COmmunity-based Management of
EnviromenTal challenges in Latin America

D2.3: "Stakeholder vision on perspectives for the future in the Colombia case study"

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Executive summary

This document presents the third deliverable (D2.3) of Working Package 3 (WP2), entitled "Stakeholder vision on perspectives for the future in the Colombia case study". On the basis of the two previous stages, *i.e.* the characterization of socio-ecological systems (SES) grounded in the Ostrom's approach (2009) presented in deliverable D1.1 ("Locally-adapted tools for the characterization of social-ecological system"), and the Prospective Structural Analysis (PSA) that led to the identification of the most relevant variables that explain the dynamics of the social-ecological systems, presented in deliverable D2.2 ("Stakeholder vision on problems and drivers related to environmental challenges in Colombia case study"), this deliverable (D2.3) offers an overview of the last stage of COMET-LA: the future scenario building exercise.

The aim of this document is to describe and assess the process of scenario building exercise in Colombia case study, in terms of its methodology, results and main advices for public policy. This stage based its development on the common methodological framework of COMET-LA but suffered some adaptations according to the local settings. Regarding the main results, this deliverable provides an overview of the response options conceived by the communities to face the future challenges for the management of natural resources within the settings expected according to the scenarios. Finally, it is important to precise that in Colombia case study, the scenario building exercise was developed in the watersheds that correspond to the collective territory of the two Community Councils with whom the previous stages were developed: Dagua River Watershed for Alto y Medio Dagua Community Council and Calima River Watershed for Bajo Calima Community Council.

The main conclusions of this deliverable are:

- The implementation of the scenario building method in the field of biodiversity and water management represents an innovative methodology to community-based planning. This was the first time that the scenario construction exercise was carried out in the Community Councils of Dagua and Calima. Although both Councils had participated previously in strategic planning processes, and have planning documents, complete planning through scenario building exercises had never been conducted.
- The exercise has contributed to the process of empowerment of the Community Councils, which we hope to see reflected in a long term change in two important aspects: a) the way the Community Councils are seen from outside their territories and b) the capacity of local stakeholders to guide the planning process for their own development.
- The use of scenarios facilitates the linking of scientific with traditional knowledge. However, in the case studied, in reference to the governance system for biodiversity

and water, it did not explicitly facilitate the definition of concrete ideas or initiatives for its improvement.

- The exercise allowed identifying urgent need to improve the connectivity among the diverse levels of the governance system, and the identification of important obstacles to improve the evolution of the governance system, leading to an understanding of the key actions necessary to implications for public policies related to biodiversity and water.

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	English	Spanish
AMDA	Community Council of Alto y Medio Dagua	Consejo Comunitario de Alto y Medio Dagua
ALTO Y MEDIO DAGUA	Community Council of Alto y Medio Dagua	Consejo Comunitario de Alto y Medio Dagua
BACA	Community Council of Bajo Calima	Consejo Comunitario de Bajo Calima
BAJO CALIMA	Community Council of Bajo Calima	Consejo Comunitario de Bajo Calima
CC – CC´S	Community Councils	Consejos Comunitarios
COMET-LA	Community-based management of environmental challenges in Latin America	Gestión Comunitaria de los Desafíos Ambientales en Latinoamérica
CVC	Valle del Cauca Regional Corporation for environmental issues	Corporación Autónoma Regional del Valle del Cauca
ELN	National Liberation Army	Ejército de Liberación Nacional
FARC - EP	Revolutionary Armed Forces of Colombia—People's Army	Fuerzas Armadas Revolucionarias de Colombia – Ejército del Pueblo
BACRIM	Criminal bands	Bandas criminales
FUNDAPAV	Social-Agro-environmental Foundation "Pacífico Vivo"	Fundación Social Agro Ambiental "Pacífico Vivo"
IAvH	Alexander von Humboldt Biological Research Institute	Instituto de Investigaciones Biológicas Alexander von Humboldt
INCODER	Colombian Institute for Rural Development	Instituto Colombiano de Desarrollo Rural
INVIAS	National Vial Institute	Instituto Nacional de Vías
ONCAPROTECA	Black-Peasantry-Calima Pro-territory Organisation	Organización Negro-Campesina Pro-territorio Calima
ONGs	Non-governmental organizations	Organizaciones No Gubernamentales
PCN	Black Communities Process	Proceso de Comunidades Negras
POT	Land Use Planning	Plan de Ordenamiento Territorial
PSA	Prospective Structural Analysis	Análisis Estructural de la Prospectiva
SENA	National Service for Learning	Servicio Nacional de Aprendizaje
TR	Tropical Rainforest	Bosque Húmedo Tropical
WWF	World Wild Foundation	Fondo Mundial para la Naturaleza

1 Introduction

The COMET-LA (COmmunity based Management of EnvironmenTal challenges in Latin America) project constitutes a partnership between academia and civil society, working to identify sustainable governance models that will enable the management of natural resources with the capacity to respond to global climate change. The project focuses on developing and supporting local solutions, adapted from global and regional strategies for each case study.

The final phase of the project, scenario planning, is based on the initial characterization of the social-ecological systems (SES) (see Deliverable D2.1), and on the analysis of problems and factors associated with the environmental challenges identified through the prospective structural analysis (PSA) (see Deliverable D.2.2). Starting with the scenarios methodology, this document considers how the current governance system and use of the natural resources, specifically water and biodiversity, can respond to potential changes in the future. Thus, the idea is to support the communities to adapt to global environmental changes by drafting a road map that builds upon existing agreements that can be modified to implement robust strategies in the future.

One of the advantages of using the scenarios methodology is that it harnesses the creativity that comes with projecting various plausible futures to explore a range of strategies, leaving aside the limitations of the current conditions (*status quo*). However, the results of the scenario building exercises must be interpreted in light of the particular characteristics of the study site. The methodological mechanism that guides this stage of scenario building also seeks to engage with the communities on what is the current governance system for the water and biodiversity resources and how this might be modified in the future. This deliverable aims to provide an overview of COMET-LA methodological lessons and results regards scenario planning in the Colombia case study.

1.1 Description of the Colombia case study

The case study in this deliverable for Colombia comprises social-ecological systems incorporating the Community Councils of Alto y Medio Dagua (AMDA) and Bajo Calima, that represent inhabitants of the watersheds of the Dagua and Calima rivers, located in the rural area of the special district of Buenaventura, under the jurisdiction of the Department of Valle del Cauca. The area where these Community Councils are locates is part of the Biogeographic Chocó, which is part of the Pacific shelf ecoregion that extends down the Northwestern side of South America, south of Panama and northwest of Ecuador. Typical tropical rainforest (TR) ecosystems predominate in the region, characterized by high rainfall levels and by being one of the most biodiverse regions of the planet (Arbeláez-Cortés, 2013). The rivers in this region have also historically been used for the extraction of gold and mineral sedimentary material, a sign of the mineral wealth that characterizes these territories. Furthermore, the most important commercial port for Colombia is located in the special district of Buenaventura, emphasising the strategic importance both politically and economically of this Pacific region. As a result of the historical and current importance of this port, most of the development and

infrastructure projects have been undertaken with the aim of improving its capacity and operation.

A particular legal framework covers the studied region, due both to its biodiverse nature and the prevalence of an Afro-Colombian population settled mainly along the rivers. This ethnic minority enjoys positive rights since the proclamation of the Constitution of 1991. The main national laws that apply to and are relevant to this case study are: Law 70 of 1993, Law 99 of 1993, Decree 1745 of 1995, the National Biodiversity Policy [*Política Nacional de Biodiversidad*] (1996), the National Policy for the Integrated Management of Hydrologic Resources [*Política Nacional para la Gestión Integral del Recurso Hídrico*] (2010), and the National Policy for the Integrated Management of Biodiversity and Ecosystemic Services [*Política Nacional para la Gestión Integral de la Biodiversidad y sus Servicios Ecosistémicos*] (2012). Generally speaking, the legal landscape can be portrayed in the following terms: on the one hand, the Pacific is a prioritized region for conservation due to the presence of strategic ecosystems (e.g. forests and rivers) and high levels of biodiversity; on the other hand, the spatial configuration of the rural areas reflects the distribution of collective territories, which are under the ownership and custody of ethnic-territorial entities called Community Councils, formed by groups of black communities.

In other words, the Pacific region has special political conditions due to the emergence of institutional figures of a civil nature, such as the Community Councils, with political and legal autonomy, and with power over large extensions of land (including the strategic ecosystems referenced in the environmental legislation). In addition to this political configuration of the land are the rulings of Decree 1320 of 1998, which make Previous Consultation a mandatory tool for the communication between official and private entities, and black or indigenous communities that are the target of intervention within the scope of macroprojects.

Despite the existence of this legal framework, the Pacific region (particularly the rural area) has historically faced the consequences of corruption, the limited influence of institutions and government programs, and the presence of armed illegal groups such as the ELN, FARC-EP, paramilitaries, and what are now called Criminal Bands (BACRIM). With all the attention turned toward guaranteeing and improving the operating conditions of the port of Buenaventura, the government and the public policy have neglected the majority of the region's concerns, which fall outside of the port's dynamics. Two of the principal manifestations of such neglect in the rural areas are the existence of significant expanses of illegal crops, and the proliferation in recent years of stakeholders who illegally conduct mechanised gold mining in the rivers of the Pacific, as well as unlawful extraction of timber and mineral sedimentary material. The weakness of government control in the port area permits the existence of problems such as contraband and illegal transportation of drugs, which is additionally reflected in high levels of urban violence. All these activities are associated with the presence of armed groups in the territory, producing a daily reality affected by armed conflict.

In this context, the COMET-LA project has focused on the study of biodiversity and water management.

2 Data Collection and Analysis

The research team followed a common methodological framework for scenario planning (The James Hutton Institute, 2014), according to an agreement at the project meeting on February 2014. However, the methodology was adapted as necessary to meet the demands of the case study. These adaptations and what was learned from them are described in Deliverable D1.3: "Construction of adaptive local scenarios: evaluation of methods".

According to what is stated in the common methodological framework (The James Hutton Institute, 2014), this is the main list of outputs generated during the scenario planning stage:

- A list of drivers and internal variables chosen by the researchers and validated by the community
- A morphological analysis of the impact of the drivers on the internal variables
- Field notes on the communities' views regarding the morphological analysis
- A set of three (3) narratives about the future scenarios imagined for each Community Council, in the categories of Stable Scenario, Undesirable Scenario, and Ideal Scenario (six narratives in total)
- Field notes on the communities' views regarding the narratives
- A list of potential response options
- A matrix of analysis (No. 1) on how the response options can respond to the conditions of each scenario
- A matrix of analysis (No. 2) on how the response options can respond to potential shocks in the territory
- A final list of robust response options
- A list of the implications of the robust response options
- Thoughts on the articulation between the existing response options and the ones that emerged during the scenario planning stage

In addition to the above, the following results were obtained from the process:

- A set of three (3) drawings of the future scenarios imagined for each Community Council, in the categories of Stable Scenario, Undesirable Scenario, and Ideal Scenario (six drawings in total).
- Oral narratives of the future scenarios imagined for each Community Council, in the categories of Stable Scenario, Undesirable Scenario, and Ideal Scenario (six descriptions in total).
- A set of 35 figures labelled "Crossroads" as a complement to the morphological space navigation exercise (adapted from the crossroad tool used by Cavanna & Abkula, 2009)
- An evaluation matrix that summarizes the main implications of executing the robust response options above.

- Four interviews with key stakeholders, specifically officials representing external institutions (local, regional, and national levels).

All this information was collected during the field work and workshops carried out on the following dates:

WORKSHOP 1 *April 24 and 25, 2014*	- Validation of descriptions of drivers and variables - Validation of the morphological matrix - Illustrations and oral narratives of the scenarios
WORKSHOP 2 *May 16, 2014*	- Validation of the narratives - List of possible response options
WORKSHOP 3 *July 2, 2014*	- Validation of the response options - Evaluation Matrix

In the first workshop, held on April 24 and 25, the descriptions of the drivers of change and the internal variables were validated. This set of internal variables resulted of the prioritization of the variables from the prospective structural analysis (PSA) method, using the MIC-MAC methodology (See Deliverable D2.2). Both the internal variables and the drivers of change were used to create the morphological matrix, which allowed for a detailed exploration of the effect of the drivers' on two possible states relative to the each of the internal variables analysed. Based on this matrix, the participants then made drawings of the three possible future scenarios, according to the following categories: an ideal scenario, an undesirable scenario, and a stable scenario. These drawings were supplemented with an oral narrative that described the situation in each drawing. The construction of these scenarios, through drawings and oral narratives, implicitly included the morphological space, that is to say, the variables and the drivers analysed in the matrix (see Appendix 5). The drawings and the oral narratives were the main outputs of this workshop and the basis for the elaboration of the narratives. These narratives were analysed further with a tool called "crossroad", consisting of a graph (X, Y) where the possible states of the variables are explored in light of the two possible states for each of the drivers. This tool will be explained in detail in the Section 6 of this document.

In the second workshop, carried out on May 16, the narratives constructed under all three scenarios (ideal, stable or undesirable) for each Community Council were validated. Later, possible response options for the issues arising from each scenario were identified, and the robustness of the response options was evaluated according to the conditions and limitations of each scenario. The response options were then evaluated in light of the four possible shocks (civil war, tropical diseases, repeal of Law 70/1993, and flooding) that would represent an abrupt change in the bio-physical and social conditions in the territory. In this sense, the

way in which these shocks could affect the viability of the response options was described, resulting in a final assessment of the robustness of the response options.

In the third workshop, held on July 2, the descriptions of the response options were validated based on the previous workshop discussions. Then, the implications of executing these response options were explored in depth based on a set of guiding questions that inquired about the concrete actions, the responsible entities, and the order of priorities for the implementation of the response options. Finally, these results were presented in a discussion forum that took place on July 3 with interested stakeholders at the local, regional, national, and international levels, to disseminate the methodological exercise of planning through future scenarios, and to provide a discussion platform to receive feedback from external stakeholders on the implications of managing and implementing these response options in each territory.

The Javeriana team was in charge of planning the development of the workshops through guiding documents, and carrying out the workshops with a participatory and gender focus, and, lastly, of systematizing the information in workshop reports and methodological documents. This process of planning the methodological exercises and the rigorous systematization of the experiences allowed for the analysis of the successes, weaknesses, and opportunities for each stage of the adjusted common methodology for planning through future scenarios (The James Hutton Institute, 2014); in other words, to evaluate the implementation of the methodology along the way.

The workshops included the participation of the legal representatives of the Community Councils of Alto y Medio Dagua and Bajo Calima, the team of co-researchers and members/residents of the territories governed by both Community Councils, representatives of entities such as Valle del Cauca Regional Corporation for Environmental Issues [*Corporación Autónoma Regional del Valle del Cauca, C.V.C.*], The National Service for Learning [*Servicio Nacional de Aprendizaje, SENA*], The Agro-Environmental-Social Foundation "Pacífico Vivo," FUNDAPAV [*Fundación Agroambiental Social Pacífico Vivo FUNDAPAV*], The Alexander von Humboldt Institute for Biological Research [*Instituto de Investigaciones Biológicas Alexander von Humboldt, IAvH*], The World Wildlife Fund, WWF [*Fondo Mundial Para la Naturaleza, WWF*], representatives of both Buenaventura's technical environmental and planning offices, and the Javeriana team, among others (see Attendance lists in Appendix 1).

Finally, responding to the limited attendance by representatives of government and private institutions, and keeping in mind the importance of the different public and private spheres (local, regional, national) for the objective of the scenario planning stage in the context of the goals of COMET-LA, some interviews with local stakeholders were carried out to complement the information collected in the workshops and fora. These interviews sought to gather the perspective of external stakeholders on the future of the collective territories of the Community Councils, and on the viable response options for the most pressing issues of these territories and their communities. In total, four interviews were conducted with officials from the following entities: Buenaventura Planning Agency [*Secretaría de Planeación de Buenaventura*], Valle del Cauca Regional Corporation for Environmental Issues [*Corporación*

Autónoma Regional del Valle del Cauca, C.V.C.], The World Wildlife Fund, WWF, and The Environmental Technical Directorate [*Dirección Técnica Ambiental*]. The guide used to carry out these interviews can be found in Appendix 2.

All the information collected was analysed through an intra-methodological triangulation (Denzin & Lincoln, 2012) between the results of the workshops, the forum, and the interviews, using conceptual elements as reference.

3 The Role of the Scenarios in the Community Management of Natural Resources

The Community Councils of both Alto y Medio Dagua and Bajo Calima were familiar with strategic planning processes. Both Community Councils built the prospective and strategic vision for their territories in a participatory manner, including a stage of updating and prioritization of projects. This vision included their dreams and wishes as part of the conceptualization of scenarios projected by the communities about their territory. This work included a cultural, socioeconomic, and anthropological characterization, through interviews and participatory workshops with focus groups, and was led by the technical group of the Agro-Environmental-Social Foundation "Pacífico Vivo" FUNDAPAV (CC Bajo Calima, 2010). The exercise was funded as part of the compensation for social and environmental impacts determined by the 2010 previous consultation agreements between the National Highway Institute [*Instituto Nacional de Vías, INVIAS*], Metrovías Divided Highway Consortium of the Buga-Buenaventura Divided Highway Project [*Consorcio Doble Calzada Metrovías del proyecto de Doble Calzada Buga-Buenaventura*] (sections I, II, and III), and the so-called "Brotherhood of Community Councils." For this reason, it was developed independently for each of the two Community Councils, as well as for the "brother" Community Council of Córdoba and San Cipriano (CC Alto y Medio Dagua, 2010).

As part of this work, a whole natural resource management plan was constructed, formulated under the scope of strategic planning with prospective tools for the region within the framework of sustainability. The first phase included the collective construction of dreams projected 10 years into the future (2008-2017); the second phase resulted in the formulation of a prospective vision contemplated over a 30-year time horizon.

During the prospective exercises, different dimensions were worked on to draft a strategic path. On one hand, the political-organizational aspect was approached, which invited community participation in the administration of public policies and the promotion of projects of territorial ownership and the defence of collective rights. Also included in this dimension was the promotion of participation in public administration and institutional consensus-building programs.

On the other hand, the economic dimension was considered with a diagnosis of the main activities in the rural area of the economic sector, the investment priorities of the region, and the articulation of productive program processes inserted in the local economy. This

dimension considered the forestry, mining, food production, and transformation processes sectors, as well as services such as ecotourism and the promotion of rural enterprises.

Additionally, in the context of the environmental dimension, there were proposals for the enrichment of forest resources and projects to establish nature preserves. Programs for the conservation and recovery of endangered flora and fauna species were also envisioned, as well as those that promoted research on genetic resources and the use of species of local importance for sustainable use. Furthermore, a project for learning about the morphological dynamics of the river was included, with the implementation of an early warning system and the identification of risk areas.

Concerning the social dimension of the strategic path, aspects such as housing, health, and ethno-education were considered. However, in relation to this last aspect, the plan was to influence basic, primary, secondary and middle technical education, including programs on ethno-pedagogical skills and leadership, so that most of the population was included. This dimension also included public health, spirituality, and recreational topics, as well as initiatives for the use of alternative sources of energy, full electrical service coverage for the communities of both Community Councils, and an implementation of road infrastructure projects. Finally, the cultural dimension is primarily based on the recovery of ancestral traditions and values, expressed in the promotion of traditional production practices, the recovery of culinary practices, and the celebration of religious feasts under the cosmology of the communities.

This exercise allowed communities from both Community Councils to map out a strategic path based on plans, actions, and work models that responded to the needs identified during the prospective diagnosis. Even though these reports have already been published and disseminated, and some projects have started by now, the work of planning through future scenarios included in the COMET-LA project was proposed as a complement to this previous effort.

As a consequence of these various prospective experiences, the exercise of thinking about the future has antecedents on the Community Councils. In effect, natural resource management, ethnic-development, and life plans are constantly being developed and updated in these territories, and all these documents guide and inform the current and future activities within the territory.

4 Drivers of Change and Selected Internal Variables

With the goal of exploring how different key tendencies can affect the social-ecological systems in the future, a detailed analysis was conducted to identify variables and drivers of change that explain the dynamics of the system in their interaction. The first stage collected information about the way stakeholders perceive that certain drivers of change can influence the internal variables of the social-ecological system, through a description of tendencies.

4.1 Drivers of change

The selection of drivers of change[1] followed the general categories proposed in the common methodological framework (The James Hutton Institute, 2014). Considering the local context, the following drivers of change were identified for each category:

CATEGORY	SELECTED DRIVER OF CHANGE
Social	Population size
Economic	Price of commodities (gold and timber)
Environmental	Climate change
Technological	Infrastructure - Macroprojects
Political	Public policy priorities

In accordance with the common methodological framework (The James Hutton Institute, 2014), each one of these drivers of change had two possible states, as follows:

DRIVER	STATE A	STATE B
Population size	2.2% annual growth	Population size remains stable
Price of commodities (gold and timber)	20% annual increase in national gold and timber prices	20% annual decrease in national gold and timber prices
Climate change	Highest average temperature rises by 2%	Both temperature and rainfall remain stable
Infrastructure - Macroprojects	Rapid increase in the number of infrastructure macroprojects	Slow increase in the number of infrastructure macroprojects
Public policy priorities	Policies aimed at promoting the economic development of the region	Policies aimed at promoting the sustainable development of the region in partnership with local communities

[1] In the common methodological framework (The James Hutton Institute, 2014), drivers of change are called simply "drivers." However, to facilitate comprehension during the workshops, the name was changed to "drivers of change" and this alteration is reflected throughout the document.

4.2 Internal variables

The selection of the internal variables was based on results from both quantitative methodologies, including social network analysis and prospective structural analysis (PSA), and qualitative methodologies, where the interpretation of the results was discussed with local communities. The methodology used for the selection of the variables and the results of the prioritization are described in brief below.

It is important to remember that the Colombian case studies are focused on water and biodiversity resources at the level of the watershed administered by the Community Council of Alto y Medio Dagua (AMDA) and the Community Council of Bajo Calima (BACA).

Initially, during a closing workshop for the prospective phase held in February 2014, two lists of variables were generated, one for the Alto y Medio Dagua basin and one for the Bajo Calima Basin, which, according to the communities, were priorities in their impacts on the water resource and biodiversity in their collective territories. Later on, a prioritization exercise was carried out with the analysis of three software programs: MIC-MAC; UCINET with its visualization tool Net Draw; and NodeXL, the network application for Microsoft Excel. In this way, those variables that have greater influence or greater dependence on the system appear prioritized in the yellow box of the influence/dependence maps, that have modified from the results of the prospective phase (Deliverable D2.2), and used in the analysis of social networks. Finally, the prioritized variables were compared in Table 1 to consolidate the prioritization into one list. More details on the process of selection of the variables are shown in see Appendix 3.

