Research Article

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A Spatial Approach for Framing the Development of Tourism: Bahía Solano – Colombia

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Abstract: The article explores the natural context and the geographical conditions for developing tourism and for designing sectorial plans. The objective is to offer basic visual rendering as a resource for appreciating the natural environs in which the tourist activity evolves and use such resource as useful input during the planning and designing exercises. The methodology relies on the application of cartographic and spatial tools as instruments for recognising the territory and the natural landscape. The results render the current condition of natural resources and the territorial reality, as a general frame for proposing sustainable strategies of tourism planning. The contribution of the analysis can be appreciated amid the scarcity of local and specific cartographic analysis, and the precarious stock of inputs that could guide the tourism and the territorial planning in lagged territories. An overwhelming conclusion of our exercise is that the awareness and valuations of natural endowments are key elements for preserving the environment and for applying an adequate planning strategy in order to reconcile the economic necessities and the preservation of natural environment.

Keywords: Economic geography; Spatial planning; Bahía Solano; Pacific Ocean sustainability

JEL Classification: F63, F64, Q01, R14

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1 Introduction

This article deploys a set of analytical and theoretical tools that can contribute to improve the exercise of planning the tourism activities in specific destinations and to highlight the importance of reconciling the environmental endowment with the spontaneous powerful economic forces guiding the upsurge of new local activities. Sudden flows of visitors and their side activities strike the original routine of geographical environs and human settlements. For conducting the research, we apply some cartographic tools for enhancing the natural conditions and the beauty offered by emerging tourism destinations, in particular, the municipality of Bahía Solano in Colombia. But beyond the local interest, the focus of public policy and planning exercise must be directed on broader geographical spaces and can be replicated elsewhere (Bahaire & Elliott-White, 1999). The geographical layers collect the whole natural features of the region spanning several municipal jurisdictions, provided that the administrative and political breakdowns are not suitable for describing the natural and geographical configurations. For this kind of problem, the spatial econometrists and analysts have coined the expression ‘Modifiable Area Unit’ problem to highlight analytical troubles when the economic and social process exceed the space of administrative limits, and artificial limits do not match with the spaces where economic and natural phenomena come about (Arbia, Espa & Quah, 2008).

The objective of this article is to offer visual resources in order to recognise the current situation of the natural environ in which the human activity is nested and the places where the tourism expansion can be carried out.

The planning of tourism is a really complex task that combines a careful consideration of geographical, economic, territorial, environmental and legal aspects. The improvement and the enhancement of the services for visitors can increase the local supply of services and also will affect the daily routines of populations and will disturb the natural environment of animals, vegetal life and ecosystems in general. Therefore, the development of

tourism must dialogue with the local human and social component and must respect the natural environment. Moreover, because of the complexity of the geographical and natural context, an inaccurate approach for merchandising and exploiting the spots in destinations can destroy the local context and jeopardise the sustainability of tourism activity and, in consequence, the future economic flows derived from it (Edgell, 2008).

Furthermore, our purpose is to render a natural framing encompassing destinations, as a point of reference for the planning of tourism, the planning of territory and the local and regional economic development as sustainable exercises (Amir, Ghapar, Jamal, & Ahmad, 2015).

According to these arguments, for our analysis, we will make reference to a set of geographical and administrative scales in order to describe the context of local attractions. First, we will talk about a wide Biogeographic Chocó as an ample zone ranging from the coast of Ecuador, wandering the Colombian Pacific and finishing near the coast of Panamá. This is an international natural zone that includes the edge of the coast, the marine conditions and the inner continental forest that goes along with the border of the sea. Second, we will talk about the Department of Chocó as an administrative region of Colombia, a general territory within which municipalities are incorporated as Bahía Solano, Nuquí and Juradó. Finally, our focus of analysis is the municipality of Bahía Solano, the scenario of the largest description. In these terms, our interest is the unexpected and vertiginous development of tourism activities specifically in Bahía Solano, belonging to the administrative region of Chocó (Department of Chocó), which is inserted in a vast geographical and natural context namely, the Biogeographic Chocó, which must be enhanced until an international realm.

The bioecological region is located on the Inter-tropic Confluence Zone known as the scenario of the meeting of northern and southern winds, which carry on a mass of clouds and strong rain regimes, and therefore, the Pacific Region is known as one of the rainiest regions throughout the world. It is estimated that, on an average, in the Colombian Pacific region, it rains 25 days monthly. The Department of Chocó contains one of the three micro-regions with the maximum rain precipitation on earth.

As can be appreciated on Map 1, our main interest is to describe the natural conditions encompassing our focus analysis: the municipality of Bahía Solano, which makes up with other towns the Department of Chocó's sea frontier with Pacific Ocean. Four departments in Colombia are coated with this ocean and its influence goes beyond, even at an international level, to the extent that we can

include into the Biogeographic Chocó some parts of littoral in Ecuador, Panamá and Costa Rica.

