Essay

Environmental governance with an ethnic approach: a management commitment in protected areas in the Colombian Caribbean

Gregoria Fonseca Lindao[1]
Miryam Arroyo De La Ossa[2]
José Alfredo Castellanos Suarez[3§]

[1]Regional Autonomous Corporation of La Guajira-Master in Environmental Sciences-University of La Guajira. Colombia. (gregoria.fonseca@gmail.com). [2]Caribbean Semi-arid Territories Research Group-University of La Guajira. Colombia. (marroyo@uniguajira.edu.co). [3]Center for Interdisciplinary and Service Research in Science, Nature, Society and Culture-Autonomous University of Chapingo.

[§]Corresponding author: jcastellanoss@chapingo.mx.

Abstract

The creation of protected areas is a mechanism that allows counteracting the impact caused by man due to the exploitation of natural resources. However, the designations of some areas are often inadequate, since they do not meet true objectives of biodiversity conservation and effective participation of communities, especially Indigenous communities. The present study is a contribution to guide institutional management with the participation of ethnic groups in the processes of protection and conservation of protected areas, in order to promote the improvement of the environmental quality of ecosystems and a harmonious use of natural resources from the cultural precepts of the Wayuu ethnic group from a model of environmental governance. The qualitative research criteria and the ethnographic method were followed, applying techniques and instruments contextualized to the ethnic group. An environmental governance strategy is proposed for the conservation of ecosystem services in Wayuu communities of the Integrated Management District of Musichi (Manaure, La Guajira), which seeks the integration and participation of different social actors, in order to improve the use of ecosystem services, regulated by a legal administrative figure that reflects the meeting of knowledge based on the intercultural dialogue, respect for and appreciation of the indigenous worldview and its forms of traditional knowledge.

Keywords: environmental governance, participation, protected area, Wayuu Indigenous people.

Reception date: May 2022
Acceptance date: June 2022

This essay presents the application of social sciences and natural sciences in the management of protected areas in a coastal area of northern Colombia, from an interdisciplinary perspective that is based on the ways in which the Indigenous people of the Wayuu ethnic group manage the territory and natural resources. Considering that the exploitation of natural resources generates tensions and complex relationships between local communities and institutions, as the ways of accessing resources and the sociopolitical and cultural structure of communities, especially those of Indigenous peoples, differ, articulating elements of the economy and ecology.

This suggests studying the form of appropriation of protected areas and the services they offer, valuing the knowledge of local communities from the material and intellectual resources and social relationships that enable and explain their ways of acting. In the same way, consider the administrative impositions supported by a good territorial planning that is reflected in environmental projects developed without prior consultation and without prior consent according to legal rigor, as in the case is required for projects directed in territories occupied by Indigenous peoples, thus generating multiple difficulties that generate tension between institutions and local inhabitants.

In the case of interaction with Indigenous communities, the recognition and appreciation of their languages and collective knowledge is traditionally underestimated, as well as the modes of knowledge production and forms of learning (Mato, 2007). Since in the decisions of the institutions, they are not considered and their ancestral knowledge is disregarded, and in some cases, the planning processes come to be contrary to their ways of managing the territory and natural resources with devastating results.

With consequences of the above, in the last 50 years, according to the Millennium Ecosystem Assessment (MEA) report , humans have transformed ecosystems faster and more extensively than in any other period of time (MEA, 2005), for Díaz and Zamora (2011) this is reflected in the socioeconomic benefits, but these benefits have been obtained with increasing costs consisting of the degradation of many ecosystem services, an increased risk of non-linear changes, and the accentuation of poverty in some population groups.

In 2004, the International Union for Conservation of Nature (IUCN) stated that the increase in protected areas in the world had grown 12% of the earth's surface, but the system of these areas was inconvenient because it did not meet its objectives of biological diversity conservation, because it was incomplete and because 'the participation of indigenous populations and local communities in the creation and management of protected areas is insufficient' (Secretaría del convenio sobre la diversidad biológica, 2004).

In Colombia, as a strategy for the protection and conservation of ecosystems so that they do not lose their function, structure and composition and preserve associated natural values, the National Government has declared protected areas (PA), defined as an 'area that is geographically regulated and managed in order to achieve specific conservation objectives aimed at its preservation, sustainable use, restoration and understanding', Ministerio de Ambiente Vivienda y Desarrollo Territorial (MAVDT, 2010).