Although Table 1 summarizes the list of prioritized variables that were produced by the different methodologies, it is important to note that the software prioritization left aside some variables that the Javeriana team considered relevant when working on future scenarios. Thus, the team included variables of "mining" and "water management" in the final list as prioritized by the community for the work with scenarios, even though they were disregarded by the prioritization analysis. In a similar way, some of the prioritized variables were described as internal for AMDA, but external for BACA. For this reason, it was necessary to review the context and description of each variable to determine its priority in the list and relevance for analysis in the scenario phase.

Table 1. Prioritized List of Variables.

VARIABLE	PRIORITIZED	INTERNAL
Condition of the Forest	✓	✓
Population	✓	✓
Community	✓	✓
Tourism	✓	✓
Agriculture	✓	✓
Macroprojects	✓	
Institutions	✓	
Traditional ecological knowledge	✓	✓
Weather (Climate Change)	✓	
Traditional Mining		✓
Water management		✓

On the basis of the above methodology, the Javeriana research team selected the following seven variables:

- Condition of the Forest
- Community
- Tourism
- Agriculture
- Traditional Ecological Knowledge
- Water Management
- Traditional Mining

With the goal of facilitating the comprehension and grasp of the internal variables and the drivers of change, the COMET-LA Javeriana team described the scope for each variable and for each driver. These descriptions were reviewed in the first community scenario workshop to adjust them as necessary. The Javeriana team supported each work group and systematized their comments on the narratives (See descriptions in Appendix 4).

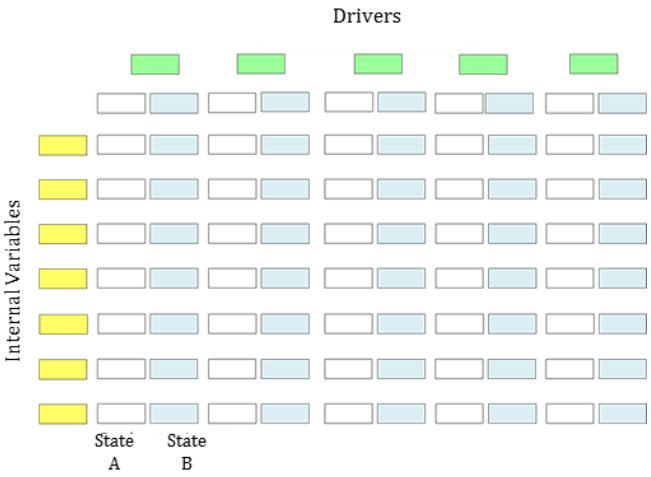
5 Morphological Analysis

Based on the list of selected internal variables and drivers of change (as well as their possible states), the base for the morphological space was constructed, following the guidelines of the common methodological framework (The James Hutton Institute, 2014) (see figure 1). The COMET-LA Javeriana team completed the morphological space by exploring the intersection between the drivers of change, under each of their two possible states, and the internal variables. This "morphological analysis" process, proposed by Godet (2000) as part of the prospective structural analysis (PSA), permits a systematic projection of what will happen to each variable, according to the particular states for each driver of change.

The guiding questions that supported the morphological matrix building exercise were the following:

- What will happen to variable X if driver of change Y behaves under state A?
- What will happen to variable X if driver of change Y behaves under state B?

Figure 1. Structure of the morphological space.



The morphological space elaborated by the COMET-LA Javeriana team was the initial tool used in conducting the first scenario workshop with the communities. During the workshop, the participants were tasked with observing the morphological space in detail, i.e. checking one by one, the resulting intersections of the drivers of change, under each of their possible states, and the internal variables. Then, they were asked to adjust, add or correct it as needed. The morphological space was visually represented during the workshops by means of a labelled morphological matrix, made up of coloured slips of paper (see figure 2).

The exercise was conducted during the workshop in three work groups, one for each Community Council, and a third with the representatives of the external institutions. The comments or adjustments offered by the participants were collected on coloured cards. After a separate discussion, spokesmen for each group then presented the comments and modifications to the morphological matrix suggested by their group to the other participants in a plenary session. The modifications were immediately added to the visualized morphological matrix.

The visual and methodological adjustment of the matrix allowed the participants to see the exploration activity of the morphological space as a dynamic exercise and provided a more comfortable setting to work on validating it. The differentiation by colour was friendly and very pedagogical in suggesting the interaction between variables and drivers of change.

Figure 2. Morphological matrix visualized during the workshop.

The process by which the workshop participants validated the morphological space provided the COMET-LA Javeriana team with the necessary inputs to build a final morphological matrix, adjusted for the case study (see Appendix 5).

5.1 Main adjustments derived from the validation of the morphological space

In the validation of the morphological matrix, the renaming of the variable *deforestation* as *condition of the forest* was proposed, avoiding an anticipated negative connotation and considering that it could encompass different processes: deforestation, reforestation, natural regeneration, etc. For *water management*, the risk of privatization was discussed. However it was clarified that in the case of the Community Council of Bajo Calima, privatization cannot be discussed since there is no formal water and sanitation service. Another important contribution was the recognition that within the theoretical framework of social-ecological systems, the term ecosystem services is preferred over environmental services.

Another important element discussed was the ancestral knowledge, clarifying that it should not be used to refer only to production processes, but that it also encompasses aspects of health, food security, and the general wellbeing of the community through the accumulation of traditional knowledge. In addition, there was consensus on highlighting the importance of emphasizing the loss of biodiversity that would result from an increase in population, due to the increased pressure on the variables *condition of the forest* and *agriculture*. An increase in population also brings forth the establishment of new rules, which directly impacts the variable *community*.

5.2 Drawings and oral descriptions of the scenarios

According to the common methodological framework (The James Hutton Institute, 2014), after exploring the morphological space, the next step is navigating, "creating the path", that is to say, mapping a route through the matrix from which the archetypes will be adapted to the local context of the case study and from which the narratives will be elaborated. For the Colombian case, this process, as well as the adaptation of the archetypes to the local context, was somewhat difficult to follow during the workshop.

For this reason, it was decided to propose that the workshop participants finish the exploration of the morphological space through the elaboration of the drawings for the three possible future scenarios: an ideal scenario, an undesirable scenario, and a stable scenario (where all current conditions were maintained, but in the future). These drawings were to graphically reflect the interaction between the variables and the drivers of change. The elaboration of the drawings had to take into account the work done with the morphological matrix. Consequently, the participants were asked to consider the internal variables and the drivers of change when representing the three scenarios in their drawings. The drawing categories – ideal, undesirable, and stable – were defined for the participants through the following questions:

Ideal Scenario	Undesirable Scenario	Stable Scenario
Where do we want to go?	Where don't we want to go?	Where are we heading now under current conditions? Where are we heading if the conditions do not change?

The suggested time horizon for projecting the scenarios was 20 years. As opposed to the validation of the morphological matrix, the drawings were done in only two work groups, one for each Community Council. The representatives of the institutions were spread out between these groups.

It is important to clarify that the instructions given, the guiding questions, the group division, and the exercise dynamic as such, all facilitated the production of the drawings. However, the main difficulty observed during the process was the participants' comprehension of the stable scenario, since it was easily confused with the current state of the territory, and not understood as a projection into the future where the present conditions were maintained as relatively stable. Thus, it was necessary to restate the role of stability in the morphological analysis for the construction of future scenarios, since it seemed easier for the communities to perceive changes in relation to the opposite states of the drivers of change.

The contributions differed among the work groups in the workshop: the people from AMDA, the people from CALIMA, and a group of interested stakeholders. The differences in perspectives of each group had been anticipated considering that, on the one hand, the Councils are located in different territories and have different perceptions and dynamics for their governance systems; on the other hand, the external stakeholders, despite working in

partnership with the Community Councils on some initiatives, project their contributions on a larger scale, around the dimension of public policy and regional planning. Even so, the diversity of points of view enriched the analysis of the morphological space and promoted deeper reflections when producing the drawings.

Generally speaking, the drawings allowed for very valuable insight into the perceptions the communities have of their territorial current situation, its potential, its failings, and what they hope for their territories in the future (see drawings in Appendix 7). It was also proposed that these drawings should be presented in a plenary session, along with an oral narrative that told the story of each watershed according to the conditions of the illustrated scenarios. Videos and notes of the presentations were taken with informed consent, to nurture the exercise of narrative construction. The workshop participants seemed very interested in the oral narrative of each scenario and, while each drawing was presented, other attendees contributed comments. Thus the oral narratives were complemented by the opinion of all the participants, prompting a discussion of some key elements in the stakeholders' visions of the territory's future situation. The experience of listening to the members of the communities represented an exercise in validating the knowledge of the territory, which permitted the information on the territory to be "updated."

6 Local Narratives of the Future Scenarios

For the Colombian case study, the process of elaborating the scenario narratives, as stood before, was somewhat modified from the common methodological framework (The James Hutton Institute, 2014). After the validation of the morphological space during the first scenario workshop, the COMET-LA Javeriana team led the exercise on navigating through the space, that is to say, the process of "creating the path" for each of the archetypes. However, after a detailed review of the definition of each archetype and its main characteristics, the team decided to set aside these archetypes, taking into account the difficulty that their application represented in the local context of the Community Councils for the Colombian case study. Factors such as the armed conflict, the lack of continuity in public policies, and the territorial autonomy of the Community Councils create a very particular contextual framework for this case study, which certainly complicated the adjustment of the archetypes to such a context.

Despite skipping the use of archetypes, the morphological space was navigated using the oral narratives constructed in accordance with the three established scenario categories: the ideal scenario, the undesirable scenario, and the stable scenario. The COMET-LA Javeriana team drafted a route through the morphological space for each Community Council, identifying the main intersections between drivers of change and internal variables, to construct the description for each of the three scenarios.

Once the route was sketched out, a methodological tool was added to the narrative construction process: "crossroad". This tool represents an own adaptation of the "crossroad tool" employed by Cavanna & Abkula (2009) in a scenario planning exercise developed with pastoralists in Africa. Briefly, the adaptation of "crossroad" used here represented a graphic

tool (X, Y) that expanded the exploration of the intersection between an internal variable and a driver of change. The X axis corresponded to the driver (the positive side is state A, and the negative side is state B), while the Y axis corresponded to the internal variable (the positive side being a state favourable to the variable, while the negative side is an unfavourable state for it) (see Appendix 6 for an example of the tool). Through this tool it was possible to consider all the possible crossing points between the variable states and the driver states, with the goal of avoiding a simplistic and linear vision of the relationships that can occur between these two elements. Thus, the intersections included in the route sketched out for each of the scenarios were those referenced in the corresponding "crossroad" graphic, to expand and complement the narrative.

In this way, a narrative was generated for each scenario (ideal, undesirable, stable), in each Community Council. Following the basic structure of the oral narratives (obtained during workshop no. 1), some modifications to form were made and contributions from the "crossroad" tool were added. Once the narratives were built, the participants of workshop no. 2 reviewed them, with the goal of incorporating the necessary adjustments and additions. The narratives constructed for the undesirable scenarios for each Community Council are presented below, since they explicitly show the difference in how the issues are viewed in each territory, and the secondary information used for the narrative construction. To read the narratives of the other scenarios, refer to Appendix 7.

BAJO CALIMA - Undesirable scenario

We are in the Bajo Calima territory in the year 2035, which reflects the consequences of the war and armed conflict. The institutional weakness of the Community Council has caused it to lose legitimacy. The native population has been displaced, victims of the violence and forced displacement. The few native afro-descendants do not follow the rules and evade sanctions for disobeying the rules for control within the Community Council. Together with the non-native outsiders from other cultures, who remain in the territory, attracted by the opportunities to extract resources and the promise of work in the construction of infrastructure and macroprojects in the area, this heightens the social and economic conflicts, relegating the customs and native traditions of the area's inhabitants to the background.

Young women and the peasant population in general are more and more scarce, given the continual evictions caused by the harassment and the fight over land use. Nowadays there is evidence of the total replacement of subsistence agricultural practices and traditional production practices. This is partly due to the introduction of oil palm monoculture supported by the government's development policies, which are geared to increasing crop yields by adding agrochemicals to the soils, which have also been depleted of nutrients by the continued presence of coca plantations in the territory, and the heavy impact of glyphosate spraying to eradicate these illegal crops.

The ecotourism once dreamt of as a promising activity for the area was never possible. The few attempts at tourism in the area did not turn out to be profitable because there are no incentives to protect the natural resources, nor any interest in conserving jungles or forests for relaxation and recreation. The promotion of the macroprojects such as the construction of the infrastructure to serve the Aguadulce port and the highway caused the massive clear-cutting of the forest. The great forests of Calima have been wiped out. Today, there are only small

fragments left of what was once a great jungle. The consequences of climate change, which are seen in the long periods of drought and/or intense rainfall, have been added to this chain of events with acute effects due to the massive extraction of timber. Thus the instability in the climate patterns and in the river flow volume of the Calima river have encouraged a reduction in biodiversity. There is greater uncertainty in the face of events of flooding and rivers overflowing their banks. All of this places the lives of the territory's inhabitants at risk.

As for the water, the instability in the climate has caused the resource to disappear, contrary to what was thought because there had been very good reserves within the territory. The lack of solid governance created conflicts of interest around the management of water, the lack of plans to prevent pollution of water sources and the absence of strategies for the proper disposal of residual waste water. In addition, the attempts to build a community aqueduct and sewer in both the river and highway communities were never completed due to lack of community interest in managing the resource.

The remaining ecosystems are being damaged by the mining exploitation supported by government policies that favour large-scale mining, even though the community always said no to the mining from the start. The lack of commitment within the Community Council and its organizational weakness made it unequal to the task of winning the battle against the mining development juggernaut that bought backhoes into the territory. This institutional weakness is also seen in the lack of continuity in the leadership processes in the young people. The idea of a governance school was abandoned, due to their lack of identity with the territory and the loss of family ties. The lack of opportunities and the presence of illegal groups, among other things, did not induce young people to stay on the Community Council or give hope to the task of continuing the fight for the sustainable development of the territory.

ALTO Y MEDIO DAGUA - Undesirable Scenario

It is the year 2035 in the territory of the Community Council of Alto y Medio Dagua, belonging to the municipality of Buenaventura in the Valle del Cauca department. The increase in population has raised the demand for food, which has, in turn, stimulated the development of technology-intensive farming dependent on agrochemicals. As a result, mono-cultivation is practiced, which depletes the soil in pursuit of greater efficiency and effectiveness, without consideration for the long-term consequences. Extractive activities are favoured as they are the most lucrative, which caused traditional agricultural practices to disappear.

New external stakeholders, legal and illegal, prevent real control by the Community Councils over the conditions of exploitation, which cause them a loss of legitimacy, loss of traditions and fragmentation of the community. Additionally, there is great urbanization of the rural area. Livelihoods have been transformed, creating greater social conflict and pollution from waste products. There are neither aqueducts nor clear management of waste products by the community, which led to the pollution of the water sources due to poor management of waste water, the use of agrochemicals and large-scale mining.

Extractive activities are practiced without control by the Community Councils. Traditional practices are no longer used in daily activities due to the emigration of local community members and the lack of a common identity in the territory. There was no generational succession to pass on traditional practices, whose use has become scattered. With the immigration into the area of people from different cultures, new practices permeate those

already in existence, both in natural resource use and in the daily dynamics, especially in the areas of food and health.

The forest has been indiscriminately cleared as it has been a constant source of income for the community. The deforestation has altered the water volume of the rivers, which has resulted in a loss of biodiversity. There is no control or monitoring of the clearing of the forest. This results in a decrease in tourism due to the poor condition of both the water sources and the forest. The recovery capacity of the resources is moderate, due to the high impact of extractive activities. What little tourism exists is unplanned.

Pressure on mining resources has increased and new extractive technologies have been introduced, displacing traditional mining. This means there is no more "barequeo"[2] and mining extraction creates major consequences, polluting the water sources, added to low levels of control by the Community Council.

Additionally, new stakeholders have come to the territory via the macroprojects implemented in the Community Council territory and its environs. Once again, there has been modernization and expansion of the highway and the oil pipelines that have continuously permeated the territory. In addition to outsiders, this has brought with it dynamics of violence, similar to those found in the urban environment, where fear and insecurity are felt throughout the community. Said insecurity has definitively torn the social fabric, as there is no longer any trust among community members.

Consensus among the communities that participated in the workshop was fundamental in the construction of each scenario. However, it is important to clarify that construction was done based on the differences. That is, workshop participants did not have a homogenous vision of the territory in each scenario. On the contrary, the discussion focused on finding common ground that reflected the different visions. In a similar way, this information was complemented by secondary documents that allowed us to have a more complete vision of a possible future. Finally, each of these narratives, complemented with the secondary information, was validated once again with the community, to guarantee that they reflected the stakeholder's vision for the future, considering the elements or information already collected.

Besides, as evidenced by the narratives presented above, each of the studied Community Councils presented different contextual characteristics, which generate different visions of the future, even when considering an undesirable scenario. The types of stakeholders that intervened in the territory and the shocks were perceived differently. For this reason, building scenarios for each of the councils was essential, with the participation of different members of the community, with the goal of giving a complete global vision to the constructed scenarios.

[2] "Barequeo" is typical mining activity where the sand is washed to separate the metals (Law 685, 2001, Art. 155)

7 Robustness Testing of the Response Options to Possible Shocks

7.1 Response options

Taking into account the previously-validated narratives, possible response options were identified to face the territories' current and future issues. The response options identified by each work group were the following:

Alto y Medio Dagua C. C.	Bajo Calima C. C.
Coordinated management of natural resources	Organizational strengthening
Closer ties and coordination between the Community Councils and external institutions	Establishment of custom education and ethno-education
Use and management of the territory (declaration of protected areas)	Proper use and management of the forest
Institutional strengthening and evolution	Influence on sustainable public policies
	Productive management of the territory

The Community Councils, as well as the community itself, are both aware of their role as main responsible for the execution of the response options. However, it is fundamental to recognize the need for support from external organizations and institutions that strengthen or contribute to the construction of these response options. For this reason, the inter-institutional coordination, or influence on public policy, is a response option shared by both Community Councils, and constitutes a fundamental action to further the other response options. Working together with the institutions that have an impact on the territory will surely contribute to the strengthening of the other processes carried out, in support of reaching the ideal scenario. The description of each of these response options was made by consensus and validated with the community and supporting organizations. The complete descriptions are found in Appendix 8.

7.2 Robustness test of the response options

Once the list of response options had been determined and characterized, the robustness of these options to respond to the challenges and inherent conditions in each scenario (ideal, stable, undesirable) was tested. This evaluation was conducted through a matrix such as the one presented below, where the response options are considered in relation to each of the scenarios:

Figure 3. Sample of the response options robustness matrix.

	Ideal scenario	Stable scenario	Undesirable scenario
Response option 1	☺ ☺	?	☺
Response option 2		☺ ☺	
Response option 3	☺	☺	☺

¬ 😐 Partially viable
¬ 😐 😐 Completely viable
¬ **?** Uncertain

The main response option for the Community Council of **Bajo Calima** (see Figure 4), in all scenarios, was organizational strengthening. This response option is the starting point for the development of all initiatives planned in the future for the improvement of the territory's conditions. The participants stated that without organization there is nothing, since the community depends on it to act and move toward common goals that benefit all, and not just a few. The second place response option in the robustness test was the establishment of custom education, or ethno-education, since it constitutes a measure that responds to the challenges of all the scenarios, but also because it prepares the community to face new and greater difficulties in the future. In the case of the other three response options, i.e "proper use and management of the forest", "influence on public policies", and "productive management of the territory", they were considered robust for the stable and ideal scenarios, but not for the undesirable scenario. This scenario, according to the narrative, would lack minimal organizational conditions and common horizons for the members of the communities, which would certainly make it very difficult to opt for a coordinated management of the resources, since private interests would be favoured under the "law of the most cunning and strong". As a result, the two first response options, "organizational strengthening" and "custom education," are the starting points for the development of the other response options; without an organized, conscientious, and trained community that has a sense of ownership of its territory, it will be difficult to implement additional initiatives to face the territory's issues.

Figure 4. Response options robustness matrix for Bajo Calima.

Response Options	Ideal scenario	Stable scenario	Undesirable scenario
Organizational strengthening	☺☺	☺☺	☺☺
Establishment of custom education and ethno-education	☺☺	☺☺	☺
Proper use and management of the forest	☺☺	☺	?
Influence on public policies	☺	☺	?
Management of the productive territory	☺	☺	?

The response option considered the most important in the work group for the Community Council of **Alto y Medio Dagua** (see Figure 5) was organizational structure and institutional evolution. This response option tested robust for all three scenarios. The group participants considered that concrete proposals and collective actions to address the different scenarios cannot be executed without a solid Council structure. The preference then is to transfer the knowledge and experience acquired by the leaders to face the challenges and global shocks that the territory must endure. It is also considered robust because it allows for the education and training of leaders, which results in concrete opportunities to strengthen relationships with other stakeholders. According to the latter, if this response option prevails, it will allow the Community Councils to solidify the other response options; that is to say, if the Community Council is strengthened in terms of its local capacities and instruments to respond to the global challenges, then it will be able to survive over time, and undertake actions to grow closer to other external institutions. Closer ties allow for joint work with official authorities and entities, in establishing action networks around the coordinated management and use of the territory. Coordinated management, as a response option, will result in the promotion of actions to conserve the natural resources.

Closer ties and inter-institutional coordination allows communities to overcome their perception of government institutions as obstacles. The communities demand rights, and the response mechanisms should be ever more clear so that these rights materialize and the mechanisms can be increasingly responsive. It is necessary to promote the improvement of communication and the generation of more opportunities for interaction to improve public support policies for the local conditions, according to the concrete needs and risks identified for the territory. For this purpose, it is important to encourage compliance agreements on the commitments pledged by both the Community Councils and the external entities, and have them verified through follow up mechanisms and performance evaluations.

Figure 5. Response options robustness matrix for Alto y Medio Dagua.