In general terms, the Colombian administrative region of Chocó is split in three tourism zones. First, the northern region (which also has a sea frontier with Atlantic Ocean) is made up by two municipalities: Acandí and Unguía, including two settlements: Capurganá and Sapzurro, the last spot having a terrestrial border with Panamá. The second central region encompasses the area of the regional capital Quibdó and other municipalities such as Tutunendo and Itsmina. Finally, the focus of our interest is located in the southern area with the municipalities of Nuquí and the municipality of Bahía Solano with the settlements of El Valle.

2 Methodology and data

Geographic Information System (GIS) technics and spatial statistical tools have an enormous potential for deploying geographical phenomena and for detecting patterns in the spatial distribution of socio-economical, environmental

Map 1: Geographical and Natural Context: The Biogeographic Region of Chocó.

Source: Own elaboration with Instituto Geográfico Agustín Codazzi (IGAC) data

and physical variables. In these terms, a general description of natural and social conditions can contribute to qualify the analysis and to offer basic elements that can guide the application of local public policy.

This kind of technique offers huge advantages for visitors and users also. GIS-based maps can provide overall information more sorted and unambiguous regarding the traditional paper-based maps. This technique endows the visitor with the ability to customise the thematic information according to his or her preferences. It is highly valuable for the user to superpose a variate range of topics for planning a journey because the user can combine information about terrain, roads, services, facilities, tourist attractions and so on (Wei, 2012).

The GIS tools have been widely applied in several tourism studies and for a diversity of purposes. In general terms, this approach can be tackled with a set of data duly referenciated on space as an indispensable input for the analysis. The applications of GIS techniques for spatial purposes in tourism analysis include diverse options such as the basic overlap of thematic layers, the spatial rendering of previously calculated potentiality index and the application of 'spatial contagion' across neighbourhoods.

The superposition of thematic layers is a basic task but has a pedagogical and introductory purpose for recognising the terrain. This kind of procedure is applied by Shyti and Kushi (2012) in assessing the tourism potentiality of the Albanian region of Elbasan and is also recommended by Jovanović and Njeguš (2008) as a useful strategy for applying a comprehensive approach in tourism analysis.

In another research applied to the region of Alberta in Canada, several aspects of GIS techniques are highlighted as the procedures to perform spatial retrievals as point-in polygon analysis, polygon overlay and spatial analysis as shortest path and other networking tools (Bertazzon, Waters, Nigel & Draper 1997).

The GIS approach applied to the tourism industry has known diverse fields of development. Some studies aim to quantify the tourism score for specific spots to ultimately sort the tourism attraction according to the calculated indicator. In those terms, Cerezo and Galacho (2011) calculated a tourism potential index applied to diverse municipalities in the province of Malaga (Spain). The input for assessing the tourism potential at a municipal level is the information associated to the local stock of tourism resources available for their exploitation and the elaboration of an individual file card with the attributes of each municipality. The quantification of the ascribable index for each municipality is exposed in the regional map, overlapping the layers with the index information

with the localization of tourism attractions. In fact, on top of the list, the methodology places the municipalities with better potential in terms of tourism resources, accessibility and equipment intended for the activity.

Other research applies geostatistical tools laying in the spatial software toolkit. Kulyk and Sossa (2018) elaborated heatmaps for identifying the most intense endowments in tourism terms for the regions of Ukraine.

The result is the rendering of a map of spatial discrete points represented by cells showing differentiated colours according to the intensity of tourism activity ascribed to each cell. As a raster surface, a previous procedure of interpolation was performed because of the lacking information in large number of cells. The procedure of interpolation is necessary when considering the uneven spatial distribution of tourism goods across the territory. The technique of heatmap is based on the principle of neighbourhood; in such terms, the local assessment of the tourism attractions and objects for each point is calculated based on values in the closer spaces.

In this proposal, we aim to elaborate a project incorporating tourism data and geo-referred information for recognising the surrounding natural frame of destinations and for assessing the impact of foreigner visits (Chang & Caneday, 2011). Some geo-statistical tools are applied, and the natural and geographical conditions could be integrated into a broader socio-economical analysis; however, the scarce availability of data hampers the analysis. This article tries to stress the importance of tourism and territory adventure (Cerezo Medina & Galacho Jiménez, 2011) as a potential activity amid other economic sectors, in order to spur the development of the Department of Chocó in general.

Our approach is analytical and cartographic. Using some tools of GIS, we connect the 'First Nature' conditions with the actual boom in tourism flows exposing the natural and human conditions as a result of social and natural processes. The methodology is based on a basic cartographic analysis of the natural conditions and the natural restriction that must be respected for guarantee a sustainable exploitation of tourism. In doing so, we emphasize the particular attributes incorporated into the geographical information and use the cartographic rendering in order to expose the natural context in which the tourism activities evolve. The observation of maps illustrates territorial and natural phenomena that can be used as a reference for a careful planning of territory.

