parents*".

As observed by the researcher during classes, students showed evident difficulties in understanding the content presented by the schoolteachers, partly because of a language barrier – difficulties in understanding Spanish -, and partly because of the content itself. According to Breidlid (2016) and Soussa Santos et al. (2007), this is not uncommon in indigenous communities, where Western epistemologies remain dominant in the education system.

Contrary to schoolteachers' perceptions, for community member [COM4], schooling in Spanish poses a threat to their language:

"We don't want to lose our language. If they (teachers) come to teach everything in Spanish, they (children) will speak everything in Spanish". [COM4]

In the opinion of participants [NGO1] and [IOR3] the education system in communities such as Wacará needs to be redesigned. According to NGO1, Western knowledge is considered as the ultimate goal in education, yet the current system does not prepare students to deal with the Western world:

"Western education is in the imaginary of everyone. To "be someone" you need to study. Boarding schools are not functional, and it is needed to re-think this education system. Around the world education has been identified as a protection element against suicide but here is a risk factor, because is not providing skills to survive in the environment they are going to live in".
[NGO1]

“At this moment, Western education is stronger. That's why the young when they finish their elementary school, their high school, continue to devalue their own culture. Because in the education they receive they are told that, that it is best to be white, that it is best to speak Spanish, that it is best to set up a business”.

[IOR3]

In Wacar, suicide is not as much a concern as it is in indigenous communities in countries such as Australia (AIHW, 2021) and Canada (Kumar & Tjepkema, 2019) , or even areas in Vaupes, where youth suicide rates are among the highest in the country (Martinez Silva et al., 2021). Nevertheless, preparation to face changes needs to be planned to avoid situations like this.

Some leaders, schoolteachers, and experts agree that despite TEK being well preserved among some families; elders are dying and TEK is becoming “diffuse” among teenagers, being “permeated” by the Western world.

As expressed by one of the participants, knowledge dies with its holders:

“My father used to know a lot about traditional medicine, but it was my fault because when he was alive I didn't ask him about it. And after he died, I thought: if I had asked... If I had talked about it... but when he was still alive, I used to think “it doesn't matter, I don't care, I can ask another day about traditional medicine”.

But then he died...” [COM1].

Erosion of TEK is of concern for the survival of their culture and related aspects for its preservation are discussed in the next section.

5.4 DISCUSSION – MOVING INTO THE FUTURE

“I want the future of this community to be different. To recover what we have lost about history and to visualize our knowledge in the future. It would be valuable to recover that knowledge and history about the Cacua”. [COM1]

In synthesis we have a SES of a nomad group, part of a regional hierarchical system, in a position of relative subordination, which in the last 50 years has undergone a process of sedentarisation influenced by conflict, missionaries and neighboring communities. In this process TEK has modified by appropriating practices such as agriculture. Later, services started to arrive in the community, first funded by the missionaries and later by the State, which motivated nearby groups to settle in Wacará. This, in conjunction with the families that moved due to the armed conflict in nearby areas caused and increase in the local population from 34 people in 1970 to 200 in 2018. This just confirms the constant change this complex system undergoes, in which TEK remains as the base of the territorial governance through norms and informal institutions that drive the use of resources and relations in the community. Nevertheless, the Cacua SES is not isolated and drivers of change outside the local system have impacts on it.

Rapid global environmental change has multiple impacts across scales and actors (Benyei et al., 2017; Biggs et al., 2022; Steffen et al., 2011), and at a national scale Indigenous Peoples in the Amazon have been historically affected by armed conflict, illegal activities, and state interventions such as education, health, and religion (Cabrera Becerra, 2013; CNMH, 2019; Franky Calvo et al., 2010; Guio, 2018).

Research on the impacts of change on indigenous SES of hunter-gatherers such as the Cacua has shown their TEK, languages, and livelihoods are increasingly at risk (Gómez-Baggethun et al., 2013; Kodirekkala, 2015; Reyes-García & Pyhälä, 2017). In the sections above the complexity and dynamism of the Cacua SES have been portrayed, showing the multiple relationships and feedbacks between elements of the system, some of which are mediated by and, at the same time, affected by TEK. From the changes in the natural distribution and abundance of species, sedentism, to schooling, all elements play a part in the erosion of TEK and the functioning of the SES, pushing it into new unknown configurations. As established in the literature review (Chapter 2), understanding the different types of knowledge in an SES, and how they are stored, passed, and compete with or complement each other is key for SES to deal with uncertainty and perturbations (Adger, 2000; Berkes et al., 1994; Olsson et al., 2006).

Interestingly, despite the increased recognition of the cultural diversity in international arenas such as the Indigenous and Tribal Peoples Convention (1989); Convention of Biological Diversity (1992); and Intergovernmental Panel on

Biodiversity and Ecosystem Services (2013), for scholars such as Escobar (2016), de Sousa Santos (2007), and Ellis et al. (2021) the struggle of non-Western knowledge systems persists. While Western knowledge is globally accepted, recognition of TEK has come a long journey and is still looked at with suspicion. Although contested, one of the fields where there has been much debate about TEK and its integration with Western science is environmental science (e.g., conservation, management, and governance). Within the scientific community, the controversy initially centered on providing evidence for the “validity” of TEK in different areas of natural resources management (Agrawal, 1995; Berkes, 2008; Gadgil et al., 1993). This debate extends to its recognition, recovery, documentation, protection and, incorporation by state authorities at different levels. In Colombia, despite certain progress and attempts from academia and state institutions to position TEK, it is often referred to as ‘esoteric knowledge’ as it was established in Chapter 4.

The analysis of the role of TEK in an indigenous SES has shown that despite the changes and pressures the Cacua have faced over the years the interdependence with the environment they live in persists, and TEK continues to play a key role in their survival and development. This is not the case for many other indigenous groups in Colombia, such as the Nukak (Franky Calvo et al., 2000, 2010), and around the world, where globalisation, social changes, armed conflict, and environmental crises have led them to severe modifications of themselves and their environments (Cristancho & Vining, 2009; Loh & Harmon, 2014; Reyes-García & Pyhälä, 2017; Ulloa & Coronado, 2016; UN-DESA, 2009).

SES such as the Cacua SES are a distinct case of the strong link between humans and nature, something that according to Biggs et al. (2021) might not be considered by those who live in big cities where such connections and interdependences are not evident or are no longer acknowledged. In Chapter 2 it was explored how challenges posed by the interactions between social systems and the natural environment led to the development of the theory and concept of social-ecological systems (SES). The theory emphasizes the need to approach conflict situations and crises in an integrated fashion, and the understanding of SES are more than the “sum” of their parts (Berkes & Folke, 1998; Biggs et al., 2022; Folke et al., 2000; Holling, 2001). In the Cacua SES, more than the characterisation of the variables for each subsystem is needed to understand and address its complexity. It needs to be understood as a nested complex system where

multiple environmental and social components interplay, creating or not conditions for their functioning, maintenance, development, and adaptation (Folke et al., 2010; Walker et al., 2004). In the sections below we will examine features that were found to be key in the Cacia SES dynamics: the local barriers, TEK erosion, and the SES interconnectedness.

5.4.1 Local barriers – beyond geographic isolation

Understanding the context of the SES in which TEK plays an integral role is essential for models of governance that consider transition scenarios. In this case, the context is not restricted to local biophysical aspects or variables but includes academic, community, social, historic, and institutional settings.

The status of TEK in the Colombian Amazon region is as complex as the region itself, and it depends on the conditions and context in which indigenous communities have been able to develop. While some indigenous groups maintain and protect their TEK, for other groups it has suffered severe modifications and losses. Preservation and loss depend on various factors such as access and bonding to their ancestral territory, capacity to exercise their rights, community ties, practices, traditions, external influences, and political organisation.

Unlike indigenous groups in countries like Australia, where the Aboriginal population has largely lost their self-sufficient life and those in remote areas depend largely on state transfer payments (R. B. Lee & Daly, 1999), or the Nukak, who have been displaced and confined from their territories (Franky Calvo et al., 2010) the Cacia still carry a hunter-gatherer lifestyle highly dependent on the forest and the goods and services it provides. The remoteness and geographic isolation of Wacar appear to act as a barrier, limiting access and being crucial in the preservation of their territory and TEK. Yet, such isolation and remoteness is threatened by road infrastructure, both planned and illegal, as addressed in the previous chapter (Armenteras et al., 2006; Botero, 2018; Krause, 2019) and studied in other Amazon cases (Southworth et al., 2011).

Access to land is central to Indigenous Peoples' identity and to maintaining long-term healthy sustainable systems (Berkes, 2008; Hall & Patrinos, 2012; Reyes-Garca & Pyhala, 2017; UN-DESA, 2009). The link between TEK and territory has long been

established in the literature (Balee, 2013; Berkes, 2008; Wright, 2020) and for the Cacia, access to land does not yet seem to be an issue. Colombia, in common with other countries in Latin America (Alwyn, 2006; UN-DESA, 2009), has reformed its constitution to respond to Indigenous Peoples' claims for the legal recognition, ownership, and control of the land (Constitution 1991, AATI); and in past years over 600,000 hectares of land have been titled to indigenous communities. Nevertheless, the historic occupation of the Amazon, the national policies, and the armed conflict occurring for about 60 years has created a context where not all indigenous communities have been able to exercise their rights and live per their worldviews and visions. Displacement from traditional lands and fear for those who decide to stay despite the conditions have become a common situation (CNMH, 2019). One of the most notorious cases in Colombia is the Nukak, also a hunter-gatherer group that has been displaced from their territory, and with that displacement, severe TEK erosion and associated social disruption have occurred (Franky Calvo et al., 2000, 2010). TEK is passed by practice and oral means, and the loss of land or lack of access to it means the loss of practices that without protection can disappear, and with them associated TEK.

The local biophysical context, as explained in section (5.3.1), is not biologically abundant, the distribution of species is not uniform or static, and soils are not very productive, limiting the availability of certain game and livelihoods. Adding to this, population growth – usually linked to decreased infant mortality and health care - (Kent, 1989; Dallos, 2011) appears to be acting as a limiting variable, causing overexploitation and food shortage. In this context, sedentism has played a major role. Tchernov (1991;1993) argues that regardless of the initial richness state of an area, the transition from scattered small bands of hunter-gatherers to larger, sedentary communities usually results in habitat degradation due to exploitation to supply new community requirements. This situation where large areas of forest seem intact but animal species are locally extinct is what Redford (1992) has called the “empty forest syndrome”. The defaunation of an area is important as the decline and loss of animal diversity creates feedbacks and cascades effects on the social-ecological system they are part of (Bogoni et al., 2023; Dirzo et al., 2014). For indigenous peoples, “empty forests” are of concern, as they have limited access to external resources and highly dependent on the ecosystems for their subsistence.

As mentioned earlier, the defaunation of the Cacua territory is closely linked to the population growth and the impacts their activities have on their surroundings due to the demand for resources to sustain them. This relationship is complex and depends on aspects such as the capacity of the community to replace determined energy and material sources (Gottesfeld, 1994; Rees, 1992). Nevertheless, species loss and environmental changes can affect TEK in diverse ways.

Balee (2013) argues that when plant or animal species are lost, associated knowledge is lost too, especially when no written record is kept. Records of this cascade of effects have been documented for the local extinction of the Hainan gibbon (*Nomascus hainanus*), which according to Turvey et al. (2018) led to the decline of associated folktales, a fundamental means of TEK transmission.

This is relevant in Wacar as certain species of palms seem locally depleted due to increasing demand and changing management practices, such as palm logging. In certain tropical forests like the Amazon, palms and Ficus trees are considered keystone⁴³ species due to the high dependency on them by species of birds and mammals, and communities (Mills et al., 1993; Terborgh, 1986). Due to the importance and reliance on palms for numerous goods and services in Wacar, local extinction could translate into a knowledge-management feedback mechanism, where changes in practices could cause local loss of species and knowledge. In this case, knowledge is being affected not only by the loss of palms but also by using Western technologies to replace goods they provide, such as house roofing. However, due to a lack of documentation and data, it is not possible to assess and track this knowledge path.

Geographic isolation is not the only type of barrier the Cacua must harness to protect their TEK. Although geographic isolation seems to protect their language and TEK, the Cacua have entered an institutional assimilation process mainly through health and schooling services, where Spanish language is key. Described earlier, language acts as a barrier, especially for the young and the elderly, who are not bilingual in Spanish, limiting their options to communicate outside the community. Many struggle

⁴³ Keystone species: concept first introduced in ecology by R.T Paine (1969) to describe those species whose loss would cause extinction of many other species in an ecosystem.

to communicate when taken to the hospital in Mitú or Villavicencio (the closest cities for health services), often requiring the presence of an interpreter, one of the reasons why they are reluctant to go to the hospital, and they prefer to make use of their traditional medicine. Lack of effective communication of Indigenous Peoples in health services has been studied in Australia, where miscommunication between Aboriginal people and healthcare workers is an obstacle to providing effective services (Amery, 2017; Lowell et al., 2012).

Equally important are the isolation and barriers created by the education system. In the words of Richard Trudgen (2000) regarding Western education “*ineffective cultural/cross-language education leaves people intellectually crippled and feeling inferior and unintelligent*”. Results in this research show disengagement of students due to language and content barriers, which have also been observed in other contexts such as in Australia by Lea et al. (2011); Smith et al. (2017); and Sonn et al. (2000). The linguistic barrier extends beyond the school environment and considering the Cacua are placed in a lower hierarchical position compared to their neighbouring communities, it limits their agency to access state aid and in negotiation processes with other regional groups.

Regarding the sociopolitical context, this research found the isolation of the Cacua has kept them oblivious of the PA and the current and potential consequences of it. It is important to understand though, that this isolation does not mean they are disconnected from events occurring at other scales, as will be discussed later. From the socio-political perspective, the recent agreement with the FARC has created a reorganization of actors and powers in the surrounding territory, with multiple associated dynamics altering land tenure and access (Chapter 4). Only nine months into the transition after the signing of the Peace Accord, 38 indigenous leaders had been killed by armed groups (Semana 2017; The New York Times 2020). The consequences of this represent major drawbacks for Indigenous Peoples, who have historically struggled for recognition, agency, and their cultural development. Moreover, these events cause fear among communities that seek to reestablish their rights over ancestral territories and the restitution of their traditional lands.

It is in this context of conflict and Peace Accord transition that TEK takes relevance as an opportunity for land and rights restitution.

5.4.2 TEK erosion

The consequences of the erosion of TEK in a bioculturally diverse country such as Colombia are difficult to predict, but negative impacts can be expected. According to the National Department of Statistics (DANE), forest cover reaches 89.3% in Colombian indigenous reserves and hotspots of biodiversity. Although it can be argued this is a consequence of geographical isolation, the low productivity of soils that discourages land occupation, and the presence of armed groups, indigenous management practices are linked to the conservation of biodiversity as has been studied by Balee (2013), de Oliveira et al. (2020) and Levis et al. (2017). Understanding the local context of the SES in which TEK operates and the cultural modifications affecting it is key. As argued by Boyd and Richerson (1988) knowledge is acquired by social learning (e.g. teaching, imitation), and from an evolutionary perspective, the authors claim that if change occurs to social and environmental conditions in which social groups are embedded, information also changes, causing some knowledge to decline or to spread among the population. This can be observed in the Cacua with the arrival of missionaries and sedentism.

For the Cacua in particular, sedentism, influenced by the arrival of missionaries and fostered by the guerrilla presence, has been the main driver of cultural changes. Besides the impacts described in the previous section, this cultural modification brought effects on education and knowledge, fundamental elements in functioning, and adaptation of SES. Unlike other nomad groups in the region (see Cabrera-Becerra 1999; Mahecha & Franky 2012), the Cacua had a gradual integration into “modernity”.

The missionaries' presence in Wacar meant the introduction to Western education and religion. The negative impacts of religious missions and the establishment of boarding schools have been widely criticized (Barreau Daly et al., 2016; Castagno & Brayboy, 2008; Maurial, 1999a). In different regions of the world, such as in Tanzania (Semali & Kincheloe, 1999), Peru (Maurial, 1999a) Canada (Austin 2005) as well as in Colombia (Cabrera Becerra, 2013) this education system meant the imposition of a classroom with a Western curriculum in a foreign language and the notion that indigenous knowledge, practices, and beliefs were primitive. Unlike Western schooling, traditional knowledge is passed by practice and oral means from one generation to another where the classroom is their homes and surrounding environment (Berkes, 2008; Semali & Kincheloe, 1999, 1999; Trudgen, 2000), and with

the imposition of a Western calendar and curriculum, knowledge associated to natural processes (seasonality) may be fragmented (Barreau Daly et al., 2016).

Attempts to overcome this challenge include promoting intercultural education and a dialogue between the two knowledge systems - Western and Indigenous Knowledge. The topic has been broadly discussed by scholars who seek to decolonise and breach the dichotomy between Western and indigenous knowledge (Breidlid, 2016; Hoppers, 2002; Semali & Kincheloe, 1999) with various degrees of success (Heyck, 2010; Trudgen, 2000) where it has proven to be essential. Despite criticism, it is argued by Ober et al. (2017) that access to higher education contributes to the development of Indigenous Peoples; but for it to work, adjustment to the culture and context is a requisite (Trudgen, 2000). Similarly, for Ellis et al (2021) empowering indigenous communities and acknowledging the role their knowledge and practices have in global conservation is key. Yet, for Colombia and especially the Cacua, there is still a long way to go, and access to higher education for Indigenous Peoples in remote areas remains a challenge.