Although it is true that Colombian legislation recognizes the common characteristics of renewable resources, González (2017); Pélaez (2017) argue that the 'joint action between communities, private organizations and public institutions', so the author affirms that, in general, these depend on the decisions of the government and other decisions in which the interested weight of external economic agents play, to which the omissions or exclusions of non-productive users are added, whose opinions are not taken into account.

The Regional Autonomous Corporation of La Guajira (Corpoguajira) reports that, despite of the goods and services of the Integrated Management District (DMI, for its acronym in Spanish) of Musichi, '(...) it is poorly represented in the System of Protected Natural Areas of Colombia' (Howlett and Rayner, 2007; Corpoguajira, 2012). In the DMI, there is no clarity in the effectiveness of the processes of community participation of the Wayuu ethnic group and the institution, nor is there a tool that allows evaluating or measuring the quality of democracy applied to environmental and social issues in the region. Hence, it is necessary to design a governance model for the management and dynamic conservation of socio-ecological systems in Wayuu communities of the protected area of the DMI of Musichi.

This is how it was sought to guarantee participation, the promotion of environmental management, environmental education, awareness and articulation of institutional and community efforts that tend towards the sustainable development of ecosystems as a preliminary exercise that includes government sectors and supranational institutions, environmental non-governmental organizations (NGOs), the local Wayuu population, and tourism and industrial sector that are directly related to the protected area (Howlett *et al*., 2007; Howlett, 2009).

Achieving in this way, with the participation of the actors involved, the structure of a governance model that identified the factors of government and political actions in terms of the competences of the State and the uses, customs and management of natural resources in the Integrated Management District of Musichi, whose purpose allows formalizing both institutional and community integration and cooperation, so that they can articulate human, physical and financial resources that contribute to the effective conservation of protected areas (Howlett and Ramesh, 2003; Rhodes, 1996).

It is a commitment to an inclusive environmental governance, where all actors appear and act under a defined structure that allows addressing the management of the natural resources of the Integrated Management District of Musichi, from the Wayuu people's own ways of managing their natural resources. The research follows the qualitative approach (Hernández *et al*., 2010), and the criteria of the ethnographic method presented by Guber (2011), qualitative techniques such as participant observation, in-depth interviews and documentary review were used, the PARDI methodological guide was applied, following Fallot (2013) to reach a shared vision of the socio-ecosystem (SES).

The study area corresponds to the Integrated Management District of Musichi, located in the jurisdiction of the municipality of Manaure, with an area of 1 977.2 ha. This data of the study area corresponds to the one estimated in the feasibility study for the declaration of a protected natural area in the region of Musichi (Municipality of Manaure, 2011). It is located in the Wayuu indigenous reservation of Alta y Media Guajira, constituted by Resolution 015 of 1984 and extended by Resolution 028 of July 19, 1994 (Figure 1).

Figure 1. Study area: integrated management district of Musichi (Corpoguajira-Biocolombia-CI, 2011).

The unit of analysis in the territory under study is made up of the *rancherías* that have some relationship with the DMI area, either because they derive their livelihood, own the territory or preserve an ancestral link with it, they were inhabited or usufructed by their ancestors, such as Neima, Pato Rojo, with the particularity of the Tuna, without current residence of the Wayuu; however, the descendants of the first inhabitants are determined to return to these lands that rightfully belong to them.

Under these conditions, the population currently resident in the DMI area comprises a total of 82 people, but the one that lives in the area of immediate influence, that is, 'the area that has a direct economic or cultural relationship with it comprises 52 *ranchería* communities, with a total of 1 728 inhabitants' (CORPOGUAJIRA, 2012). According to the Dictionary of the Royal Spanish Language, the *ranchería* is a set of *ranchos* (poor huts or houses). In the Wayuu culture, they are made up of several one-story *ranchos* inhabited by extended families. The *ranchería* system houses family units of uterine relatives, forming a residence group defined by a collective corral, gardens, a cemetery. Some have a mill to pump water or *jagüeyes* (artificial wells) and *casimbas* (dams in riverbeds) to store water, a close network of cooperation and the right of access to a local water source.

