

# Sustainable Perspectives and Local Development Potential through Tourism

Pedro H. S. Messetti, Mary L. G. S. Senna, Afonso R. Aquino

**Abstract**—Sustainability is a very important and heavily discussed subject, expanding through tourism as well. The study proposition was to collect data and present it to the competent bodies so they can mold their public policies to improve the conditions of the site. It was hypothesized that the lack of data is currently affecting the quality of life and the sustainable development of the site and the tourism. The research was held in Mateiros, a city in the state of Tocantins (TO)/Brazil near Palmas, its capital city. Because of the concentration of tourists during the high season and several tourist attractions being around, the research took place in Mateiros. The methodological procedure had a script of theoretical construction and investigation of the deductive scientific method parameters through a case study in the Jalapão/TO/Brazil region, using it as a tool for a questionnaire given to the competent bodies in an interview system with the UN sustainability indexes as a base. In the three sustainable development scope: environmental, social and economic, the results indicated that the data presented by the interviewed were scarce or nonexistent. It shows that more research is necessary, providing the tools for the ones responsible to propose action plans to improve the site, strengthening the tourism and making it even more sustainable.

**Keywords**—Jalapão/Brazil State Park, sustainable tourism, UN sustainability indexes.

## I. INTRODUCTION

THE human needs are unlimited, however, the natural resources, the ones utilized for survivability and maintenance of the species, are not. The *Homo sapiens* makes use of those resources and mold them [1] in a way to take the most out of it and enjoy a better lifestyle, but never once was thought that such interferences could cause any harm to the surrounding. A few decades ago, the concept of sustainability officially appears amidst discussions related to the environment, in the international meeting The World Conservation Strategy [2].

Known worldwide as Our Common Future [3], shown at the World Commission on Environment and Development in 1987, conceptualize sustainability as meeting the needs of the present without compromising the ability of future generations to meet their own needs. The report also concludes that the development as it is done nowadays must go through a big change, for all-ecological systems on the planet are suffering serious negative impacts that could result in an irreversible

end [4]. Regarding this reformulation and application about the development, three pillars were established so it could become sustainable: must be economically viable, as it is necessary to generate capital; socially just, objecting the extinction of the social differences and consequently the economic ones; and environmentally right, preserving and conserving the natural resources available on the planet [5].

The sustainability, as said before, permeates all knowledge areas including tourism, and for this activity to keep being done it must be adapted to the sustainable concept. The World Tourism Organization (WTO) says that sustainable tourism must meet the needs of the present tourists without compromising the opportunities for tourism in the future [6].

With the advent of new technologies and the fast economic growth, the human being can reach further, directly influencing where and how tourism is made. Due to these factors, competition between countries that have big tourist attractions becomes even narrower and brutal, because tourism, in the past six decades, had an enormous expansion helping the economic growth on the sites [7]. However, as well as positive impacts tourism can have negative ones if the receptive communities do not take into consideration how and how much intensity this tourism is made, for that reason need to be continuously monitored to avoid or lessen the negativity of those impacts [8].

The term index, originated from the Latin word *indicare*, means point. In Portuguese it means, what points, reveals, proposes, suggests, exposes, advises, and remembers. Those indexes are tools that allow to measure modifications in a system characteristic [9]. It becomes a valuable tool to collect data of the local development in an environmental, social and economic sphere. New research may be held utilizing these data and making it better, as well as the competent bodies can use them to apply necessary policies to develop the site.

Reference [10] shows that the microregion of Jalapão is in the East portion of the state of Tocantins that is bordered the states of Maranhão, Piauí and Bahia. It holds an area of 53,3 thousand km<sup>2</sup>, being 34,1 thousand km<sup>2</sup> inside Tocantins, encompassing 15 cities, Mateiros, where the study was held, being one of them.

The Jalapão region encompass valleys resulting from the recoil process of cliffs from Serra Geral and Chapada das Mangabeiras, where can be observed imposing registers from the regional natural history as Serra da Muriçoca, Serra do Espírito Santo, Serra da Jalapinha and others [11].

The city of Mateiros is 275km far from Palmas, being one of the eight cities that comprise the Jalapão region, an ecotourism and adventure tourism site, as well as an

PHS. Messetti is studying in the Instituto Federal do Tocantins, Palmas, TO 77600000 BRA (e-mail: ph.messetti@gmail.com).