Gender and age knowledge heterogeneity among community members is not uncommon (Aswani et al., 2018), yet there is increasing concern in Wacar from some participants regarding knowledge transmission to younger generations. Although no detailed data regarding the variation of knowledge between groups was collected, results on the lower number of identified animals and plants species compared to Silverwood-Cope records are likely associated with intergenerational weakening of TEK. Two possible explanations are the decline in the population of the elderly, with only 13 people over 60 years and lack of interest among the young to carry out certain activities such as basketry and cultivation. Interest has shifted towards elements of the modern world, such as technology. Intergenerational weakening and loss of knowledge is not a phenomenon exclusive to the Cacua people. This phenomenon has also been reported in other communities in Colombia and Guatemala (Cristancho & Vining, 2009), Australia (Si, 2020), and Bolivia (Reyes-Garca et al., 2013). Although context differs among cases, what is shared is the impact of globalisation on lifestyle changes (food, interests, education), and therefore TEK.

Erosion of TEK is of significance for the Cacua, and documentation becomes of remarked importance, especially when the community elders are passing away and TEK with them.

5.4.3 Interconnectedness - *the best of both worlds*

“Here in Wacar we want to learn both things: we want to conserve our culture and live with Western things too. We want to understand it and respect others too. That for me would be beautiful. That would be a nice look forward, that we can respect others, and that others respect us as well.”
[COM2]

From an SES perspective, understanding cross-scale interactions between the subsystems, variables that make up the system, and its consequences is key to proposing relevant strategies for sustainable forest management that do not compete with Indigenous Peoples’ visions and worldviews. Yet, analyzing components of complex systems such as TEK in the context of the Peace Accord is not as simple as scaling up (or scaling out); and therefore, other variables and processes operating at larger scales need to be examined.

The findings presented in the current chapter show the Cacia’s reliance on TEK for their livelihoods, which with elements such as a well-conserved territory have allowed them to navigate the dynamics of their SES until present time. However, for the analysis of TEK’s role in the post Peace Accord scenario on a larger (national) scale we must consider several aspects, such as connection across scales and the influence of the social-political context, and the governance system in place (Chapter 6).

Given the high diversity of indigenous groups in the Colombian Amazon (Meisel Roca et al., 2013; Zarate Bota, 2012), it is not appropriate to generalize or homogenize TEK for the different groups - that would be a reductionist approach and it is probable these results do not apply to all contexts. However, it is possible to agree that TEK has a critical role in the conservation of ecosystems and provision of ecosystem services as has been largely examined by the Intergovernmental panel Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2018a, 2018b; McElwee et al., 2020). Also, in the same way, human activities at larger scales have an impact on Indigenous Peoples and TEK as Gomez-Baggethun et al. (2013); Kodirekkala (2017); Reyes-Garca et al. (2013) have suggested, the global population has benefited from the conservation of the Amazon through climate regulation.

With increasing speed, the current global environmental crisis associated with human activities – the Anthropocene – (Crutzen, 2006; Steffen et al., 2015) has led us to understand that there are no isolated systems, and although some indigenous groups like the Cacua might seem to be safe in relatively remote areas of the world, they are being increasingly impacted by global social, economic, political, and cultural processes (Kodirekkala, 2015; Reyes-García & Pyhälä, 2016).

Considering the interconnection and impacts of drivers across scales, if we examine the Peace Accord as one of the main challenges in the socio-political arena of the country, in terms of economic development (S1) and political stability (S3), we could argue that it plays a major role in the functioning of the system. As discussed in Chapter 4, we can think of the PA as an opportunity to lead the system into a more desirable state, where TEK becomes a pivotal element for the sustainability of the indigenous groups and the region.

TEK, although associated with a specific context and group in a moment of history, is also part of the global social, political, and economic system, not only by the pressures it endures but for the contributions it offers.

Unlike their past and partially their present, where TEK has played a major role in their survival and organization facing uncertainty and the complexity of the cross-scale system, the Cacua cannot exclusively depend on TEK nor let TEK disappear. As participant COM2 expressed, “*we need the best of both worlds*”. This statement can be paralleled with one of the key aspects of SES theory, which emphasises the importance of different types of knowledge systems for adaptive management of SES (Biggs et al., 2022; Folke et al., 2005). To date, increasing evidence of synergy between knowledge systems for environmental management and conservation has been compiled (Alcorn, 1993; Becker & Ghimire, 2003; Berkes, 2008; Berkes et al., 2007; Bohensky et al., 2013b; Moller et al., 2004; Oviedo & Maffi, 2000; Stevens & Dean, 1997). However, TEK should not be romanticised, and its limitations acknowledged.

The figure below (Figure 5-12) is a simplified snapshot, from an SES perspective, of the role of TEK in Wacará and the nested structure and type of interactions occurring between actors and resources at the different levels, from the Community itself to the regional, national, and international level.

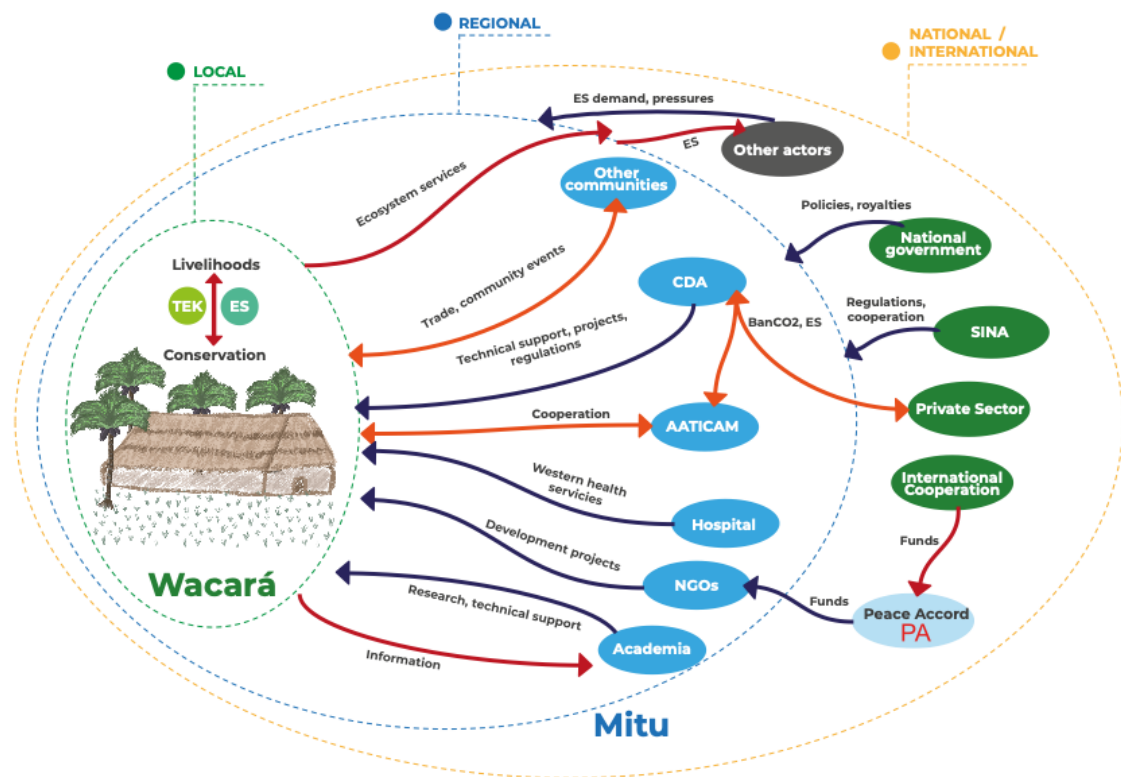


Figure 5-14. Cacua SES cross-scale interconnectedness (Source: this research)

At the local level, the majority of the Cacua people’s daily interactions occur among themselves, the forest they live in, and their close environment. Accumulated knowledge about climate, soils, plants, and animal species reflects in their main livelihoods: hunting, fishing, fruits gathering, gardening, and basketry. TEK still has currency and value in their lives providing them with food and tools and allowing them to participate and negotiate in ecosystem projects.

At the regional level, relations are established with a series of public institutions such as the regional environmental authority (CDA), the local hospital, different state secretaries, NGOs, AATICAM, and other local communities. At the national level, the interactions occur in the form of national policies mandates and funding for development projects from international organizations, mediated by regional and national NGOs.

From the SES analysis undertaken in this chapter, we can glean that TEK is a key component in the functioning of what we have called an indigenous SES. It does not

only allow the Cacua to conserve important cultural traits such as traditional medicine, livelihoods, and food practices in the face of external and internal changes, but it has also played a key role in the conservation of forested areas and provision of ecosystem services beyond the local boundaries. From this perspective, TEK becomes a power and negotiation tool in the face of the global crisis and unforeseen impacts of events such as the Peace Accord. Nevertheless, drivers of change such as local defaunation, acculturation, institutional and social integration, language barriers, intergenerational erosion of TEK, and weak planning mechanisms put TEK at risk of decline, with severe cultural and environmental consequences for the Cacua.

5.5 CONCLUSIONS

For forest-dependent communities such as the Cacua, TEK plays a key role not only in their livelihoods and survival but also in the institutional arrangements and negotiations they can establish with other actors and institutions interested in the provision of Ecosystem Services.

TEK is dynamic and its detailed account and documentation is required for better understanding of its dynamics, how it changes, what knowledge is lost and what knowledge is conserved, what aspects are modified/adapted from the context, how those changes occur and why. As part of this, further research for the identification of drivers of change, TEK conservation, and adaptation strategies to navigate socio-ecological systems is required. Similarly monitoring of plant and animal species used in indigenous communities is needed for a better understanding of TEK changes in SES.

Although boundaries of the Cacua SES seem to manifest themselves in the forest the Cacua inhabit and from which they obtain most of their livelihoods, they are not isolated, and boundaries extend beyond the forest in a variety of interactions with actors and institutions across regional and national scales.

The findings presented in this chapter show the key role of TEK in the resilience of SES at different scales, and its transformation across scales, from local livelihoods to

global markets (e.g. carbon credits) and the wellbeing of indirect users through the provision of ES.

The role TEK plays is scale-dependent – it varies from the local to the global - but the need for dialogue and integration with other knowledge systems increases in the face of the crisis triggered by the Peace Accord. To achieve this, new systems of governance with frames of analysis that incorporate concepts and tools that reflect and allow IP to thrive from their perspective are needed.

The understanding of Spanish acts as a limiting factor in the development of the indigenous communities in the Amazon. It is the language of every institution in the area and not understanding it restricts the options communities may have. It is the language the state requires to interact with it. In Wacará, despite being the main language being taught, it remains limited.

From an SES perspective, in navigating transitions not only a dialogue with Western knowledge should be considered, but an understanding of the context where this knowledge is produced and put to practice. For this to happen, major challenges need to be overcome, such as the deeply embedded disdain in society and state institutions for what is indigenous, and the strengthening of indigenous leadership.

In the next chapter, an analysis of the post-peace accord governance system in which the Cacua and other IP are embedded will be discussed.

6 Post- Peace Accord Governance in the Colombian Amazon: A Patchwork Arrangement



Figure 6-1. Vaupes river (Photo: P. Vejarano Alvarez 2019)

6.1 INTRODUCTION

The two previous chapters of this thesis have addressed (1) the Amazon as a complex social-ecological system being pushed into a new regime due to the Peace Accord, where TEK potentially has a crucial role in the design of new arrangements in the region but faces multiple challenges, and (2) the role of TEK in a local SES as a key element for the survival and conservation of biocultural diversity. In this chapter, through the lens of SES theory, I will analyse how those findings elicit the dynamics of the governance system in which TEK is embedded, and what strains and challenges TEK faces to become mainstreamed not only into policies but also into practice.

6.1.1 Indigenous Peoples, conflict, and peacebuilding

During the 2016 United Nations Permanent Forum on Indigenous Issues (UNPFII), the “International Seminar on Indigenous Peoples and Unreported Struggles: Conflict and Peace” took place. In this seminar, some of the struggles of IPs around the world were presented, discussed, and compiled. The final document takes account of conflicts IPs undergo around the world, with cases from Chile, Nicaragua, East Africa, India and Russia (Stamatopoulou, 2018).

These cases, in common with other reports (Salamanca et al., 2017; UN-DESA, 2009; Wanis-St. John, 2013) emphasise the disastrous effects of war/conflict on IP’s land, livelihoods, and ultimately their culture and survival. Part of the conflict in which IP are trapped is caused by the interest of different actors in their territories rich in natural resources. Some of these groups are not only armed actors, but also the state, who seeks control over them (Stamatopoulou, 2018; Tidwell & Zellen, 2016). Now, in a context where external drivers of change are added to the local/regional situations in which IP are embedded, such as global markets, the global environmental and social crisis, governance on natural resources in indigenous territories gains relevance.

6.1.2 Environmental governance in times of conflict and peacebuilding

The global environmental crisis has pushed environmental leaders and scholars to discuss strategies to improve natural resources management (Castro et al., 2016; Folke et al., 2005; Tengö et al., 2014). As a result, the concept of environmental governance has evolved and today is used to stress the need for collective action and organisation between government, businesses, and society around the management of natural resources to tackle the current environmental crisis (Evans, 2012). The definition of governance adopted in this research is the one provided by the IUCN (2021) as the “set of formal and informal rules and norms that determine decision-making processes and behaviour regarding use and access of natural resources”. As suggested by Lebel et al., (2006) governance includes power, laws, regulations and interactions among diverse actors across scales. governance includes power, laws, regulations, and interactions among diverse actors across scales. Despite the growing interest and development of environmental governance in a context of sustainability and, more recently, social and environmental justice, environmental governance remains a challenge — especially in areas with severe armed conflict, like in the Colombian case.

Armed conflict, in Colombia as well as in other parts of the world (UNEP-DPA, 2015), has had a severe impact on the environment and its governance. Access to and use of natural resources in Colombia have been determined not only by national policies, but also by the nation's history of occupation and the presence of armed groups in the territory. The Amazon is acknowledged for its enormous biocultural diversity but also as a resource-rich region where multiple conflicts over resources occur (Ulloa & Coronado, 2016b). It is also a vast territory, occupied by settlers, peasants, and Indigenous Peoples of approximately 70 different ethnic groups, where ecological, cultural, and institutional particularities influence its governance.

Some of these elements, such as remoteness, weak institutional presence, international border areas, illegal actors and illicit economies have caused the armed conflict to push Indigenous Peoples towards severe cultural transformations. As a result of these complex relationships, history and context, indigenous systems of governance in the region have been affected and adapted. In the face of the Peace Accord, which at the time of writing reaches its sixth year of implementation, an analysis of governance arrangements that hinder and foster TEK to navigate changes in the region becomes imperative.

From the perspective of social-ecological systems theory, environmental governance is a crucial part of the system's functioning (Biggs, Schlüter, et al., 2015; Folke et al., 2005). Following the definition of environmental governance adopted in this research, the analysis looks at formal and informal norms, rules, practices, agreements, and strategies as well as policies established between government, civil society, and other actors to manage the environment, and also the challenges those arrangements face.

This chapter presents, firstly, how governance relationships have been historically established by the state and Amazon occupants. The structures of power between institutional systems, Indigenous Peoples, and other actors, and the consequent territorial conflicts are examined. The chapter describes mechanisms and spaces that Indigenous Peoples must navigate despite difficulties and some of the challenges that persist in their organisation processes. Finally, the elements that contribute to the development of communities and their self-determination, such as alliances and their TEK, are examined.

6.2 METHODS

In this chapter, research question three is addressed (RQ3): Can improvements be made to the current environmental governance system to safeguard TEK and the provision of ecosystem services (ES) in the Peace Accord transition scenario?

To do so, 24 of the 29 semi-structured interviews that were relevant after transcription were analysed and codified in light of governance pre-and post-peace accord, including institutions, governance challenges, and the role of TEK and ES in the peace building transition scenario. Data were complemented with systematic review of national policies and public documents. As a result, the subsequent sections of this chapter have been organised in relation to the most relevant topics emerging from the analysis of the interviews and documents.

6.3 RESULTS - ENVIRONMENTAL GOVERNANCE, A PATCHWORK ARRANGEMENT

“One of the big problems we have (as government) is that we are divided, and that happens at departmental and municipal government levels, it happens everywhere. One piece of information is held by commerce, another by Colciencias, or other state agencies. So, when a decision must be made, the sources of information can be infinite and you cannot cross it, because it costs you a lot of time and money. Thus, you can never make a good decision, ever. Then imagine the indigenous context, in collective territories where you have reserve zones, protected areas, resguardos... if they want to make an intervention, they can't do anything, because the legal instruments are not harmonised.”

[GOV8]

This quote provides an introduction to the environmental governance of the Colombian Amazon and the multiple challenges it faces, especially for its IPs. The development of the region is influenced by local, national and international factors that mean the environment requires special attention in the post-Peace Accord scenario. Some of these challenges are addressed in the subsequent sections.

6.3.1 The invisible Amazon

For Serje (2011), the Amazon region is part of one of those peripheral regions in which historically the Colombian State could not establish control due to its isolation, remoteness, and inhabitants “apparently alien to the order of the State and the modern economy” among other reasons. Nevertheless, as argued by Puyana (2010) the Amazon and its IPs are no longer isolated and have been part of the global arena through integration processes such as the already mentioned bonanzas of rubber, fur, and natural resources (See: Chapter 4).