The research was developed in the following moments. Phase 1: the area of study was selected and delimited, the approach to the *rancherías* of the area of influence of the DMI was made, following the procedure of the normative system of the Wayuu culture and agreeing with the traditional authority. Phase 2: the identification of government structures and forms of appropriation and use of territorial space in the Wayuu culture was carried out by means of ethnographic methods (observation, interview and use of the story through oral tradition) and review of historical documents. This methodology is characterized by fieldwork, the interpretation of meanings, the analysis of social structure and roles in the community studied.

Phase 3: the territorial transformations that occurred in the socio-ecological systems in the face of the pressures and disturbances generated by the drivers or direct causes of change of the ecosystems of the area of influence of the DMI of Musichi were analyzed, it was determined through a simplified and systemic representation of the reality perceived by the actors involved in the same issue of natural resource management, using the problems-actors-resources-

dynamics-interactions (PARDI) method, which consists of a participatory process developed during workshops and interviews, in five steps that correspond to fundamental questions and objectives, through which a shared vision of the socio-ecosystem (SES) was reached, in accordance with Fallot (2013), as follows: P: definition of the problems or central theme for research and modeling; it corresponds to a social concern about the management of natural resources; A: identification of actors with a decisive role in the problems due to their participation in the management or use of natural resources. A mapping of actors and interviews, reaching a list of 'important actors around environmental management'; R: identification of the resources that are at stake in the SES and the key indicators on their good management; D-I: characterization of the dynamics and interactions of the ecological, economic or social processes that determine the functioning of the territory.

At the stage of the analysis by the PARDI method, the dynamics and interactions that occur between the actors and resources under the stated problems were defined. The dynamics are processes, succession of phases or the cycle of stages that occur in a period of time (recharge of aquifers, runoff, soil compaction, among others). The interrelation of two resources can also constitute a dynamic. The interactions are relationships between actors, actors with resources in some cases between the same resources, usually specific in a certain and precise time. For instance: grazing, browsing, consume, contaminate, among others.

Phase IV: the environmental governance model for the DMI of Musichi was proposed in a participatory manner, based on the agreement, with a view to solving the socioeconomic, cultural, biotic and physical problems of the ecosystem, coordinated through a legal administrative figure.

The Wayuu ethnic group and the ecosystem services of the DMI

The use of the territorial space of the Wayuu Indigenous people who inhabit the area of Musichi is based on the economy of grazing and fishing, activities combined with hunting-gathering and horticulture, weaving, salt exploitation and wage labor. For Stone (1989); Guerra (1990), the Wayuu, in their worldview, recognize that life is based on the sea, where continental territoriality is reproduced, and on the underwater world, which repeats the social order of the shepherds.

The DMI of Musichi is a regional protected area that provides a great diversity of ecosystem services, among which scenic beauty, recreation and tourism, spiritual and religious values stand out, they also prevent and mitigate the effects of climate change, as well as natural disasters, however those who make use of them have caused transformations, pressures and disturbances generated by drivers or direct causes of change occurred in the years from 1947 to 2011, such as: i) there is evidence of human intervention on the mangrove population, which is extracted and used mainly as firewood and wood for fences and corrals.

The transit of the Indigenous people through the area and the grazing of cattle makes the spontaneous restoration of it not prosper; ii) the anthropic pressure that is currently taking place in the coastal-marine belt of the study area requires knowing the morphogenetic dynamics to define and prevent natural threats and in turn, evaluate the human impact on morphogenesis; iii) there is a northeast-southwest degradation associated with some morphogenic processes and

climatic conditions, such as active wind processes; iv) one of the most relevant processes to explain changes by loss or accretion, together with the construction of some forms, is littoral drift and the transport of sediments along the coastline; v) local structural control in the municipality of Manaure has caused sedimentation pits where, more frequently, littoral accumulation occurs in the forms of beach ridges, beaches, marshes and deltas; vi) the construction of several production projects transformed the lower part of the basin into salt-producing ponds, preventing the natural drainage of surface runoff, especially in the sector of Manaure (*Shorshimana* and Manaure ponds); vii) the attack of the waves and their consequent erosion are the main causes of the small variations of the coastline; and viii) it is expected that, for the coastal belt of the DMI-Musichi, the rise in sea level will cause an increase in flooding trends and the damming of natural and artificial drainage.