Jovanović and Njeguš (2008) emphasized the availability of the tourism spot and also the geographical context using technical formats as grid or vector data, being able to represent the elements in a geometric, thematic and

topologic way. The purpose is to choose the focus spot and identify its interaction with the surrounding spatial context.

Unfortunately, for our study there is no previous information about located tourism attraction in Bahía Solano and nobody has applied a GIS methodology for identifying the exact ubication of restaurants, hotels, routes and so on; therefore, we have no geographical layers that can zoom in the internal tourism flows in this jurisdiction. Moreover, the local system of statistical information is precarious, and we could not find robust data for applying a quantitative approach based on the calculation of the tourism index. In spite of the lack of previous tourism analysis, we have tackled our research applying the visual analysis to recognise the surrounding environment, in which the exercise of planning and tourism development must be performed.

Our sources are the Colombian Geographic Institute (Instituto Geográfico Agustín Codazzi [IGAC]) for geographical layers related to natural conditions that are managed in shape format and Colombian Statistical Office (Departamento Administrativo Nacional de Estadística [DANE]) for additional thematic data. Our task is to insert the proposal for the development of tourism into the geographical layers and coverages that the IGAC got ready previously.

For thematic explanation, we consulted the metadata and respective attribute tables as important inputs for the interpretation and analysis. Using such information, we combined, in a descriptive manner, a general context for the development of tourism namely, the natural endowments, the geographical surroundings, potentials and threats in the region of our interest. Other thematic sources stemmed from the publications of Non-Governmental Organization (NGO) 'Mar Viva' devoted to conducting technical studies and research on the ground, and in pursuit of theoretical concepts other documents were consulted (Velandia & Díaz, 2016).

The accurate description of the ecosystem, suitability of land and features of soils can be overlapped into the real and effective use of land to eventually proceed to improve it through an exercise of territorial planning. In some cases, the unappropriated exploitation of natural resources with inadequate techniques and with damaging purposes undermines the sustainability of territory. Our concern is focused on geographical conditions, provided the incontrovertible connection between the natural environments and the development of economic activities associated with first nature advantages (based on primary natural endowments), in particular, tourism. Unfortunately, a broad exploration of statistical sources, unveiled

the lack of data in tourism figures such as beds, rooms, visitors, revenues, employment, investment and so on, because of the precarious level of development of local statistics for small municipalities. Only some official data appear at a regional level.

Considering that none of the previous studies has applied the geographical layers for tourism purposes, specifically for the municipality of Bahía Solano, our interest is to identify the thematic information that can be projected for recognising layers collecting the natural conditions for the development of local planning of tourism activity. This interaction of geographical visualisation is recommended in Jovanović and Njeguš (2008). In their methodology, they integrated vector shapes, textual descriptions and imagery in order to frame an outright tourism cartography. The basic natural and infrastructure layers (roads, buildings, vegetation and watercourses) must be enhanced with available tourism spots such as hotels, restaurants and sights.

Kulyk and Sossa (2018) bestowed upon the evaluation of social and natural resources a pre-eminence for building a methodological approach for assessing the attractiveness of specific tourism spots. They combined the appreciation of natural stock (landscape, water objects, forest, mountains, etc.) with cultural and historical local richness (monuments, architectural objects, sacred places, religious buildings, fortresses, castles, etc.) and the extant infrastructure intended for the service of visitors. In those terms, a logical positive association emerges from the complete availability of infrastructure, the regional economic development and the degree of attractiveness for visitors.

3 Empirical results and discussion

As Kulyk and Sossa (2018) pointed out the success in the application of the GIS techniques depend on the quality, completeness, actuality and reliability of the database and spatial information.

Our interest is to recognise the potential of tourism in a new natural destination located at the western fringe of Colombia (see Maps 1 and 2), a region altogether opened to the Pacific Ocean, where the contact of municipalities with the sea and the landscape are attracting a myriad of national and foreign tourists.

There is no availability of data for local tourism activity in Bahía Solano. The spontaneous and informal operation of some activities and, in some cases, the weakness of the local institutions hinder the accurate registration of

Table 1: Department of Chocó. Regional Tourism Statistics.

	2014	2015	2016	2017	2018
Arrivals national passengers	180,714	185,542	211,907	201,808	186,114
Arrivals foreigners	2,098	2,500	3,110	3,020	2,429
Visitors natural parks	6,146	5,776	11,896	13,644	17,552
Providers of tourism services	179	200	222	245	249
Establishments of accommodation	123	144	157	175	196
Total of rooms in establishments of accommodation	1,680	1,953	2,030	2,310	2,553
Total of beds in establishments of accommodation	2,741	3,202	3,320	3,980	4,351

Source: CITUR-Ministerio de Comercio, Industria y Turismo.

visitors and operators. Nevertheless, extant information at a regional level for the Department of Chocó is available. It is interesting to confirm the increasing trend in the supply of services available for visitors in terms of operators, beds and establishments in spite of the explicit reduction in the statistics about arrivals of passengers. This development hints a spontaneous process of entrepreneurship amid the regional population and a slow consolidation of Department of Chocó as a tourism destination, envisaging an enhancement in the economic opportunities of inhabitants.