Results in this research concur with Puyana (2010) that this historical political, territorial, and cultural disconnection manifests in deliberate state abandonment or negligence, with negative consequences for the territory and its inhabitants. Militarisation of the territory, weakening of institutions, territorial conflict, lack of economic/employment alternatives, and poor education systems were mentioned by participants and are explored in the following sections.

6.3.1.1 State negligence

The perception of state negligence was reported and shared among some of the participants, who believe such negligence is a deliberate state policy. These participants reported that institutional presence is often limited to the militarisation of the territory, and to some extent to the education system, without a territorial development offer:

“The problem is that in a state of servitude and alcoholism, IP is a defeated society, without the capacity for dialogue to impose its agenda. I believe that this may also be an intentional decision of the state because one often says, “it is absence from the state”, but I believe that the absence from the state is a voluntary decision not to comply, to be absent. In other words, absence is a state policy.” [ACA3]

Similar sentiments were expressed by government and NGO representatives, for whom the some of the underlying causes are based on economic elements such a low contribution to the national GDP, which in 2011 was reported to be 1.1% (Meisel Roca et al., 2013), and unwillingness to recognize the differential approach proposed in the Constitution.

“For the State, these rural areas under disperse classification, are areas that hardly contribute to the GDP, which at the same time are somehow “neutral” in terms of the conflict, and do not generate so many problems in the management of the administration, therefore, they are not subject to actions either”. [GOV8]

“The relation the State has with those areas is scarce, weak, and doesn’t recognise the characteristics of the region, despite the theoretical acknowledgment of ‘differential approach’, which is ignored.” [NGO1]

Militarisation of the territory as the state’s response to the presence of armed groups is debatable as it can cause further armed confrontations among illegal armed groups or between them and the military force in or near indigenous territories. Also, installation of military bases, battalions, camps and training spaces transforms the territories (CNMH, 2019; Ramírez, 2018). For ACA3, military presence and actions are challenging as they not only do not contribute to the conflict situation but worsen it:

“State action is strictly through the military: there are military bases, there’s an army, an official force, but there is no enforcement of rights. It is that militaristic conception of the state, which does not even solve anything, but sometimes worsens the situation”
[ACA3].

However, for officials of regional environmental authorities such as participant GOV7, the army presence is vital in areas where illegal crops, drug traffic, and insurgents are present, and where their role as civilians is not sufficient to prevent or penalise actions such as deforestation and land occupation:

“A person who enters the forest knows that if the environmental authority comes, they can entice or threaten them. It also depends on who invades, because if there are still dissidents... or potential drug traffickers... the function of a civilian is not appropriate. There are situations in which the state must exercise its sovereignty

and control militarily. If in Guaviare we want to say, "not a single hectare of forest is logged down again" it is going to be with the army".

[GOV7]

Associated with the militarization of the territory, is the weakening of institutions. For example, Arjona (2014) concluded that the war in Colombia has caused state institutions to weaken and sometimes eliminated them while new ones are created, often by the armed groups involved in the conflict. When some of the institutions in the region had to leave, including the army, people were left on their own. Alterations of indigenous organisation processes, their norms, and practices have been found to be another serious consequence of the state abandonment during war time. Due to the presence of armed groups, deterioration of indigenous communities and fragmentation of their territory occurred, with impacts on their self-government and agency, as documented by Franky Calvo et al. (2010), and expressed by ACA5 and IOR2:

"The conflict has had a very strong impact on the social fabric and structure of the communities... when you have conflict the communities are displaced or there is no leadership. The conflict attacks that capacity of the social fabric, of organisation, which is very serious".

[ACA5]

"Once all the machinery of the guerrillas was installed, they began to operate within the indigenous territories, affecting their governance systems. The recruitment, the threats, and the dispossession began, and even more so the confinement, which is a very concerning topic.

[IOR2]

Additionally, the state absence has affected the communities by threatening groups trying to work with the indigenous communities in the territory. For participant ACA1, working with the Nukak in Guaviare became a threat to their security and hindered the work and processes carried out with such a vulnerable community:

"Security became difficult and the last time we went into the field we were told paramilitary groups were coming in, so we had to leave. On one occasion, before

going to the campsite, and after a few times having been there, we were taken to visit the cemetery, as a reminder of all the people that had died”.

[ACA1]

Furthermore, participants reported that one of the most detrimental consequences of the militarisation of the territory and state's historical absence was the persistent violation of Indigenous Peoples' rights. The situation has been reported since 2001 by the UN (Stavenghagen, 2004) and considers the state military action in indigenous territories in Colombia put IPs lives at risk and increasing the number of refugees in urban centres. To participants ACA1 and ACA3 the war and militarisation only aggravated the existing situation of neglect of rights.

“There was already a situation of violation of rights and total state abandonment. So, the effects of the war aggravate a situation of violation of rights”.

[ACA1]

“There is an issue there and it is that [Indigenous Peoples] have lived through a situation of risk and vulnerability before the war. In other words, there was already a situation of violation of rights and total state abandonment. So, the effects of the war aggravate that situation... Even all the concepts of the commissioners of the United Nations for indigenous rights suggest making indigenous rights effective, imagine that?. It is an elementary recommendation ‘make them effective, guarantee them decent health posts and hospitals, education with a dignified differential approach, assistance to children and elders’, things that they have by right.

[ACA3]

In this context of state absence, the signing of the Peace Accord and the prospect of recovering its institutional presence requires consideration. This is not only because of the governability vacuum left by the FARC, discussed in Chapter 4, but also because recovering institutional presence should extend to strengthening indigenous organisations and communities and preparing them to face the challenges it entails.

For INDI, an expert in legal issues, two aspects are key. First, that to have effective governance IP should assume control, as they are the ones in the territory; and second,

that the return of institutions matches the needs and context of the territory and its peoples, and is not an imposition of top-down plans and programmes.

“To have governance and control over the territory, it is up to the government to acknowledge what is really viable here, and that is Indigenous People (to be in charge), to strengthen them. And also, to strengthen the environmental corporations, which are the ones that could exercise some functions of conservation and vigilance and so on. The state has never arrived, so what’s important is that when it arrives people are ready to receive it and not only to do what other people thought. That they have the preparation to receive them and not to make it a traumatic event”

[IND1]

The negligence of the state has very serious impacts on the social and environmental justice for Indigenous Peoples. In addition to the consequences already widely described, there is also the lack of local opportunities in urban areas where the state has an apparent presence. As reported by the UN-DESA (2009) the increasing number of Indigenous Peoples living in urban areas results, among other things, in lack of employment, income, and poor living standards. From the perspective of community members living in cities like Puerto Inírida and Leticia, unemployment is one of the foremost problems.

“The other big problem is unemployment. There is mass unemployment here, and - what happens when there is unemployment? People grab the first chance they’re given, and what’s the first chance? To grow coca!

[IOR1]

“Look, one goes downstream on the Guaviare River, and what is the strong economy there? People were initially living off fish, but fish wasn’t enough... then people had to replant coca because it was the only thing that gave people tools so they wouldn’t starve.”

[IOR3]

These responses suggest views consistent with those found by the National Centre for Historic Memory, in relation to the impacts of the war and the relations of the state with the country’s indigenous populations (CNMH, 2019). In this report, structural

discrimination and systemic violence against Indigenous Peoples are identified as the main causes of the social, political, and economic exclusion of which they have been victims, coupled with a process of physical and cultural extermination. This situation is not exclusive to Colombia and other developing countries, but also in developed countries such as Canada, Australia, and the United States of America, where their IPs are objects of discrimination (UN-DESA, 2009).

Amid the apparent state negligence, there are still some attempts to fill that void through projects, interventions, and legal protection measures. Nevertheless, as found in this research, the origins of the failure of the state to meet these needs can be traced back to multiple elements such as institutional disarray and structural cultural disdain. These elements are addressed in the next section.

6.3.1.2 State paradoxes and institutional disarray – a governability matter

As mentioned in the previous chapters, the Constitution of 1991 was a turning point for the Colombians IPs and their recognition in national legislation. The Constitution acknowledged their territories through the creation of *resguardos* and determined some of the mechanisms for their self-determination and interlocution with the State, such as the *plan de vida*. More importantly, it intended to give Indigenous Peoples authority over their territories through the creation of the ETIs⁴⁴ and AATIs⁴⁵. However, compliance with such regulations would take many years to be implemented. The state contradiction and institutional lack of coordination and implementation of the Amazon is widely discussed by regional experts (Palacio et al.,

⁴⁴ ITEs: in Spanish ETIs – Entidades territoriales indígenas. The national constitution defines as Territorial Entities the departments, districts, municipalities, and indigenous territories (Art. 286); with autonomy to manage their interests; and within the limits of the constitution, they have the right to administer the resources and establish the necessary taxes for the fulfillment of their functions (Art. 287).

⁴⁵ AATI: Asociación de autoridades tradicionales indígenas (Association of Indigenous Traditional Authorities) An AATI is an organizational structure in which diverse indigenous communities can associate in representation of their territory. They are autonomous and exercise government within the communities they represent.

2010). In this section, focus is drawn on the findings regarding indigenous autonomy and territorial planning and self-organisation.

Twenty years after the Constitution of 1991 the Colombian government launched the Organic Law of Territorial Planning⁴⁶, which is intended to “*promote decentralization with a local government model to facilitate the purposes of the State*”. The ultimate purpose of this law was to stimulate territorial integration and equitable socioeconomic growth at the local level, through investment and territorial integrity. Despite the intention of the law, many challenges remain, particularly when it comes to the Amazon and its indigenous territories. Quotes from participants GOV6 and NGO6 provide an introduction to this section:

“There is a large space of evolution still in the territorial ordering, which is a dramatic issue, which in general is of poor quality in Colombia. It has failed to understand the conditions of the indigenous territories, so there are clashes between municipal, departmental, and indigenous authorities. Who arranges the territory? There is a clash of important cultures, because depending on the worldview, on the interpretation of biological processes, we are in two different worlds”
[GOV6]

“The state is not the state but a giant fracture of a number of dissociated, uncoordinated agencies. That is the problem of this country. Which occurs not only at the local or regional level, but also occurs at the national level.”
[NGO6]

A recurrent patchwork of institutional arrangements in disarray and conflicting or contradictory discourses between what is written in the legislation and promoted, and what is implemented was identified. This disarray is not new as it has been reported by scholars such as Correa (2017) and Chaumiel (2017), but in the current research, some of the repetitive patterns previously identified that perpetuate such disarray are structural cultural disdain for IP and the disconnection across scales between the

⁴⁶ Ley orgánica de ordenamiento territorial. Law 1454 of 2011.

national and the local territories. Quotes from participants NGO4 and NGO5 illustrate the cross-scale institutional disconnection:

“What we have brought from outside does not adapt to their (IP) reality, which is a different specific context. And today that’s still the problem. We bring development plans according to our conception (Western), not only roads but houses, animals, sanitary systems, writing, school, all are our inventions, that are not necessarily good.”

[NGO4]

“I think there are big gaps between the regional and local levels because those officials (national) are less prepared, they have less sensitivity, many of them have more prejudices, they have been educated as if indigenous people were ignorant”.

[NGO5]

Discrimination against Indigenous Peoples is widely documented in different contexts such as in the criminal justice system (Cunneen, 2006), land right and access to resources (Daes, 1995), and laws and policies (UN-DESA, 2009), with common negative effects, among them impoverishment, health issues, and poor education. One participant from academia referred to this discrimination and racism as being institutionalised, mentioning for the Colombian context the most common examples health, education and development programs centrally designed, by people unfamiliar with the territory in which the western systems prevail over the traditional ones.

“What you see when you arrive at these places is all the institutionalized inheritance of practices of isolation, discrimination... and many things that are being invented by lawyers from their desk”.

[ACA1]

In a similar situation to Australian Aboriginal people who only after a referendum in 1967 were considered citizens under the constitution and allowed to vote (Dodson, 1994), Indigenous People in Colombia were subject to governmental discrimination and segregation. As an example, by the end of the 19th century, the law 089 of 1890 determined how the “savages” – and not Colombian citizens- were to be governed:

“Article 1: The general legislation of the Republic will not govern among the savages who are being reduced to civilized life through the Missions. Consequently, the Government, in agreement with the ecclesiastical Authority, will determine the way these incipient societies should be governed.”

(Law 089 of 1890, p.1)

This structural discrimination translates into the incoherence between what is in the legislation regarding self-government and autonomy of Indigenous Peoples, and what is implemented. Although land titling and the creation of traditional authorities have been key elements for self-government and determination, most communities are far from autonomously governing their territories. Participant IOR2 gave an account of this:

“But then there is still that inconsistency because on paper it says that the communities are authorities within their territory, but in practice, those who continue to regulate the use are the CARs, or parks or some state institution.”

[IOR2]

For participants NGO6 and ACA5, the institutional and social discrimination is historical and is reflected in state development and land occupation policies. Referencing the “*guahibadas*” – hunts of Guahibo Indigenous Peoples organised by settlers in complicity with state agents to drive the communities away from the newly established farms in the Orinoquia region- NGO6 and ACA5 stated:

“Colombia has a history, not only of contempt but of violence against Indigenous People. Those same people who come from doing the “guahibadas” in the Orinoquia, those same people are the people who are now colonising here [Guaviare].”

[NGO6]

“In the 1960s, they [government] brought a number of peasants to these zones under the idea that they were going to civilize the area, under the idea of the civilisation of a territory. They were the national heroes, reaching the most recondite, they were going to civilise... civilise was a verb that connoted something positive, it was to bring development, and the Indigenous People at that time were seen as savages, as remnants of time, as symbols of backwardness”

Despite this scenario of discrimination and disconnection, and since the recognition of the cultural diversity of the country in the Constitution the state has introduced and issued a series of policies and rulings intended for the protection of ethnic groups and their culture⁴⁷. Some of these include the Ethnolinguistic Protection Policy, the “auto 004” of 2009, and the “auto 266” of 2017 for the safeguarding and protection of displaced indigenous groups, and those affected by the armed conflict. More recently, the decree 632 of 2018 on Indigenous Territorial Entities (ITEs) was regulated and signed by former president Juan Manuel Santos.

Full implementation of the Peace Accord, which addresses some of the most vulnerable indigenous groups, the Nukak and the Jiw, has not been accomplished. Among the reasons are the current government’s opposition to the PA, and the governability vacuum created by the FARC (See: Chapter 4). By October 2021, according to the Kroc institute (PAM-Kroc, 2021) only 13% of the stipulations with and ethnic approach (section 6.2 of the PA) have been completed.

Beyond the Peace Accord and its implementation, recurrent institutional deficiencies and shortcomings identified were the constant planning and diagnosis without implementation. One participant from academia referred to it as “hyper-planning”:

“They [government] plan, plan, plan, and go back to hyper-planning about what was planned and that doesn't make any sense, especially for the communities. It is a waste of so much planning and so little execution, so little assertiveness when defining specific strategies”

[ACA3]

⁴⁷ Law 21 of 1991 – Ratifies the ILO convention 169. Law 649 of 2001 - Participation in the House of Representatives of ethnic groups, political minorities and Colombians residing abroad. Law 1381 of 2010 – Dictates norms on recognition, protection and strengthening of ethnics’ languages. Decree 1088 of 1993 - regulates the creation of associations of Cabildos and/or Traditional Indigenous Authorities. Decree 2164 of 1995- endowment and titling of lands to indigenous communities for the constitution, restructuring, expansion, and reorganization of the Indigenous Reservations in the national territory.

Similarly, the disconnection among the national and local scales was mentioned as one cause of the disarray, usually reflected in local projects not fully meeting national policies and legislation, nor reflecting local necessities, with compliance and acknowledgement of the cultural approach dissipating with distance from top-down, central authorities. Participants stated:

“Many of the things have been planned, but there are many difficulties in this nation-territory coordination relationship. The territorial instance does not take orders but advice from the national instance, and does not take actions either”
[NGO8]

“What happens is that I am looking at the disruption or the incoherence between how national policies work about the whole issue of recognition of the country's multiculturalism, of the different ethnic groups and the importance of knowledge, but when making decisions continue to be top-down and the communities are not being taken into account, which are the ones in the territory”.
[IOR2]

Besides the creation of the indigenous reservations, the 1991 Constitution included the creation of the Indigenous Territorial Entities, which conferred authority and autonomy to the Indigenous Peoples within the reservations but took more than 20 years to be regulated. Two years after the signing of the Peace Accord, it finally provided the set of norms and procedures for their implementation in Amazonas, Guainía, and Vaupes in 2018 through the decree 632. In the words of participant ACA2, the reason for this delay was the lack of interest of the government in providing real authority and autonomy to those territories.

“Since the 91 Constitution, the ITEs were invented but remained in a transitory paragraph and was never implemented. The congress didn't assume the responsibility of doing that because it is to say that those indigenous territories become like departments. That is giving too much power to the Indigenous People”
[ACA2]

Similarly, for interviewee ACA3 the reason for this delay is the structural discrimination toward Indigenous Peoples:

“So, what happens? That the state treats them [Indigenous Peoples] as minors. It is not capable of recognizing them as environmental authorities, and that is a racist attitude, they are inferior, and incapable of defining environmental policies, so it is only possible if it is done through parks or the state agenda, in the state’s language.

[ACA3]

Despite the apparent benefits of the decree, some participants expressed doubts about it. While for participant IOR3, it represents a threat to the indigenous territories and is only a strategy of the state to access the resources that are in the reservations, for participant GOV2 it is a much more complex issue that needs to be examined as it can impose a Western system of managing a traditional area.