Response Options	Ideal scenario	Stable scenario	Undesirable scenario
Coordinated management of natural resources	☺	☺☺	☺
Closer ties and coordination between the Community Councils and external institutions	☺	¿?	☺ ☺
Use and management of the territory	☺	☺ ☺	☺
Institutional strengthening and evolution	☺ ☺	☺	☺ ☺

Finally, it is worth mentioning once more the consensus capacity within and even among the Community Councils in regard to the response options, since, as seen, these are similar for both Community Councils. These similarities are strongly tied to the vision of the joint future they have, and especially to all the work undertaken by regional and national organizations of afro-Colombian communities (e.g. PCN), which aims to foster the construction of common aspirations, where identity is fundamental. However, in addition to unifying these aspirations, they also establish common channels and key actions to achieve such aspirations, which have been made evident in community exercises conducted previously. All this is part of the construction of a common identity based on the recognition that the State gave black communities as subject to special rights, through the Constitution of 1991, and specifically, Law 70 of 1993.

7.3 Response options to possible shocks

After establishing the response options and evaluating their level of robustness, four possible shocks to the territory were considered, with the goal of exploring once more the way in which such shocks could impact the selected response options and their robustness.

The following shocks were chosen based on their relevance and possible occurrence in the region:

a. Tsunami - Flood
b. Surge in the rate of tropical diseases
c. The repeal of Law 70 of 1993
d. Civil war

Through the characterization and description of these shocks (see Appendix 9), an analysis was conducted with the participation of the community on the effectiveness and viability of

the response options, even when these shocks are present in the territories. The corresponding reflections are summarized below for each of the Community Councils:

7.3.1 Alto y Medio Dagua

Figure 6. Response options robustness matrix for Alto y Medio Dagua, in the face of possible shocks.

Response Options	Tsunami/flood	Surge in tropical diseases	Repeal of Law 70	Civil war
Coordinated management of natural resources	☺	?	?	?
Closer ties and coordination between the Community Councils and external institutions	?	?	☺	?
Use and management of the territory	☺	?	?	?
Institutional trengthening and evolution	?	☺	☺	☺

Flood (Tsunami):

Closer inter-institutional ties is the main response option in the face of the devastating effects of a natural phenomenon of this kind. The strategies proposed by the external entities for emergency prevention and attention would be necessary but not sufficient on their own. These strategies would need to be complemented by training processes, with the goal of providing tangible tools and resources so that the communities can face this kind of disruption. This is why, in joining efforts to overcome a catastrophic event, external public and private entities play an important role, and it is vital to improve the coordination of their actions with the Community Councils. Additionally, this response option is also relevant because the technical and administrative strengthening of the Community Council increases local capacities, which would allow for a greater level of preparedness to face natural disasters. Finally, the use and proper management of the territory allows for the conservation of natural areas that can absorb the impact of natural shocks such as floods.

Surge in tropical diseases:

In the case of a surge in the incidence of tropical diseases, closer ties and coordination between the Community Council and external institutions, such as the Ministry of Health, would represent a necessary response to face this disruption. This response option is the most robust for the coordination of actions and strategies to prevent and control diseases, and would also facilitate the development of local capacities to deal with mitigating the risk.

Likewise, the coordinated use and management of the territory is a response option that can help mitigate the effects of diseases spreading, since proper management of the territory could avoid the occurrence of additional proliferation hotspots for disease vectors.

Repeal of Law 70:

If Law 70 were repealed, all response options would weaken. It is necessary to work for the strengthening of the Community Councils so that under this disruption the community dynamics can still recover to face the crisis. Without a law that safeguards the collective ownership and control of the territory, there would be no Community Council. Therefore, institutional strengthening and internal unity within the community would be the best working alternatives.

Civil War[3]:

Organizational strengthening of the Community Council is the response option that best addresses this disruption. Under a war scenario, the political strength of the Community Council would allow the creation of a structure resistant to the fragmentation of the organization, or for the recovery of the conditions that existed before the start of the conflict. The phrase "*the people united will never be defeated*" summarizes the community's sentiment.

7.3.2 Bajo Calima

Figure 7. Response options robustness matrix for Bajo Calima, in the face of possible shocks..

Response Options	Tsunami/flood	Surge in tropical diseases	Repeal of Law 70	Civil war
Organizational strengthening	☺	?	☺	☺
Establishment of custom education and ethno-education	?	☺	?	?
Proper use and management of the forest	?	?	?	?
Influence on public policies	?	?	?	?
Management of the productive territory	?	☺	?	?

[3] This shock was hard to contemplate for the case of the work group of the Community Council of Alto y Medio Dagua. Although there is discussion of armed conflict in the territory, a war scenario generated a high level of uncertainty, which influenced the depth of the responses in the exercise.

Flood (Tsunami)[4]:

Assuming that there are survivors, it is reasonable to expect some to leave the territory. However, if some remained, even some of the leaders, this would help restart the organizational process. Simultaneously, facing the need to start from scratch, it would be opportune to promote a differential and pertinent education, through which the young people can feel a sense of ownership of their territory and work for it. In this sense, the two response options mentioned above (organizational strengthening and pertinent education) remain viable and relevant in the possible occurrence of a flood. Even though their effectiveness would be weakened in an event of such magnitude, if a process of organizational strengthening were started, the other options would become viable and could be implemented. "*When we organize, then comes education and the rest…*"

Surge in tropical diseases:

Once more, there would have to be organization to fight the strong impact of these diseases. If the community is organized, it can help fight the diseases and cure those suffering from them. This, of course, has to be complemented by public policy efforts that guide what can be done, how to counter the high incidence of such diseases, etc. Additionally, education and the territory's management in productive terms can also positively impact a shock like this since, in addition to traditional medicine, a proper and well-balanced nutrition, produced naturally, can be a tool to prevent the incidence of these diseases. The disease-transmitting vectors can also be controlled through adequate practices for the disposal of solid wastes and wastewaters, which is also included in the productive management of the territory.

Repeal of Law 70:

This shock has a real possibility of occurring in the territory. However, the Community Council of Bajo Calima has ONCAPROTECA, which is the organization from which the Community Councils emerged. If Law 70 were repealed, this organization would be strengthened and protests would be held. But also, the organizational strengthening does not have to be limited only to the figure of the Community Council: it has to go beyond and allow communities to organize themselves, even if the figure of the Community Council changes or disappears. What is important is to think collectively and as a community. This is why organizational strengthening is the fundamental response.

Civil War:

"Even to go to war you have to organize". Organization and organizational strengthening are fundamental for the community to know what to do in the event of war. In any case it will be difficult since every man looks to save himself when war starts. However, to face the new

[4] More than a tsunami, a flood is the environmental disaster that is more probable in Calima. It could be the type of flood that occurred recently, in which the high part of the forest collapsed and the debris fell into the river, causing it to lose oxygen, which in turn makes the fish die. This happens every 40 years.

context imposed by war, it is important to organize to know what to do, and how to start over again.

8 Implications of Adopting and Executing the Response Options

After the response options had been constructed and consulted with the communities regarding the challenges that possible shocks would bring to the territory, the implications for the execution of these response options were examined. The following questions served to guide this process of examination:

1. What is needed to implement this response option? (e.g. use of incentives, drafting of norms and regulations?)
2. What stakeholders should participate in the execution of this response option?
3. How does the response option affect the territory and the Community Council?
4. How does the response option affect the men, women, and youth?
5. What relationship does this response option have to other response options?
6. Which one of these response options should be prioritized?

During the third workshop a discussion around these questions was encouraged about adequacy of the response options and the implications of their execution throughout the collective territories of the Community Councils. Promoting the participation of all the workshop attendees in specific aspects related to what would be needed to implement the response options, a potential list of stakeholders involved in the management was created, and the main implications of executing the response options over the collective territories were anticipated.

A brief summary of the main ideas emerging from the discussion of each group is presented below. The complete matrix with all the information discussed in the workshop – in light of the guiding questions – is shown in Appendix 10 of this document.

8.1 Alto y Medio Dagua

Organizational strengthening and institutional evolution was the response option prioritized by the members of the Community Council of Alto y Medio Dagua, since all the other response options draw strength from this one. For example, to coordinate the use and management of natural resources, such as water and biodiversity, it is necessary to have strong institutions that correspond to the context, capable of generating alliances with external institutions, and which can exercise effective internal control over the resources.

As part of the institutional strengthening, a more fluid relationship with local and regional authorities is sought, allowing for the constant support of them in conservation dynamics, monitoring, and control of the collective territory's natural resources. This will have direct

implications on the welfare and livelihoods of the communities. Among the entities referred to for the improvement of relationships, the following can be highlighted: Valle del Cauca Regional Corporation for Environmental Issues (CVC), the Environmental Technical Directorate of Buenaventura, and the National Service for Learning (SENA).

Likewise, support between the different administrative bodies within the Council and the strengthening of internal relations is also recognized as fundamental, with the goal of effectively bolstering and promoting traditional practices and conservation. In this sense, workshop participants proposed, in the medium to long term, to set up the Community Councils as an environmental authority, which also favours the sustainable use of the resources and the traditional knowledge and practices concerning nature.

Organizational strengthening and particularly inter-institutional networking both have an important gender dimension in AMDA, given that, on one hand, young people and children will have more opportunities for education and training, and local productive and job options will be generated for youngsters and adults, which will discourage their emigration from the community. On the other hand, opportunities for personal growth for seniors will be encouraged, as well as places for the recovery of their ancestral knowledge. Likewise, men will be better recognized and remunerated for their labour, and job opportunities for women can increase.

8.2 Bajo Calima

The response option selected by the Community Council of Bajo Calima as a priority was Organizational Strengthening, considering that it is the option that boosts the execution of the other options. The following elements were mentioned as pillars of organizational strength: efficient communication, a strong sense of ownership, vocation for leadership, establishment of of cultural values, and formation and responsible election of leaders. In addition, the implementation of this response option is key, considering that throughout the discussion the participants manifested some progress with other response options; however, the existing strategies and plans have not been put in practice because of difficulties complying with the laws, and weak communication between the administrative bodies within the Community Council.

Another fundamental aspect of the Organizational Strengthening response option is that its execution would have strong and important repercussions in the role and participation of women and young people in the Community Council. According to the participants' testimonies, organizational strengthening would allow the gap between adults and young people, and men and women, to be narrowed, in terms of community leadership and participation. The execution of the other response options will not have differential effects between men, women, young people, and seniors, since their consequences will favour all members of the community equally.

Finally, the importance of the participation of both internal and local institutions, and external ones as well, in the execution of the response options, is recognized. Among the institutions

identified were those involved in education (e.g. National Service for Learning, universities, the Secretary of Education, educational institutions, the Ministry of Education), entities involved in territorial aspects and the use of the territories, as well as environmental authorities (Valle del Cauca Regional Corporation for Environmental Issues, the Ministry of the Environment, and the Colombian Institute for Rural Development [*Instituto Colombiano de Desarrollo Rural INCODER*].

During the process of discussing the implications of executing the response options, different points of view were evident between the communities and their leaders, which allowed for a rich debate around the prioritization of the execution of the response options, argued from different perspectives. This contributed to the definitive comprehension of each of the response options on behalf of the community and its leaders, and the strengthening of the actions around each one. In a similar way, this exercise stressed the differences between the two Community Councils, especially in regard to the factors and external stakeholders involved in the territory and fundamental for the execution of such response options. It is also worth highlighting that the different positions of the external institutions, in regard to the implications of executing the response options, contribute new ideas and implementation paths that the Community Councils may not have considered. This is essential since such institutions or organizations are key stakeholders in the execution and consolidation of actions that help reach those response options.

8.3 Considerations for both Community Councils

Organizational strengthening and institutional evolution have a marked historical sense, linked to the construction process of the territory. In a similar way, from this response option, a follow up of the process of evolution of the institutions that form part of the governance system is proposed. This exercise allows for the operationalization of the lessons learned in the past and projecting them into the future objectives of the Community Councils, actively collecting the history of the territory and fomenting the development of the governance system.

Since the most relevant response option for both Community Councils refers to organizational strengthening and the need for inter-institutional coordination, it is important to define training and skill generating strategies for the local population, to achieve such strengthening and coordination in different contexts:

1. Leadership: understood as the acquisition of skills for decision-making, managing conflicts, and collaborative learning. It is important for leadership to be exercised by different people in the territory, and that information is shared, socialized, and owned by the majority of the people sharing the territory. The internal processes of the Councils, such as the ethno-education plans, need to be articulated, and the work of informing, sensitizing, and training in subjects such as Law 70 needs to continue. Similarly, it is important to design strategies for generational succession that involve young people

and women beyond certain committees, in making decisions about the collective territory.

2. Inter-institutional coordination: this depends on the interest and political will of both the Community Council and its legal representatives, and on the local, regional, and national entities. It is necessary for the Community Councils to have clear territorial planning proposals, and to discuss and coordinate them with strategies at the local level strategies, such as the land-use plan and the Municipal Development Plan. Furthermore, there are elements of the territorial planning of the Councils that need to be discussed at the regional and national levels, such as coordination with the National Biodiversity Policy and the National Policy for the Integrated Management of Hydrologic Resources.
3. Gender perspective: a process of raising gender awareness and sensitivity among local stakeholders is required, so that organizational strengthening and inter-institutional coordination consider the interests, needs, and perspectives of all the population in the Council, keeping in mind the differences in gender and age.

9 Coordination with the Current Governance System and Community Development Processes

As part of the exercise previously carried out by both Community Councils (CC Bajo Calima, 2010; CC Alto y Medio Dagua, 2010) to formulate the prospective and strategic vision, programs, guiding projects, and strategies were defined; in addition, in some cases, key stakeholders were also defined at the local, regional, national, and international levels. Appendix 11 presents some of the most relevant strategies highlighted in the prospective exercises, grouped by components.

The response options suggested during the scenario exercise of COMET-LA match the various options proposed by the two Councils during their own planning exercises. This way, organizational strengthening and inter-institutional coordination is defined in Bajo Calima as: "Strengthening the organizations of the Councils to maintain unity while defending the collective territory," and carrying out a "Public management and institutional coordination program," that involves the management of programs and support projects, training and management plans with regional and national entities, training in organizational aspects, and participation in the formulation of public policies. For its part, the Council of AMDA refers to a "public policy and institutional coordination program" that requires the participation of the Council in designing the laws, development plans, territorial land use planning for protected areas and watersheds, forest development, and policies for protected areas with an ethnic vision.

To make the strategic planning exercise previously done by the Councils more thorough, it is important to identify and build a follow up and monitoring system for each of the options,

that will promote the implementation, as well as the sequencing and coordination with other proposals.

Relating community issues with regional and global tendencies through the construction of scenarios allowed the participants to view themselves better in the territorial context. It also allowed them to understand that this context is not static but subject to constant change and to the influence of disruptions that can be internal or external in origin. In a similar way, the construction of scenarios strengthened the capacity to project results generated through the decision-making process, which forms part of the process of strengthening the local capacity to advance and implement preventive actions to face future shocks generated by internal or external variables.

A challenge inherent in the scenario methodology is that, even though it foments the reflective capacity of the community and makes viable the joint participation of public and community institutions, it does not facilitate the establishment of concrete policy actions. This comes as a result of a weakness manifested in relation to the insertion of the exercise in the formal planning process of the public institutions of the closest urban centre (Buenaventura), since these processes do not match in terms of time or scale. In other words, municipal and institutional planning is subject to the directions given by a very precise legislation (based on Law 152 from 1994) that very strictly establishes time frames, goals, and presentation formats for the results. Additionally, while the Community Councils operate at a local level, the municipality and department are at a regional level, and the majority of institutions with influence in the region are at the national level. For this reason, it was not possible to coordinate the implementation actions of the scenario method with the initiatives developed in the public sphere. However, the national-regional planning system is based on the scheduling of public budget investments tied to plans and programs focused on development projects implemented in periods of four (4) years. By contrast, the scenario exercise encouraged thinking about the territory's possibilities in the long term, with a perspective of diachronic (inter-generational) solidarity.

10 Conclusions on the use of Scenarios in Community Management of Natural Resources for the Colombian Case Study.

- It is important to keep in mind that the scenario methodology is normally used for applications in the field of business strategy and management, where both the scope and the business and the stakeholders involved are strictly defined. For this reason, implementing this method in the field of biodiversity and water management has some important challenges concerning the adaptation of the method and the interpretation of the results obtained. In this case, it was difficult to guarantee the participation of key stakeholders, since both Community Council members and public officials face diverse pressures and daily challenges that do not always allow them the time to participate in planning exercises. An important absence worth mentioning was that of the private stakeholders representing large companies, such as the Port of

Buenaventura, which also have specific visions and a high level of influence on the future of the collective territories.

- The process of applying the method is somewhat unpredictable, and the considerable degree of subjectivity in the process of identification and assessment of the key variables should not be overlooked. In a similar way, diverse challenges emerged as the application of the method progressed, which had to be faced by the work team. One of the greatest challenges was the difficulty in guaranteeing the participation of a heterogeneous set of participants in the workshops, and particularly, as mentioned above, the limited participation of government officials. The team looked to solve this last issue through individual interviews. Another important challenge is that the diverse problems and concerns manifested by the attendees cannot be addressed in an expeditious manner with both the public and private entities that have the powers to resolve these concerns. Although this last challenge is approached through learning and meetings with the different levels of stakeholders, it is difficult to create concrete commitments regarding structural problems such as violence or the macroprojects.
- As one of the biggest challenges in the application of the common methodology (The James Hutton Institute, 2014) was guaranteeing an adequate level of representation, the formation of a group of 25 co-researchers and the formation of work groups with the participation of young people, seniors, and adults, men and women, has proved to be a useful strategy, not only to guarantee an adequate level of representation, but also to reduce the level of subjectivity in the collected information.
- This was the first time that the scenario construction exercise was carried out in the Community Councils of Dagua and Calima. Although both Councils had participated previously in strategic planning processes, and have planning documents, complete planning through scenario building exercises had not been conducted. From this perspective, the exercise allowed both the co-researchers and the other members of the Councils to acquire new skills to improve their decision making process and increase their capacity to manage and resolve conflicts. In this way, the exercise has contributed to the process of empowerment of the Community Councils, which we hope to see reflected in a long term change in two important aspects: a) the way the Community Councils are seen from outside their territories. This aspect refers to the need to change the external vision of the communal territories and their inhabitants as the object of development and biodiversity protection programs, and replacing this vision for one in which the communal territories are active subjects with sufficient skills to plan the development process of the territories they own; b) the scenario exercise challenges the existing power and authority patterns in the Pacific, by reflecting the capacity of local stakeholders to guide the planning process for their own development. The scenario exercise validates these capacities and reflects the way that the future is thought of and searched for, from their own perspective.
- The applied methodology proved to be useful in three important aspects: one, it helped recognize the future implications of organizational development from an adaptive perspective, for the future of the Community Council; two, it facilitated reflection on the possible impacts that the governance system can suffer as a result of

external disruptions, and helped prepare through the early identification of response options; three, it allowed for the combination of the diverse perceptions of the participants regarding the future of the territory and its governance system.

- The use of scenarios facilitates the linking of scientific with traditional knowledge. However, in the case studied, in reference to the governance system for biodiversity and water, it did not explicitly facilitate the definition of concrete ideas or initiatives for its improvement. Nonetheless, the actions proposed did identify the urgent need to improve the connectivity among the diverse levels of the governance system, and the identification of important obstacles to improve the evolution of the governance system, leading to an understanding of the key actions necessary to implications for public policies related to biodiversity and water.

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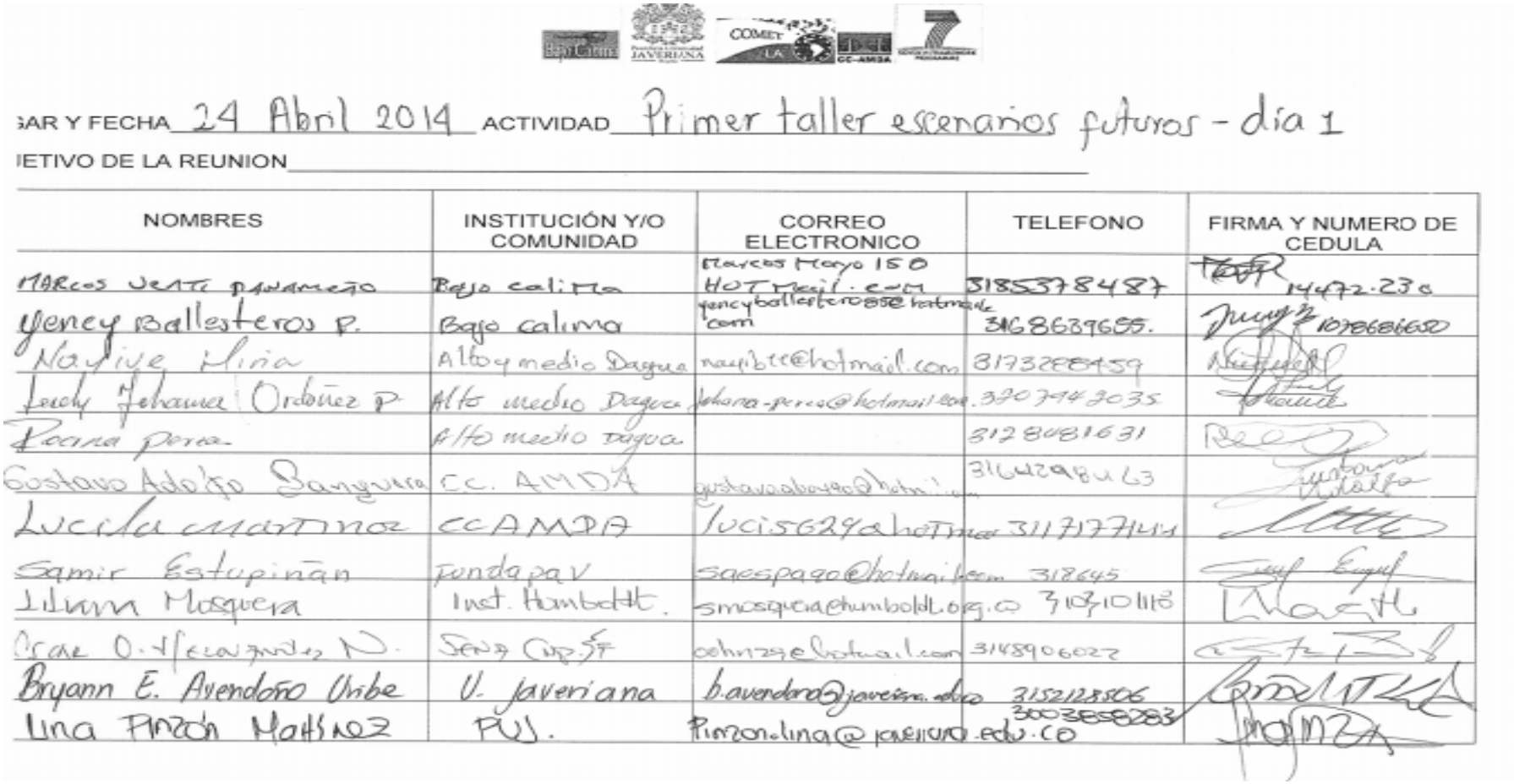
Annex I. List of workshops participants

Workshop 1



GAR Y FECHA 24 Abril 2014 ACTIVIDAD Primer taller escenarios futuros - día 1

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Workshop 2

LUGAR Taller 2: Escenarios futuros Mayo 16 - 2014

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Annex II. Guide to semi-structured interviews of officials

Good Afternoon. We have been implementing a project with the Community Councils of Alto y Medio Dagua and Bajo Calima for the past two and a half years, financed by the 7th Framework Programme of the European Union. You may have participated already in one of the meetings and fora we have scheduled.