A steady growth in the figures of visitors to national parks suggests a growing interest to experience the contact with natural spaces duly preserved. Regarding the focus of our interest in Bahía Solano, the National Park of Utría can be found, whose vast territory touches also the jurisdiction in the neighbour municipalities of Nuquí, Alto Baudó y Bojayá. Putting aside this detail for our focus of analysis, the Department of Chocó has in its territory two additional spaces of preservation: the national park Los Katios spanned between the municipalities of Riosucio and Turbo and the national park Tatamá situated in the jurisdiction of San José del Palmar, Novita, Santa Rita de Iró and Tadó.

The comparison between tables 1 and 2 is useful to extract conclusions for public policy and for development strategies. The Department of Chocó hasn't achieved high levels in the provision of touristic services in comparison with national destinations widely consolidated as Cartagena (in Bolívar), Medellín (in Antioquia) or even Bogotá. But its idiosyncratic nature and specific endowments

contribute with a differential advantage for enticing additional foreign and national visitors.

Therefore, the local attractions in the Department of Chocó must be included into an aggressive policy of promotion at national and international level. The advertising strategy for the region should emphasize a differential character in the surrounding landscape that hardly can be found and exploited in other spots of the geography.

The economic opportunities and the posts opened for local people can help to improve the living conditions in the poorest region of Colombia, therefore, our concern is to propose the tourism as a tool to reach development in lagged regions. Sociologically, the region has a predominant presence of Colombian Afro population, sharing the territory with Indigenous communities and people coming from inward Colombian territories (generally known as 'Paisas'). The indigenous component is represented by Kuna, Tule, Wounaan, Noanamaes, Embera, Baudoes and Citararaes communities.

Chocó, a western department in the Colombian Pacific coast, is an attractive place in terms of biodiversity and natural landscape; however, the economic and social reality shows a disappointing outcome. The region exhibits enormous lags in comparison with the rest of the country evaluating several indicators of education, health and social coverage. Moreover, the lack of connectivity relegates the whole region to the peripheries of the main country, and in some cases, the unique way to communicate the region is through long journeys by the river or by airplane.

The administrative Department of Chocó has 30 municipalities; most of them were geographically isolated from the core of Colombia, a circumstance that determines their calamitous economic path. The regional capital city is Quibdó with a population of roughly 116,000 people, but the most dynamic tourist activities are concentrated in Nuquí and Bahía Solano in the west fringe. The geographical isolation of this region conveyed several practical consequences: first, a disappointing lag in economic and social terms and, second, a process of natural endogamy that implies specific features of some animal and vegetal specimens. Therefore, the place is full of idiosyncratic and extensive biodiversity not found elsewhere on the planet.

Putting aside the economic reality of the region, the tourist potential is enormous. The beach at the Colom-

bian Pacific Sea has not been exploited commercially on a scale similar to that of the Caribbean Sea beaches. The tourist attractions in our destination have been recently discovered, and in consequence, the infrastructure (Boers & Cottrell, 2007), the investment and the human capital mobilised are jet relatively scarce. In spite of the fact that Bahía Solano is a fully coastal town, there is not a port in stricto sensu, but there we find two jetties located on two inhabited points: Mutis and El Valle.

A diversity of economic activities push the use of land, increasing the pressure coming from the process of urbanisation and some illegal activities on the territory. For example, in the case of the Municipality of Bahía Solano, agriculture presses the land with plantations of

Table 2: Other Departments of Colombia. Arrivals of Visitors.

		2014	2015	2016	2017	2018
Antioquia (including Medellín)	Foreigners	200,408	247,882	315,352	333,627	379,158
	Nationals	3,090,970	3,260,383	3,503,204	3,448,251	3,606,668
Atlántico	Foreigners	38,175	46,723	52,518	53,710	70,949
	Nationals	1,054,118	1,204,941	1,276,496	1,081,982	1,067,791
Bogotá	Foreigners	859,949	992,144	1,066,182	1,165,977	1,254,656
	Nationals	7,397,993	8,190,884	8,430,291	8,180,311	8,504,778
Bolívar (including Cartagena)	Foreigners	239,239	279,621	353,964	420,538	511,902
	Nationals	1,449,277	1,645,804	1,823,118	1,901,786	2,133,115
Boyacá	Foreigners	3,004	3,990	4,631	5,546	5,843
	Nationals *	0	0	0	0	0
Caldas	Foreigners	6,714	7,572	8,192	8,967	9,938
	Nationals	96,603	95,159	106,090	106,671	101,079
Magdalena (including Santa Marta)	Foreigners	18,711	22,271	22,994	30,656	30,945
	Nationals	598,283	715,483	749,413	820,046	977,562
Quindío	Foreigners	8,359	10,113	12,849	13,745	14,941
	Nationals	155,849	203,254	189,321	168,201	149,868
Risaralda	Foreigners	18,604	22,062	24,355	24,250	27,012
	Nationals	578,959	651,190	633,573	636,465	746,993
Valle del Cauca (Including Cali)	Foreigners	138,424	170,393	189,310	190,624	185,367
	Nationals	1,842,170	1,968,035	2,137,987	1,899,624	1,805,078
San Andrés and Providencia	Foreigners	82,796	91,130	101,372	114,472	104,483
	Nationals	558,303	772,649	834,924	960,846	0

*No local airport was operating during the period.