“Converting indigenous territories into municipal areas is a threat that we are experiencing here. That is the strategy to make viable the great conceptions of mining exploitation. Who promotes it? The government”.

[IOR3]

“Some ‘paisanos’ from the Apaporis may understand some things, however, I have had to explain to them what [the decree] means, how it works, and that it can be a double-edged sword to enter into something that is not so relevant to them because they are saying that they are authorities and that nobody denies it, but if they start developing things in a scheme that is not their own can mean something different”.

[GOV2]

There is still a way to go for the effective implementation of the ITEs due to the numerous administrative and technical obligations they entail. Among them, the registration and inscription of the Indigenous Councils, a formal request to put into operation the indigenous territories, including their delimitation, demographic information, and many others. Although much remains to be done regarding the ITEs, for participant NGO3, it is a big step into self-determination and consolidation of indigenous autonomy as it recognises indigenous councils as a local entity of territorial government:

“I think that is to progress in the political and administrative decentralization of the government and is to advance in the recognition of the political autonomy of resguardos. What is needed now is to put it in practice”.

[NGO3]

Another example of the institutional disconnection between the theory and practice across scales are the life plans (*plan de vida*). As briefly explained in Chapter 5, life plans are mechanisms by which indigenous communities plan their strategies and projects to meet their needs.

While this may sound promising, opinions among some participants (IOR3, ACAI, and GOVI) were that life plans have become a requirement to access resources, without real impacts for the communities, and that they are not considered in the regional/national planning instruments. The comments below illustrate some of the opinions:

“Life plans became requisite documents. They are formulated by demand over situations that are not real to access resources and to have a certain legitimacy. Not in all cases, but in many. Also, they are not articulated between institutions or entities, and what is it called? Politics.”

[ACAI]

“We have more than 13, 14 indigenous life plans. One would say “wow cool” but those life plans are never articulated with the territorial public policy. I did an exercise on what has been the impact of the resources from the national participation system on life plans. And one is surprised that neither the Indigenous People nor the leaders nor the government takes this planning document into account. It would be interesting if life plans were linked to a planning process.”

[GOVI]

Even though the legislative panorama for Indigenous Peoples in the Amazon is complex and has changed in recent decades, there is still much to be done that is not the sole responsibility of the state. The following sections analyse some of the conditions of the indigenous institutions -- including mechanisms and strategies

Indigenous Peoples and other actors have used to respond and adapt to the complex socio-political context -- in the pursuit of their survival and self-determination.

6.3.2 Defying hegemonies - Indigenous vindication

Traditional indigenous governance systems associated with their culture and cosmologies have had to adapt not only to state requirements but also to their historical socio-political and economic context. As a result, indigenous organisations have emerged in an attempt to respond to those conditions, usually the pressures and demands from the “world of the white” [NGO6] Participant NGO6 summarises the situation as follows:

“What have Indigenous Peoples seen during their lifetime the world of the “white” is? That they’re merchants and warriors. That’s the vision of the spiritual origin of the “white”. And that is what they have seen... And the centuries go by, not the years, right? three centuries where the “white” are still extracting, mining, wood, fish, coca, whatever, and wars... one war has not passed and a new one appears: the army, the Peruvians, the guerrillas, the paramilitaries, the rebellions, always a circle and they accommodate”.

[NGO6]

The coded data from the interviews conducted as part this research revealed a series of elements that have supported indigenous organisation and some that have hindered it. Those elements are strongly linked to the IP (Cacua included) capacity to make alliances, foster their knowledge including TEK, and strengthen their skills and Western knowledge.

6.3.2.1 Self-government and organisation – the good and the bad

For participant NGO1, one aspect of Amazonian indigenous organisations is their incipient political organisation compared to other groups such as those in the southern part of Colombia in Cauca⁴⁸ or in the Sierra Nevada:

⁴⁸ Eight indigenous groups in Cacua are part of the CRICA (Regional Indigenous Council of Cauca): Nasa - Paez, Guambiano Yanaconas, Coconucos, Epiraras – Siapiraras, Totoroes, Inganos and Guanacos.

“What happens in the Amazon is that the organisation level is very low compared to Cauca, or La Sierra for example. In the Amazon you can’t see so clearly their political position and therefore when they get paid to conserve something, that is invested in a productive process somewhere else. In the case of the Andean groups is different since they are more advanced in their organisation, and they use the resources for their political purposes. In the Amazon is not so clear because the levels of organisation are fragile. Organization is not motivated by a political project but by the most convenient and available frame that suits them”.

[NGO1]

From the perspective of NGO participants, key aspects to understand this regional difference are the high diversity of groups (over 70), their dispersion, and the low population numbers for some, such as the Cacua. Such configurations represent a challenge for the coordination of collective proposals, more so when there are groups such as the Makú (Cacua included) whose voice and participation are influenced by the indigenous social hierarchy (See: Chapter 5). For some groups, this situation is critical, such as for the Nukak and the Yujup:

“On one side is the diversity and multiplicity of the indigenous groups. In one small area you can find up to 20 indigenous groups, which causes discussion and differences. This is also linked to the low number of certain groups, which is a difference from the Andean groups. In Vaupes you find 200 Sirianos for example, what do you do with them how do they organise? So, besides the high diversity, and the low numbers they are also very dispersed in the territory. For these reasons, any organisation process is very complex”.

[NGO1]

“It is a drama what the Yujup are going through, they are around 65-70 in the resguardos, trying to be accepted. For the other groups, they are important as part of how the system works (they need to keep moving to keep the system as it is), but they are not being incorporated in boards or participating in decisions.”

[GOV2]

Another key aspect that makes a difference with the indigenous groups in the south, is the struggle for territory. Somehow, amid the state abandonment, the territory of the

Amazonian Indigenous Peoples has been recognized as theirs, a different situation for the Indigenous Peoples of the south, who have had a constant struggle for the recognition of their territory.

“Another interesting thing that marks a difference with the Andean groups is the relation with the territory. Amazonian Indians have always had their territory, they have lived and owned thousands of hectares and anywhere they look there is forest and water, while Indians in Cacia, for example, have had to fight for their land and their water, and this has created a different relationship with their place.”

[NGO1]

Although the political organisation appears to be a critical element for regional governance, in the view of two of the participants from indigenous communities, their current situation demands cultural strengthening more than political, as they perceive it to be at constant risk from state policies.

“Our purpose is cultural rather than political. We are pushing the cultural issue a lot. We have seen that we are indigenous, we cannot deny it, and even though we are in a city context, that does not make us white, we will always be indigenous”.

[IOR2]

“I think the first thing we should do is look within. How we are talking to each other to know where we are going. What role does youth, women, and the elderly play? It is a way of rediscovering the territories of thought and knowledge and recovering the language of these territories, communicating with nature. That is why it is important to characterize this knowledge, how it is and who has it”.

[IOR3]

Cultural and political organisation are key, and the challenges they face are various, yet in the process of rights and organisation vindication, some aspects are strategic. On one side, the pressure for the creation of spaces for discussion and negotiation with the State has resulted in spaces such as the Vaupes regional board, the Amazon regional board for the Indigenous Peoples of the Amazon, and the Permanent Board of National Coordination. In those spaces, indigenous organisations at the regional and national

levels discuss and negotiate with the state regarding the administrative and legislative decisions that affect them, and monitor compliance of the agreements made.

“The permanent board (different from the regional one) is a space for dialogue at the national level and there are all the organizations, the ONIC, OPIAC, the major government, the 5 indigenous organizations that exist at the national level, and all the government ministries. In this space, work routes are created, yet decisions are not made”.

[IOR1]

“Now, there is the Amazonian regional board, which is an important space for agreement, which was conquered based on many struggles and legal and political efforts, with the help of some NGOs, and much more important things are negotiated there than in the congress”.

[ACA3]

On the other side, the organisation towards collective goals, challenging the state agenda and the organisational systems imposed by it are other ways of resistance. One successful example is the creation of the Yaigojé Apaporis National Park, a co-management arrangement that brought together 19 indigenous communities of different groups when their territory was under threat by mining projects (Vallejos et al., 2020). Participant ACA1 and GOV2, who were part of the process of creating the park, commented:

“I supported the process of enlargement of the Resguardo Yaigoje Apaporis. This resguardo is very special, since the organisation was based on kinship relationships, regardless of the political division and the administrative entanglement and the difficulties it would mean. They broke the administrative governmental organisation [imposed by the national government] to respond to their needs since their organisation existed long before. It was fascinating to see it working and the incidence of the elders. Also key was the participation of one leader who spoke several languages, with a lot of experience, and was a great health promoter, and also, they had the support from Gaia.”

[ACA1]

“The first thing is that amid everything there was a decision to maintain a unity of thought and collectively accept that, despite their internal differences, different interests, despite the hegemonies of some ethnic groups over others. Despite everything they said: we want to defend our territory, maintain our culture, and generate a life for our current and future generations”.

[GOV2]

Participant IOR2 offered that for processes to be successful they should be bottom-up strategies and not an imposition by the state or by officials who are unaware of the territory. This approach has been described as:

“For me, the strength of the process is that it has been built bottom-up. Many of the processes that go wrong, such as Amazon vision, do you know why is that? Because they do it top-down. We did the opposite, we started slowly, but considering our cultural principles, we have not separated from that, and we are not going to separate, rest assured.”

[IOR2]

Indigenous organisation has been a process of struggle that has contributed to the recognition of their rights and autonomy, but it has weaknesses and has adopted some of the negative features of state institutions. Such is the case with the disconnection between high-level leaders and local communities, already discussed in Chapter 5, and the corruption and mismanagement of resources involving some of these leaders. Such events negatively affect processes as they reinforce the state's perception that IPs are not capable of managing their resources.

“You must think about a problem and that is that there are some indigenous leaderships that due to problems of preparation in resource management have had problems of confusion and corruption. So, these resources are going to be managed by the indigenous leaders, who have had many problems in managing the resources, and the bases that live in the territories? It's a risk. That is why in many policy documents it has been recommended that the indigenous authorities submit to accountability with the local bases, which is good. They have also said it”.

[ACA3]

6.3.2.2 *Globalisation of the Amazon - discourse adoption and power negotiation*

In the face of the global climate crisis, conservation of the Amazon has become relevant in many international scenarios, and therefore Indigenous Peoples that have historically inhabited the region became important actors. This situation is an opportunity for Indigenous Peoples, but it must be approached from a perspective that promotes their empowerment and self-determination and not a utilitarian relationship that poses additional threats to them.

There are a number of important elements that require examination. On one hand, the undeniable contribution of Indigenous Knowledge and practices in the conservation of the Amazon and the global provision of ecosystem services (ES). On the other hand, there are impacts that such recognition might have on their life systems and worldviews, especially considering the historic abandonment they have been subjected to. Participant GOV8 refers to the imposition of a global responsibility on communities who are struggling for their rights in territories of great complexity due to all the dynamics occurring there.

“One of my big concerns is that everything was dumped in their territory. Besides not having instruments, they were dumped a lot of responsibilities. They are told... look... everyone deforests the planet, so you must conserve, because if you don't conserve, then the USA cannot continue to grow. This was imposed on them, is not that they [IP] don't conserve, but now they've imposed the burden that they must be responsible for conservation and ecosystem services. They are told 'the Amazon is the lung of the world, the regulator and stabilizer of the planet's climate' so indigenous communities, you are responsible for caring for the Amazon and the ecosystem services”.

[GOV8]

This is closely related to the international agreements and platforms to which the country adheres. These entail commitments and goals, such as is the case on COP26, where the commitments assumed by the Colombian Government before the international community include to be a carbon-neutral country by 2050, reduce greenhouse gas emissions by 51% and have zero deforestation by 2030. These new roles imposed on Indigenous Peoples by global markets, society and governments have been

studied by Blaser et al. (2004), and suggest that if not addressed properly, another form of colonisation could be taking place as IP alter their strategies for survival and autonomy in response to the development needs imposed by the western world. One example of neo-colonialism is green grabbing, which refers to the appropriation of land for conservation or environmental agendas (Fairhead et al., 2012). Among the debate on green grabbing are the efforts to combat global climate change and initiatives aimed to reduce CO₂ emissions. One of such initiatives is REDD+, a framework adopted at COP 19 in Warsaw in 2013 and finally signed in 2015 with the purpose of “*reduce emissions, from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries*” (UNFCCC, 2015). This programme is broadly negotiated in indigenous lands around the world and some of the critique includes that it might impulse alienation of ancestral land by changing occupation and land rights (Fairhead et al., 2012) and that uses market-based mechanisms to address deforestation (Krause, 2020).

Similarly, for some of the participants, Western concepts are adopted and transferred to communities without careful analysis and commitment to explain them. NGO₃ explains this:

“We adopt languages and concepts from international debates, like climate change and REDD, and try to explain REDD to local communities...and all the implications it has. When we adopt concepts, we adopt the discourse, not the practice, the meaning, the tools, then it would be different. REDD is among the most sophisticated expressions of capitalism: carbon credits. Where are your carbon credits? Hmmm... distributed in the system...explain this to an indigenous person”.

[NGO₃]

As for the opinions on the concept of ecosystem services, these are varied. For participants NGO₃ and GOV₂, it can be translated into monetisation of nature and therefore negatively permeates communities and their worldviews. The state of vulnerability of many of the Indigenous Peoples can cause the adoption of these types of initiatives without a complete understanding of them, because they are seen as opportunities to access resources for their communities. Such is the case of the Cacia in Wacar, as explained in Chapter 5.

“When things are priced, it causes serious difficulties within the communities, because what and how do you value? and people start requesting to be paid for taking care of the forest. Valuation/pricing simplifies an interaction when this interaction is not simple but complex”.

[NGO3]

“We tried to promote a different approach to the ecosystem services concept, to do a bit of resistance, since it is a political issue that seduces because it comes loaded with monetary resources. But the resistance has not been strong and with little effect. We’re still trying to build a social informed base of what this means, but I’m not sure, given the seduction power of the money, for how long it can be resisted”.

[GOV2]

In certain communities with higher degrees of political organisation, these types of concepts are not well-received as they are seen as a new imposition of roles in favour of the non-indigenous. In the experience of participants GOV6 and GOV2 with Indigenous Peoples in the Amazon, some communities exert political resistance to such concepts that do not reflect their worldviews.

“There are Indigenous Peoples who have come here and told us: ‘we do not have payment for ecosystem services, we have dignity, we are not going to be park rangers for the rich, we actively participate in the construction of the ecological administration of what you call services’.”

[GOV6]

“I’ve spoken to many ‘tradicionales’ and they say they don’t do things because it gives them a benefit but because that is the way it has been established from the beginning of the world. And from this logic it is very difficult to think about a service. For example, the water has a spirit, and I can talk to it and establish a relationship, it becomes angry, it dries, it changes... so I can’t assume it belongs to me, because it would mean I’m being petty by not letting it to flow and express itself as is the mandate. That’s why it is so difficult to understand the concept of ES... the term service itself is confusing and difficult to embrace/appropriate”.

[GOV2]

Despite the criticism, as the Amazon has become an object of global attention, in which globalisation ceased to be an external agent and became a force within, indigenous people could seize the ES momentum to negotiate and mainstream TEK on their terms. For participant GOV6, the concept is on the national agenda through the National Policy on Biodiversity and Ecosystem Services (PNGIBSE) and it could be an opportunity to seek alliances and commitments between actors for a better ecology.

“I believe that ecosystem services is the great agenda of the Humboldt⁴⁹ and IPBES⁵⁰ to draw attention to a more complex ecology behind management. And an ecology that can benefit from the one that Indigenous Peoples already know”.
[GOV6]

Incorporation of the ES concept requires careful consideration and adaptation to the indigenous context, as it is seen as conflicting with their worldviews of reciprocity and unity between humans and forest beings. Attempts in this regard have been made by National Parks and a conservation NGO, showing other options in which, the concept can be approached from a TEK perspective.

“We proposed that there are no ecosystem services, but rather a construction within the framework of the principle of reciprocity, which is more relevant for the Amazonian indigenous context, where the conception is that if nature gives you something you need to contribute back”.
[GOV2]

“Well, we didn’t even work with the ES concept. At the end of the discussion with them [IP], the conclusion reached was that they were not going to talk about ecosystem services, but spaces for use and key elements of biodiversity, which are still two technical concepts, but a bit more related to the praxis”.
[NGO5]

⁴⁹ Alexander von Humboldt Biological Resources Research Institute, often referred to as IAVH, is an independent non-regulatory research institute of the Executive Branch of the Government of Colombia charged with conducting scientific research on the biodiversity of the country including hydrobiology and genetic research.

⁵⁰ IPBES: Intergovernmental panel on biodiversity and ecosystem services (<https://ipbes.net>)

6.3.3 Weaving alliances

“I think that governance, in a very pragmatic way, is the ability to make good alliances. And for these communities it is essential to know with whom to ally, so that the issues that are important to them are put in their territories”

[ACA5]

In social-ecological systems theory, understanding the networks of the actors that are part of the system, either because they legislate, or because they carry out actions, their interests and the potential they have to influence the system trajectory towards one state or another is fundamental. As previously seen, in the case of the Amazon and the challenges for Indigenous Peoples to take actions, finding the points where there are opportunities for strengthening and overcoming challenges and bottlenecks is a necessity. In doing so, NGOs, academia, some state institutions, and international aid have proved fundamental.