We want to speak to you because the opinion of government agencies on the vision for the territory and the possible response options to the various problems faced by these territories is very important.

Are you interested in speaking with us about this subject and are you willing to have your opinion incorporated into the documentation for this project?

As we mentioned before, we started this work two and a half years ago. A series of variables have been identified as important for the territory by our team of researchers and the Community Council leaders. These are:

- Agriculture
- The condition of the forest
- Community
- Water management
- Ancestral knowledge
- Tourism
- Traditional mining

We have also identified some drivers of change that can influence these variables, which are:

- Population
- Macroprojects
- Climate Change
- The price of Commodities
- Public Policy (concerning armed conflict)

Together with the Community Councils we have developed several scenarios that take into account both the variables and the drivers of change. These are: stable, ideal and undesirable. These are the drawings depicting the situation that could exist in 2035.

What do you think about these maps? What is missing from them?

Now we need to know what response options you would favour to the problems depicted in these scenarios

Finally, which of the response options you propose would be viable if the following shocks were to occur: civil war; an increase in the incidence of tropical diseases; a tsunami; the revocation of Law 70 of 1993?

If you answered in the negative, what would have to be done to make these response options viable?

Annex III. Process of selection of the variables

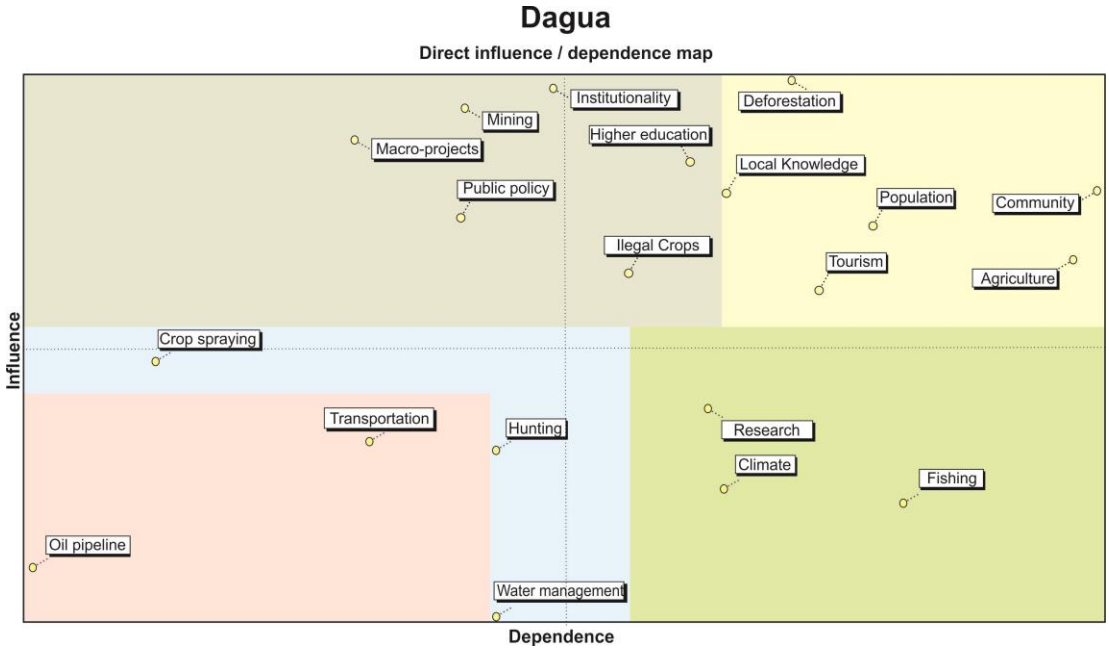
Prioritized variables: Alto y Medio Dagua

VARIABLE	TYPE (internal-external)
DEFORESTATION	INTERNAL – EXTERNAL
INSTITUTIONALITY	EXTERNAL
MINING	INTERNAL– EXTERNAL
HIGHER EDUCATION	EXTERNAL
OIL PIPELINE	EXTERNAL
LOCAL KNOWLEDGE	INTERNAL
PUBLIC POLICY	EXTERNAL
COMMUNITY	INTERNAL
POPULATION	INTERNAL
ILEGAL CROPS	EXTERNAL
AGRICULTURE	INTERNAL
TOURISM	INTERNAL-EXTERNAL
AERIAL SPRAYING	EXTERNAL
RESEARCH	EXTERNAL
ARMED CONFLICT	EXTERNAL
CLIMATE	EXTERNAL
FISHING	INTERNAL
MACRO-PROJECTS	EXTERNAL
WATER MANAGEMENT	INTERNAL
TRANSPORTATION	INTERNAL

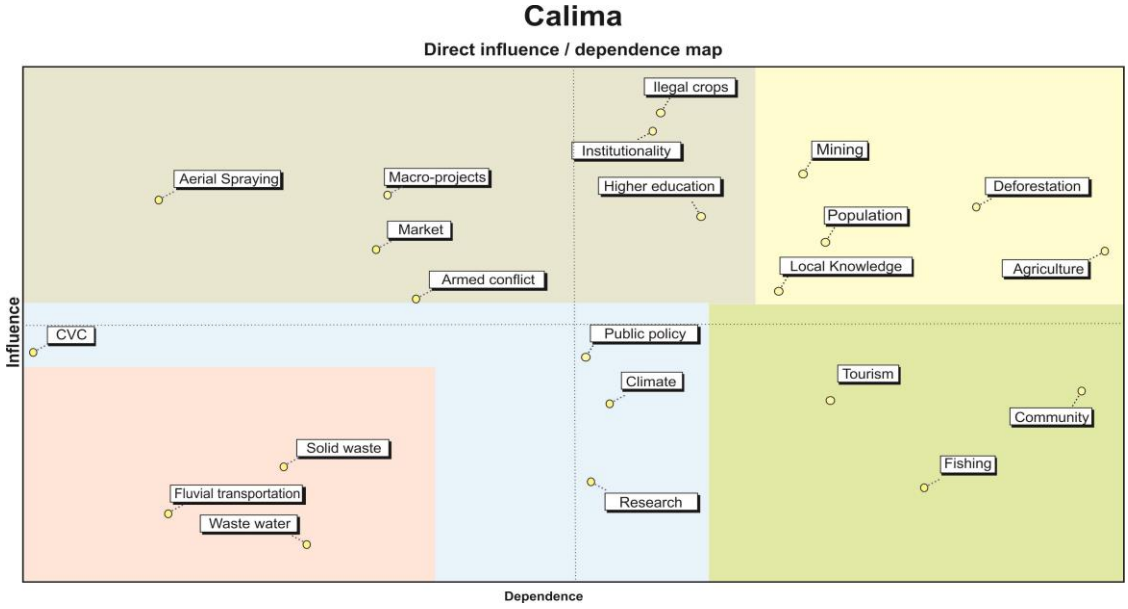
Prioritized variables: Bajo Calima

VARIABLE	TYPE (internal-externa)
ILEGAL CROPS	EXTERNAL
INSTITUTIONALITY	EXTERNAL-INTERNAL
HIGHER EDUCATION	EXTERNAL
MINING	INTERNAL– EXTERNAL
AERIAL SPRAYING	EXTERNAL
MACRO-PROJECTS	EXTERNAL
DEFORESTATION	INTERNAL – EXTERNAL
POPULATION	INTERNAL
MARKET	EXTERNAL
ARMED CONFLICT	EXTERNAL
LOCAL KNOWLEDGE	INTERNAL
AGRICULTURE	INTERNAL
PUBLIC POLICY	EXTERNAL
VALLE DEL CAUCA REGIONAL CORPORATION FOR ENVIRONMENTAL ISSUES C.V.C	EXTERNAL
TOURISM	EXTERNAL
CLIMATE	INTERNAL
COMMUNITY	INTERNAL
FISHING	INTERNAL
RESEARCH	EXTERNAL
SOLID WASTE	INTERNAL
FLUVIAL TRANSPORTATION	INTERNAL
WASTE WATER	INTERNAL

Influence/dependence map*: Alto y Medio Dagua

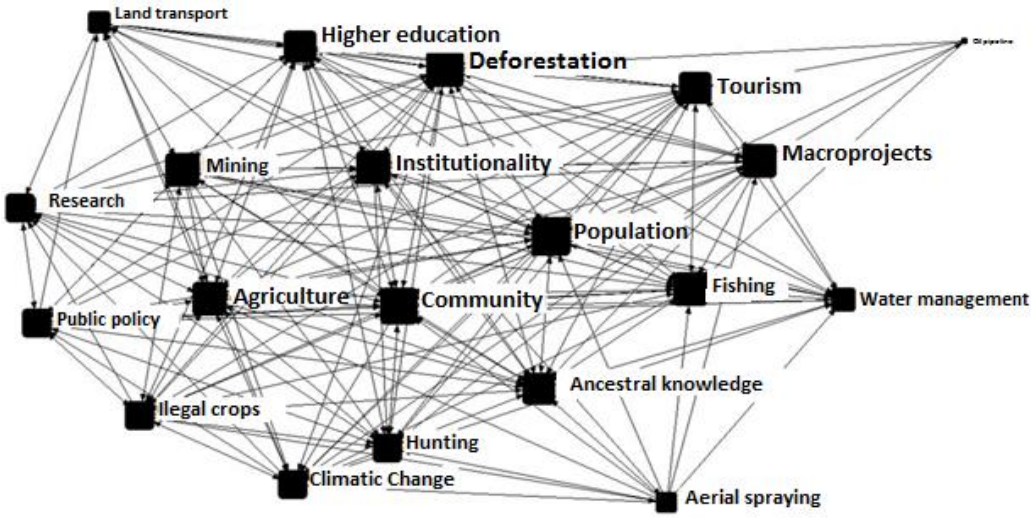


Influence/dependence map*: Bajo Calima

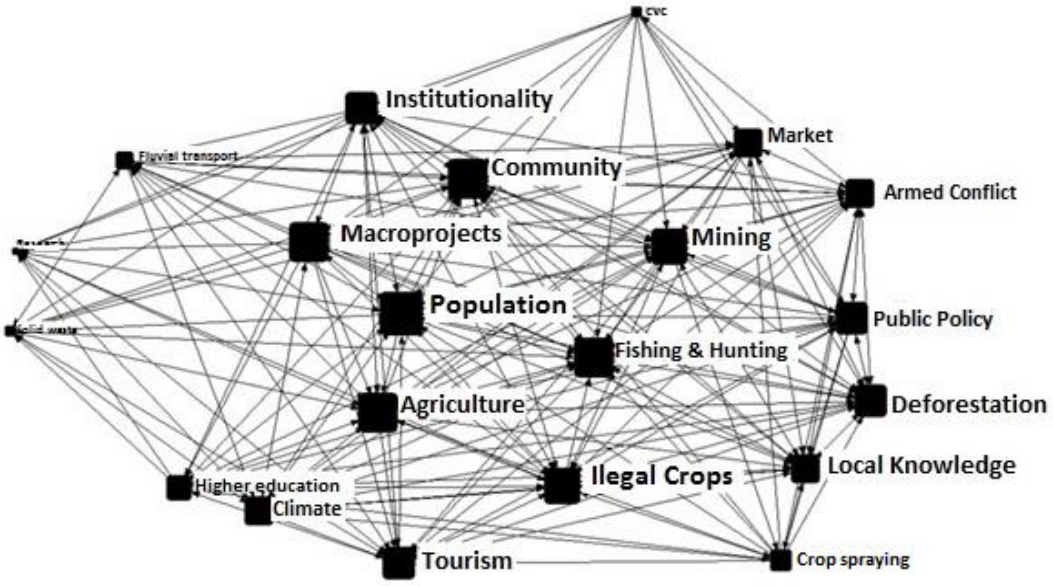


* The color shades in the influence/dependence maps represent the following: yellow = challenge variables (vulnerable variables that generate global changes in the system); green = evolution indicators (very influential variables, but little dependent); blue = lever variables (variables with medium influence and dependence, that do not generate significant changes); grey = controllers (explicative variables of the system); pink = inertia/disconnection variables (variables with low impact and self-development)

Centrality and Betweenness degree network: ALTO Y MEDIO DAGUA



Centrality and Betweenness degree network: BAJO CALIMA



Comparison BETWEEN the prioritized variables according to different methods (MICMAC and UCINET): Alto y Medio Dagua

MIC-MAC	UCINET Centrality	UCINET Betweenness
Population	Institutionality	Institutionality
Deforestation	Deforestation	Population
Community	Mining	Community
Agriculture	Higher education	Macro-projects
Local Knowledge	Local Knowledge	Tourism
Tourism	Community	Deforestation

Comparison BETWEEN the prioritized variables according to different methods (MICMAC and UCINET): Bajo Calima

MIC-MAC	UCINET (Centrality)	UCINET (Betweenness)
Agriculture	Agriculture	Armed Conflict
Deforestation	Deforestation	Climate
Mining	Fishing-Hunting	Ilegal Crops
Population	Community	Population
Local Knowledge	Tourism	Community
Tourism	Mining	Agriculture
	Local Knowledge	Institutionality
		Tourism

Variables repeated in both MIC-MAC and UCINET methods

Annex IV. Description of the internal variables and drivers of change

Internal variables

Forest Management

Deforestation has been a constant in the territories of the Colombian Pacific throughout history. With regard to the local communities, deforestation has been a constant issue as a result of activities undertaken by external stakeholders.

Deforestation affects biodiversity to the extent that it destroys ecological niches, endangering the diversity of animal and plant species. It also increases soil degradation processes because the loss of forest cover increases the vulnerability of soils to the erosive effects of the wind and water. As a result, deforestation has an indirect negative impact on the hydrological resource since the water filtration and aquifer replenishment processes of eroded soils have limitations. Additionally, the contribution of surface run-off to the maintenance of river water flow diminishes because the exposed soil receives more sunlight and the water evaporates before reaching the waterways. The processes of erosion also create a greater discharge of sediments into the rivers, causing an impact on the quality of the available water. Finally, it must not be overlooked that deforestation alters and supresses one of the basic processes of the hydrological cycle: evapotranspiration.

Even so, within this variable it is important to acknowledge the existence of natural processes of regeneration in forests. The majority of the areas studied within the framework of forestry projects (e.g. Cartón Colombia) have been experiencing a process of natural plant succession after the departure of the extractive companies, and today these sectors have secondary forests whose growth and development signify recovery of the forest cover in the territories. The process of natural plant succession has also benefitted from the armed conflict to the extent that the lack of stability in law and order has impeded other stakeholders from entering the territories and exploiting the region's forests. Thus, although the sectors bordering the communities are experiencing deforestation due to some of the economic activities underway, the more remote forest sectors have been recovering their forest cover through natural regenerative processes that benefit from the fewer anthropic pressures on them. In other words, the territory is experiencing simultaneous processes of loss and recovery of the forest cover, which suggests the existence of a deforestation rate near zero, whereby, the deforested areas in the community's central district are compensated by the naturally reforested areas in the remote forests.

Community

The concept of community takes on a very specific connotation in the context of an internal variable. By community, we mean a social group with specific organizational structures, with both formal and informal rules and standards of conduct, and with its own characteristics of relating to the territory. The communities covered by the case study are organized under a Community Council system, a legal structure that grants them authority over the territories they inhabit and, in that regard, gives the communities the basic role of determining and, also, regulating the uses and conservation of the biodiversity and hydrological resources within their territories.

Although the community has a body of traditional knowledge which serves, in the majority of cases, as the principal basis for the development of economic activities, there are different productive techniques in use within the territories that include techniques and technologies adopted from the outside world, including the use of agrochemicals and the indiscriminate harvesting of trees.

In addition, the community's capacity to negotiate with external stakeholders has improved thanks to the status afforded them under the Community Council structure and the support given through the legal requirement of "Previous Consultation." However, the communities face difficulties in managing illegal activities such as coca cultivation and mechanized gold mining, since these involve armed stakeholders, and the communities lack police or control mechanisms to regulate them. In addition, although to a lesser extent, there is evidence of limitations in the control of compliance with internal norms on the part of the Council members themselves. This is due to the relationship links between members of the Council, which can become an excuse for ignoring rule-breaking and forgiving sanctions, which highlights the low level of commitment to the internal regulations and/or diminishes the credibility of the community leaders.

Tourism

In recent years tourism has become an alternative source of income for the communities of the Colombian Pacific. The communities are visited by people from other regions of the department and country seeking to enjoy the attractions of the region's forests and their biodiversity, as well as its streams and water resources. The communities also sell traditional culinary and artisanal products. In the territories covered by the case study this is seen much more clearly in the Alto y Medio Dagua Community Council, where the proximity of some of the communities to the highway contributes to the increase in visitors. The main focus of tourism activity development and promotion for this Council is the San Cipriano Nature Preserve, which borders the collective territory of Alto y Medio Dagua. However, it is important to clarify that tourism activity is a recent development, yet to be consolidated: tourism is seen more as a promising additional source of income in the future. Previously, there was more tourism in the area of the Bajo Calima Community Council, but the increased violence due to the armed conflict, together with the difficult access to this collective territory, has reduced the number of tourists. Even so, the Bajo Calima communities still view tourism as an economic alternative, so they have undertaken

efforts to manage the trash and litter along the river banks in the hope of making them suitable as ecotourism destinations.

Agriculture

Subsistence agriculture with low levels of technology use is the characteristic agriculture practiced in the communities within the case study. It comprises small lots or tracts, most of them under 5 hectares in size, in which a variety of crops are grown, with the objectiveof achieving a balance between different plant and animal species and achieving healthy food products.. The crops are interspersed between different species of wood, fruit and palm trees. The combination of crops are selected to guarantee the availability of food for a year round balanced diet. This combination of species must also meet other criteria, such as the control of pests and diseases, providing a source of income throughout the year, and the efficient use of the available labour resources. The crops are grown in the flood plains of the rivers due to the fertility of their soils. However, population growth and the division of the land among different generations has provoked agricultural expansion into higher altitude areas that were previously covered by forest. This process, in turn, has brought deforestation events with it.

Although agriculture is primarily oriented along traditional ecological knowledge, in some cases the use of agrochemicals has been incorporated, particularly for the control of pests and diseases, which impacts biodiversity, the soils, waters and the ecosystems near the crops. The use of agrochemicals has been promoted by government policy, as the farmers accept the technology packet offered by the government agencies because it promises them higher crop yields. Technology use in agricultural activity is introduced progressively in this fashion. Added to this is the fact that newer generations do not adopt or assume the cultural customs and traditions associated with agriculture, and rely more heavily on the use of pesticides, fertilizer and chemical inputs. Given its higher levels of agriculture, this phenomenon is more pronounced in the Alto y Medio Dagua Community Council.

Traditional Ecological Knowledge

Traditional ecological knowledge is understood as the body of practices, beliefs and knowledge surrounding the relationships between the communities and their territories, which evolves through adaptive processes across generations through the transfer of culture. According to traditional thinking, natural phenomena are closely associated with God and the ancestral spirits. As such, the physical and the spiritual are two dimensions of the same universe. The traditional medicine practices of the healers and herbalists have always embraced this duality. The knowledge of natural processes and of the effective medicinal plants of the tropical rainforest have coexisted with a belief in the magical-religious character attributed to certain forces considered beyond human comprehension. Thus, traditional ecological knowledge in the Colombian Pacific involves, among other things, techniques to identify and collect medicinal plants, agricultural and extractive practices, knowledge of climate patterns, traditional gold

extraction techniques, fishing with traps, food recipes and the preparation of brews and beverages. All these elements reflect a particular cultural domain and show specific adaptations to the different situations and changing environments of the territory.

The knowledge forms the basis for the design of the rules of the game that govern the relationship between the society and nature. As a consequence, knowledge is transformed into institutions to the extent that it guides, whether deliberately or unknowingly, the conduct of productive activities, the means of livelihood and the interaction between the stakeholders around them. Therefore, this knowledge has an indirect influence on the biodiversity and hydrological resource, by establishing the guidelines under which these resources will be used. In general terms, the traditional production practices advocate sustainable techniques, unaided by chemicals and heavy machinery, and controlled and selective extraction in the case of timber and mineral sedimentary material from the river.

Water management

The Colombian Pacific is characterized by the wealth of its water resources. In the case study area, the Calima and Dagua rivers, and their adjoining tributaries and streams, are the main water sources for the communities. The water sources are resources for collective use and management in the territories. Water is a common pool resource that is involved in the majority of economic activity and livelihoods of the Community Councils. The management of the resource is currently controlled by the Community Councils, although there is no formal regulation of maximum consumption volumes, nor is there any measurement of household consumption.

The community drinking water comes mainly from the streams that have their sources in the upper elevations of the mountains, and from rain water. Both Community Councils have favored building aqueducts that permit rain water to be stored then distributed through pipes to each household. The water resource supports economic activities such as agriculture, fishing, gold mining, river material extraction and tourism. Since rain water is one of the main sources of the replenishment of the resource, the rainy seasons determine the access people have to the water resource. In general, during times of low rainfall, activities such as timber felling, hunting and agricultural production are emphasized, while during rainy seasons when water levels are high the felled timber is transported, and following that season the river minerals and gold are extracted. The Dagua and Calima rivers also serve as a means of transportation and social connectivity for community members.

However, the domestic use of water in the upper regions and its use in tourist activities and car washes creates significant amounts of waste water which is disposed of in open country, or directly into the rivers and streams in the absence of a sewer system; few families have septic tanks.

Last of all, the communities have reported the existence of water use processes by individuals and companies. For example, Hidropacífico (formerly Acuavalle) supplies water to the Buenaventura

urban area by collecting the water provided by the main aqueduct (San Cipriano) of the Community Council of Alto y Medio Dagua through three pipelines. Users in the municipal seat of Buenaventura are charged for water service, but there is a lack of clarity as to whether the community in the collection area receives any remuneration for protecting the watershed supplies.