Wayuu Government System and actors in the territory

The structure of government and form of appropriation of the territory within the Wayuu culture is related to the right to administer justice by Indigenous peoples, it has legislative implications because it allows the communities to create their own rules and procedures to be applied within their jurisdiction. Decisions made by indigenous authorities have the same legal effect as a judgement issued by any judge of the State, within the respective territory. In addition to this, the diversity of systems of Own Law from the large number of Indigenous peoples, and with these their worldview, requires diverse coordination policies, which implies as many policies as peoples exist today in our countries.

The Wayuu community has a unique legal system that must be understood in its cultural, social and spiritual dimension and is recognized as a fundamental right. Its governance structure presents an active relationship with the actors present in the territory, with capacities to act or contribute to solutions, which can be summarized in Table 1, in addition, the actors that interact in the Wayuu territory with the capacity to make decisions or contribute to solutions were identified.

The actors that interact in the Wayuu territory with capacities to act and contribute to the solutions considered that the main direct generators of change in the ecosystems of mangrove, Limon River, ray, coastal dunes, lagoons and dry forests during the last 50 years are: the creation of the protected area District of Integral Management as a positive driver, Saltern Concession and climate change, negative drivers that considerably altered the biodiversity of the area.

In the identification of drivers or generators of change of the protected area and general definition of ancestral policies, rules and regulations, a collective memory event of drivers or generators of change of the area was carried out, through a timeline of the period from 1950 to 2017 as a tool to organize relevant information of change in the DMI of Musichi, a trend was also made until 2022. As for the Maritime Salterns of Manaure, as the biggest negative driver, the Wayuu community stated that it has maintained a struggle for many years, claiming the ancestral rights of the lands where the salterns are located, as well as compensation for environmental losses and ecosystem services (Trumbo, 1996).

Table 1. Government structure of Wayuu society.

Authority	Function	Laws	Actors that interact in the Wayuu territory with capacities to act or contribute to solutions
Pütchipüu (Moral and autochthonous authority)	Mediator or conciliator, they are in charge of the management of conflicts between the different clans.	Law of kinship, Law of inheritance, Law of marriage, Law of adultery, Law of death, Law for shedding blood in the first birth, Law of payment for theft, Law of damage done by animals, Law for bad advice or slander Law for offense in a love affair	Public, Corpoguajira, Mayor's Office, Government of La Guajira, Ministry of Environment and Sustainable Development, National Parks Academics and researchers Uniguajira Research institutes attached to MADS SENA Organized communities Waya Wayuu Sumain Ichi Private and mixed economy SAMA Big Group National and international cooperation CISAL Civil society organizations NGO Environmental Watchers
Alaulayu (Indigenous authority)	They may exercise jurisdictional functions within their territorial scope, in accordance with their own rules and procedures, according to Art. 246 of the Colombian National Constitution. These actors recognized themselves with great, high and medium power and interest in the Area.		
Outsü (spiritual authority of process guide)	They are in charge of taking care of nature such as water, flora, fauna; these must be asked for permission through different rituals when it is intended to make some kind of intervention to natural resources.		

Justice based on reparation and compensation The Wayuu Law does not distinguish between pain and guilt (intention).

Within the results of comparison of the temporal transformations in the SES of the area of influence of the DMI of Musichi on different covers for the years 1947, 1971 and 2011, they focus mainly on the analysis of the modifications of the terrain in the period between 1947 and 2011 (64 years). From a multitemporal analysis of the study area, it is deduced that: year 1947: for this year, the study area was characterized by a morphogenesis represented mainly by having beaches, spits, bars, dunes and marshes, in which there was no evidence of anthropic intervention. The beaches showed, for the most part, beach ridges, carpeted with halophytic herbaceous vegetation, adapted to saline soils, such as *platanillo* or salty grass (*Batis maritima*) and purslane (*Susuvium portalacastrum*).