6.3.3.1 *Filling state gaps – NGOs, Academia, and international aid*

“We are generating a new strategy; we know that we cannot do it alone. We must have allies, we need alliances, with the people or entities that want to support us. That’s the route, because the situation is getting worse every day, and we are at risk, and we need to continue strengthening the communities, their authorities, the empowerment of the communities in their governance”.

[IOR3]

In the absence of strong state institutions, the alliances that indigenous communities and organizations may establish with other organisations are decisive, especially for those communities further away from populated centres and those with limited technical capacities. Motivation, roles, and strategies established by non-state organisations with Indigenous Peoples vary from interest in research and collaboration, to helping indigenous communities in their organisational processes and in rights protection. The eight NGO participants interviewed in this research emphasised their role in strengthening communities, the production of information

for decision-making, and acting as interlocutors between indigenous communities and policy makers.

“What we do is the documentation of IK and strengthening of local knowledge, always in a dialogue with academia and institutions. Because the objective of strengthening is to have capacity for interaction, which is capacity for negotiation. And this is governance”.

[NGO3]

“The work in general consists of supporting organizations in their advocacy processes with the national government for the conservation of forests in the face of REDD initiatives and initiatives to stop deforestation.”

[NGO5]

At a more local level, some NGOs play a role attending to the specific needs of the communities. This is the case for the NGO Sinergias in Wacar, whose activities focus on health care; or the case of the NGO Fundacion Conservacion Sostenible, which has been the most active NGO in monitoring and reporting the causes and effects of deforestation in the Amazon since the signing of the Peace Accord.

“The project focus was maternal and childcare, but from the consultation process, it was obvious that more things needed to be addressed. And what we always try to do is to have a more integral approach. Since we are an NGO we can’t provide health services, that’s a function of the State, therefore what we do is to provide training and strengthening of local capacities”.

[NGO2]

In the case of NGOs, although at first sight the intention may be good, their prolonged presence is questioned. For some participants, their role should be to strengthen the communities and leave the territory once they become autonomous, and not remain indefinitely living off the resources assigned to them. Yet, in the opinion of participant ACA5, management of resources is one of the main bottlenecks for indigenous organisations and for which many are still dependent on the support of NGOs.

“I worked for USAID and as donor it was clear that if I gave the money to the indigenous organisation in 3 months, I have no evidence on how the money was spent, unlike if I give the dollars to the NGO, making sure they follow some guidelines. At the same time, I’m very critical about this, because we should work in order to not have more NGO’s as intermediaries and indigenous associations should be able to lead their own processes. But indigenous associations have all the problems that social organisations have.”

[ACA5]

Besides NGOs, there are some state institutions with which indigenous communities have established better relations, including National Parks and research institutes such as SINCHI, the Amazonian scientific research institute. The success of the work with these state institutions has been the recognition of the communities, their knowledge, and their cultural particularities.

“The SINCHI and I have a good relationship with the indigenous associations and with the communities because we work with respect, with the awareness that we are in a collective territory, with some very special characteristics”.

[GOV5]

“What we did with National Natural Parks was to redefine conservation priorities in a protected area, by emphasising the relationships between social groups and their territory. From that, priorities were not traditional boxes, but biodiversity elements, cultural elements, and relations of use, both material and immaterial. In planning, we included variables such as time, and that an area was not static but changed according to the uses and the time of the year. The other thing was that we worked from an approach where there was coordination of the function between 2 authorities: the indigenous authority and national parks. This meant some institutional learning”.

[GOV2]

Regarding the relations and contribution of NGOs, academia and other institutions with indigenous organisations, a recurring element raised among the participants is the need to strengthen the capacities of Indigenous Peoples. Emphasis was given to the

strengthening of their own knowledge and those skills that allow them to better engage with the state.

“I think that one of the great challenges, as well as the great gaps that exist, is that in the Amazonian indigenous organizations there is still a lack of technical capacity, which results in limited political capacity. We try that organizations have technical information and can have technical support for their political advocacy processes and that their political struggle is based on scientific and technical information, which we say is not only collected from outside but by themselves, that can support their proposals with evidence they are very clear, but many times they do not have them, or they are not so well organized. So the challenge is above all that, how to achieve technical capacity in their organizations, both in their teams and in the knowledge they have of their territories”.

[NGO5]

Although indigenous organisations aim at self-determination under their own views and cultural traditions, for participant IORI in their local strengthening and organisational processes, understanding of the laws that cover them and the meaning of the technical terms appears to be indispensable.

“First, we have to train ourselves because to talk with the government you have to have knowledge and capacity. The idea is first to acquire knowledge of the laws, what is in the mayor's offices, what is in the government, what is in the ministries to be able to speak and ask for things”.

[IORI]

Similarly, they recognise the value of their traditional knowledge and consider it part of their greatest capital, but as it faces multiple threats, its recovery and conservation are crucial.

“Our strength, the weapon we have had for millennia, that our ancestors have left us is ancestral wisdom and knowledge. It is deposited in our knowledge, that at this moment is at risk, that is what we need to recover and strengthen. That's where we need your [academia] support, that's where we want to call the whole world. Do you want to keep the Amazon? So help us continue to uphold that”.

In the support provided by NGOs in the region, one common observation regarding the indigenous communities is their lack of understanding of their role and connections with larger scales. Remaining isolated has been the strategy of some groups, such as the Nukak, until it is no longer an option because external pressures continue to grow and surround them. This does not mean that they should be integrated or absorbed by Western culture, but rather prepare to face the changes brought by the encounter of two different worlds that coexist in the same territory, as the political, geographical, linguistic, and cultural isolation determines most of their actions.

“I think the problem is they are not connected with the rest, and I do believe that part of those capacities that must be strengthened in communities, not only indigenous but local, is that they understand their role in the world. How is the world, who are they, what do they represent for that, and what is their contribution?”.

[NGO5]

A first step in the process of connecting scales, from local to national and even global, is provided by the dialogue and integration between knowledge systems, Western and Indigenous Knowledge. These connections are presented in the next section.

6.3.3.2 Knowledge systems alliances – opportunities and challenges

Although still with a lot of apprehension in some spaces, one of the synergies that has provided options for successful collaboration between the Western and the indigenous world for the management of natural resources is the dialogue and transfer of knowledge systems. Although co-production of knowledge for natural resource management has been broadly analysed (Berkes, 2008, 2009; Gadgil et al., 1993; IPBES, 2014; Hill et al., 2020) some of its real impacts and ways of such integration remain to be investigated (Bohensky & Maru, 2011).

For participants in this research, TEK is immense and a cornerstone in territorial planning and conservation; nevertheless, more needs to be done by the government to incorporate this knowledge into public policies and development plans.

“Fortunately, Indigenous Knowledge, ecological knowledge about the functioning of ecosystems is impressive, it continues to surpass for years the knowledge that the Colombian academy has built. The ecology academy is 50 years behind what it should be in terms of understanding the functioning of the territory”.

[GOV6]

“That knowledge exists, is real, is profound but if we don’t recognise it, we don’t document it, we don’t promote, protect it, what kind of public policy can we produce? Because in general policies it is acknowledged, it is included in the CDB, in the PNGIBSE, and since it is in CDB it multiplies for all the national policies, but the praxis is what is missing”.

[NGO3]

In this research, knowledge integration was found to often be limited to NGO and research institutes-mediated interventions. For expert NGO4, in the Pirá Paraná and Mirití regions, when TEK is combined with new technologies, involving young generations, in dialogue with the elders, it produces a great dynamic and motivation that reflects the value of IP identity. This has been referred to as *“dialogo de saberes”* and has shown to be crucial in self-organisation, agency, and indigenous self-determination in the Latin American context (Barkin, 2012).

“An environment of endogenous research is created, which has had very good results, more than some processes that we have made of ethno-education, intercultural health, self-government ... etc. This has been the most effective because the elders are talking about what they know, that is, the territory; and the young people are learning and recovering their identity, their pride, and their dignity”.

[NGO4]

Similarly, expert NGO3 from the NGO Tropenbos highlights the importance it has for communities to combine TEK with new technologies and produce information that can be used to negotiate with state institutions and look at their territory differently.

“We are convinced we have greatly influenced the governance through the production of local information. All that documentation has been key in discussions, debates, and decision-making scenarios of IP. In terms of territory, 400 maps have been produced with an incredible level of precision. When one has this amount of information it is great to be able to have a dialogue with the institutions, being able to show them that knowledge exists, is valid, profound, sophisticated, beautiful, and useful for life. With this, negotiation process is facilitated and decision making takes another level”.

[NGO3]

Statements like those above demonstrate the intent of some actors to bring together those knowledge systems; but as has been revealed throughout this work, the lack of interest and commitment on the part of the state means these efforts do not scale up and have a political impact.

“There are experiments that have been done in many places for example when an indigenous person learns to handle satellite images, it is incredible. The ability to interpret satellite images, to manage technology devices for referencing ...

“There is also a lack of decision by the state to make the real cartography of these territories, with creeks, hills, and old roads, which are not referenced in the official cartography. Will we do it someday?

[NGO6]

Nevertheless, there is also disagreement as to whether TEK is a practice rather than a discourse that serves to access resources. For participant ACA1 some of the communities have lost connection with the territory and use the construction of the “ecological native” (Ulloa, 2004) as a platform for their particular interests.

“In some groups, depending on the situation, is it [TEK] simply a discourse that sells outside, because leaders no longer have contact with the base [local level], don’t even know what is happening inside, but they know that this discourse reaches a lot. Because it is true that many people have taken advantage of this and have hyper-enhanced this creation of the ecological indigenous, and have given much to talk

about it, but everything has to be put in context. I can tell you that the indigenous people of Apaporis are ecological. To generalize is very dangerous”.

[ACAI]

In general, what the participants from indigenous communities, NGOs, government, and academia agree on is the multiple internal and external pressures and drivers of change that hamper indigenous culture, organisation, and self-determination. A precarious educational system that does not meet the expectations of any of the life systems - indigenous or Western -, the lack of opportunities for young people, the armed conflict, the state abandonment, the structural disdain, and the permanent contradiction between conservation and development policies produce a fragile governance system with little capacity to navigate the growing challenges of the region. Therefore, recognition, alliances and strategic approaches that acknowledge the complexity of the Amazon region, its differential cultural and ecological configuration, and that promote a social-ecological perspective, in which a cross-scale dialogue is built, are needed.

6.4 DISCUSSION - NAVIGATING TRANSITIONS, FROM CONFLICT TO PEACEBUILDING

“Weak organizations, absence of the state, no support for the exercise of the governance, the result is that this is impossible to govern. Plus, the lack of capacity of governmental institutions.”

[NGOI]

Environmental governance in the Colombian Amazon remains a challenge. As has been presented in this chapter, the current governance system is comparable to a patchwork of interventions where the repeating patterns in which those interventions operate include critical elements such as structural cultural disdain, epistemic hegemony, state neglect, ambiguity, and institutional disarray. As the decisions and transformations of the Amazonian environment are associated to social, economic, political, and cultural factors (Carrizosa et al., 2016; Echeverri, 2009; Echeverri & Pérez Niño., 2011; Guio, 2018), these factors make its governance a matter of political ecology. Such a patchwork has had implications at different scales, but what has become clear

is the constant violation of indigenous rights, their marginalisation, and its consequences for social (in)justice in terms of security, education, health, economy, and self-development. At a local level, the case of the Cacua SES was analysed (see: Chapter 5), showing the multiple social and environmental pressures it faces and the drivers of change influencing it. By adding the Peace Accord to this complexity scenario, as discussed in Chapter 4, the stability of the Amazon system – the Cacua included – is being challenged. Nonetheless, possibilities for adaptation and improvement of the governance system could be seized in a way that historically marginalised groups become active actors in the peace-building transition.

The previous chapters explored and analysed a series of SES attributes relevant to the corresponding research questions, and to understand the SES functioning, such as boundaries, actors, system states, context, and interconnectedness. To give final shape to the analysis, in this chapter attention has been placed on the attributes that contribute positively or negatively to the governance system of the Amazonian SES and the potential role of TEK across scales.

This potential offers scope for communities such as the Cacua to better position themselves looking ahead and attending to issues of inequality and justice. The discussion has been arranged around transition governance and three key attributes of governance that provide resilience to SES: participation, cross-scale arrangements, and polycentric systems (Lebel et al., 2006). To do so, the impacts of the peace accord for IP in the Amazon (See: Chapter 4), the role of TEK on a local SES (See: Chapter 5), and the patchwork governance influencing the system (Chapter 6) are brought together.

6.4.1 The Amazon - A matter of governance or governability?

The Colombian state is responsible for enforcing the Constitution of 1991, which on paper has granted the Indigenous Peoples in the Amazon multiple rights, benefits, and authority. Yet, as reported in other similar contexts, those rights, benefits, and powers remain poorly fulfilled, as the capacity of the State to control and govern such large and complex territory, and to satisfy societal demands, is limited (Maldonado & Martínez, 2016; Stamatopoulou, 2018; UN-DESA, 2009). Such limitations are reflected

in the poor quality of life for many indigenous groups, whose lives and livelihoods are under constant threat.

The capacity of the state to legitimately and effectively meet the social needs and demands of those to be governed, is defined as governability (Paquet, 1999). Although the Amazon scenario appears to be a governability matter, and the government should implement what is in the law — Indigenous Peoples being the authorities in their territories —, the complexity of the system and the multiple actors across scales conflate governance and governability. Responsibility for the use of common pool resources to meet societal needs is not exclusive to the state, but to the set of multiple actors across scales that directly and indirectly interact and make use of those resources. As such, interactions are mediated by laws, power relations, traditions, and formal and informal regulations, we refer to as governance (Lebel et al., 2006). In this case of this research, we refer to environmental governance. Additionally, Indigenous Peoples are lawfully acknowledged as territorial authorities, however, as found in this research, many of the relations established with the Indigenous Peoples are based on disdain and marginalisation, which have perpetuated an unequal system in education, health services, economy, and politics, which in turn reflects poor governance. For Lebel et al. (2006), “*social justice is the central goal of good governance*”, but how can justice be achieved in such a governance patchwork? One possible answer lies in finding ways to make the current system inclusive, adaptive, and resilient.

Such a governance system would need to account for the regional differences among the Amazonian departments, associated with the cultural diversity, sociopolitical systems, their historic occupation, and geographic connections with other parts of the country, such as the Orinoquia and Andean regions (Correa, 1988; Palacio et al., 2010). While Guainía, Vaupes and the Amazon departments are mainly occupied by indigenous groups, Putumayo, Caquetá and Guaviare have a long history of colonisation by non-indigenous peasants and the presence of illegal armed groups. Similarly, events such as armed conflict have affected these departments differently and communities in Guaviare, Putumayo and Caquetá have been more severely affected. Such particularities must be accounted for in governance arrangements to avoid further conflicts over land and resources (Bruch et al., 2012; UNEP, 2009).

More importantly the transition to a ‘stable and lasting peace’ as is the main goal of the PA, must inevitably consider not only power relations between the state and other actors with the Indigenous Peoples, but also the diversity of values, knowledge, worldviews, and traditional practices that determine the uses of the territory. Such a model of governance is what Arturo Escobar has called *pluriverse* ‘a world where many worlds fit’ (Escobar, 2018, p. xvi).

6.4.2 Post-Accord Amazonia – Transition Governance

Transitions, as seen in Chapter 2, are transformations that systems undergo, changing from one state to another (Shove & Walker, 2007). In the case of this research, we refer to transition as the conflict-to-peacebuilding scenario, in which the system seems to be moving into uncertain directions or system states.

The historic armed conflict has impacted Amazonian indigenous communities severely, and the legal and illegal extraction of the natural resources (NR) in their territories has had negative socio-environmental consequences, (Guio, 2018; Ldrovo et al., 2001; Rodriguez, 2016; Salazar Cardona et al., 2019; Tropenbos, 2012). According to the United Nations Environmental Program (2009) and (Krampe et al., 2021) the strategies followed to manage NR in post-conflict scenarios are key in facilitating sustainable peace processes. However, despite the window of opportunity for peacebuilding that the PA with the FARC opened in 2016, its implementation and the governance in the territory is still contested.

A recent analysis made by the Kroc Institute (2021), shows only 13% of the stipulations in the agreement involving ethnic groups (point 6.2 in the PA) have been implemented, and the signing of the accord has not improved IP’s situation (Pereira et al., 2021). A primary concern is that during the transition social and indigenous leaders have been victims of further violence (UNHCR, 2020), and the magnitude and speed of deforestation in the region has increased alarmingly (Clerici et al., 2020; Murillo-Sandoval et al., 2020; Van Dexter & Visseren-Hamakers, 2020) (See: Chapter 4).

Peacebuilding transitions are complex, particularly in contexts where States do not guarantee the exercise of basic human rights for marginalised groups, such as Indigenous Peoples (Maldonado & Martínez, 2016; Stamatopoulou, 2018). Limited

success with reconciliation, peacebuilding, and rights vindication processes involving Indigenous Peoples have been documented globally. In Australia, the government has failed in providing justice for aboriginal people by not effectively implementing laws regarding their self-determination and land property rights (Gunstone, 2016). Similarly, in Canada (Verwaayen, 2016) and Bolivia (Vidaurre-Belmonte, 2016) structural discrimination has been reported as the cause of the government's resistance to implement protection measures. In Timor-Leste (Close, 2016), the peacebuilding model has focused on economic and democratic reforms, leaving out traditional worldviews and knowledge systems linked with peacebuilding practices.