Traditional Mining

There are two types of traditional mining in the territory covered by the case study: gold mining and the extraction of mineral materials from the river. Traditional mining is known as "*barequeo*" [panning for gold]. It is a small-scale activity using traditional tools and no chemicals in the process. The stakeholders who engage in this type of mining are community members to whom the knowledge of traditional mining techniques has been passed down. This type of mining forms a part of the livelihoods of the communities and has the approval of the Community Councils, because it is a traditional activity through which the cultural heritage is preserved and because of its low environmental impact. However, this activity — in both its legal and illicit forms — abounds in the territory of the Community Council of Alto y Medio Dagua, while it is not such a significant activity in Bajo Calima. The Council of that latter community hopes that mining activity in its territory will disappear in the coming years.

As for the extraction of mineral materials from the river, this is mainly done through traditional methods to meet local and business needs. It is important to mention that this activity is undertaken without the permits required by law. Nevertheless, there is no entity to regulate it, beyond the control that may be exercised by the Community Councils.

DRIVERS OF CHANGE

Social category - population

The population size is a very dynamic factor as it is susceptible to variation due to the action of many factors. In the case of our specific study, the population is considered, in general terms, within the context of the national rates of increase, due to the natural growth in the population; however, elements such as voluntary migration, both emigration and immigration, as well as forced displacement enter into the behaviour of the size of the local population. On the one hand, there is a growing tendency toward emigration by young people in search of better work opportunities in urban areas, given the scarcity of employment sources within the territories. But at the same time, some population groups from other regions of the country come to the territory of the Community Councils and settle there, encouraged by the opportunities for extraction of natural resources. In the case of Bajo Calima, the arrival of external populations has created different dynamics between the river and highway communities: for example, in the El Crucero community, situated on the highway, migration is more common given the proximity to

Buenaventura, while in the riverine community "La Esperanza" the distance from the highway and the constant movement of people along the river increases the levels of immigration.

On the other hand, the armed conflict is an element promoting displacement, whether due to forced recruitment of community members by the illegal armed forces, or during times of harassment against the inhabitants of rural areas, or even due to the incursion of illicit crops that replace the food crops that are part of the community's livelihood. Armed conflict affects the Bajo Calima Community Council more although there have also been episodes of violence by armed stakeholders in Alto y Medio Dagua. Nevertheless, although the displacement events caused by episodes of violence in Alto y Medio Dagua have created considerable population decreases at specific moments, the territory has shown a recovery to its previous population size in the years following conflicts. Thus, in general terms, the local population of the territories of both Councils follows the national tendency toward growth, thanks to the natural increase and to the arrival of new stakeholders in the territory, especially those related to the extraction of natural resources. As for the rest, migration events provide for an important variety in the cultural and ethnic composition of the population. Nevertheless, it is important to clarify that the rates of growth are not constant over time, as the territories undergo periods of growth or stability in the size of their populations.

Possible State A	The annual population growth in Colombia is 2.2% (this translated into an increase in the local population size, due both to the natural growth and to the occurrence of new immigration events and the settling of external stakeholders).
Possible State B	The population in Colombia remains what it is today (local growth rates and the occurrence of settlements by external stakeholders decrease from current levels, such that the local population follows the national tendency and stays the same).

Technological category - infrastructure technology

In the territory covered by the case study, this driver refers to the technological advances that underlie the infrastructure improvements in the region. These technological advances are achieved through the execution of large-scale projects, called macroprojects. In the case study area the main macroprojects are related to the expansion of the port, that is to say, the improvement and construction of additional infrastructure to connect the port of Buenaventura with the rest of the country.

Currently there are various macroprojects in the planning and/or execution stages in the collective territories: first of all there is the expansion of the principal highway connecting Buenaventura to Cali. The construction of this highway is of strategic importance for the economic development of the country since it is the only connection between the port and other regions. It is important to note that this highway passes through the Community Council of Alto y Medio Dagua. Secondly, there is a project to build an electric power connection system which passes through the territory of several of the communities in the Community Council of Alto y Medio Dagua. The high voltage

line is meant to provide service to several sectors of the port of Buenaventura. Third, there is a project to build an oil pipeline to supply the port area, passing through the collective territories. Finally, in the case of the Community Council of Bajo Calima, there is a construction project underway to build the Agua Dulce port bordering the bay of Buenaventura. There are plans to improve the specific infrastructure of the port, which implies interventions along the coasts of Buenaventura and changes to the mouths of the rivers that cross the collective territories of the Community Councils.

It is important to clarify that the macroprojects have the most influence over the specific places where they are located. This is why it is important to mention what type of projects take place in each one of the studied Community Councils. Even so, the general dynamics that result from the development of these projects include: changes to the population due to the increase in temporary housing built in the work zone, changes in the livelihood activities undertaken by the population or to generate income, increased pressure on the forests and, indirectly, on the water and biodiversity resources due to the needs that arise during the construction of highways and other structures, among others.

Possible State A	The infrastructure improvement works for the expansion of the port will undergo a significant rapid increase. (In the territory studied, this will translate into greater ease of transport for commercial products, such that the demand for these resources increases and, with it, the production and extraction activities in the region are intensified. Additionally, this attracts new stakeholders, interested in joining the economic dynamics, especially the extractive ones. The proliferation of macroprojects will also cause heavy impacts on the environmental conditions in the collective territories. The speed of their implementation will not allow responses to the environmental changes, thus substantial ecological imbalances will be created.)
Possible State B	The infrastructure improvement works for the expansion of the port will undergo a slow increase. (In the territory studied, this translates into almost imperceptible changes in the commercial conditions for the products produced and extracted, without attracting new stakeholders or intensifying the activities. In other respects there will be no accelerated intervention in the ecosystems.)

Environmental category - climate change

The Colombian Pacific region has historically been characterized as having high precipitation levels in relation to the other regions of the country. However, the distribution of rainfall throughout the year permits the identification of periods of greater and lesser precipitation. The close relationship between the precipitation and the volume levels of the rivers, which serve as the hub around which the communities in the area have been established, explains why the black communities have adjusted their production practices, especially agriculture, according to the periods of rainfall that occur during the year. In spite of this, the degree of uncertainty around harvest and sowing times, based on the annual bimodal cycles, has increased in recent decades.

Climate change is a global phenomenon, which stems from global economic dynamics, mainly influenced by industrialized and developed countries. This global phenomenon of climate change affects multiple variables, among which can be emphasized the rainfall patterns, and sea and temperature levels, as these variables are widely recognized and easily perceived. Thus the temperature variations affect the totality of the ecosystems, affecting their productivity and natural cycles and, consequently, affecting the production and extraction processes that depend on the yield of the soils. This is not to mention the impact of the change in the solar radiation on evapotranspiration, which not only changes the plant physiology, but also the evaporation rates of the water sources and alters the hydrological cycle, increasing the variations and the uncertainty in the annual precipitation cycles.

The possible repercussions of the global phenomenon of climate change will be different for each Community Council. This is due mainly to the management by each Council of its natural resources, as well as its mechanisms of control over the extraction and the conservation strategies for the ecosystems that are being conducted in each collective territory. Additionally, climate change will influence or impact aspects of social order, which will cause varied effects in the Community Councils.

Possible State A	The high median temperature will increase evenly by 2% across the entire country in the 2011-2040 time period. Precipitation levels will be reduced generally by 10-30%, which will increase vulnerability to the effects of the El Niño and La Niña phenomena, a rise in sea level, mudslide and flooding events and a reduction in the available hydrological resources. In the medium term the ecosystems and livelihoods that underpin the economic activities will be affected. (In the area of the study this will be seen through changes in the hydrological cycle, with higher temperatures and lower average rainfalls, as well as a more pronounced rainy season. The water volume of rivers and streams will decrease. Additionally, the increased temperatures will change the vegetation and species found in the territory, and increase the threat of the arrival of invasive species or pests.)
Possible State B	Median temperatures and precipitation remain stable during the time period. The changes in the climate patterns do not cause significant impacts, or increase the vulnerability to the effects of natural phenomena or catastrophes. The consequences to the ecosystems do not impact livelihoods, thus economic activities are not drastically affected. (In the study area this will imply maintenance of the climate conditions as well as the annual rainfall patterns, the water volume of the rivers and the composition of animal and plant species.)

Economic category - Changes in the Commodities Markets (Gold and Timber)

With the exception of fishing and agriculture (whose products are mainly used for self-consumption), several of the productive activities conducted in the Colombian Pacific are subject

to the behaviour of the markets for their respective products (whether simply extracted or processed). Raw materials such as timber and mineral sediments from rivers, along with "processed" products such as gold, make up part of the market dynamic, in which the fluctuations in supply and demand and in the sale prices can have repercussions on the intensity, scale and techniques used in the productive activities to supply these commodities.

Although the extraction of timber and gold occur in both Community Councils, timber extraction is more important in Bajo Calima, while in Alto y Medio Dagua the extraction of gold is more wide-spread. The timber extraction dynamics in Bajo Calima are more differentiated between the highway and the river communities: in the former the extraction of timber has diminished since the proximity to the macroprojects (the Agua Dulce port) offers employment in the infrastructure construction processes as an economic alternative and tourism is seen as a potential option; on the other hand, timber extraction continues in the riverine communities, taking into account that part of it is later transported along the same waterway. In general terms, there are no protocols to control the transport and extraction of timber, thus there is no way to regulate the development of this activity by members of the community or stakeholders outside the territory. It has only been in recent years that restrictions have been imposed, although there is no rigorous enforcement of compliance with them. It is worth considering the periodic demand from Chinese industries for this raw material, which creates spikes in the development of extraction due to the unexpected increase in demand.

Concerning the dynamics of gold extraction, especially in the Community Council of Alto y Medio Dagua, it is conducted on the basis of profitability and demand. In other words, if there is no buyer, there is no extraction. Gold prices are in constant fluctuation, along with the dynamics of its extraction. For its part, the influence of external stakeholders who have come to the collective territories to mine depends not only on the dynamics surrounding the extraction of the mineral, since once these stakeholders have entered the territories and settled there, the decline in the profitability of the extraction due to decreased gold prices promotes episodes of extortion by these stakeholders, who refuse to withdraw from the territories.

Possible State A	Annual increase of 20% in the national prices for gold and timber. (This implies a greater demand for these products and, consequently, higher rates of extraction in the region. Implementation of technologies to increase the yield of the extraction (heavy machinery in the case of gold and mineral sedimentary material; chainsaw in the case of timber). With the increase in prices, there are incentives attracting of illegal stakeholders interested in engaging in these commercial activities).
Possible State B	Annual decrease of 20% in the national prices for gold and timber. (This reduces the demand for these products and their extraction in the region. Traditional extraction techniques predominate, including "barequeo" and selective felling of trees to meet local needs. The fall in prices is a disincentive for illegal stakeholders in the area, which leads to the withdrawal of heavy machinery from the rivers).

Political category - Changes in Public Policy

Public policies arise as a response to the needs of the society. These needs are infinite as well as dissimilar across the different scales. Public policies are mainly destined to address national or regional needs as they are aimed at favouring the greatest number of people possible. However, the decision on which needs to address will always be an object of dispute. The Colombian Pacific is a difficult environment due to its nature and history: on the one hand, it is home to the greatest levels of biodiversity in the country, in addition to containing the largest commercial port; on the other hand, it has been a socially and institutionally abandoned region, in which different armed stakeholders are present as well as different companies who conduct their activities without any regulation. This panorama explains both the multiple interests that intersect in the region as well as the immense list of needs that merit consideration as the basis for public policies.

A lack of coordination can be seen in the Colombian Pacific, which leads to contradictions between the various public policies due to the multiple interests concentrated in the area. Thus, the environmental legislation identifies this region as a priority for conservation because of its high levels of biodiversity and the presence of strategic ecosystems; nevertheless, at the same time, the existence of the port and the abundance of natural resources in the region promote — with the support of government plans and CONPES documents — the development of extractive macroprojects and road and energy infrastructure, which necessarily entail a considerable intervention with the consequent impact on the ecosystems and biodiversity of the region.

In addition, the lack of institutions in the region has facilitated the arrival and presence of various armed stakeholders in the region, which engage in illegal activities such as coca cultivation (among others). In response, the government has ordered aerial spraying of glyphosate – which was erroneously considered to be a selective chemical that would only affect illegal crops – causing pollution and degradation of the soils and vegetation: this policy, once more, goes against the objectives of environmental conservation.

Possible State A	An increase in public policies focused on economic development through the extraction of minerals and the over-exploitation of natural resources. And a decrease in public policies for conservation, and even a loss of collective rights over ancestral territories. Incoherence and instability in resource protection. (In the area studied this will translate into: the arrival of multiple private and government stakeholders to undertake macroprojects in the region. Social unrest, manifesting as breakdowns in law and order in response to the loss of collective rights over ancestral territories. Substantial deterioration of the ecological condition of the ecosystems, loss of biodiversity and reduction in water abundance and quality.)
Possible State B	Strengthening of conservation policies and resource preservation through empowerment of the communities with ancestral roots in the territories. Additionally, the creation of development policies focused on sustainable development in partnership with the local

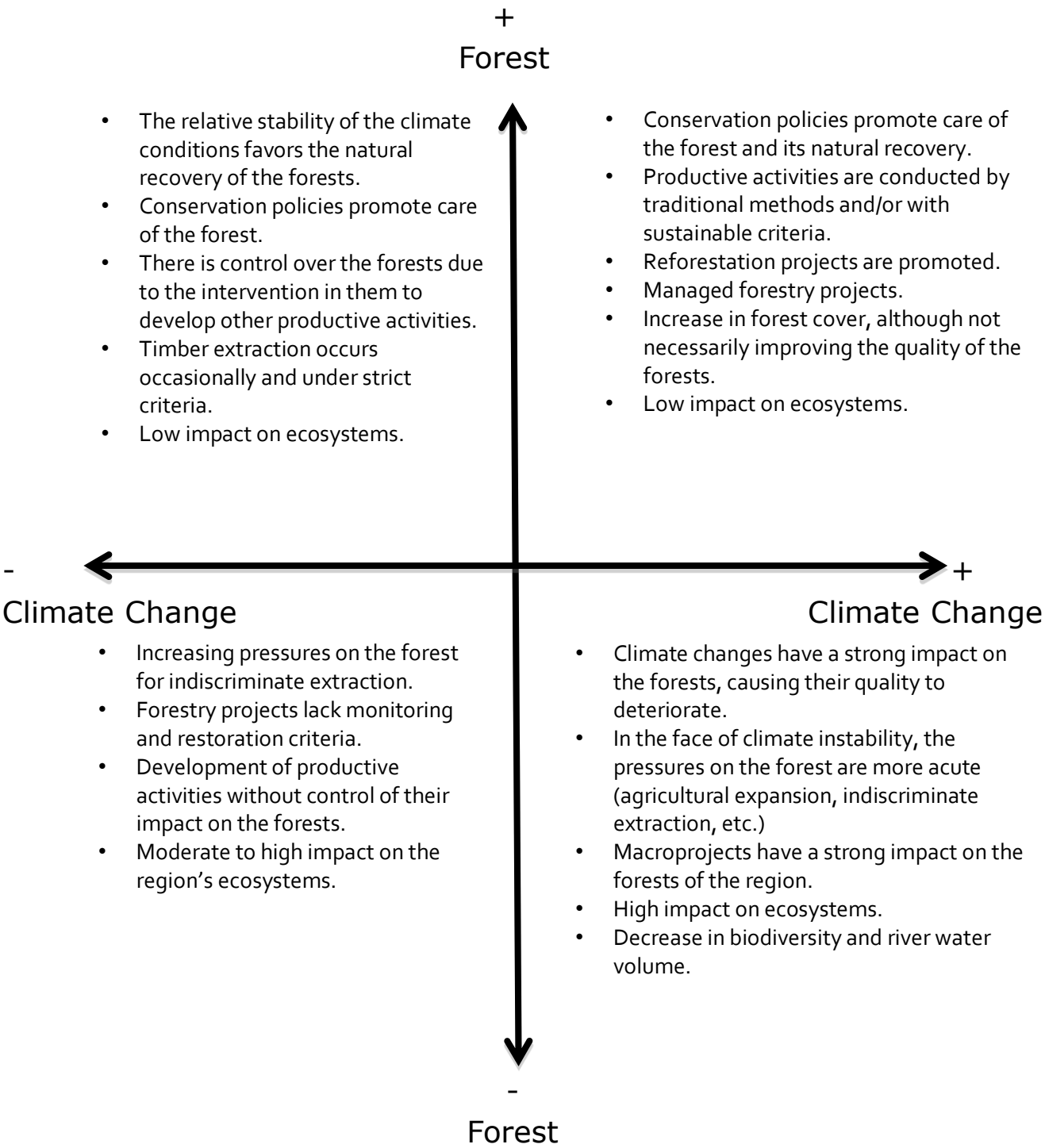
	communities. (In the area studied, this will translate into the strengthening of the Community Councils as environmental authorities and their coordination with agencies such as the CVC. Development of ethno-education plans and the beginning of the process of natural regeneration of the forests and recovery of the rivers, with the withdrawal of the illegal stakeholders present in the territory.)

Annex V. Morphological matrix. Morphological space, showing the intersection of drivers of change and variables