Source: Migración Colombia-CITUR-Ministerio de Comercio, Industria y Turismo.

Map 2: Administrative Context: The Department of Chocó.

Source: Own elaboration based on IGAC.

banana, corn, yucca, pineapple, rice and some domestic exploitation of horticulture (Bahía Solano, 2016).

However, new economic activities and the flow of foreign people do impact the environment and land distribution indeed. When the changes in social and economic activities are very strong, we must expect paramount transformations in land use and affectation on territory. The detection of actual trends in changes of use of land allows to forecast future developments. In fact, urban growth prompted by the growth of population conducts to increasing changes in the use of land, demanding spaces for urban uses (Acevedo, Taylor, Hester, Mladinich & Glavac, 2006).

For being acquainted with the general context encompassing the tourism destination, Jovanović and Njeguš (2008) posed a more complex and elaborated analysis going beyond the basic rendering. With the adequate basic information, the research can be intended to detect spatial trends on data and to project deeper relationships between data sets for an overall understanding of the real world. Such additional purposes can be reached out by applying the analysis function using the spatial layers and the non-spatial attributes extant in the databases. A desir-

Map 3: Municipality Bahía Solano: The General Ecosystem

Source: Own elaboration based on IGAC.

able goal is to observe beyond the basic rendering and to detect underling trends into geographical process that can contribute to offer new and available information.

As is shown in the Map 3, ecosystems are characterised by indigenous species where natural forest predominates on the territory. Bahía Solano is nested amongst the longitudinal extension of the sea, the mangroves and the extension of the tropical forest across the east of the municipality. Therefore, the tourism can convey several effects on the ocean and on the movements of wild animals, and, on the other hand, urban pressures by the necessity of accommodating tourists can affect the territory and disturb environments of animals in almost virginal places.

As discussed before, the jurisdiction of Bahía Solano spans a large variety of landscapes and microsystems mainly due to the combination in the same territory of a littoral fringe and an inner forest natural area. There is a certain kind of volcanic traits and the erosive action of the sea that have provoked the emergence of coral environments with high subaquatic richness. There is also an extensive beach area with quiet waters in local places such as Nabugá, Flores, Paridera, Potes, Mecana, Guaca

Map 4: Department of Chocó Roads (Primary Network)

Source: Own elaboration based on IGAC.

and Huina. As is shown in the Map 4, the red lines representing the main national highways barely have contact with the municipalities of our interest. There is a connection starting from the second Colombian city, Medellín, that barely touches the regional capital of the Department of Chocó (Quibdó). Amongst this lack of infrastructure, the air connections emerge as the only efficient communication inbound and outbound. River rounds can also be done in long and tortuous passages.

Bahía Solano, the case under study, has no overland connection with the interior of the country or even with other points in within its own region. The faster air communication come from some regional capitals, taking off from Medellín, the second largest city in Colombia or from Quibdó, the regional capital. The procurement of supplies for the town is conveyed from the main port of Buenaventura, an important southern spot for Colombian international trade. This long travel is intended for passengers as well, via ferry in long and exhausting journeys (República de Colombia Ministerio de Trabajo, 2013).

The historical isolation of the administrative Department of Chocó conveyed a social and economic context of poverty (Neri & Soares, 2012), underdevelopment and

institutional lag. Some of such lacks emerge as crucial drawbacks for developing a sustainable tourism activity (Nechifor, 2014). According to the Map 5, Chocó's Gross Domestic Product (GDP) per capita appears at the bottom of the interregional comparison. The contrast with more advanced manufacturing centres shows that Bogotá's GDP per capita is four times and Antioquia's GDP per capita is 2.5 times higher than Chocó's figure.

In spite of the extended image of poverty and underdevelopment affecting our region, this is the unique department in Colombia having coast with two oceans: Pacific and Caribbean, and an infinite tropical forest maintains almost unaltered the natural landscape.

Nevertheless, its fame as a touristic destination continues summoning tourists from elsewhere enticed by all activities related to ecotourism and natural observation. It poses the challenge of including the development of tourism into a general strategy of development. In fact, several documents illustrate the role of tourist activities contributing to the reduction of poverty, not only at an academic level but, more importantly, as a discussion made by international institutions and, in some cases, by governments (International Labour Organisation, 2011; Organización Mundial del Turismo Madrid, 2003). In such a discussion, the term pro-poor tourism comes up (Ashley, Boyd, & Goodwin, 2016; Holland, Burian, & Dixey, 2003; Jamieson, Goodwin, & Edmunds, 2004). Pro-poor is an adjective intended to allude strategies aiming to impact openly on the conditions of poor people and to enable them to overcome poverty. It deals with a strategy for unlocking opportunities for them through the qualification of labour and the expansion of self-managed entrepreneurship.