Participation of IP in the Colombian peacebuilding transition is central to address current conflict and avoid further disputes over land and natural resources. However, as it has been remarked in the results section, and in common with the cases mentioned above, despite the governments' supportive rhetoric, protection of Indigenous Peoples' rights continues to fail. In the Amazon, violation of their rights has impacted directly on the communities (abandonment, displacement, recruitment, killings), or their territories and the environment to which they are connected (through transit, camps, landmines, and concessions for extractive enterprises). While in the final document of the PA indigenous groups such as the Nukak and Jiw are explicitly acknowledged as victims of the conflict (Peace Accord, 2016. p. 208), it is necessary to understand that peacebuilding in the region must go beyond the presence/absence of armed actors, the implementation of some stipulations and decisions top-down. Recent research on conflict resolution in indigenous context has shown that non-indigenous management strategies are less effective versus indigenous management strategies, as they incorporate key cultural feature such as story-telling, spirituality, and the involvement of elders (Lundy et al., 2022; Mac Ginty, 2008).

To face the post-Peace Accord scenario, the governance system requires structural adjustments, the question that remains is how, and as it will be addressed in the next sections, it appears the combination of cross-scale interactions, feedbacks, the Peace Accord, and uncertainty are ensuring the system remains trapped in an undesirable configuration of inequality for Indigenous Peoples.

6.4.3 Cross-scale governance and feedbacks

In the last two decades, scholarship on SES has called for a focus on the interconnectedness among systems across scales, or panarchy (Gunderson & Holling, 2001) and the feedback mechanisms operating within them (Berkes et al., 2006; Chaffin et al., 2014; Folke, 2006; O. R. Young et al., 2006). This concept allows an understanding how apparent isolated indigenous groups in the Amazon are subject to global governance systems and multiple drivers of change occurring externally but impacting their territories. As discussed in Chapter 5, the Cacia might appear isolated and 'protected' but such perception can no longer be accepted, especially with rapid changes encroaching on the Amazon and Cacia territory. In this increasingly interconnected configuration, one key aspect of SES governance is feedback.

The concept of feedbacks, or feedback loops, is closely linked with that of nested systems, - meaning a complex system contains many other subsystems in a panarchy arrangement (Allen & Starr, 2017; Berkes et al., 2002; Gunderson, 2002; Holling & Gunderson, 2002). What this means is that events at local scales can have effects and generate impacts at larger scales, and vice versa. The Cacia SES presents as a clear example of a nested system, embedded in a more complex system, the Amazon region, which in turn is part of the global system. What can be gleaned from this research is that these exchanges and feedbacks across scales are unequal and inequitable.

From a bottom-up perspective, that is, from the perspective of indigenous communities such as the Cacia, whose practices have allowed the conservation of the Amazon rainforest, national and global benefits are generated — namely climate regulation through carbon sequestration among other ecosystem services. However from a top-down perspective, multiple negative feedbacks can be identified. Some of those have already been discussed and include acculturation, extractive booms, displacement, knowledge loss, diseases, and ecosystem deterioration. It could be argued that the inequality of feedbacks is associated with governance systems based on opposing worldviews and values. For Indigenous Peoples, local governance arrangements reflect their value systems and worldview where they are one with nature, and the living and non-living system components are governed relationally with reciprocity a key feature of governance. This is contrary to the Western value system where nature is seen as capital that can be used to produce economic growth (Close, 2016; Correa, 2017; UN-DESA, 2009).

As explored in Chapter 5, the Cacua and their territory can be conceptualised as a coupled relationship between an ecological and a social system – an SES. Although the Cacua's holistic worldview may not be as obvious as has been reported for other indigenous groups in the region (Krause et al., 2020; Reichel-Dolmatoff, 1976), they are aware of this interdependence. This indigenous vision differs from the national hegemonic system, strongly associated with utilitarian development of regions based on the extraction of natural resources, which in turn responds to the global demand for materials (Benyei et al., 2017; E. Boyd, 2008; Reyes-García & Pyhälä, 2017).

For Puyana (2010) the Amazon ceased to be a globally isolated region a long time ago, with all the 'bonanzas'. Presently, the Amazon faces what Puyana calls autonomous integration versus subordinate integration, the latter being the one that currently rules. This means that national and global agendas prevail over local ones (Muñoz Gaviria, 2021; Paucar Anchiraco & Quillahuaman Lasteros, 2021). At the national level this is reflected in interventions that do not respond to local needs and in the guidelines and procedures that must be followed to establish a dialogue with the state. This subordination extends to the global scale in different areas, one of them, as mentioned in the results section with the development of new concepts and responsibilities imposed on Indigenous Peoples, without their consultation.

While in Chapter 5 some of the feedbacks occurring at the local Cacua SES was analysed (e.g., sedentarisation, population growth and game scarcity), cross-scale impacts at higher levels (e.g., global markets, international agreements) are more difficult to track, because more elements play a part in the system and outcomes cannot be attributed to a single cause. As the influence of the Cacua on elements outside their local SES is currently limited, their adaptive capacity should be enhanced so that they can resist external pressures. A first step is the strengthening of internal systems that counteract the weakness of the system. Some of these elements include local capacity building, including leadership, and protection (e.g., documentation, promotion, revival) of ecological knowledge.

6.4.4 Participation, leadership, and local capacity building

Participation and capacity building processes in indigenous communities have shown a positive impact on their self-determination and self-government (Rubio, 2014; UN-DESA, 2009), and are fundamental in adaptation to drivers of change. Not without challenges or difficulties, crucial elements in the Amazonian case have been the creation and operation of the reservations, the organisation of the AATIS, and the role and commitment of local leaders.

A specific case is documented in two localities of the Amazon department: Leticia and Puerto Nariño with the establishment of the Association of Indigenous Councils of the Amazonian Trapeze (ACITAM). This process facilitated the creation and delimitation of the *resguardo* TICOYA to address the loss of the land resulting in overcrowding of IP in Leticia and Puerto Nariño respectively (Vieco, 2017). Associated with this process was the design of the life plan, during which the lack of knowledge about public administrative procedures by local leaders became evident. This concurs with the opinion of participant IOR1, a member of this community's *resguardo* (TICOYA). However, the benefits of participation go beyond this and seek to create conditions for self-determination in aspects such as health, education, politics, and economy, which can be achieved through access to formal education, training, and enterprise development (Hunt et al.; 2020). Traditional education in synergy with appropriate Western skills enable IP to participate actively in indigenous and non-indigenous contexts.

Examples of successful outcomes from indigenous participation have been documented around the world. Some examples include the planning and approval of the Ivvavik National Park by the Inuvialuit in Canada East (1991); the development of an intercultural education project that culminated in the inclusion of more than ten languages in the educational policy in Bolivia with improvements in primary school performances (d'Emilio, 2001); and in Australia, in a range of projects developed by the Telstra Foundation, focused on youth participation (Burchill et al., 2006). The corresponding success factors in each case were the organisation and establishment of an advisory committee to be consulted on land management; the involvement of teachers and parents in the program design, and building capacity among local individuals.

The debt of the Colombian state to the Indigenous Peoples is deep. Despite the opening of multiple spaces for participation, such as the regional board of the Amazonian people (Decree 3012 of 2005) and participation as government advisers for programs with a differential approach (Correa, 2017), the situation for many communities has not changed. The state system continues to represent challenges, especially for local organizations and communities whose knowledge of laws, administrative operations, and bureaucratic arrangements is limited and different from their own traditional organization systems. Furthermore, as highlighted by Jackson (2003), and mentioned by several participants in the current research, there is still debate about “who best represents the country’s Indigenous Peoples: if traditional leaders in local communities, or leaders from the national indigenous movements” (Jackson, 2003; p.82). At local levels, such as the Cacua SES, local capacity and leadership need to go in hand with programs for the recovery and protection of local knowledge, involving women and men of different generations.

6.4.5 Shared authority – shared knowledge

The Amazonian SES is complex and the limited presence and action of the state in the territory has created social and environmental conflicts affecting IP. Research on SES governance suggests that polycentric management models, a form of multi-layered governance in which authority is shared or overlaps (Imperial, 1999), and decisions can be made at different levels (Berkes et al., 2002; Ostrom, 2010), allow for better resource management. Among the advantages of such a system compared to centralised models are providing balance between a centralised and community-based governance, and the ability to address local social-ecological needs (Berkes et al., 2002), be more inclusive (Imperial, 1999), to be able to better monitor to identify feedback loops (Lebel et al., 2006), and the mitigation of risks (Carlisle & Gruby, 2019).

In this regard, one of the alternatives for the Colombian Amazon - as expressed by the INDI participant - is for Indigenous Peoples to exert authority over the territory, through the application of the recent Decree 632 of 2018⁵¹. The importance of the decree

⁵¹ For complete text of the Decree 632 of 2018:

<http://es.presidencia.gov.co/normativa/normativa/DECRETO%20632%20DEL%2010%20DE%20ABRIL%20DE%202018.pdf>

is that it establishes the procedure for indigenous reservations in non-municipalised areas of the departments of Amazonas, Vaupés and Guainía, to be formed as Indigenous Territories, acquiring the same category as the municipalities and becoming part of the administrative political organisation of the nation.

Some of the principles and rights contained in Decree 632 of 2018 include: development and self-government in harmony with the National Development Plan; guarantee and strengthen the prevalence of Indigenous Knowledge systems for the use, management and organisation of their territories respecting the cultural particularities and the cosmology of each Indigenous People; conservation and sustainable use of natural resources; guarantee the right to access opportunities and benefits provided by the state, seek to reduce cultural, social, economic and environmental imbalances; and guarantee the validity of fundamental rights, social, economic and cultural rights and collective and environmental rights of all the inhabitants under its jurisdiction.

It is in this context of self-government and adaptation that TEK has a critical role. TEK has been found to be crucial in social learning and adaptation of SES, through the accumulation and generation of environmental knowledge (Berkes, 2009; Berkes & Folke, 1998; Biggs, Schlüter, et al., 2015). Examples of the role of TEK in adaptation and resilience have been documented for communities in Australia, through fire management (Ray et al., 2012), the conservation of biodiversity by Amazonia groups (Gadgil et al., 1993), and co-management of natural areas in diverse contexts (Berkes et al., 2002). Nonetheless, adaptive capacity and resilience associated with TEK are limited by internal feedbacks and external drivers of change.

In the literature, it has been emphasised that TEK is not static. As part of indigenous practices and traditions, TEK transforms according to context through generations (Berkes, 2008, 2009; Hunn, 1993; Reyes-García & Pyhälä, 2017). It would appear though that with all the pressures and challenges identified in this research (e.g. language barriers, TEK erosion, defaunation), the adaptive capacity of the Cacia SES would be limited if major perturbations or modifications occurred, such as forced displacement, extinction of keystone species, unsustainable population growth, or acculturation. Consequently, unless interventions are put in place, it is expected the local-level SES to be pushed beyond its ability to absorb major changes and the Cacia to be trapped. The SES will likely remain in a transformed state, but even so, as discussed before,

TEK alone is not sufficient to adapt to perturbations of the system, and strategies for the dialogue between knowledge systems are required.

6.5 CONCLUSIONS TO THE CHAPTER

Coordination and cooperation between indigenous and municipal authorities is required, so that each one can develop their own agenda and support each other. The challenge as a country is to build state and IP alliances together, starting from recognising the IP as authorities and their TEK as central knowledge in their development.

Due to the close connection between Indigenous Peoples and the territory, the peacebuilding transition mechanisms must consider such interdependencies and adjust national and local governance systems to better understand the feedbacks between all the elements in the system and across scales. Social-ecological systems theory provides a framework for such an approach, but as discussed in this thesis this alone is not enough: deep structural social and cultural changes must also be implemented, and rhetoric must turn into practice.

The governance system must aim at protecting the Indigenous Peoples and their territories, as it is IP and their traditional knowledge that have allowed the conservation of the Amazon. Granting them autonomy and authority in their territories is not enough to face the increasing external drivers of change, neither to bridge the inequality gap.

The relevance of the PA is that to a certain extent it eliminated a factor (the FARC) that contributed to weakening indigenous governments/institutions and the work of the state, NGOs, and international cooperation in these territories. Thus, this new context creates a scenario so that through environmental governance and adequate management of these territories could be achieved; but it should be based on the recognition of indigenous governance and their TEK as a basis for planning and development.

7 Final Discussion and Conclusions

“Overcoming poverty is not a task of charity, it is an act of justice. Like slavery and apartheid, poverty is not natural. It is man-made and it can be overcome and eradicated by the actions of human beings. Sometimes it falls on a generation to be great. You can be that great generation. Let your greatness blossom.”

-Nelson Mandela-

In this final chapter, the key findings and insights that emerged during the investigation and engagement with the Cacua and other participants, to answer the research questions formulated in this thesis, are addressed and synthesised. Firstly, I summarise the main components of the thesis, including the problem, the research design, and the three chapters of results. This is followed by a discussion of the main findings about the Amazon region as an SES in transition, the implications of this transition for the Cacua and their territory as a local SES, and the gaps in the regional governance system revealed through the analysis of changes occurring under the PA. Finally, I make some recommendations and offer the reader my conclusions.

As will be discussed later in this chapter, peacebuilding requires fair and inclusive governance systems that guarantee Indigenous Peoples the preservation of their territories, their knowledge systems, and traditions, and not simply the cessation of warlike actions between different actors.

7.1 THE RESEARCH THEMES AND PROBLEM

Scenarios of armed conflict and their transitions to peacebuilding processes bring challenges to territorial, political, social, and environmental processes. Given the complexity of these processes, which involve a variety of social, state, and private actors, as well as natural resources, this research selected a social-ecological systems (SES) approach as the lens of analysis for the Colombian case. From a SES perspective, the research seeks to contribute to the area of environmental governance in post-conflict settings, with a focus on the role of Indigenous Peoples and their Traditional

Ecological Knowledge — TEK. The Colombian Amazon was selected for this purpose due to its rich biocultural diversity and the historical impact on the Indigenous Peoples and ecosystems by the armed conflict in the country.

The research addresses a number of knowledge gaps, identified in Chapter 2. First, my literature review found that while there has been research on the impacts of the PA on the ecosystems (Armenteras et al., 2003; Betancur-Alarcón & Krause, 2020; Clerici et al., 2020; Krause, 2019, 2020), there exists limited work (Krause et al., 2020; Pereira et al., 2021) on the implications of the PA for the Indigenous Peoples in the Colombian Amazon and their TEK, and TEK's potential to help navigate the peacebuilding process. Second, the Cacia, a hunter-gatherer group with extensive knowledge of the forest, have been largely overlooked by other indigenous groups, the state and academia.

7.2 THE RESEARCH DESIGN

Using qualitative methodology, and applying semi-structured interviews and document review, this research elicited perceptions from key participants about the impacts of the Peace Accord in the Amazon region between 2016 and 2019. It also investigated their perceptions of the role of TEK in the governance of the Amazon in the peacebuilding scenario. This research also carried out a cross-scale analysis, using as a guide McGinnis and Ostrom's (2014) framework it characterised a local SES, the Cacia people in the community of Wacará. Evidence to support the analysis was gathered through participant observations, semi-structured interviews, workshops, and a focus group as data collection methods.

The Cacia were chosen as the relevant case study for this research because they are one of the four hunter-gatherer Makú groups in the region that still have access to their territory and well-conserved TEK, on which they depend for their subsistence and livelihoods. Additionally, they are a small community of about 200 people, of which there are few records apart from limited reports from one health NGO that works with them, the work from Cathcart (1973), the ethnographic work of Silverwood-Cope in 1972, and the grammar study of Bolaños-Quiñonez in 2016. Finally, although they have not been affected by the armed conflict to the same extent as other indigenous groups

like the Nukak or Jiw, the Cacua face pressures and drivers of change that put aspects of their culture at risk.

7.3 SYNTHESIS

7.3.1 The Peace Accord for Indigenous Peoples and their TEK in the Amazon

In Chapter 4, the implications of the Peace Accord in the Amazon were addressed through a series of interviews with participants from different sectors (NGOs, academia, indigenous organizations, indigenous communities, and government) and a review of public documents related to the PA. The analysis revealed three perceived categories of impacts of the PA in the Amazon and on its Indigenous Peoples in the period between 2016 and 2019.

The first category identified the PA as a positive event or an opportunity. It was perceived as a prospect to enforce Indigenous Peoples' rights as stipulated in the Constitution, and to rethink and design more inclusive governance models in territorial planning. It was also an opportunity to advance biological research in the country by accessing areas historically isolated by the FARC. The second category that emerged was the PA as a negative event or a risk. The main reasons for this were the increase in deforestation rates after the signing of the PA, and the governability vacuum left by the FARC, which led to reorganisation of new armed actors in the territory. The third category positioned the PA as 'business as usual', meaning it was perceived by participants as not having any impacts. The explanation for this was that regardless of the PA, the extractive model of development and the historical disdain expressed for Indigenous Peoples continue to be obstacles to their self-government and determination. In general, perceived impacts and opportunities of the PA are linked to a range of effects of the war in the region that include weakening of indigenous organisations and processes, weakening of traditions and customs, land dispossession, and environmental deterioration.