Drivers of Change	**Social: Changes in population size**		**Technological: Changes in infrastructure technologies**		**Environmental: Climate change**		**Economic: Changes in the commodities markets**		**Political: Changes in public policy**	
Variables	*Annual increase of 2.2%*	*Stability maintained*	*Infrastructure construction in the region increases rapidly*	*Infrastructure construction in the region increases slowly*	*High median temperature increases by 2%*	*Median temperature and precipitation remain stable*	*Annual increase of 20% in the national prices for gold and timber*	*Annual decrease of 20% in the national prices for gold and timber*	*Incoherence and instability in resource protection.*	*Development policies focused on sustainable development in partnership with local communities.*
Agriculture	Demand for food increases, causing expansion of land use and territory exploitation, using new technologies to increase the efficiency and effectiveness of agricultural processes. Loss of biodiversity.	Pressure on natural resources remains stable and mechanisms for environmental sustainability are sought. Environmentally responsible agriculture is promoted.	The expansion of the agricultural boundaries in the area increases, given the pressure to use land for infrastructure. Construction projects replace agricultural work and promote short-term employment. Traditional agricultural practices are lost.	Agriculture continues under traditional practices. The supply of food products does not increase, nor does the demand for land by new stakeholders. Farmers alternate agriculture with other activities that provide additional income.	Agriculture is impacted. Uncertainty in knowledge of climate patterns to guide agricultural practices increases (rainfall, drought). Agricultural expansion occurs, causing changes in land use. Arrival of new crop species; also disappearance of crop species that cannot adapt to the changes.	Production remains stable. Although there is uncertainty over climate patterns, the people adapt their practices according to agricultural knowledge. No large changes in land use.	Agricultural production is relegated to lower importance as the community turns mainly to mining and timber extraction, which are better-paid activities. Scarcity of agricultural products. The price of day labour increases.	Agriculture increases as the price of gold and timber decrease, causing pressure on the land. Mechanisms for improve production and marketing of products is sought.	Productivity-focused development policies increase the use of agrochemicals and the establishment of monoculture farming. The agriculture frontier expands and there is ecosystem degradation. There are impacts on agriculture and traditional production practices. Sustainability policies are overlooked, allowing disproportionate exploitation.	Agricultural policy is created from the community level up, with strong environmental sustainability content. The quality of products and their production improves.
The condition of the forest	Forest pressures increase. The arrival of people with different traditions makes community control over forestry use by operation of law (that is to say, in a self-regulated manner, taking into account the fact that it is a community resource) more difficult, therefore there is no control over the exploitation. This diminishes the forest cover and the water resources, and causes loss of biodiversity.	The rate of forest loss stays constant. Although there is a loss of biodiversity habitat, the control of extraction by operation of law manages to lessen the significant effects on the reduction of forest cover. Ecosystems are able to recover in the medium term along with the biodiversity in the area.	The rapid pace of infrastructure construction stimulates the use of timber. Despite controls, the rate of intensive logging operations in the forest increases. This results in a reduction in plant cover, threatening the biodiversity and water resources upon which the maintenance of the forest matrix depends.	The use of timber for construction activities increases slowly, which allows the ecosystems and plant cover to recover in the long term. The loss of forest does not increase significantly, despite remaining a threat of habitat loss for biodiversity.	The changes in the climate patterns increase the vulnerability of the forest to the effects of logging. The renewal of forest species is altered as temperatures change. A change takes place in the structure of the animal and plant communities. There is a greater risk of forest fires (does not apply to Bajo Calima)	Climate stability allows for generational succession of forest species, which dampens the impacts and consequences of forestry on the biodiversity and water resource.	The high prices of timber and gold stimulate their extraction. Indiscriminate logging, both to extract wood and to access gold mines. There are incentives for the extraction of timber to build mining infrastructure. This creates a loss of habitat and threatens the biodiversity and the water resource.	The reduction of prices for gold and timber stimulates alternative income-producing activities in the area. In the long term this permits the recovery of the areas altered by these extractive activities. There can also be intensification of the extractive activities to compensate for the drop in prices.	The institutional weakness of the environmental authorities causes a reduction in the control and monitoring of the forests. As a result, the rate of deforestation increases and there is no prudent follow-up.	The sustainable exploitation and use of the forests is promoted, stimulated by community conservation policies that acknowledge the importance of the maintenance of habitats as a biodiversity refuge. The possibility of implementing payment for conservation schemes exists as a government initiative.
Community	With the increase in population, the dynamics of the community and the informal rules begin to suffer changes, due as much to the arrival of new rules of the game as to changes in the existing rules. The figure of the Community Council remains stable, as the community sees to it that this structure does not fade. However, the local authorities are capable of handling problems in regulating activities in the face of population increases.	With a stable population, the formal and informal rules of the Community Councils can be transmitted in an efficient manner. There is greater control over compliance with the rules and they reflect the dynamics of the community.	The increase in infrastructure construction permits the entry of new stakeholders who are unfamiliar with the community rules. This results in an increase in failure to comply with them. There is a process of fragmentation of the community.	The community dynamics remain similar. The role of Community Councils is strengthened in finding new pathways to market local products.	Community norms are changed to respond to new problems that arise due to the change in temperature. These new norms are stricter controls over the responsible and sustainable use of the resources.	The changes in the community norms concerning the natural resources are minimal since the dynamics remain stable. However, efforts are made to strengthen the cultural processes of production, health, food security, etc. Agricultural production and tourism are strengthened, in turn.	The increase in the prices of gold and timber create a high demand and an increase in the exploitation of these resources. Together with the presence of new stakeholders, this fragments the community. Regulation of the norms for conservation of natural resources becomes more difficult. An option to improve regulation is to issue use permits; however, this type of arrangement can foster illegal mining operations, which weakens the community resource management processes.	The pressure on other natural resources from production and extraction activities such as fishing, agriculture and mining is increased, so the Community Council authorities must establish stronger control mechanisms related to the use of said resources.	Government policies focused on economic development cause the dynamics within the community to also aim toward this objective, weakening the community's conservation measures	The conservation dynamics and use of natural resources that have been created by the communities are adopted and replicated by the local and regional authorities with the aim of contributing not only to conservation but also to strengthening the community itself.
Water management	The demand for the water resource increases, as do the sources of pollution, which makes it difficult to control the water use and to manage it fairly and equitably.	With the population remaining stable, there are mechanisms to achieve equity in the distribution, adequate access and management of the resource by the community.	The development of infrastructure macroprojects significantly increases the demand for the water resource and the pollution of it. The resource is privatized for the benefit of individuals, complicating the equitable access by the population.	The infrastructure projects place moderate demands on the water resource. The water sources maintain their capacity to recover and formal and informal standards are promoted throughout the population for community management of the resource. A water privatization scenario might be possible, following the Departmental Water Plans.	The availability of and access to the water resource is limited, causing increased tension within the Community Councils and promoting competition over a common pool resource. Privatization of water occurs in common management areas. As a result of the scarcity, conflicts and disease increase.	The community makes medium and long-term plans for management, placing limits on water consumption and improving its control. There is heightened awareness of the usage of the resource.	The growth in extractive activities increases the pollution of the available sources of drinking water for the community. The water resource becomes scarcer. In addition, the water supply and aqueduct are privatized, which definitively causes the resource to become more expensive.	The extractive activities are discouraged by the prices, and the resource has a period of time to recover in the area, which improves the availability and access by the communities. Additionally, there is recovery of the water quality (clean-up).	There is control and vigilance of the access to and pollution of the water resource. The institutional weakness ignores equitability in the distribution of the resource and the conflicts over its use increase. The water resource decreases along with its availability.	There is a culture of conservation in the communities and the access to the resource follows the plans for its distribution. The threat of reduction of the resource is reduced and the water reserves are increased for future generations. Recovery of the quality of the water resource.
Ancestral knowledge	Ancestral knowledge is weakened as traditional practices are not transmitted to the whole community. Other knowledge systems, made up of different practices for the use of natural resources, are mixed in with ancestral knowledge.	With stability in the population, it is possible for ancestral knowledge to be strengthened and to be adopted by more members of the community, which creates benefits in the management of natural resources. The culture is strengthened.	The increase in macroprojects brings new actors into the area, who seek extraction of natural resources with new technologies. Ancestral knowledge moves into the background and is no longer used by new generations.	The steady increase in the number of macroprojects and the infrequent arrival of new actors into the area make it possible for ancestral knowledge to continue being used and transmitted by the community to new generations. While there is not total dependence on it, it is important in the production processes, and at the medicinal, spiritual and cultural levels.	Concern for the consequences of the increase in temperature leads to a strengthening of the dissemination of traditional practices by the community. These practices become a basic tool in the productive, medicinal, cultural, and other processes. Additionally, the traditional processes are combined with other knowledge. Mechanisms to disseminate knowledge and protection are established within the community.	With stability in the temperature, ancestral knowledge continues to be used in the same manner. The community does not depend on this knowledge, but it does not cease to be an important factor. This knowledge is complemented with other resource use technologies.	With the increase in prices, ancestral knowledge is marginalized since the community is focused on the exploitation of gold and timber, through industrial methods, leaving behind their traditional practices. Although traditional knowledge is reduced, it does not disappear entirely. The cultural, medicinal and food security aspects of ancestral knowledge are also weakened.	As prices fall, the communities abandon mechanized extractive activities and return to traditional activities, relying on local knowledge.	Policies focused on increasing production through industrial methods cause ancestral knowledge to lose importance and to be relegated by the communities along with the accompanying institutions.	Policies focused on sustainable development that favour ancestral knowledge and its productive practices permit their adoption and dissemination by the entire community.
Tourism	The carrying capacity of the tourism sites is saturated. Garbage increases and the recovery capacity of the natural areas is diminished, which causes a loss of potential ecotourism areas in the long term. Additionally, the increase in families involved in the activity reduces its profitability.	Tourism areas do not surpass their carrying capacity and it is possible to engage in environmentally responsible tourism. The population regulates the number of people who can enter and conservation of the landscapes is conserved for this activity, such that ecotourism in the area can be stimulated.	The construction of infrastructure facilitates the arrival of tourists to the area. On the one hand, this improves the accessibility and makes it possible to create ecotourism projects that integrate environmental services with the construction of hotels and recreation areas. The modernization of the tourism processes position tourism as a profitable activity in the area. However, if the implementation of the tourism activities is handled in a disorganized fashion, there is a great risk of causing serious impacts to the ecosystems, as well as to the social conditions.	The slow growth of the technological development in these processes allows the gradual natural recovery of the ecosystems and, with it, the availability of other ecosystem services improve, which make successful ecotourism in the area possible.	The loss of forest areas and the increase in the temperature reduce the quantity and quality of landscapes with ecotourism potential. With this, the ecosystem services potentially useful in stimulating this economic activity in the region are also reduced. They are weakened and lose importance.	Landscapes continue with current levels of potential for tourism and other ecosystem services that are enjoyed by tourists also have potential. In the long term, the ecotourism activity is positioned as an economic growth activity for the region and there is care given to the recovery of the ecosystem services so they might continue to stimulate the activity in the area.	Extractive activities prevail over ecotourism and landscapes are transformed with mining and deforestation such that there are no sites for environmentally responsible ecotourism.	Extractive activities are discouraged by which ecotourism is promoted as a source of income and an alternative development opportunity for the region. Environmental services are promoted, which favours biodiversity conservation.	The institutional weakness is reflected in the lack of policies to manage the community conservation areas with tourism potential, and there is no strong stimulation of development of this activity in the area.	A responsible ecotourism model is adopted, based on policies to conserve community areas and it is possible to establish profitable and sustainable businesses around the environmental services.
Traditional Mining	The practice of "barequeo" diminishes since the increase in population increases the pressure on the mineral resources and the community finds itself needing to use large-scale gold extraction practices. The practices of traditional mining (tunnels) changes and extraction increases and the ecosystem is changed.	"Barequeo" continues to be an infrequent activity practiced by the community. There is no strong pressure on the mineral resource.	The increase of infrastructure attracts new stakeholders who seek to exploit the mineral resources. This implies the loss of traditional mining and promotes industrial mining.	Pressure on the mining resources is reduced, although new stakeholders with large-scale extraction techniques arrive; however, traditional practices continue within the community.	The reduction in the availability of water makes it more difficult to engage in traditional mining. If the water runs out due to the high temperatures, traditional mining may disappear and mechanized mining may increase. If traditional mining should manage to endure, its adaptation to the new conditions will demand a change in the techniques. The effort required to engage in mining will increase.	The pressure for large-scale extraction by external stakeholders will increase. This will reduce the practice of both traditional and motorized mining.	The increase in prices will lead to an increase in non-traditional extraction, since new stakeholders will arrive bringing new extraction technologies. The community abandons traditional practices to dedicate itself to large-scale extraction, given its profitability.	With the fall of prices the external stakeholders will abandon their extractive activities in the area. Traditional mining gains traction within the community.	The mining development policies focus on extraction of mineral resources using new technologies, thus "barequeo" is substantially reduced, opening the door to vast extraction from the area. This threatens the biodiversity and the water resource because the environmental impacts of the activity increase.	Conservation policies aim to encourage "barequeo" as a key extractive activity, because in additional to achieving the extraction of the resource, it does not cause environmental changes of great magnitude.

Annex VI. "Crossroad" example

Climate Change vs. Forest Condition



Annex VII. Scenario drawings and narratives

BAJO CALIMA

Ideal Scenario

Drawing of the Ideal Scenario for Bajo Calima

We are in the collective territory of the Community Council of Bajo Calima in the year 2035. The territory is zoned. It harbours a significant amount of forests, some managed (with controlled use) and others dedicated exclusively to conservation. Along the edges of the highway and where there was no highway, there has been reforestation and the forests there are also designated for managed use. In general, the timber is used to meet needs, but is also used by transformative micro-enterprises that meet the demand from the municipal seat for furniture in an organized fashion using sustainable manufacturing processes. Even so, all the areas (especially those for conservation) are protected and have been recovering through reforestation projects and natural regrowth. Animal life is generally abundant throughout the forests of Bajo Calima. Additionally, on the river one only finds the boats and watercraft used by the Council members for mobility. The

boats of the transportation companies that were previously present in the territory were removed as part of efforts to keep the river clean. To accomplish this, strategies for the proper treatment and disposal of waste water and solid waste have also been put into place.

Food for the community is produced on its own lots, as subsistence agriculture is what is practiced. For this, there is no use of chemicals brought in from the city; rather traditional agricultural techniques are favoured, such as the combination of crops and the use of organic amendments. Fish are a staple food source, along with shrimp, animals, birds, etc. The river can be fished and provides the animals necessary for consumption. Tourism has been greatly strengthened. There is an ecotourism project involving nature tourism, the environment, in the community. Because of this, conservation plans for the forests and rivers have been created and promoted, allowing only their moderate and sustainable use. A cultural facet has been added to the ecotourism product, arising from the way of life and the traditional community practices (agricultural practices, traditions, etc.)

Different institutions have a presence in the territory, such as universities and the SENA, allowing young people to gain an education and receive training within their territory without the need to go to another city. The Community Council also has a differential educational model, which allows the young people to better assume and be trained in useful skills promoting ownership and involvement in the situation of their territory, taking into account the differences between the riverine and highway communities. In this manner, the communities have avoided the migration and displacement of their people for educational purposes. In addition to the universities, other institutions have a presence in the territory, such as the IIAP.

The river and highway communities have electric power service. In addition, the Council is tapped into the main aqueduct line that runs along the Cali-Buenaventura main road, for the highway communities; there has also been an aqueduct built for the river communities, such that all communities are supplied with water, without depending on the city.

The conditions of the football pitches have been improved and a "Maracaná"-type stadium has been built, with a large pitch and stands. Additionally, each one of the communities has its own football pitch and its own community centre, where ancestral musical, medicinal and similar practices take place. The territory also has hospitals that use ancestral medicinal practices to cure diseases. There are also cemeteries, ecological trails, cabins, nature preserves, etc. Traditional, ancestral medicine has been strengthened. The Community Council has also become stronger and has maintained its recognition, and even has international recognition. The members of the community participate actively in all processes and activities, but also have a strong sense of interdependence on one another. The territory also has a school of governance, a leadership school where young people learn to take ownership of the territory and its organization as such, which helps ensure and strengthen the process of generational succession. The governance school works hand in hand with the hamlet committees, which also serve as a school where people can prepare to serve on the Board of Directors of the Community Council. In addition, the oral tradition has been rescued and strengthened, which allows for a more effective transfer of traditional knowledge. This has also been nurtured by new sustainable production practices. The traditional practices have allowed the communities to adapt to the changes in the territory, especially in managing floods.

There is no coca in the territory, or mining, or armed conflict; only a well-managed forest, where the people can extract timber for their needs (house construction or repair, boats, etc.). People can move freely about the territory. The Community Council regulates the productive and extractive activities in the territory, avoiding the involvement of external stakeholders and promoting the implementation of traditional techniques and practices. Finally, in the area surrounding the port of Aguadulce, a managed forest has been established, with no buildings, only a natural space to live in good health.

Undesirable Scenario

Drawing of the Undesirable Scenario for Bajo Calima

We are in the Bajo Calima territory in the year 2035, which reflects the consequences of the war and armed conflict. The institutional weakness of the Community Council has caused it to lose legitimacy. The native population has been displaced, victims of the violence and forced displacement. The few native afro-descendants do not follow the rules and evade sanctions for disobeying the rules for control within the Community Council. Together with the non-native outsiders from other cultures, who remain in the territory, attracted by the opportunities to extract resources and the promise of work in the construction of infrastructure and macroprojects in the area, this heightens the social and economic conflicts, relegating the customs and native traditions of the area's inhabitants to the background.

Young women and the peasant population in general are more and more scarce, given the continual evictions caused by the harassment and the fight over land use. Nowadays there is evidence of the total replacement of subsistence agricultural practices and traditional production practices. This is partly due to the introduction of oil palm monoculture supported by the government's development policies, which are geared to increasing crop yields by adding agrochemicals to the soils, which have also been depleted of nutrients by the continued presence of coca plantations in the territory, and the heavy impact of glyphosate spraying to eradicate these illegal crops.

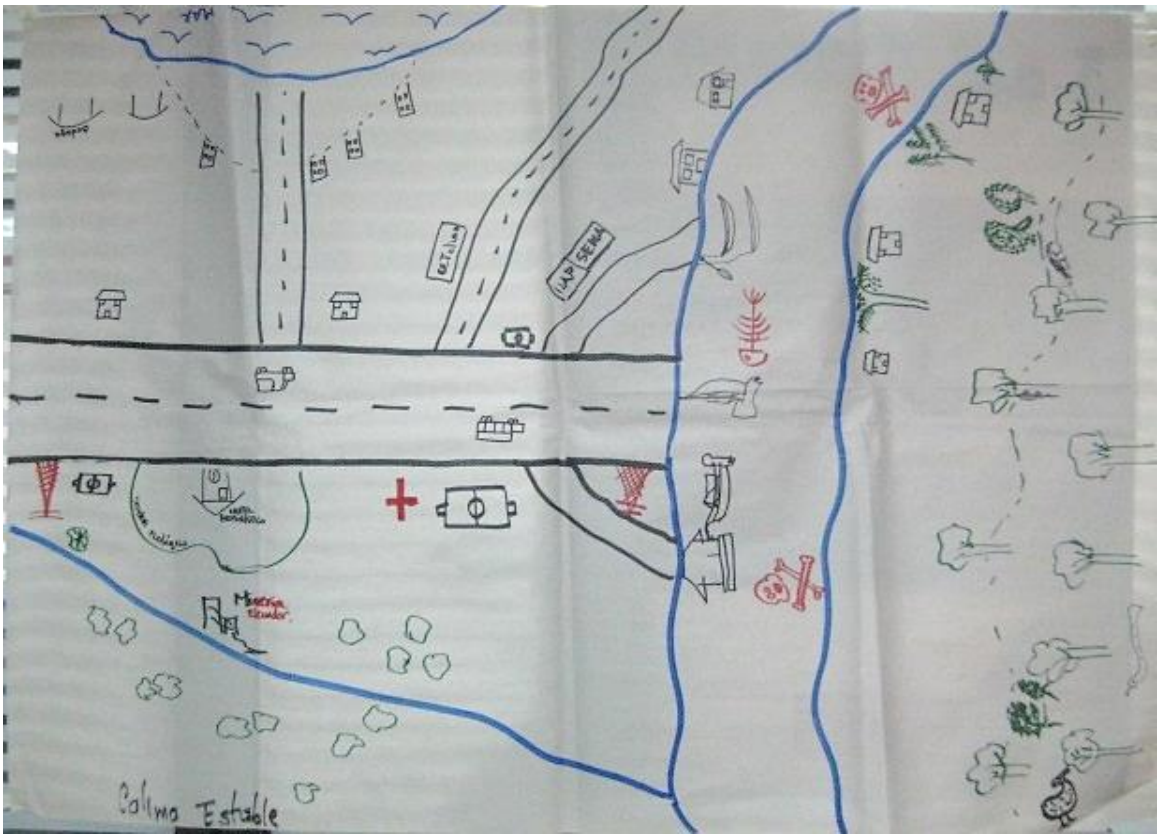
The ecotourism once dreamt of as a promising activity for the area was never possible. The few attempts at tourism in the area did not turn out to be profitable because there are no incentives to protect the natural resources, nor any interest in conserving jungles or forests for relaxation and recreation. The promotion of the macroprojects such as the construction of the infrastructure to serve the Aguadulce port and the highway caused the massive clear-cutting of the forest. The great forests of Calima have been wiped out. Today, there are only small fragments left of what was once a great jungle. The consequences of climate change, which are seen in the long periods of drought and/or intense rainfall, have been added to this chain of events with acute effects due to the massive extraction of timber. Thus the instability in the climate patterns and in the river flow volume of the Calima river have encouraged a reduction in biodiversity. There is greater uncertainty in the face of events of flooding and rivers overflowing their banks. All of this places the lives of the territory's inhabitants at risk.

As for the water, the instability in the climate has caused the resource to disappear, contrary to what was thought because there had been very good reserves within the territory. The lack of solid governance created conflicts of interest around the management of water, the lack of plans to prevent pollution of water sources and the absence of strategies for the proper disposal of residual waste water. In addition, the attempts to build a community aqueduct and sewer in both the river and highway communities were never completed due to lack of community interest in managing the resource.

The remaining ecosystems are being damaged by the mining exploitation supported by government policies that favour large-scale mining, even though the community always said no to the mining from the start. The lack of commitment within the Community Council and its organizational weakness made it unequal to the task of winning the battle against the mining development juggernaut that bought backhoes into the territory. This institutional weakness is also seen in the lack of continuity in the leadership processes in the young people. The idea of a governance school was abandoned, due to their lack of identity with the territory and the loss of family ties. The lack of opportunities and the presence of illegal groups, among other things, did not induce young people to stay on the Community Council or give hope to the task of continuing the fight for the sustainable development of the territory.

Stable Scenario

Drawing of the Stable Scenario for Bajo Calima



The year is 2035 in the collective territory of the Community Council of Bajo Calima. The port expansion of the Aguadulce port that was planned twenty years ago without consideration for a sustainability policy and the arrival of productive macroprojects to the area have caused significant changes in the forest cover, the river flow, and the condition of the natural resources in general. Subsistence crops have been displaced over time and replaced by land use to develop the infrastructure for the operation of the port. Up to this point, the progress of the infrastructure has not benefitted the highway communities that have to co-exist with the presence of this port dynamic in their neighbourhood. In the case of the river communities, no progress is seen, despite the construction of high-voltage towers to supply electrical service to the port, as the communities do not receive any compensation to allow them to improve their standard of living. The spatial configuration within the Community Council favours the formation of population clusters, which differs from the traditional tendency to settle along the length of the river. This new tendency promotes the abandonment of lots and encourages temporary work.

Additionally, the population continues with a steady rate of growth, which causes high demand for food and the need to import it. However, this is not a problem because the expansion of the port has improved the means of access to the territory, and with it, more commerce has arrived. The few ecotourism initiatives in the area are promising due to the forest cover in the river area. But there has been a loss of forest in the highway area, because control of the illegal forestry is only sporadic.

Despite this, nowadays several community conservation areas have been established, which are used for ecotourism trips, but there is a lack of investment in the area because the armed conflict has not ceased having impact in the territory.

Local fear persists in the face of insecurity and despite that fact the Community Council itself has said no to mining, the increase in the prices of gold and timber encourage laxness on the part of some inhabitants toward the development of illegal mining and timber extraction. This illegal intervention stimulates the arrival and settling of external stakeholders, who promote motorized extraction and production activities. This threatens to erode the traditional community production practices, the internal rules and the transfer of ancestral knowledge that was once practiced with greater frequency.

Government policies have not been able to mediate for the peaceful eradication of coca crops: there are continuing clashes between the illegal armed groups and the military forces. The spraying of glyphosate continues as an ineffective means of eradication with high impacts on the soils and ecosystems of the territory. Public policy has only focused on the expansion of the port and not on the territorial development of Bajo Calima. Nevertheless, river transportation has been improved and organized, but the volume flow of the Calima river has diminished along with the navigability due to the transformation caused by climate change in the ecosystems.

Concerning the water resource, the Community Council still has not yet managed to decide on expanding and improving the community aqueduct and sewer systems. Thus, although there are abundant sources of water in the territory, there are no contingency plans for the climatic instability that has been occurring. Despite the fact that the Community Council has been strengthened through the generational succession facilitated by the school of governance, there are no noticeable significant changes in the recovery of natural resources or specific initiatives focusing on sustainable development of the territory. Although there are internal regulations, a significant portion of the members of the Community Council are not aware of them and do not follow them, which is aggravated by the poor example given by some of the individuals close to the Board of Directors.

ALTO Y MEDIO DAGUA

Ideal Scenario

Drawing of the Ideal Scenario for Alto y Medio Dagua

It is the year 2035 in the territory of the Community Council of Alto y Medio Dagua, belonging to the municipality of Buenaventura in the Valle del Cauca department. Demographic conditions have permitted the strengthening of traditional values and knowledge along with the Community Council. Local leaders are empowered in their role in Colombian society and the community has more avenues for citizen participation. Regarding inter-institutionality, the municipal administration no longer sees the ethno-territorial institutions as rivals; on the contrary, their potential for joint work to develop the territory is acknowledged. Thus, relations between the Community Council and other entities occur horizontally and there is greater control of the natural resources.

The forest has good vegetation and there are usage strategies for the resources and services it provides. The good condition of the forest permits the promotion of ecotourism, one of the principal activities in the territory now, among others. Ecotourism is carried out in an organized fashion by local individuals and some outsiders in the area, through community groups organized to offer the service. The increase in trash resulting from this activity has been met with greater control in the form of waste disposal strategies by the Community Council.

In this fashion the community has organized itself around the various resources, including water, creating new waste water treatment techniques, the construction of community aqueducts with administrative boards and programs to promote conservation and efficient use. These actions have encouraged ancestral knowledge and serve as an example for other communities in the management of resources. New knowledge has complemented known practices; that is to say, ancestral knowledge has adapted to the current territorial dynamics.

The construction of macroprojects in the area has constantly driven the community to strengthen its internal dynamics and its position in relation to external stakeholders. Previous consultation has been a tool for engaging in horizontal discussions with government and private entities. Thanks to this, the forest has recovered through reforestation programs and policies for the protection and continuous monitoring of the forests. The community has established efficient mechanisms for the use, conservation and treatment of water.