A deeper level of analysis brings more elements for the understanding of local poverty and inequality. Bahía Solano has two main populated settlements where the local population is concentrated: Mutis and El Valle. But there are inner territories with very scarce population density in the context of rurality and underdevelopment. The local authorities also diagnosed a broad gap in the social and economic conditions between the urban population and the inner people living in the deep countryside and the jet surviving indigenous tribes relegated from the more dynamic urban activities (Bahía Solano, 2016). Bahía Solano has an extension of 1,667 km² and an estimated population of 9,351 inhabitants for 2016. Thanks to a privileged strategic location, it can become a key border area for the whole country. The main economic activities supporting the local economy are public employment, artisanal fishing, commerce, tourism, agriculture and forestry extraction. Other productive activities with less

Map 5: Departments of Colombia GDP per capita (Current USD of 2018)

Source: Own elaboration based on IGAC and DANE.

participation are joinery, carpentry, construction, a sale of meals, domestic work, informal commerce, loading and unloading of ships and transport of passengers by land, sea or river (Bahía Solano, 2016).

The municipality of Bahía Solano offers a myriad of tourism activities, namely, sightings of whales, dolphins and birds; promenades to natural paradises such as the Ensenada de Utría national Park; visits to jungle paths, waterfalls, important canyons, rivers and streams; swimming in natural pools and thermal waters; and visits to countless special virgin places for sports activities. Its marine area propitiates the practice of diving, fishing in its all modalities, surfing and other water sports. The Municipality of Bahía Solano is made up of the Municipal Head (Ciudad Mutis), six 'Corregimientos' (Nabugá, Huina, Huaca, Cúpica, El Valle and Mecana), two recognised or formalised indigenous reservations and two that are not yet, (Boroboro, Poza Mansa, El Brazo and Villa Nueva Juna) and an extensive collective territory of Afro-race Communities (overlapped with the Corregimientos). The Utría National Natural Park and 6 Natural Reserves of Civil Society that also makeup areas of special management can also be found (Bahía Solano, 2016).

The municipality in terms of infrastructure has an airport, with a paved runway, whose air terminal is in wood and covers the capacity of the airlines that arrive in the territory. Tourists can stay in spots of Huina, Cúpica, El Valle and Mecana, as well as in the settlement of Ciudad Mutis. To get to Huina, Cúpica and Mecana, tourists must move to Ciudad Mutis and, on the newly built dock, get maritime transport as boats to get there. In both municipal settlements, including El Valle, the roads are unpaved and there is no space for urban tourism.

A Map 6 shows up the recommendation for economic activities but taking emphatically the conditions of soil as criteria of preservation. In fact, images are concordant with an unexplored region having weak urban pressure and with a relatively wide preserved natural environment. A long stream of rivers goes longitudinally through the territory with a high incidence on mining extraction and agricultural activities, subsequently, the predominant feature of the department is the strong active sedimentation of soil. The natural description of the department includes the Darien forest a large landscape, covering the largest part of municipalities and streams of Atrato and San Juan Rivers. A wood endowment has driven to over-exploitation of the forest by strangers, white people coming from abroad as well. An illegal mining exploitation and the felling of forest for opening space to illegal crops threaten the preservation of such a natural environment as well.

The town Bahía Solano is made up for a beach stretched between the sea and the Baudó Mountains. Several activities are arranged by local people for enjoying leisure, namely, handcraft and sports fishing, watching of the migration of birds, spawning of turtles and promenades throughout the beach. The local population is made up of black and and indigenous inhabitants and supplemented by inland people coming from other Colombian regions.

The Colombian Pacific coast makes up a long fringe that expands by 1.300 km and is composed by virgin jungle with high biodiversity and an enormous hydric richness. A variety of rivers crosses throughout all territory, giving a particular natural attractive and carrying also abundant auriferous resources. This region is the higher rainy area in Colombia and the presence of hydric streams are abundant, to such an extent, that Atrato River communicates two oceans: The Pacific and Caribbean seas. This fluvial body is used for daily communication across dispersed towns in the Department of Chocó.

The geographical position produces an abundant rainfall. The temperature of valleys and coastal territories is in the average upper to 27° with high humidity and, subsequently, with a strongly varied natural environment.

Map 6: Municipality of Bahía Solano: Recommended Utilisation of a Soil

Source: Own elaboration based on IGAC.

In the western coast, we find Corrientes cape as a deep geographical accident on the border, and along with the coast, we find the Baudó Mountains that reach the highest points at 1,810 m. The Department of Chocó is located in its largest part of Pacific plains made up by the valleys touched by rivers Atrato, Baudó, and San Juan.