7.3.2 Role of TEK in a local SES in the Colombian Amazon in a post-conflict setting

Chapter 5 delved into a local SES, the Cacua people and their territory, to understand the role of TEK in the system, identify the drivers of change affecting it, and the mechanisms that can contribute to its preservation. Major drivers of change in the community in the last 50 years have been the process of sedentarisation and the influence of education, from missionaries and the public education system. These events have created a cascade of changes and feedbacks such as population growth, game scarcity, cultural modifications, and TEK erosion. Despite this, TEK continues to be crucial in the life of the community and its livelihoods as it is the foundation for hunting, fishing, fruit gathering, garden crop cultivation, food preparation, and community relations. In more recent years, TEK has also proven to be an important element in negotiation processes with external actors on issues related to forest conservation and provision of ecosystem services. The SES analysis in the context of the PA showed the need for consideration of small indigenous groups such as the Cacua that seem to be largely unengaged in local, regional, and national development programs. Their knowledge and traditions are key in understanding dynamic systems such as the Amazon and the consequences for local ecosystems of their knowledge loss cannot be fully predicted. The potential for SES reorganisation under the PA scenario could be a window of opportunity for the Cacua to become visible and be active participants in the design of their community development plans. However, many cross-scale interactions that are not so obvious at the local scale need to be considered to avoid negative feedback loops that might 'tip' the SES into a less desirable configuration for the Cacua.

7.3.3 Configuration of the current environmental governance system to provide opportunities for the inclusion of TEK and the Cacua agency

In Chapter 6, the current governance system of which Amazonian IP are part and how they are benefited or affected by its current configuration were analysed. The analysis indicated a persistent state of negligence in the fulfillment of the laws for the inclusion and protection of IP rights, and the recurrent contradiction between legislation regarding development and conservation. In Chapter 6, again, cultural disdain proved to be one of the causes of this lack of protection despite prevailing state discourses and

legislation for inclusion and self-determination. Another cause of the failure to protect the rights of IP was identified as the interest of the State and other actors in the control of natural resources in indigenous reservations. In addition to the local and national pressures communities face, they also now face international discourses that impose on them responsibilities for issues of conservation and provision of global ecosystem services, and the impacts of the global economy as a fundamental driver of degradation of their territories and peoples. Within the framework of the PA and the territorial organisation based on the ethnic approach (section 6.2, p. 207), there is potential for TEK and ES to have an expanded role in governance and ES negotiation with the state, as TEK facilitates the organisation of the territory according to its uses and ecological characteristics.

7.4 DISCUSSION

The results of this research provide a snapshot of the dynamics of the region in the PA scenario in the period 2016--2019. Considering the PA has not been fully implemented (as of 2022), there are elements that require special consideration to improve the governance model and to enable pathways for a stable and lasting peace. Such elements which have been described in relation to leverage points (Meadows, 1999) for navigating transitions, and the incorporation of TEK to supplement future SES governance, are discussed next.

7.4.1 The Peace Accord transition: The Amazon and the Cacua SES

This research focused on two scales: the implications of the PA for the Colombian Amazon as a *regional-scale* SES, and for the Cacua people as a *local-scale* SES. At each scale, a series of elements have been identified that influence the trajectories of the systems, namely external factors, cross-scale interactions, ecological limits to the SES, and path-dependencies. The implications of these elements for each SES and the cross-scale interconnections between them as nested systems will be briefly discussed.

At the local level, my findings suggest the Cacua SES resides in a basin of attraction undergoing transition, mainly due to internal pressures and drivers of change such as going from nomadism to sedentism, the religious influence, the Cacua's population growth (influenced by the conflict), and the ecological limitations of their territory. In

the current context, it would appear the PA has not had major direct impacts on the system. Yet, as discussed in Chapter 5, although geographically isolated, cross-scale connections or panarchy between their local SES, regional SES and drivers of global change ensure that the Cacua do experience impacts. At the regional level, the results have shown the PA playing a significant role in the organisation of the region-scale SES and having major negative impacts on it, with unforeseen consequences for local SES such as the Cacua and their territory.

In the adaptive cycle associated with SES theory (Chaffin & Gunderson, 2016; Holling & Gunderson, 2002), the reorganisation of a system that occurs after a disturbance phase can take several paths: replicating the previous system or producing a new one depending on the elements interacting, their connections, and new elements entering the system (Peterson, 2000). In sustainability scholarship, when a system undergoes “substantial change and movement from one state to another” it is referred to as a system in transition (Shove & Walker, 2007). In this research, I have conceptualised a local SES — the Cacua and their territory — that has exhibited important change over the last 50 years (from Silverwood-Cope records in 1972). In a post-PA scenario, it is immersed in a governance model of state neglect and indigenous discrimination, among other challenges. This situation has resulted in disturbance of the local SES and its trajectory moving into the future has become uncertain.

The possible pathways or trajectories the Cacua SES might be following could lead to contrasting future system states, desirable or undesirable from the perspective of the Cacua (Figure 7-1). A desirable state would comprise a highly adaptive SES, with sufficient ecological resources to provide for the community, a robust social organisation to respond to internal changes and external pressures, and a governance system in which IPs and their rights are recognised and exerted and their aspirations for community development are expressed. Although the extent to which a complex system can be directed or managed towards a desired state (and away from an undesired one) is disputed (Shove & Walker, 2007), some elements such as knowledge, leadership, and networking have been identified as levers of influence before and during the transition phase of a SES (Lebel et al., 2006; Olsson et al., 2006). For the Cacua, some of the elements that are in their favour to enable a transition into a desired state also include an intact core TEK and access to their relatively well-preserved territory. To follow this trajectory, those elements are insufficient and additional

elements need to be in place, such as anticipation, justice, recognition, rights' protection for IP, and improvements in the state's capacity to govern the region, that is, its governability.

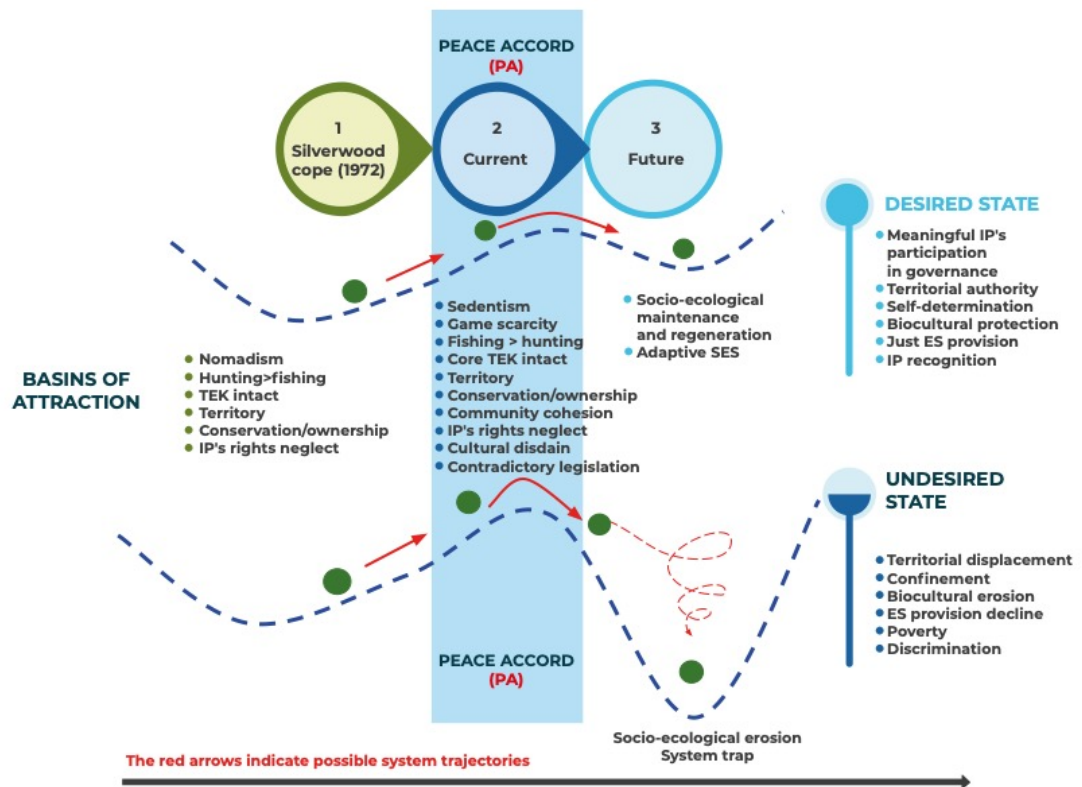


Figure 7-I. Cacua SES basins of attractions (Source: this research)

Unlike the Nukak and the Jiw, who are currently living under precarious circumstances, mainly due to land dispossession, the associated loss of traditional practices and the influence of harmful habits of Western culture (Franco Calvo & Mahecha, 2011; Franky Calvo et al., 2010; Zimmermann, 2018), the Cacua still have possibilities to avoid transition to a similar state. Yet, being a marginalised group, isolated from development opportunities, and with cultural aspects under internal and external pressure, and whose survival depends on their social-ecological resilience, finding mechanisms for social-ecological strengthening are crucial. Delaying action could mean the system transitions to an undesired state and remains trapped, perpetuating conditions of inequality in education, health, knowledge, and livelihoods.

In this sense, the literature refers to SES in a resilience trap as a system with configurations that preclude its capacity to adapt to changes and absorb perturbations, meaning that the undesirable state persists (Carpenter & Brock, 2008; Maru et al., 2012; Walker et al., 2004). In the complex and dynamic Amazonian scenario to avoid system traps and pursue just transitions to sustainability, the need for dialogue between Indigenous and Western Knowledge systems gains relevance and will be discussed in the final sections.

At the regional scale, the Peace Accord seems to be playing an important role in the dynamics and events that are taking place, as discussed in Chapter 4, and the Amazon SES as a whole is following a similar trajectory of decline to the Cacia SES, albeit caused by different drivers of change operating at wider scales. Initially, the PA seemed to be the starting point in a process of fundamental, potentially positive, transformations in land distribution, social and environmental justice, development and, of course, the end of armed conflict. Nevertheless, numerous obstacles seem to have placed the system on a trajectory leading towards a less desirable state. The increased regional deforestation and the rearrangement of power among actors vying for the control over natural resources and local economies has led to activities such as drug trafficking, cultivation of illicit crops, and illegal mining, creating renewed and expanded conflict in many areas (Botero, 2018; García Muñoz, 2019; Guio, 2018; Krause, 2019). At the same time, the government has sought to stimulate rural development based on national and global models that promote extractive economies and extensive agro-industries, which cause degradation of local ecosystems and livelihoods (Rodriguez, 2016; Silva et al., 2021; Ulloa & Coronado, 2016b).

War in Colombia has been critical to varying extents for many indigenous groups. Likewise, the adaptation and survival mechanisms indigenous groups have adopted have varied. However, what many indigenous groups share is a transition to decline in their local SES to a less than desirable state from IPs' perspective. For those who have lived through the war, the failure of the state to guarantee the fulfillment of their rights is profoundly disappointing. For this reason, the PA with the FARC was seen as a break from the permanent state of war and marginalisation, and hope of a transition into a state of (re)construction of the country in which the multiple realities of all Colombians have a place, and wellbeing is shared. For this to happen, while local and national efforts are vital, a changed global scenario is also required that enforces policies, rather

than simply rhetoric, on Indigenous People’s rights, their protection and recognition, and re-evaluates the mercantilist development model that disadvantages and disenfranchises IPs around the world (Figure 7-2).

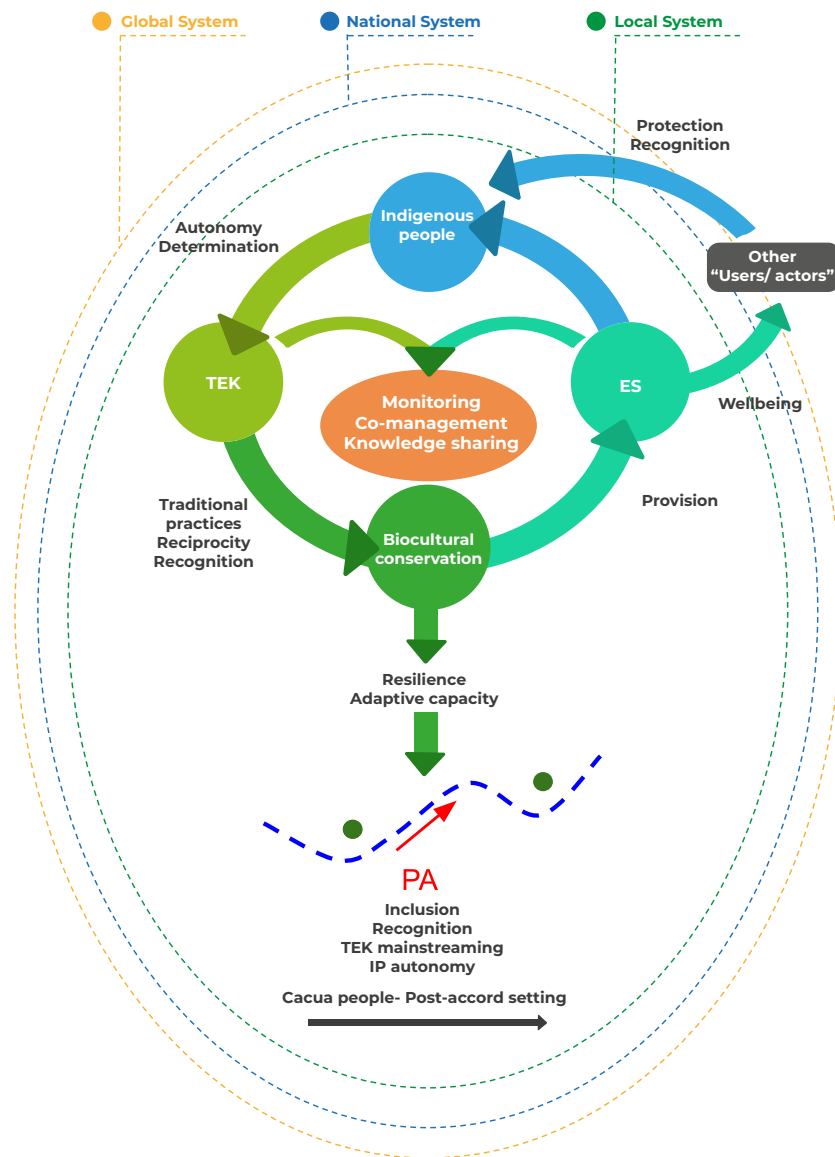


Figure 7-2. Desired transformation for Indigenous Peoples recognition (Source: this research)

7.4.2 TEK and ES — compass to navigate transitions

One of the main themes of this thesis has been the role of TEK and its connections with ES in this complex scenario of transition through peacebuilding. Scholars agree on TEK as a dynamic process of observations, discussions, and practices passed between

generations, and as such it adapts to environmental changes and cultural pressures (Berkes, 2008; Hunn, 1993). From an evolutionary perspective, as Boyd and Richerson (1988) argue, culture encompasses different types of knowledge. Therefore, if social and environmental conditions in which social groups are embedded change, information also changes, causing some knowledge to decline, or altered knowledge to spread among the population. This is key to the survival of the Cacua, since as it has been established in this thesis that they are undergoing cultural changes and are facing environmental challenges that put their TEK at risk of further erosion.

Literature on hunter-gatherer groups has reported that due to their heavy dependence on their surroundings, their capacity to adapt to rapid environmental modifications in the current global scenario is limited (Reyes-García & Pyhälä, 2017). This capacity is further limited as some drivers of change extend beyond the boundaries of their system (e.g. climate change, economic growth, cultural disdain) and their capacity for action and control (Dallos, 2011; Reyes-García & Pyhälä, 2017). As for the Cacua, most of their current limitations are associated with the ecosystem offer, specifically game availability for their subsistence. For them, as for many IPs in the Amazon, subsistence hunting is essential in their diet (De la Montaña, 2013; Peres & Nascimento, 2006) and as an adaptive mechanism to the scarcity, they have turned to fishing. Faced with these challenges, TEK needs to be understood in terms of the critical threats that place at risk the Cacua and their culture. One of the most important of these being the change from mobility throughout their territorial range to sedentism in permanent settlements.

Sedentism is a significant cultural modification hunter-gatherer groups have experienced. It has been demonstrated that mobility itself is an adaptation associated with the search for food, changing environment, political response in the face of internal conflict, or the death of a family leader (Cabrera Becerra, 2013; P. Silverwood-Cope, 1973). For my case study area, Silverwood-Cope's records (1972) show TEK at the center of the Cacua's mobility in connection with resource availability (p, 41), and this research shows that it remains at the center of their daily activities and livelihoods. Where in most studies, sedentism of nomad groups is reported as a consequence of increasing pressures such as colonisation, land grabbing, etc., (Reyes-García & Pyhälä, 2017; Tchernov, 1993), for the Cacua it was a decision initially motivated by the notion of improving their conditions with the presence of the missionaries (See: Chapter 5),

likely associated with their sense of inferiority regarding the other indigenous riparian groups.

The Cacua's transition towards sedentism triggered a series of reactions or consequences for the local SE. Comparing their current situation to the trajectory the Nukak have followed (Franky Calvo et al., 2010), sedentism promoted by the missionaries seems to have safeguarded the Cacua from major issues such as drug addiction, alcohol, and mendicity. In response to the new organisation and life conditions, the Cacua have increased cultivation and fishing practices in a reduced geographical range, often to the detriment of local resource stocks. Roscoe (2016) offers a detailed analysis of a similar situation among foragers in New Guinea, where a governmental intervention resulted in the settlement of groups with different impacts in their subsistence patterns. While for hunter-foragers who settled near water courses fish and other aquatic resources became a key subsistence resource, fisher-foragers groups turned to planting as an easier way of accessing resources (Roscoe 2016). What needs to be learnt from processes or interventions in indigenous communities like these (hunter-gatherer) is to look for the possible unforeseen feedbacks and consequences of such interventions.