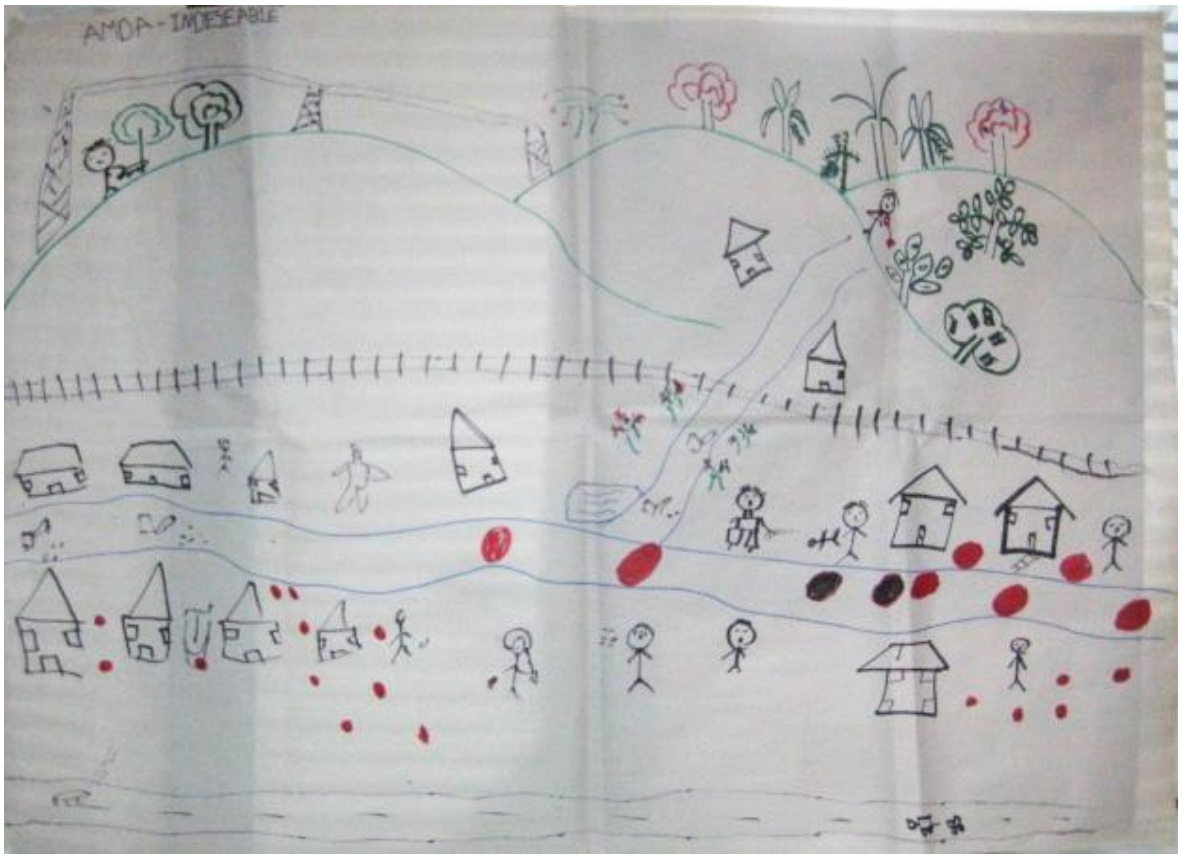
In the same fashion, traditional agriculture is now promoted, focused mainly on self-consumption, since the instability in the rainfall conditions prevents other types of agriculture (large-scale or for market). Traditional products and medicinal plants are grown in mixed crop family plots and terraces. In this regard, there is greater control over the exploitation of resources, by both the internal and external institutions, since the community is cohesive, even when there are new stakeholders attracted by extractive activities.

As for mining, solidarity markets have been created that strengthen production through traditional means; "barequeo" has been preserved due to its cultural importance and the activity is practiced along with other traditional activities. There are also stringent controls on mining exploitation by the Community Council, even while external stakeholders lack clear policies in this regard.

There is a community centre in the community, where traditional activities are conducted. It has a small garden of medicinal plants for the healer or bone-setter to use. It is a place that conserves the traditional practices. The water sources also have strong volume flows, thanks to the conservation policies and the steps taken to manage and recover the natural resources, including the animal ones. Finally, the armed conflict in the area has decreased, making it possible for the children in the community to play freely, since the community has a football pitch and other recreation spaces. There are also dual-lane roadways and hospitals, a childcare centre, a university, a school and the church.

Undesirable Scenario

Drawing of the Undesirable Scenario for Alto y Medio Dagua



It is the year 2035 in the territory of the Community Council of Alto y Medio Dagua, belonging to the municipality of Buenaventura in the Valle del Cauca department. The increase in population has raised the demand for food, which has, in turn, stimulated the development of technology-intensive farming dependent on agrochemicals. As a result, mono-cultivation is practiced, which depletes the soil in pursuit of greater efficiency and effectiveness, without consideration for the long-term consequences. Extractive activities are favoured as they are the most lucrative, which caused traditional agricultural practices to disappear.

New external stakeholders, legal and illegal, prevent real control by the Community Councils over the conditions of exploitation, which cause them a loss of legitimacy, loss of traditions and fragmentation of the community. Additionally, there is great urbanization of the rural area. Livelihoods have been transformed, creating greater social conflict and pollution from waste products There are no aqueducts nor clear management of waste products by the community, which led to the pollution of the water sources due to poor management of waste water, the use of agrochemicals and large-scale mining.

Extractive activities are practiced without control by the Community Councils. Traditional practices are no longer used in daily activities due to the emigration of local community members and the lack of a common identity in the territory. There was no generational succession to pass on

traditional practices, whose use has become scattered. With the immigration into the area of people from different cultures, new practices permeate those already in existence, both in natural resource use and in the daily dynamics, especially in the areas of food and health.

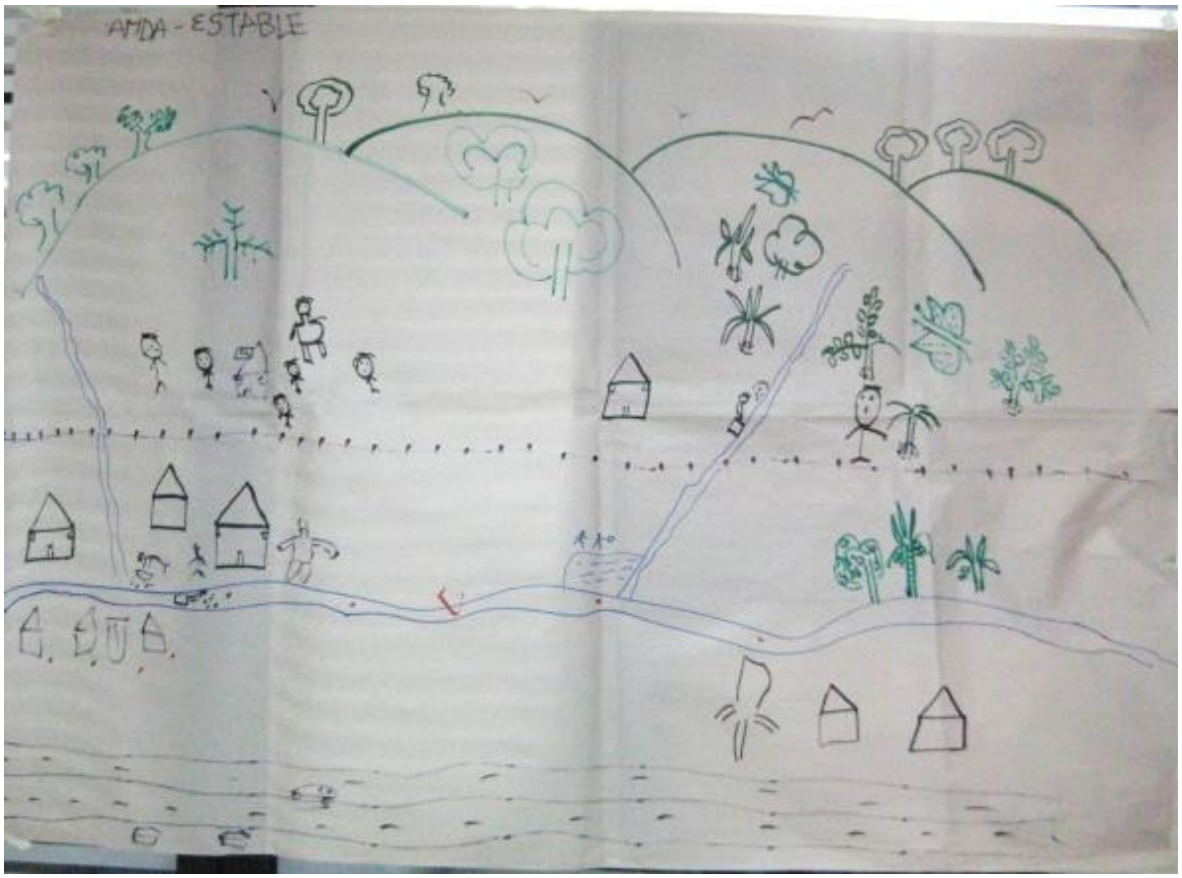
The forest has been indiscriminately cleared as it has been a constant source of income for the community. The deforestation has altered the water volume of the rivers, which has resulted in a loss of biodiversity. There is no control or monitoring of the clearing of the forest. This results in a decrease in tourism due to the poor condition of both the water sources and the forest. The recovery capacity of the resources is moderate, due to the high impact of extractive activities. What little tourism exists is unplanned.

Pressure on mining resources has increased and new extractive technologies have been introduced, displacing traditional mining. This means there is no more "barequeo" and mining extraction creates major consequences, polluting the water sources, added to low levels of control by the Community Council.

Additionally, new stakeholders have come to the territory via the macroprojects implemented in the Community Council territory and its environs. Once again, there has been modernization and expansion of the highway and the oil pipelines that have continuously permeated the territory. In addition to outsiders, this has brought with it dynamics of violence, similar to those found in the urban environment, where fear and insecurity are felt throughout the community. Said insecurity has definitively torn the social fabric, as there is no longer any trust among community members.

Stable Scenario

Drawing of the Stable Scenario for Alto y Medio Dagua



We are in the collective territory of the Community Council of Alto y Medio Dagua. It is the year 2035. The highway now runs in two directions and carries a good number of vehicles. The forest is in the process of recovery, through reforestation and natural regrowth processes, following the impact caused by the construction of the divided highway. Pressures on the forest have lessened, which has allowed the environment to reach a manageable state and harbour biodiversity. An example of this is the presence in the territory of a greater number of birds in relation to the past, and also land animals, which feed on wild fruits and have larger tracts of forest for habitat.

The improvement in the condition of the forest has also allowed the river flow volume to recover. Additionally, the river is no longer as polluted, although it still cannot be said that it is completely clean. Nevertheless, an increase in fish and shrimp can already be seen. Pollution in the communities has also been reduced, but still has not been eliminated entirely. While there are still car washing operations at the side of the highway, these are strictly regulated both technically and environmentally. In addition, the aqueduct and sewer system is being strengthened, but there is still a need to implement strategies for the treatment of solid waste and waste water. The improvements in environmental conditions have encouraged ecotourism, which has grown through strategies and controlled activities that are non-polluting.

Agriculture is mainly dedicated to self-consumption and incorporates natural amendments, using traditional agricultural practices (such as crop mixing) that are conserved and transmitted orally to new generations, and with little use of chemicals. The historical knowledge accumulated regarding rainfall patterns assists the process of organizing the agricultural production and, generally, the various productive and extractive activities throughout the year.

Industrial mining has been significantly reduced, but is still occurring in the territory, although much less frequently. In the upper areas of some streams and micro-watersheds there is still motorized mining taking place, but in other areas of the territory it is clear that traditional mining is practiced. The aim is for motorized mining to disappear and leave only traditional mining. There are sink-holes in the earth from the tunnels and shafts dug for mining. Nevertheless, the mining boom has ended and the outsiders have been leaving the territory, along with their illegal mining exploitation operations. The reduction in the demand for gold has encouraged the departure of outsiders from the territory.

The territory also has a Council chamber for its meetings and events, but each community also has its own community centre. Thanks to the experience from the Previous Consultation, the Community Council has increased its capacity to interact and coordinate with the district and other institutions (e.g., Ecopetrol). In addition, the Council promotes traditional knowledge and hopes to maintain it over time through education projects and formation of leaders. Even so, population control is still difficult, since there are a lot of people, some outsiders, and there is a significant practice of extractive activities in the territory.

Annex VIII. Description of the response options

ALTO Y MEDIO DAGUA

Institutional Strengthening and Evolution

The transfer of knowledge to young people and their training in leadership skills are essential elements that the Community Council must revive in order to strengthen their organizational structure. Despite the difficulty in reconstructing history when the process of oral transfer of the rules and norms has not been documented, the Community Council must begin to recall them and leave a written record as a legacy for future generations. Their institutional evolution lies in updating and disseminating the internal regulations and other documents that allow the Community Councils to develop local skills focused on responding to the new challenges of the millennium.

The Community Council needs constant training for both the community leaders as well as for local young people committed to the community processes on matters of territorial governance. Local capacity must be created for academic knowledge to support traditional ecological knowledge. It is recognized that there is a need to promote the participation and a greater interest of young people in the negotiation processes for macroprojects that have a direct influence on the welfare of the community. Nevertheless, it is also necessary to seek out and spread the word about local opportunities that allow the young people to establish roots in the territory to ensure generational succession and the transfer of community processes along with it.

Concerted Management of Natural Resources

The main objective of concerted management consists in working together for the preservation of natural resources, opting for the use and rational utilization of water and biodiversity in the Community Council. The territory has been the product of years of ancestral heritage, that is to say, the people have managed to learn from their relationship with nature and the forest. Therefore, it is necessary to preserve this relationship, strengthen it and maintain the identification with the territory. Promotion of the identity allows the Community Council to take authority over the forest and establish restrictions on the use of the natural resources. However, the participation of academia is also necessary to ensure that the concerted management arises from the dialogue between local and scientific ecological knowledge that is key for the territory management.

Additionally, one of the alternatives proposed as a response option toward global change is that the Community Council focus on working with carbon credits in the clean development initiatives market. This profitable initiative for the communities requires the support of the environmental authorities to strengthen the educational programs focused on conservation and natural resource management. It then becomes a high priority to raise awareness among the youth that the future

lies in working for the community to achieve progress in the ecological knowledge of the territory that informs a dialogue with academia to achieve a balanced and harmonious management of the natural resources.

Mutual Understanding and Consensus-Building between the Community Council and External Entities

Conciliation actions are currently underway over compensation provided for the initiation of macroprojects in the area. This has created a forum for dialogue between the companies, external stakeholders, institutions and the Community Council. These roundtable forums deal with topics of public health, road infrastructure and housing, management of collective areas and forest conservation initiatives or measures. Even though the Community Council has experience in negotiating, one priority is to have technical accompaniment from social and environmental agencies.

According to the Community Council the independent efforts to implement development and training actions that guide the governability of the territory must include the participation of the environmental authorities. This response option from the Community Council requires bridging the gaps with the institutions so that these entities work hand in hand with the community. As a part of this mutual understanding, one proposal is that these institutions become a part of the communities, that undersecretaries or places were the community can approach the institutions inside the territories be established.

The idea is that the leaders of the Community Council and the representatives of these entities in the territory work together to solve problems. This requires a willingness on the part of the institutions to establish work teams in a coordinated effort between the Community Council and other internal and external institutions to carry out development actions. If the entities are involved in the territory and know the needs of the area, they could exercise their function in concrete actions that manifest their support of the communities. This feeds into the design and implementation of public policies.

Territory Use and Management (Declaration of Protected Areas)

This refers to the Community Council stressing conservation and sustainable use of the natural resources through concrete actions such as the declaration of a protected area, the establishment of a biological corridor, the initiative to design environmental education with an emphasis on the nuclear family and the importance of reviving and conserving traditional ecological knowledge. This environmental education must be centered on the family. To accomplish this it is necessary to promote education that builds ownership as a way of creating identification and appreciation for the territory by recovering and conserving the oral traditions for knowledge transfer.

It is also necessary to teach children and youth about the use of the natural resources to create empowerment and raise awareness in the communities from the roots up. In doing so there will be greater control over the utilization of the natural resources, which is fundamental for the territory's governance. The maintenance of protected areas where the rational use of resources is permitted

preserves the ecologic dynamics, increases resistance and resilience of the ecosystems against global threats, and mitigates the effects of the loss of biodiversity and the territory's water resource.

BAJO CALIMA

Organizational Strengthening

The Community Council should emphasize strengthening itself organizationally. First of all, it is important to revise the image that the community has of the Community Council. The mission of the Community Council as an ethnic and territorial entity is much greater than just a job opportunity, since the attainment of and respect for the specific rights of the black communities in relationship to their collective territories depends on its efforts. The Community council is a body that provides political guidance to the communities and constantly fights for the defence of the territory. That is precisely the vision that must be strengthened within the community.

The Board of Directors is currently comprised of three components: the Board of Directors, individual Hamlet Committees and a Central Committee. There is an occasional perception of weakness in the Community Council due to poor information flow between these groups and the community. The organization needs to be improved, starting by training the council leadership. To accomplish this it is proposed that a governance school be created, where a sense of ownership by area youth can be encouraged as well as general training for community work in legal, organizational, and political areas, among others. It is expected that this political training of the youth will result in greater strength and unity in the Community Council in the long term in addition to reworking the inter-institutional relationships to achieve a dialogue among equals through respect for the assembly's authority and participative decision-making on matters of interest to the whole community. Above all, this guarantees respect for the law and procedures by state agencies concerning the interventions to be undertaken in collective territories.

The main objective of the proposals for organizational strengthening is to have committed leaders heading the Council, who live their vocation and leadership roles at all times and who know how to effectively communicate information to the community; additionally, that the authorities in the Community Council fight for common objectives and give priority to collective interests when carrying out their duties. The Community Council must be capable of defining the policies for the territory, showing that they are an efficient authority, committed to serving the interests of their community. In turn, the community must support the decisions of the Council's Board of Directors, trusting in the transparency of their management.

Establishing a Custom Educational System and Ethno-Education

The community council currently provides an education to its youth and children that follows the general public policy, in which there is no space for relevant educational and differential education schemes yet. Thus, the education provided does not offer tools to strengthen the community in facing its problems and challenges. The community council aims to implement an educational

model oriented toward the area, in other words, focusing on its particular problems, needs, conditions and vision for the future. First of all it is expected that this education has as a starting point a deep understanding of their territory, with the aim of engaging in a real process of ownership-building through this knowledge, thereby guiding the execution of proper management, based mainly in traditional practices.

For this reason, a new curriculum is being developed within the Community Council, which includes elements relevant to the territorial context, such as medicinal plants and beneficial crop-plant associations. A stronger spiritual and religious education is also desired. "If people do not know what they have, they do not value it."

Proper Use and Management of the Forest

The intervention performed during the government concession to Carton Colombia had an immense impact on the forest of the Bajo Calima Community Council; but it also modified the behaviour of the communities involved in the extraction, promoting forestry without any type of management. Currently, the internal control of the Community Council has weaknesses: although there are procedural regulations and a management plan for the territory which lists the rules and norms of use and forestry guidelines, external stakeholders and sometimes the community itself engage in irrational exploitation of the forest, with no attention given to the forestry rules and norms. To this extraction are added other activities that place pressure on the forest such as the implementation of monocultures (of coca and oil palm tree), mining and the presence of illegal groups.

The council intends to implement forest management, starting by strengthening the internal controls and providing a good example within the community in terms of the conduct of forestry operations. The forest management will take as a basis the forest-use plans of the territory to establish areas of conservation, sustainable use and forest preservation areas, inside which there will be specialized management that allows for the conservation of streams and lakes as well as for enjoyment through regulated activities such as ecotourism. Last of all, timber transformation (e.g., furniture making) is envisioned as one of the economic activities, in the hope of increasing the profitability of timber use. The members of the Community Council are aware that launching these strategies of proper use and management of the forest depends to a large extent on the end of monoculture farming, the eviction of mining facilities and the withdrawal of illegal groups that are currently present in the territory.

Involvement in Public Policies

The collective territories of the Community Councils remain vulnerable to the incursion of external stakeholders and the subsequent development of activities on the fringes of the Council's policies. Faced with this reality, the Community Councils recognize the importance of having some say in the design and creation of the public policies since these are the only external legal structure above the internal regulations of the Council that can control the behaviour of external stakeholders who come into the collective territories.

Specifically, the Councils believe that their involvement in the timely development of regulations for chapters 4 and 5 of Law 70 of 1993(related to the management of the territory, the environment and mining) is crucial. The development of the regulations for those chapters, which could be an inclusive energy-mining policy for the communities, is the ideal place for Councils to obtain support or where there is a possibility of exercising control mechanisms over motorized mining, among others. In addition, public policies are the direct route for the Council to have more control over illegal crops, as long as the communities are involved in their creation in a way that keeps in mind the internal dynamics and logic underlying this issue. Finally, by participating in the making and/or launching of the public policies, the Community Councils acquire the capacity to take part in public proceedings, in such a way that this can become a source of control of corruption.

Productive Management of the Territory

There is a proposal to establish an integrated production project in the council's territory in order to counter the growing tendency to abandon productive parcels in search of what has been called "easy money" (e.g., work for hire, smuggling and dependence on public assistance, among others). The project seeks to identify the productive families, promote their return to the abandoned lands and stock them with animal and crop plant species (e.g., sugar cane and cacao) so that they can restart production and remain on their lots, strengthening family unity, without depending on external factors for their subsistence.

Part of the comprehensive nature of this project will seek to facilitate transportation to school for the children of these productive families. This project is definitely aimed at improving the lives of families in the area, strengthening food security through the implementation of subsistence crops (e.g., yucca, yampeen, etc.), but also by creating alternatives to rise out of the welfare trap and reducing the vulnerability of the families to fluctuating contract offers, as well as from the dangers posed by smuggling.