MLGS Senna é Professora do Instituto Federal do Tocantins, doutoranda em Ciências pelo IPEN/USP, TO 77016162 BRA (e-mail: marysenna@ifto.edu.br).

AR Aquino is with the Instituto de Pesquisas de Energias e Nucleares IPEN/USP, SP 05508000 BRA (e-mail: araquino@ipen.br).

environmental protection area, the Jalapão State Park. The city has a small population, around 2.500 [12], in an area of 9.681km<sup>2</sup>. Due to the Park being more famous by the tourists and several attractions being nearby Mateiros, the city gets many tourists in the high season being the ideal location for the study.

The objective of this work was to collect data and present it to the competent bodies, so that the public policies could be modified and molded to satisfy the region and turn the tourism and the location more sustainable.

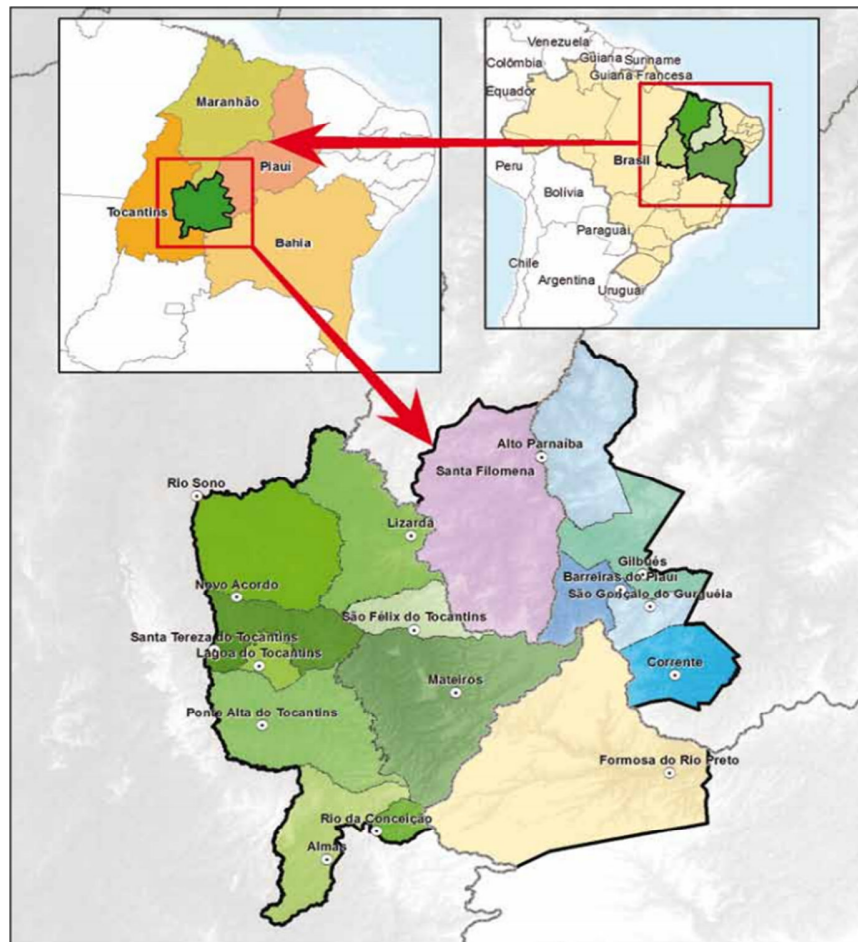


Fig. 1 Location of the microregion of Jalapão

## II. METHODOLOGY

In the present work it was used the United Nations indicators of sustainable development table in an interview system with administrators of the competent offices linked to each indicator. The mayor who is the first lady is also the Secretary of Administration, Planning and Infrastructure of the city is the Environment Secretary and Health Secretary as well. All interviews were held between august and December of 2014.

## III. RESULTS AND DISCUSSION

According to the data collected, the population of Mateiros has its life expectancy of 65 years, being lower than the state, which is above 72 [11]. No further studies were conducted to determine the population living below national poverty line, the difference in income of males and females, unemployment, nutritional status of the children, usage of

contraceptive methods by women, formal and informal town houses and the number of inhabited houses in the region.