At Atrato river valley in the northern zone, we find inundated territories and marshes, being a region named as ‘Tapón del Darién’. Regarding the most coastal strip, we can find two regions, being the northern one characterized by high and abrupt relief and the southern made up by lower lands full of marshes and mangrove swamps.

In concrete, the town of Bahía Solano offers a diversity of attractions for all kinds of visitors, and the activities range from natural beaches, excursion by rivers and, ultimately, the spotting of humpback whales as an exotic activity that precisely, in the respective season, is a unique spectacle in the whole world. The whale migration each year comes up from a natural phenomenon. In fact, during a season, whales move from the Antarctic and from the south of Chile looking for warm waters and places where to meet and to birth, and in doing so, they finish their

Map 7. Bahía Solano: Traits of Soil

Source: Own elaboration based on IGAC.

journey in the Colombian Pacific and in general along the Bio-geographical region of Chocó. This natural phenomenon turns out in a spectacle for animals’ admirers and nature lovers, in consideration of the scarce places where the spectacle can be found. The back of whales could be appreciated on the surface of the sea, and, eventually, some animals could be seen jumping above the water.

A Map 8 shows the extant use of land in the municipality of Bahía Solano. The central and more extended fringe was made up by natural forest, and it is necessary to preserve the natural environment not jet affected by human processes. However, some sustainable economic activities can be conducted. Provided the immense forest richness occupying so vast spaces, reasonable forest exploitation can be carried out in zones with slight slopes and with minimal connections for transporting the wood. There, indigenous specimens can be exploited with adequate regeneration measures.

The legal area for protection is made up of the National Park of Utría with a total extension of 54,300 ha. The global extent of park is shared with neighbour municipalities of Nuquí, Alto Baudó and Bojayá and inside can

Map 8: Bahía Solano: Current Use of Land

Source: Own elaboration based on IGAC.

be found a large variety of ecosystems combining the environmental traits of mangroves in contact with ocean and the inner lands of tropical forest. The natural variety inside the park combines landscapes of mangroves, tropical wet forest and the coral microsystems. In such conditions, the national park shelters a variety of fishes, turtles, birds, mangroves, trees and palms.

According to IGAC, in zones currently exploited in agriculture, the margin or rivers must be drained and the edge vegetation must be conserved in order to avoid the erosion effect of the stream of rivers. On the other hand, the forest resources can be reasonably exploited with the regeneration of native trees and some permanent swamp zones must be preserved as an environment for the growth of native specimens.

As it was indicated, the larger part of the Bahía Solano's territory is overwhelmingly covered by a dense layer of indigenous forest with native specimens. Few areas of land are used for agriculture exploitation. Autochthonous crops are dominated by rice, banana, yucca and some fruits as borojó and chontaduro.

Map 9: Bahía Solano: Conflict in the Use of Land

Source: Own elaboration based on IGAC.

4 Discussion about threats

The natural conditions of soils and ocean waters offer a very vulnerable environmental equilibrium in a jet unexplored region, endowed with wonderful landscape. Although, from another point of view, the lack of roads and communication connecting with the core of Colombia hindered the economic and social development and also has preserved the natural endowments and specimens of fauna and vegetation.

Maps 8 and 9 show an important natural phenomenon in the wide geography of the Department of Chocó. This region has a low degree of urbanisation and a lagged economy that determine the relatively low utilisation of land for human and commercial purposes. Besides, the scarce presence of industrial activities has preserved the zone from air contamination and degradation of natural environment. The region is almost a throughout open forest, with some sections devoted to agricultural activities and a strong presence of mining exploration. A large part of the wild and natural environment has been preserved, in spite of the exaggerated exploitation of wood

and illegal mining that threaten the natural resources of the region. A challenging task for the future is to assess the effects of tourist developments on the natural conditions and the land use and to propose a rational planning of territory and exploitation of natural resources.

The exploitation of tourism activities requests a huge effort for preserving the natural environment in the whole region. The populated areas are nested between the coastal mangrove and the virgin forest and also are surrounded by a set of indigenous communities settled there since pre-Colombian times. In those terms, the sustainable exploitation of the zones imposes a mandatory responsibility in order to preserve the biodiversity.

The general context and the daily customs of inhabitants will be affected by a careless development of tourism and by a growing flow of visitors and their activities on the ground. None of the activity could be as harmful as a chaotic and in disarray growth of services, intended to meet the necessities of visitors. In particular, the incipient tourism destination can be exceeded by an unexpected flow of people pressing for public services, public goods and, eventually, generating waste and outreaching the local capacity for assimilating the temporal population.

On the other hand, extend local problems can also affect the interaction with tourism activities. Illegal activities such as drug traffic, violent groups and delinquency attract the local workforce mainly the youngest one, because of higher salaries, reducing the supply of labour intended for formal activities.

From the environmental perspective, there is a complex process threatening the environment and the integrity of the virgin forest. The ravage of trees is a common practice for opening space to illegal activities as prohibited crops and mining. The destruction of forests derived of is accompanied by the contamination of rivers and small water streams by pouring of chemical stuff used in illegal mining.