It remains difficult to assess what level of the Cacua's TEK has been lost. This research, while comprehensive by design, presents a mere discrete snapshot of its condition in time and space (2018–2019); yet knowing what has been lost over the course of the preceding decades (with Silverwood-Cope's 1972 study standing as the sole benchmark) cannot be determined. It could be assumed that with the decline of species and new Western practices, TEK must have also declined. Evidence of the decline in use of traditional medicine plants signals a loss of associated TEK. Despite this, it seems TEK continues to guide their hunter-gatherer life, yet concern rises from the fact that feedback mechanisms between the elements that make up the SES (resource system, units, actors, and governance) are driving the Cacua and their TEK in new directions. While the outcomes of such pressures are uncertain, there is potential for them to limit the role of TEK in supporting adaptive capacity. Also, in addition to existing pressures (e.g., elderly mortality, inadequate schooling, resource scarcity, and language barriers), new ones such as the PA add further uncertainty to the picture and might inadvertently push their SES into new undesired configurations. This

precarious situation risks the loss of system resilience and the potential for reconfiguration into a system trap as covered before.

In the transition of SES to more desirable configurations, Olsson et al. (2006) have identified building knowledge and networking as one of the strategies for transition preparation. Throughout this research, the complementarity of TEK and Western knowledge has been reiterated. While for indigenous communities such as the Cacua, TEK is essential for survival in their territory, Western knowledge is vital for their interactions with other actors across scales. Similarly, Western scientific knowledge in this case could benefit from years of in situ knowledge about ecosystems such as the Amazonian rainforest. Such complementarity should be oriented towards an interaction in which the quality of life of the communities is positively impacted.

From my research, one area that shows potential for the two knowledge systems, indigenous and Western, to engage in the sustainability of the Cacua SES, is the concept of ecosystem services (ES). For example, it was shown in chapter 5 that despite their limited understanding of what climate change means both globally and for them, the Cacua appreciate that their practices and use of land provide opportunities to access funds through conservation projects. Nonetheless, appropriate design and engagement are necessary to respect visions, avoid discourse adoption, and limit the imposition of concepts and worldviews on the Cacua. Adoption of discourses is not uncommon, and several existing studies suggest indigenous groups have borrowed and modified concepts, especially from conservation discourse, as a power and negotiation tool for self-representation (Berman Arévalo & Ros-Tonen, 2009; Ulloa, 2004; Warren & Jackson, 2002).

The concept of ES has gained increasing relevance in recent decades. It has also sparked fierce debate as regards its ontological limitations (Diaz et al., 2018; Muradian & Gómez-Baggethun, 2021; Schröter et al., 2014). One of the main criticisms of the ES concept is its inadvertent adoption of worldviews that do not represent those of all beneficiaries involved in ecosystem services evaluations and assessments. Such is the case of values of reciprocity and spirituality the Indigenous Peoples have for the environment, contrary to the monetary value usually associated with ecosystem services, which are often mistaken for payment for environmental services. Yet, action-

oriented modifications to the concept are always possible when it comes to achieving common goals, as was the case of WWF working with the communities in La Chorrera (WWF & Fundación Puerto Rastrojo, 2018b, 2018a). In this experience, the concepts were adapted by the community to their language, understanding and worldviews, and then incorporated into the co-planning and technical actions.

Once the breach is passed, and adequate integration of the concepts has been appropriated by communities such as the Cacua, they could not only establish development projects that benefit their community, but that also empower and better position them in their interactions with the other indigenous groups.

In chapter 2, some of the ontological and epistemological differences between scientific knowledge, where ES has its origins, and indigenous knowledge, of which TEK is part, were addressed. Yet, it also addressed some of the elements that link those two concepts to enable contributing to natural resources management such as biodiversity enhancement and conservation, despite their apparent incompatibilities. In peacebuilding scenarios, where economic reactivation is essential for its sustainability (Bruch et al., 2012), in a country like Colombia, where biodiversity is one of its greatest capitals, largely due to TEK and practices of the Amazonian Indigenous Peoples, the provision of ES and their supply can be an economic alternative for small communities such as the Cacua. Such opportunities could contribute to the revitalisation of the local economies and the maintenance and improvement of IP livelihoods, with benefits extending beyond their local lands. For this to happen though, as has been pointed out by Sangha et al. (2019), the role of IP in the maintenance of global resources and its contribution to the wellbeing of direct and indirect users' needs to be recognised.

Developing collective action plans, commitments, and monitoring tools that allow the community to continue harvesting the forest without compromising the resources have been examined by Cardona et al. (2014) in communities of the Bolivian Amazon. Some of those measures included land distribution and management according to customs and traditions. Their findings highlight the importance of collective design of rules, rights, and obligations for the self-governance and self-organisation of the communities. Strategies like in this example, with TEK at their centre, could help the

Cacua manage their resources and look for alternatives to improve the conditions of the community.

7.4.3 Window of opportunity — pluriverse governance?

In the literature on systems transformations, besides mechanisms that can be implemented to navigate transitions, such as those discussed in the above section 7.4.1, there is discussion about points in time and space where managers or related system actors can intervene to influence positive system change. Those points are referred to as leverage points by Meadows (1999). The author has proposed a set of twelve leverage points to intervene in a system, among them the rules of the system, the goals of the system, and the mindset or paradigm. Using this framework as a departing point, (O'Brien, 2018) has adapted Meadows framework and reorganised Meadows' leverage points in a heuristic model of three spheres of influence in which levers operate to achieve transformations. The three spheres are the practical, the political, and the personal (O'Brien 2018). According to the author, most of the interventions we try to implement take place in the practical sphere. Examples include PES schemes and other management interventions. These, according to O'Brien and Meadows, are the weakest leverage points to boost transformation. On the other hand, in the political and personal spheres, where worldviews, values, and beliefs reside, is where the most influential leverage points occur, and where social and ecological injustices can be tackled (Meadows, 1999; O'Brien, 2018). Yet, these levers are often harder to pull, due to issues associated with power and politics.

As discussed throughout this thesis, it is in these dimensions or spheres where the challenges of the environmental governance of the Amazon manifest themselves. The structural disdain and discrimination towards IP have been used as an excuse to maintain a discourse in which IP are incapable of governing a territory — which they have in fact been governing for centuries. Moreover, the national global model of development, driven by capitalism and welfare, clashes with the IP worldview of 'wellbeing', in which people and nature interact and live in reciprocal harmony (Lara Ponce & Vides-Almonacid, 2014; Viteri Gualinga, 2002).

From this perspective, the PA became important, not only for the peace in the country, but as a window of opportunity to rethink and redesign models of governance that are

inclusive and just for Indigenous Peoples, their livelihoods, traditions, and knowledge systems, including TEK. The findings of this research suggest that, for Colombia, such models face multiple challenges, namely structural cultural disdain, institutional disarray, weak institutions (state and indigenous), persistent conflict over land and resources, ecological limits, and, importantly, political will. Nevertheless, if we want to transform the current system into a just, multicultural system, we — the researchers, managers, NGOs and other actors in the SES — have to also start shifting the eurocentric worldviews and broaden perspectives. This involves including IP perspectives, methods, and approaches and embracing differences. In essence, we must embrace new ontology, which has been termed the pluriverse (Escobar, 2018).

Arturo Escobar and Boaventura de Souza de Santos are among the scholars who have dedicated much effort to making other knowledge systems visible in light of the global social and environmental crises (Escobar, 1988, 2014; Santos, 2007). Both authors claim that at the core of injustice is the exclusion and oppression of knowledge systems different from the Western/Eurocentric epistemologies. The findings of this research support their assertions but have also shown multiple contemporary attempts to bridge the divide between IP and non-IP, which is becoming common in the field of environmental governance (Berkes, 2008; Berkes & Folke, 1998).

7.5 METHODOLOGICAL REFLECTIONS

Despite the general observation that the SES approach allowed for an overall picture of the main issues and interactions in the peacebuilding transition scenario, and to understand its complexity, this research has some limitations. These include, first, the breadth of engagement; second, the application of the McGinnis and Ostrom framework with the Cagua; and third, the researcher's interpretation of the participants' perceptions.

Regarding the breadth of engagement, it was not possible to interview participants from indigenous communities and indigenous organisations from the departments of Caquetá and Putumayo, and from the Organisation of Indigenous Peoples of the Colombian Amazon (OPIAC). Although secondary information was available for these areas, primary information would have enriched the work, especially considering that these departments have been severely affected by the armed conflict, and that the OPIAC leads most of the indigenous matters in the Amazon. The main reason for this

was the lack of response to the call for participation, which was beyond the researcher's control.

At the local SES scale, the application of the McGinnis and Ostrom framework served as a guide to identify which elements to consider for a comprehensive analysis of the system. However, the level of detail suggested for the variables in the second tier turned out to be too exhaustive. For an indigenous community like the Cacua, the required detailed information was not available. Neither were all the resources needed to generate such information. Undoubtedly, more details about ecological aspects of the territory from the TEK perspective could have contributed to the establishment of a more complete baseline of the intergenerational and gender status of TEK.

7.6 CONCLUDING COMMENTS

The regional Amazonian SES, with its resources, actors, conflict, state absence, is highly complex. Its governability and governance depend largely on the Amazonian peoples, who have occupied it for centuries, and its articulation with state agencies.

The post-PA has become a state policy with national consequences. For Amazonian IPs, the Accord reinforces existing regulations and opens up new possibilities for recognition and rights protection. It also offers potential for unique models of governance that acknowledge the authority of IP in their territories and the crucial role of TEK in its planning and management.

Such possibilities the PA opens might be differential, prioritising the people most affected by the conflict (eg. Nukak and Jiw) or those with more developed organisational systems. For indigenous groups like the Cacua, this differential means they might benefit from general measures included in the PA; but in their condition of not being direct victims, they might continue to be marginalised in political and decision-making contexts.

Yet, a positive impact would be the reinforcement and application of indigenous legislation, recognising their rights to be different as per their hunter-gatherer tradition. In terms of governance, the ending of armed conflict and its associated insecurity and instability provides possibilities for international, NGOs, and academic

cooperation (such as this study); but this will depend on the Cacua's capacity to acknowledge the changes they are going through, and their connections with other actors, institutions, and activities outside their local SES.

Given the current implementation of the PA and the global environmental changes taking place, the Amazon may be pushed into undesired configurations in which the existing systems of governance do not favour Indigenous Peoples and their traditional ecological knowledge. For local SES to better assimilate the changes that ensue from the PA, the governance system requires cross-scale modifications that incorporate concerted planning processes between IP and the State, NGOs, and other relevant actors, where TEK is recognised as central to assimilating changes without compromising IP's survival and livelihoods.

TEK is dynamic and adapts to the SES conditions, yet it is highly dependent on the relations IP can sustain with their territory and other aspects of their culture. Increasing pressures on TEK, such as transgenerational erosion, ecosystem deterioration and armed conflict make it increasingly fragile. To mitigate this fragility, TEK can benefit from a multicultural dialogue with non-Indigenous Knowledge, which has been canvassed widely in the literature. For the Cacua in particular, TEK needs to be documented before it becomes modified or lost due to internal and external drivers of change in the community. It also requires monitoring systems that help identifying knowledge tipping points with severe negative impacts on the Cacua SES.

Peace bulging in Colombia is not possible only with the recognition and reparation of its Indigenous Peoples, but rather requires structural changes in the governance systems, for models that are inclusive and respectful of the indigenous worldviews, and that foster and guarantee indigenous agency and development.

8 Appendices

Appendix A — Participants ID

Participant code	Name	Participant code	Name
COM1	Samuel López	IND1	Ramon Laborda
COM2	No ID	ACA1	Dany Mahecha
COM3	No ID	ACA2	Germán Palacio
COM4	No ID	ACA3	Marco Tobón
IOR1	ATICOYA	ACA4	Felipe Cabrera
IOR2	No ID	ACA5	Julia Gorricho
IOR3	No ID	GOV1	CDA Mitú
NGO1	Pablo Martínez	GOV2	Hernán Montero
NGO2	Maria Camila Rodriguez	GOV3	No ID
NGO3	Carlos Rodriguez	GOV4	Sinchi Leticia
NGO4	Martin Von Hildebrand	GOV5	Fernando Jaramillo
NGO5	Pia Escobar	GOV6	Brigitte Baptiste
NGO6	Rodrigo Botero	GOV7	CDA Inírida
NGO7	Javier Moncada	GOV8	Mario Andres Murcia
NGO8	Gloria González		

Appendix B — List of mammal species known by the Cacua in Wacara (2018)

Cacua name	Scientific name
Tihwã	<i>Pecari tajacu</i>
Queéb	<i>Cuniculus paca</i>
Muu	<i>Tayassu pecari</i>
Muúh	<i>Dasyprocta fuliginosa</i>
Jiwi	<i>Tapirus terrestris</i>
Wehép	<i>Lagothrix lagotricha</i>
Neih	<i>Myoprocta sp</i>
Jiό dáca	<i>Panthera onca</i>
Decha cóoh	<i>Leopardus wiedii</i>
Jiό dáca	<i>Leopardus pardalis</i>
Jodah jiό	<i>Herpailurus yagouaroundi</i>
Jiό mujjiό	<i>Speothos venaticus</i>
Jiwi yoό	<i>Cabassous unicinctus</i>
Chée	<i>Caluromys lanatus</i>
Mujma	<i>Chironectes minimus</i>
Ñuuh	<i>Didelphis marsupialis</i>
Chée	<i>Philander opossum</i>

Chée	<i>Philander andersoni</i>
Noót wuúd	<i>Bradypus variegatus</i>
Wuúd	<i>Choloepus didactylus</i>
Paloh	<i>Cyclopes didactylus</i>
Ombeh	<i>Myrmecophaga tridactyla</i>
Jap om	<i>Tamandua tetradactyla</i>
Neemép chéloh	<i>Saguinus inustus</i>
Yogoó	<i>Alouatta seniculus</i>
Gohgo	<i>Aoutus sp.</i>
Awá	<i>Cheracebus torquatus</i>
Waáp einy	<i>Sapajus apella</i>
Chéloh babaá	<i>Saimiri sciureus</i>
Wājchōóh	<i>Bassaricyon gabbii</i>
Múih	<i>Potos flavus</i>
Jíih	<i>Nasua nasua</i>
Dáat	<i>Eira barbara</i>
Ween	<i>Pteronura brasiliensis</i>
Jió dñi	<i>Puma concolor</i>

Appendix A — List of common fish species of importance in Wacará (2018)

Cacua name	Family
Yée	Erythrinae
Pawaáh	Heptapteridae
Nelih	Characidae
Jiib	Anostomidae
Chooh	Sternopygidae
Yuyúwā	Characidae
Dúub	Cichlidae
Jáya doonít	Cichlidae
Amaá	Auchenipteridae
Ao	Doradidae
Yée	Erythrinae
Pawaáh	Heptapteridae

Appendix B — List of wild edible plants commonly used by the Cacua

Cacua name	Scientific name
Noót nah	<i>Dacryodes belemensis</i>
Jwéo	<i>Poraqueiba sericea</i>
Mii	<i>Pouteria ucuqui</i>
Jwee	<i>Couma macrocarpa</i>
Yaáb	<i>Oenocarpus bacaba</i>
Wúúp	<i>Oenocarpus bataua</i>
Ēj	<i>Mauritia flexuosa</i>
Túub	<i>Mauritia sp</i>
Ñunup	<i>Euterpe precatoria</i>
Chēi	<i>Mauritia sp</i>
Joh yop	<i>Attalea maripa</i>

Tãam	<i>Astrocaryum chambira</i>
Queh	ARECACEAE
Waape calah	STERCULIACEAE
Chuguh	<i>Rollinia</i> sp.
Jweo	<i>Poraqueiba sericea</i>

Appendix C — Plant species grown in the garden crops by Cacia people (2018)

Cacia name	Scientific name
Tolituu/Tõidah chuñh pínah	<i>Manihot esculenta</i>
Munáh	<i>Bactris gasipaes</i>
Momo páaj	<i>Inga</i> sp
Chúu	<i>Ananas comosus</i>
Dii	<i>Saccharum officinarum</i>
Cão	<i>Capsicum</i> sp
Ñoa	<i>Dioscorea</i> sp
Jódah	<i>Musa</i> sp
Botoni bab	<i>Solanum sessiliflorum</i>
Bab dahwani	<i>Solanum</i> sp
Johyop jódah	<i>Musa</i> sp
Juúp	<i>Nicotiana</i> sp
Cúud	<i>Ipomoea batata</i>
Tidihdah	<i>Citrus</i> sp (possibly <i>C. latifolia</i> y <i>C. limonia</i>)
Papaya*	<i>Carica papaya</i>
Jwéo	<i>Poraqueiba sericea</i>
Igui	<i>Pourouma cecropiifolia</i>
Pão	<i>Artocarpus altilis</i>
Jiwá wape calah	<i>Theobroma grandiflorum</i>
Bóod	<i>Pouteria caimito</i>
Guayaba	<i>Psidium guajava</i>

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