In 1947, the Limón stream has two (2) mouths (Mouth of Musichi and Mouth of San Agustín) each limited in its external part by a spit. Initially, the study area corresponded to an estuary or coastal wetland that receives water inputs from both the Caribbean Sea and the Limón and Musichi streams and freshwater inputs resulting from rainfall.

The approximate area of the water mirror of the maritime salterns of Manaure for 1947 is 1 331.43 ha, a natural buffer area that, for the time, assimilates the increases in water volume that occur in the winter seasons and by contribution of the Limón stream (with its supply beds that exist in its upstream path). The stream bed is not very wide (50 m on average) and has an area of diversion, made up of swampy areas, which do not represent a large area either. Year 1971: from 1971, physical changes of the terrain begin to be generated due to anthropic causes. Aerial photographs show the beginning of an increasing intervention by man, due to the favorable conditions of the area for the formation of salt. Between 1971 and 2003, the different natural geoforms were destroyed, the intervened area 'parceled' and converted into what is now known as salterns of Sarampión.

The accumulations observed in the area are associated with anthropic fillings made towards the coast in order to give greater use of the area for the extraction of salt (Rangel, 2010). In 1971, the fact that the bare floors (304.73 ha) disappear significantly is noticeable, which, compared to those existing in 1947 (614 20 ha), decrease by 309 27 hectares in 1971; that is, 50.36% disappear, while the covers of high shrubland go from 98.93 ha (year 1947) to 27.06 ha; it decreased by 71.87 ha (27.36%).

Year 2011: this issue was addressed from the existing conditions in the areas a year before (2010) and 2011. Already in 2011, inside the study area, the bare floors have decreased to 183.26 ha, with respect to 1947, the total decrease has been 430.7 ha (70.14%). As for the cover of high shrubland, in 2011, and dry shrubland, it increases; that is, with respect to what was detected in 1971 (they increased by 3.63 ha), going from 27.06 ha to 30.69 ha, in a period of 41 years. With the construction of the ponds, from 1971, much of the bare soil (430.7 ha), the average width of the greater spit becomes thinner, to make more room for the construction of embankments and other works for the exploitation of sea salt.

It should be noted that the processes of littoral drift (parallel component), different from beach drift (curved advance path), have been transformed due to the construction of works. These affect the processes of sediment accumulation in some parts and loss in others. Likewise, the diversion of the bed of the Limón and Musichi streams or the flow of their waters has also affected the construction of forms by littoral drift.

Governance model: in the design of an environmental governance model for the DMI of Musichi (Figure 2), all actors recognize a high degree of interrelation between themselves, which is of great importance to potentiate public-private alliances and alliances with organized communities, with which it can be possible to develop shared, collaborative and joint actions.

It was determined that the decisions in the study area are made by the territorial entities and the environmental authority-Corpoguajira. This community states that they are kept informed, but in this aspect, the need to be a more preponderant actor, protected in their constitutional rights, was stressed.

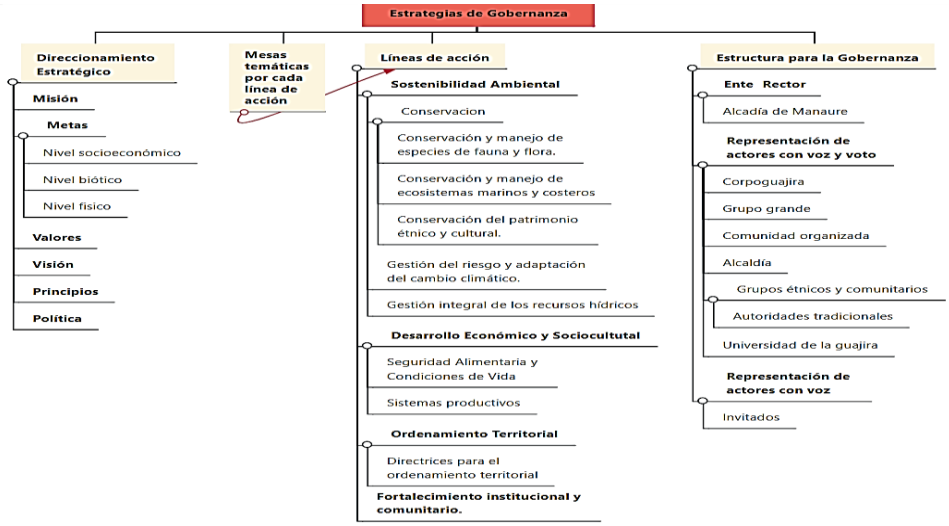

Figure 2. Governance strategy proposed for the DMI of Musichi.