5 Conclusion

The Department of Chocó has a huge potential for tourism activities, in view of/ considering its natural and wild environment. Nowadays, the use of land is not so pressing, given the low economic intensity, and the jet weak urban pressure explains the preservation of natural conditions. Some threats come from illegal activities such as mining, drugs and over-exploitation of wood. Provided the lagged position of this region in the Colombian context,

tourism could be an important tool of development to offer employment opportunities for the local population.

Provided that the ecosystems are not constrained by administrative breakdown, the design of public policy must be inter-territorially coordinated as an effective frame of environmental protection (Brondizio et al., 2016). Here, we exposed the reality of Bahía Solano as an administrative unit, but the natural configuration of the biogeographic Chocó, implies the participation of regional and local authorities in order to plan the tourism and the territorial expansion, currently pushed by new flourishing economic activities. This endeavour involves the engagement of regional and national levels but could even escalate to an international level (see Map 1).

Problems, such as contamination, management of sewage, destruction of native forest and garbage disposal, demand the coordination of local jurisdictions and diverse scales of public administration. Therefore, efforts for the conservation of natural environments cannot be performed in isolation by a remote municipality without connection with the remaining parts of the country (Rubio & Olaya Amaya, 2018). Real possibilities of the local authority are constrained to the planning of territory, the reinforcement of local public services, the provision of local public goods and the coordination of environmental local initiatives. The worst scenario amid the tourism boom is that wrong policies and uncontrolled economic forces could jeopardise an environmental equilibrium in natural spaces exploited with tourism motivations.

Several and multidimensional factors threaten environmental and social equilibrium of Bahía Solano and neighbouring places. The most threatening devastation stems from the uncontrolled exploitation of the natural environment coming either from legal business as from illegal activities. The over-exploitation of tourism, agriculture and fishing conveys side effects as contamination and a pressure on surrounding environs of plants and animals. Illegal activities destroy the native forest for substituting indigenous vegetation by illegal crops, and illegal alluvium mining destroys the forest and the natural layers of soil contaminate rivers and small streams as well.

In similar terms, the social disruption steaming from illegal groups conveys violence, reduction of the labour force and higher local prices. In those terms, organised planning of tourism can contribute to offering economic alternatives for local residents, in particular young and indigenous members of the population, previously qualified for a productive insertion (Miroudot & Cadestin, 2017) into the local economy.

From a theoretical point of view, the New Economic Geography proposed two stages in the process of agglom-

eration of economic activities. The initial attraction for a point in space is made up by basic natural and geographical advantages. But in a second stage, the interaction with extant firms and the mutual feedback encourage the agglomeration of firms on space (Krugman, 1991). Applying such categories to the analysis of tourism, we can identify a set of 'First Nature' advantages associated with natural endowments, namely, the unexploited landscape of Biogeographic Chocó. And also, a 'Second Nature' quality of advantages is connected with spillovers and interaction between tourism operators and entrepreneurs that attract more firms and agents into the region.

In some cases, the boom of tourism activities demonstrates that market processes advance faster than the sluggish measures of public policy and planning exercises. It means that public policy measures have a reactive quality but not proactive one. It is more evident in the cases of lagged and isolated places of the geography, where the development of local institutions is rather precarious.

A broader approach of public policy must discuss the effective integration of the administrative region of Chocó (Department of Chocó), traditionally known as an isolated territory disconnected regarding the national market, and of economic dynamics. The geographical distance and the lack of overland roads have relegated this region outside of the core of economic circuits. Moreover, its clear dependence regarding the second largest city, Medellín (a remarkable manufacturing centre), reinforce its peripheral role amid the Colombian regions. Several environmental challenges, the tourism awakening and the necessity of launching a policy of regional development will put the administrative region of Chocó, jointly with all its municipalities and its society, in the core of the promotion of lagged territories in Colombia.

The previously defined Modifiable Area Unit problem affects the analysis from the theoretical point of view and from the effectiveness of public policy approach. The administrative local breakdown limits the local budgetary capacity, constraints the broader local competences for an effective action of preservation and hinders a comprehensive exercise of planning. Broader scales of administration (regional and national) must perform an effective role of coordination and can collect funding in a multi-scale scenario and thus can be propitiated a consistent exercise of coordination in territorial planning and development of tourism.

In general, the tourism activity coexists along with other economic and human interests and competes with other purposes in order to use the land and natural resources. Therefore, the regulation and the public policy must contribute to reconcile the economic development

with the environment and the territorial sustainability. In such terms, we expect that the present analysis could be used as an input for the local exercise of tourism planning and for guiding an adequate territorial management.

The tourism industry must be strongly included in a regional development strategy. The idiosyncratic character of the landscape and endowments bring a differential quality in the exploration of the Chocó's destinations. This region must be more straightforwardly promoted as a real option of eco-tourism in the Colombian context and must be made more visible for the national and international tourism market.

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