Annex IX. Description of possible shocks

Category	Shock	Description
Natural phenomenon	Tsunami – flood	Tsunami refers to the natural phenomenon caused by tectonic movement that affects the ocean tides. A seaquake – the counterpart of an earthquake in the sea – Could influence the Buenaventura bay and affect the urban as well as the rural area. Both Community Councils of Alto y Medio Dagua and Bajo Calima should consider the risk of flooding in the communities close to the river within this natural phenomenon risk category. This is because the councils have communities settled on the banks of the river and a sudden increase in precipitation (as a possible effect of climate change) could cause abrupt changes in the river level, directly affecting the collective territories, particularly the productive systems, housing and the possessions of the population.
Health	Increase in the rate of tropical diseases	Infectious illnesses that attack human beings are those transmitted by microorganisms (virus, bacteria and parasites) through their specific vector. These organisms have specific geographic distributions. However, these distribution patterns may be affected by climate change. The change of distribution patterns also affects the rate, emergence and natural behaviour of these organisms. This leads to an increase in the frequency of associated diseases and the emergence of new transmission pathways[5]. The result is a generalized epidemic and the increased risk of a pandemic of diseases such as Malaria, Chagas, Leishmaniasis, Onchocerciasis and Dengue Fever.
Social-political-economic (territory administration)	Repeal of Law 70	The legislative proposals related to the institutionalization of multiculturalism and the visibility of ethnic minorities expressed in the Colombian constitution, are achieved through legal instruments for the protection of the cultural legacy, allowing the empowerment or self-government capacity over their territories recognized as ancestral legacies. Thus, the law that specifically mentions the black communities and their right to collective appropriation of their ancestral lands is Law 70 of 1993. This law affects the governance and dynamics of the Community Council's

[5] For more detail see: Patz, J. & Olson, S. (2008). *Climate Change and Health: Global to local influences on Disease Risk*. In: Vector-Borne Diseases. Understanding the Environmental, Human Health and Ecological Connections. Workshop Summary. Forum on Microbial Threats Board on Global Health. Institute of Medicine on National Academies. The National Academies Press. Washington, D.C, USA. 88 p.

		operations and its establishment and how it should exercise the right to administer the collective territory. However, an omission or failure to comply with some obligation under this law could result in sanctions or the loss of the granted title through legal channels[6]. In other words, there is a legal and political possibility of repealing Law 70 of 1993, a situation that would leave the black communities of the region without legal support for their collective ownership of the territories and the legal recognition as an ethno-territorial figure under the category of Community Councils.
Socio-political	Civil war	For more than 50 years, Colombia has been the setting for internal armed conflict between the state and armed groups of both the left and the extreme right. This conflict has been characterized by being dynamic and variable in its methods. It started as a guerrilla war and evolved into the formation of armies. In addition, the sources of financing of the armed stakeholders have changed, from donations to drug trafficking, including extortion and robbery. The conflict persists today and remains the focus of attention of several sectors, political as well as economic and social, which could lead to situations of increased violence and even the outbreak of civil war. A civil war implies a frontal battle of the entire population of the country, polarized in two sides fighting for power or legitimacy.

[6] See Erazo, Alejandra. (2012). *La ley 70 de 1993 y la participación política de las comunidades negras*. Trans-pasando Fronteras, Centro de Estudios Interdisciplinarios, Jurídicos, Sociales y Humanistas (CIES), Universidad Icesi. Num. 2. pp 31-45. Cali, Colombia.

Annex X. Evaluation matrices

Bajo Calima

Response option	*¿What is needed to implement this response option (e.g., use of incentives, establishing rules and norms)?*	*What stakeholders should participate in the execution of this response option? (Who and when)*	*How does the response option affect the Community Council and its territory?*	*How does the response option affect men, women, youth and elderly?*	*What relationship does this response option have to the other response options?*	*With which of these response option(s) should we begin?*
Organizational strengthening	* Improve communication. * Be more respectful with decisions and what is said. (When we are in power we forget what is written). * Training in rules and norms is needed. * To be more conscientious: it is like loving oneself, it does not feel like the territory is ours. * More responsibility when choosing leaders, be conscientious and think of what is best for the community. Not all leaders have the same thinking or capacity of taking ownership; each leader has his/her own way of thinking and leading. That is why we must know who we are choosing and must personally know the people that get to run as community representatives. The leader must also have a sense of belonging; sometimes the one trained cannot assume that responsibility. I cannot become a leader if I do not communicate or have a sense of belonging. * Control of the dignitaries, establish over-sight committees. Debate things and get involved in what leaders do; know whether they are doing their job or not. * Creation of a governance school. We are not ready to administer what we have. * Mobilize economic resources.	INTERNAL * The community * Children and youth * Leaders with experience * The Community Council * Teachers * Elders * The board of directors * Hamlet committee * Fundapav and Ecobios EXTERNAL * ICBF * Universidad del Valle * Universidad Del Pacífico * SENA * The city administration * The justice center	* Better leaders * Improve communication * improve academic readiness * Improve the community's quality of life. * Improve the sense of belonging. * Improve management of the territory * Less conflict, no guns or dredgers; it would be a more peaceful territory.	* Women and youth would participate more. The participation could be better balanced, as well as decreasing the gap between elders and youth.	This option is the one that organizes everything. Everything depends on this. If we are organized it is easy to fix everything else.	**1**
Establishing custom education and ethno-education	* Disseminate the Ethno-education plan that already exists in Calima (brochures). * The Ministry of Education must include this plan in its curriculum; lack of recognition. The Ministry is to blame for us losing our identity. Implementation of the ethno-education plan also depends on the Ministry. They must create a commitment to make the implementation obligatory. * Trained and committed teachers are needed. * Increased awareness.	INTERNAL * Community Council EXTERNAL * Ministry of Education * Education Secretariat * Educational institutions * ICBF	* More ownership of the land * Revival of ancestral customs, practices. * It would be easier to spread the information with a common language that could improve communication. * More and better knowledge of the territory. * Better representation (anyone can represent us), with better leaders. * Better quality of life.	It would not be differentiated, better for everyone.		**3**
Proper use and management of the forest	* Adopt the management plan of 2000/2003 (e.g., crop areas, preserve areas, etc.). * Strengthen the existing norms, through sanctions that help with compliance. * There is only monitoring in the reserve area, it must be expanded. * Seek resources that allow us to start initiatives to take care of and protect the forest. * Look for income alternatives to replace the logging activity. * Create awareness and sensitivity in the community on the proper use and management of the forest. * Seek agreement with the CVC. In Calima there is no forestry permitted, although our income comes from timber; for the government that is a crime.	INTERNAL * Community Council EXTERNAL * Ministry of Environment * CVC * Incoder	* Fresher air. * More fauna and flora, more biodiversity. * We could have control of the forest * Less pollution * Minimize global warming, climate change. * Increase of water sources.	Men make the most use of the forest (not in every aspect). Positive effect for everyone.		**2**
Impact on sustainable public policies	* We must start at the beginning: being well organized with professionally trained leaders or individuals. * Have a representative in politics, to have real representation. Partnership with a political party, belong to one. If we are organized we will have people in the Congress, and in the Senate. * Resources are needed to get there (maybe if we are organized they are not needed anymore). *We need to define our own policy: where do we want to go? What is it we want to do? If we define our own path toward the future, the rest will happen. That will be the way to what we want to achieve.	INTERNAL * Community Council * Other Community Councils *Allied organizations	* Better control of the territory * Better benefits * Political control * More autonomy	There are no differentiated effects		**4**
Productive management of the territory	* We must be well organized. * We need economic resources and technical and professional assistance for the farmers. * Policies that help to organize the tourism sites. * Production strategies and crops suitable for the territory (ancestral practices). * Inter-institutional support from external entities to develop ideas and projects. * Public policy that suits out ancestral practices, in other words, a sustainable policy. * Improve our knowledge: know what resources we have, and what our potential is. * Promote that our youth learn to produce, strengthen the sowing (e.g., maize, yampeen, plantain, etc.). * Strengthen the exchange; explore to whom we are going to sell. * Strengthen the diet in our territory. * Influence public policy for the promotion and sale of products. * Advance in raw material transformation processes. * Promote ecological tourism.	INTERNAL * Community Council * Fundapav and Ecobios EXTERNAL * Incoder * Ministry of Environment * Ministry of Agriculture * SENA * Universities	* More benefits * More productivity * Better quality of life. * More and better control over the territory * Conservation of natural resources	There are no differentiated effects		**2**

Alto y Medio Dagua

Response option	*What is needed to implement this response option (e.g., use of incentives, creating rules and norms)?*	*What stakeholders should participate in the execution of this response option? (Who and when)*	*How does the response option affect the Community Council and its territory?*	*How does the response option affect men, women, youth and elderly?*	*What relationship does this response option have to the other response options?*	*With which of these response option(s) should we begin?*
Concerted management of the natural resources	* To have a sense of belonging to the territory; to know what links people to the territory. * Rescue the knowledge to incorporate it into childhood education, pass the message along to next generations to value the resources of the territory. Give visibility to the traditions. Teach the kids and youth how to sow, fish and hunt. *Enforce the internal rules, create commitment and concern for neighbours to improve compliance with the rules. *Make the outsider educate and train him/herself to be part of those who manage the collective territory.	INTERNAL * Families * Local institutions * Community Councils EXTERNAL * State institutions * National Government * CVC * Environmental police and military to control the territory.	(It is the same as for the response option of use and management of the territory) * Benefit to the forest and agricultural systems. *If the resources are well managed, the organizational capacity can be improved as well as the livelihoods.	* It helps the youth and children to be conscientious of why they should conserve natural resources. * In general men as well as women improve as individuals and as a collective. *In a non-differentiated way it creates a sense of belonging, the economic traditions are recovered. * We must work on territory management from the basis of the family, because if the territory is complete, children and youth do not have to go from place to place to get training, but they can find it all within the territory.		**4**
Mutual understanding and agreement between Community Councils and external institutions	* Establish relationships based on rules for the council to relate to organizations outside the territory. * Improve the channels of communication so that outsiders see that there is order in this territory. * The Community Council must agree on how it is going to communicate, and what it is going to communicate, because it must speak for the common interest with one voice. * Enforce the rules. * The Community council must BE PERSISTENT with the objective that it has set, always constant in its efforts, look for ways of solving conflicts. * Engage entities to commit to enforcing compliance with the rules, as well as the council itself engaging in internal control.	INTERNAL * Especially the community leaders, but supported by the community. * Community Council * Other institutions that are part of the council or with which we already have agreements. EXTERNAL * CVC * City administration * Governor's office * Tourism and Development Secretariats * Foundations and nongovernmental organizations.	* We improve our management skills. This creates benefits because more resources and more projects for the community can be managed. We seek more collaboration and agreements to strengthen our objectives. *Facilitates the relationship with other entities to optimize the internal structure processes of the Community Council.	* For the youth and children, because there are more opportunities for education and training for young people. * Personal growth of the elderly * For men: the recognition of their job and better pay. *For women: increased employment and positions available * For the elderly: recover their ancestral knowledge, to have a space for their development. * Prevents the migration of youth because there are local productive alternatives, education and employment. * The opportunity that the training gets to the youth and adults improves technology in productive systems and that benefits the community and generally boosts the economy of the region.		**3**
Use and management of the territory (declaration of protected areas)	* Environmental education: train and raise awareness about the management of natural resources among the people, a sense of belonging to the territory must be fostered. Inculcate in children an awareness of conservation of natural resources not only through external workshops but also by training the adults: "*Let us return to the ancestral knowledge and put it in dialogue with current knowledge*". * Take advantage of the natural resources available using what is needed and paying for what is being used. * Being an area with scant employment, strategies must be sought so people don't depend so heavily on the forest. * Organize the internal regulations, enforce them, monitor them and control the extractive activities from within the Community Council.	INTERNAL * The community with its leaders who ultimately are the ones in charge of replicating the acquired knowledge and being the representatives to other communities. * From the family that is part of the environment and creation of this process. * Internal organizations from within the Council: the local community action council and the indigenous with whom we share the territory. EXTERNAL * CVC: the community must be willing to accepting their constant support in managing the natural resources. * Educational institutions * Ministry of the Environment * Ministry of Agriculture and Rural Development	* It is positively affected, improving the quality of life of the inhabitants of the Community Council's territory. * It manages to attract external support and international cooperation * It favours the abundance of species because it protects biodiversity. * Possible shock: outside stakeholders can approach and negatively alter the resources. Because when there is abundance and prosperity of resource production, it becomes attractive to external stakeholders.	* Improving the health and wellbeing of children mainly, also of men and women equally. * The difference in income between gender is reflected by the fact that men will have employment, and more money, while women will benefit from the employment of the men. * Long term the children will benefit from this conservation strategy.		**2**
Institutional strengthening and evolution	*Stronger ties to the institutions and entities involved in the management of natural resources: have an office of the CVC, where the environmental authority has a more direct authority over the jurisdiction of the territory. * Institutional education for leaders, as well as formal education to combine knowledge. * Hold discussions and research workshops on the black community processes that have not been documented; there is a lot of richness in oral tradition but we must begin to write it down. * Take advantage of the ancestral knowledge to replicate it, get to know the history, traditions and ancestral institutions. Hold discussions with the elders so they can relate how the territory was managed and how to practice justice, so that ideas about governance practices of the past can be taken up and adjusted to the present context and scenarios. "*For example, when someone stole something, it was confiscated and word was spread that he had stolen this, and the punishment was focused on educating and not punishing, because it cause him shame so he would not do it again. Who were the judges? It was always the elders and they were the ones to rule on what to do in someone broke the law. Although this wasn't written, it was plainly known.*"	INTERNAL * PCN: to interact at a national and international level reviving memories. * Community Council ("It has to be the whole body, because one way or another, we are convinced that everyone, from the youngest to the oldest, needs to learn.") EXTERNAL * Academia through universities "It is we who must tell the story; let no one else tell it for us."	* A history is begun; this way it will be known where the Community Council wants to go and what it needs to do to achieve its objective. *It allows setting a course to follow with the evolution of institutions, not to remain in the past, but rather to progress with the norms and rules as the community processes of the territory progress.	* History will be reconstructed; the history of the community will be recovered and will be able to contribute in an effective way to the strengthening of the territories. It affects everyone the same way.	Institutional strengthening is the response option that relates to the other options, since through this the communities achieve more autonomy, identity, empowerment and territorial recognition. If there is strengthening the community will be able to adopt a commonly-accepted management of the territory through more equitable relationships with external institutions or entities. The management of natural resources is tied to an institutional strengthening through the training of children and youth of the community, which fosters the strengthening of traditions and culture. It is necessary to prioritize the strengthening because we must start by instilling community objectives, knowing what is collectively owned and strengthening the institutions and policies that will guide the norms, opportunities and shocks.	**1**

Annex XI. Programs, guiding projects and strategies of the two community councils defined in previous strategic planning exercises

BAJO CALIMA

Political-organizational component

1 Management of the reclamation procedures to the relevant entities for the 11,000 hectares that are untitled.
2 Defend and maintain Law 70 and Decree 1745. Appropriation and application of the internal regulations to assume the right of ownership in the collective territory.
3 Strengthen the organization of the Councils to stay united in defence of the collective territory. Training to expand and strengthen the active, directed and organized participation of the communities. Training programs for youth on human relationships, afroheritage, ethnic identity and sense of belonging, ethnic legislation, education and environmental legislation.
4 Name Pacific Black Community representatives to the Congress of the republic, to defend the law.
5 Establish control systems over the internal regulations of the Community Council.

Production-commercialization

6 Recovery of ancestral practices of soil conservation, diverse production, "*mano vuelta*" or "*mano cambiada*"
7 Carry out a market study of agricultural products and road improvement for the commercialization of the products. A program of food sovereignty and autonomy. By planning the production, exchange and commercialization of the products the ancestral practices may be recovered for the conservation of soil and diverse production.
8 Creation of alliances and partnerships at the levels of production, transformation and commercialization. Strengthen associations between transformative producers and marketers of agricultural products through training.
9 Carry out a study to identify ecotourism sites and design an ecotourism route. Reserves, with adaptation of the sites and the establishment of productive and artisanal projects and ecological trails.
10 Training of ecotourism guides and ecotourism entrepreneurship groups in the area

Health and public services components

11 Total coverage for the population in ARS and SISBEN.
12 Treatment of rain water, construction of septic tanks and waste water treatment systems to improve the disposal of human waste and garbage.
13 Analyse and study the possibility of getting water through pumping or gravity for each community. Create a board of directors of the aqueduct and operational procedures to manage the aqueduct and protect the water sources.
14 Implementation of the order of the Community Council to establish the landfill for the final disposition of garbage.
15 Strengthening of traditional medicine. Organize an exchange of knowledge between the traditional and the allopathic (conventional) doctors.
16 Petition the Ministry of Health for the appointment, training and financial compensation of traditional doctors.

Community education – ethno-education

17 Design, implementation, follow-up, evaluation and adjustments to the ethno-educative model, with an active participation of teachers in building the model and continuous training of the teachers.
18 Support the people in the community to be trained in pedagogy and become the educators of the educational institutions of the Community Council.
19 Design printed and audio-visual material with the educational model to be disseminated at the Pacific Councils level, the nation and other international entities through different media (e.g., T.V., radio, and Internet).
20 Develop and carry out projects that raise awareness in the communities about peaceful coexistence and harmony among the Calimeños.
21 Continuous coordination between the educational institutions (I.E.), the Board of Directors and the organization of the communities of the Community Council.
22 Carry out research projects that respond to the economic, environmental, social, cultural and organizational challenges of the territory.
23 Have an educational committee that provides oversight of the teachers to ensure compliance and commitment to the educational development of the children and their integration with the community.
24 Identify what kinds of professionals are needed in the territory and provide scholarships with the government and the universities to implement programs in the territory.

Community participation

25 Inter-institutional agreement and coordination to carry out programs and projects; effective use of resources and efforts.
26 Participation in the formulation of public policies and municipal development plans.
27 Public management and inter-institutional cooperation program: program management and projects for cooperation, training and management plans with entities at the

regional and national level; Training in organizational aspects and participation in the formulation of public policies.

Spiritual-cultural component

28 Research local beliefs and their rituals; promote dialogue with leaders of the churches and the Board of Directors of the Community Council to promote unity and respect for religious expressions to strengthen communities and the collective territory.

Environmental component

29 Environmental education program: promotion and encouragement of ecological groups, implementation and design of the PRAES.
30 Program for the mitigation of risk areas in the Council: diagnose the areas of blockage of the river channel; establish a local radio station to provide an early warning system. Identify risk areas and relocate population that could be affected by natural disasters.
31 Genetic resources conservation program: monitoring and identification of sources for the conservation of genetic resources, promotion of production-protection programs.
32 Recovery of flora and fauna program: establish threatened flora and fauna inventories; identify conservation priorities for medicinal and artisanal plants, implementation of systems of agro-forestry and poly-crop farming in abandoned areas.

Social dimension

33 Construction and improvement of residential dwelling program: through the quantification of housing needs, design custom models of houses according to the ecosystems and ideals.
34 Creation of projects to set up terrace plots for growing medicinal, food and herb plant species; as well as the recovery of knowledge and uses of these plants.
35 Study for the relocation of houses at risk of flooding7.

Alto y Medio Dagua

Environmental component

1. Define the lagoon, together with the water supply and associated vegetation, as a special protection area with the support of the Ministry of the Environment and the Valle del Cauca Regional Corporation for Environmental Issues.
2. Establish the Dagua river as a conservation area. Conduct a study to promote connectivity through wildlife corridors (Limones-La Delfina-La Víbora-Pericos, Bendiciones-Km 40 and Zaragoza at Km 27).

[7] Not addressed in the response options for natural disasters.

3. Hydrological restoration of the flow of the Dagua River in areas affected by mining and the construction of the divided highway.
4. Channeling and management of all the runoff that poses a risk to the stability of the hillsides.

Education component

5. Unite educational institutions with community environmental education programs.
6. Develop information material on the biodiversity of the area and informational signs at settlements and tourist areas.
7. Establish ecological trails with youth and child brigades that promote environmental education and strengthen their knowledge on the use and harnessing of medicinal and artisanal plants.
8. Management of the construction and improvement of educational centres and day-care centres, creation of work groups to conduct beautification projects and the construction of schools.
9. Program to train Council members.
10. Entrepreneurship and management skills program (work education).

Control and surveillance component

11. Promote the formation of ranger families and the support of the environmental authority: "rangers armed with wisdom," who will earn an income from offering tourist services and collecting ecological fees supported by the State.
12. Regulation of hunting and fishing, limiting the taking of females with offspring.
13. Limit agricultural practices to low gradient areas.
14. Geological studies for the management of areas to be outfitted with road security measures and road monitoring with a specialized team.

Productive – economic component

15. Ethnic research program: rediscovery of medicinal plants and traditional uses. Establish nurseries to restore native seed stocks, promote a meeting to "exchange knowledge, tastings and seeds."
16. Create internal regulations to govern the fishing activity and prohibit inappropriate practices in agriculture (e.g., use of agrochemicals, pesticides). Promote regulations to control hunting and promote the restoration of fauna.
17. Manage support for the control and oversight of mining, eliminating industrialized mining, and regulating the presence of outsiders for sustainable mining operations. Development of mineral potential oriented and directed by the community itself.
18. Development of a program to strengthen environmental services by promoting ecotourism and carbon sequestration.
19. Establish an ecotourism route and train the community council on it. Identify appropriate sites to build cabins, hotels and tourism service centres.

20. Take steps with public and private entities to create microenterprises and implementation projects for product transformation processes derived from ancestral uses: crops, breeding animals, fishing, hunting, logging and mining.
21. Carry out a project to set up shrimp farms with the help and support of the relevant public entities, to improve the financial strength of the families of the Council.

Political-organizational component

22. Creation of internal regulations to govern the use and sustainable management of the territory's natural resources.
23. Establishment of a system for planning, execution, follow-up, evaluation and systematization of the management plans of the Community Council.
24. Continuous training on self-rule rights (Law 70, decree 1745), afro-heritage, environmental legislation, leadership and human rights to broaden the participation base and so communities acquire social and political skills.
25. Public management and inter-institutional cooperation program: efforts to incorporate the council's management plans in the triennial plan of the C.V.C., the municipal development plan and the Buenaventura land-use plan.
26. Participation in the formulation of laws, development plans, protected land-use plans, basin-use, forestry promotion and policies of areas protected with an ethnic vision.
27. Development and management of housing improvement or relocation projects for dwellings located in high risk areas through community mingas to improve the housing infrastructure.
28. Program of service management, basic sanitation and waste water: Implementation of a potable water treatment plant, latrines, septic tanks, improvement of the electric power service and a public services oversight committee.
29. Advocate a rate adjustment with EPSA for electrical services and to guarantee the proper maintenance of the electrical system.
30. Recuperation and conservation of the forest resource program. Creation of reforestation projects in degraded areas.

Health component

31. Strengthening of traditional medicine program: training individuals in the community in health care with traditional medicine and conventional medicine.
32. Efforts to establish scholarships in medicine and nursing for individuals in the community: Appointment of doctors and health promoters for the communities.
33. Development and management of the hospital building project, improvement of health centres and the acquisition of an ambulance.
34. Efforts to properly stock health centres and the hospital.

Cultural – spiritual component

35. Program to recover and strengthen values, customs and ancestral knowledge. Seek to promote midwives, healers and bone-setters, trained and active in workshops and

gatherings for knowledge transfer about medicinal plants and dissemination of the work through informative brochures in the educational centres to ensure the spread of this knowledge to children.

36. Promote traditional celebrations, recovery of gastronomy and typical beverages. A special day to prepare and share tastings of typical products. Recipe books of typical foods.
37. Peaceful coexistence program: training the community in peaceful resolution of conflicts, appointment and training of justices of peace and equity and community arbitrators.
38. Construction of the headquarters for the promotion of traditional practices. Strengthening the cultivation of medicinal plants.