Within the authorities, the municipality of Manaure, department of La Guajira and the Reservation of Media and Alta Guajira were identified as agents of social regulation, the *Pütchipüu* (messenger of the word), *Outsü* (spiritual authority of process guide), *Alaulayu* (indigenous authority) are recognized within the Wayuu community, and the Ministry of Environment and Sustainable Development and Corpoguajira were identified as environmental authorities. Likewise, the organizations of the General Maritime Directorate-Dimar, Invemar, the National Police and the National Army were identified as the most important. Decisions are made by the institutions in accordance with their competences, which are socialized to the communities both through prior consultations and accountability.

Among the weaknesses, the lack of public service, education, access roads, solid waste disposal and environmental knowledge were identified. Finally, among the threats, climate change, high vulnerability, illegal trafficking, insecurity, forest fires, logging and the death of mangroves due to high salinity were identified.

Through the participatory spaces carried out with the Wayuu community of the DMI of Musichi, the recognition that this group makes of the different actors involved in the management of natural resources and the importance of working in the direction of a shared and joint environmental governance in favor of the conservation of these ecosystems was perceived, which is why this study proposes a model of environmental governance based on joint and collaborative actions between the Wayuu community and the State, similar to what Borrini-Feyerabend (2014) proposed, as a form of collaborative management of Indigenous peoples, regulated by their rules of uses and customs, and government entities. Protected areas under shared governance are based on institutional mechanisms and processes in which, formally and/or informally, various actors share authority and responsibilities.

In the process of determining solution alternatives to the problem posed, a strategy of shared environmental governance is proposed as a joint space through territorial entities that facilitate public-private coordination where organized Wayuu communities, public and private entities,

entities of academia and research converge, which, to give it effectiveness and validity, need their decisions to bear fruit in a legal act of a general nature, within the framework of the constitutional powers exercised by the municipal councils and the departmental entity.

As the driving force behind the environmental governance strategy, the municipality of Manaure was identified within the framework of the responsibility for the planning of the municipal territory, which aims to plan its territorial dimension economically and socially, with a prospective approach, rationalizing the intervention on the territory and promoting sustainable development and use. To ensure the implementation of the establishment of a governance strategy for the conservation of ecosystem services in Wayuu communities of the DMI of Musichi, it was proposed to create it by an agreement of the Municipal Council.

The implementation of a governance strategy for the conservation of ecosystem services in Wayuu communities of the DMI of Musichi will serve in the treatment of social processes for the protection of biodiversity and strategic ecosystems through a shared vision that links different social and institutional actors. Likewise, it is desirable to articulate planning and management instruments that exercise methods of dialogue so that the necessary actions and the responsibilities of those involved contribute as a whole to the meeting of the general objectives of biodiversity conservation.

The operationalization of the governance strategy for the conservation of ecosystem services in Wayuu communities of the DMI of Musichi has as objectives to solve the socioeconomic, biotic and physical problems, which lead to the conservation of biological diversity, ecosystem services and cultural heritage in the DMI of Musichi and its area, with a buffer function. To give it effectiveness and validity, the creation of a legal entity called 'governance for the conservation of ecosystem services in Wayuu communities of the Integrated Management District of Musichi (Manaure, La Guajira)' is proposed and a budgetary allocation is established for its sustainability. This entity will be created by means of a legal act of a general nature, within the framework of the constitutional powers exercised by the municipal councils.

Conclusions

The constitutional amparo supports the Wayuu Own Law and with it the decisions within its territorial scope, in accordance with its own rules and procedures, which guide the strategies of participatory governance by articulating planning and management instruments in a scenario of dialogue of knowledge. The creation of the model as a governance strategy constitutes a contribution to the institutional actions and initiatives of the Wayuu society for the conservation of ecosystem services in the DMI of Musichi.

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