The annual under-five years old mortality rate is 0,01%. The health network has 40 daily service calls between appointments, schedules and spontaneous demand and 80% of the children immunized against childhood infectious diseases from 2012 to 2014. 2% of the children are not in elementary school, yet only 7% of the young people are attending high school and the illiteracy rate among adults is 42%. Families have an average of 4 children and the population growth in 2010 was 3,05% [11]. Even though the city has a police department, no crime was registered in 2014. There is no sewerage system or water treatment station.

As seen above, the region lacks social studies are better grasping the reality of the city and better starting to discuss policies to improve the social development inside the community.

TABLE I  
UNITED NATIONS SUSTAINABLE INDICATORS

Theme	Sub-theme	Indicator
<b>Poverty</b>	Income poverty	Proportion of population living below national poverty line
	Income inequality	Ratio of share in national income of highest to lowest quintile
	Sanitation	Proportion of population using and improved sanitation facility
	Drinking water	Proportion of population using and improved water source
	Access to energy	Share of households without electricity or other modern energy services
<b>Governance</b>	Living conditions	Proportion of urban population living in slums
	Corruption	Percentage of population having paid bribes
	Crime	Number of intentional homicides per 100,000 population
<b>Health</b>	Mortality	Under-five mortality rate
		Life expectancy at birth
	Health care delivery	Percent of population with access to primary health care facilities
<b>Education</b>		Immunization against childhood diseases
	Nutritional status	Nutritional status of children
	Health status and risks	Morbidity of major diseases such as HIV/AIDS, malaria, tuberculosis
	Education level	Gross intake ratio to last grade of primary education
		Net enrolment rate in primary education
<b>Demographics</b>		Adult secondary (tertiary) schooling attainment level
	Literacy	Adult literacy rate
	Population	Population growth rate
		Dependency ratio
<b>Natural hazards</b>	Tourism	Ratio of local residents to tourists in major tourist regions and destinations
	Vulnerability to natural hazards	Percentage of population living in hazard prone areas
	Disaster preparedness and response	Human and economic loss due to natural disasters
<b>Atmosphere</b>	Climate change	Carbon dioxide emissions
	Ozone layer depletion	Consumption of ozone depleting substances
	Air quality	Ambient concentration of air pollutants in urban areas
<b>Land</b>	Land use and status	Land use change
		Land degradation
	Desertification	Land affected by desertification
	Agriculture	Arable and permanent cropland area
		Use of agricultural pesticides
<b>Oceans, seas and coasts</b>		Area under organic farming
	Forests	Proportion of land covered by forests
	Coastal zone	Percentage of total population living in coastal areas
	Fisheries	Proportion of fish stocks within safe biological limits
	Marine environment	Proportion of marine area protected
<b>Freshwater</b>	Water quantity	Proportion of total water resources used
		Water use intensity by economic activity
	Water quality	Presence of faecal coliforms in freshwater
<b>Biodiversity</b>		Wastewater treatment
	Ecosystem	Proportion of terrestrial area protected, total and by biological region
	Species	Change in threat status of species
<b>Economic development</b>	Macroeconomic performance	Gross domestic product (GDP) per capita
		Investment share in GDP
	Sustainable finance	Debt to GNI ratio
	Employment	Employment ratio
		Labor productivity and unit labor costs
<b>Consumption and production patterns</b>	Information and communication technologies	Share of women in wage employment in the non-agricultural sector
		Internet users per 100 population
	Tourism	Tourism contribution to GDP
	Material consumption	Material intensity of the economy
	Energy use	Annual energy consumption, total and by main user category
		Intensity of energy use, total and by economic activity
	Waste generation and management	Generation of hazardous waste
		Waste treatment and disposal
	Transportation	Modal split of passenger transportation

On the environmental scope, many aspects were not systematized through research, as the amount of gases emitted contributing to the greenhouse effect, the amount of fertilizers and pesticides used by large farms in the area, protected area of cerrado – including the Park. As well as the concentration of algae, percentage of population living in riparian areas, annual capture of species of higher commerce interest, studies on the water used by the community and its amount and abundance of species found in the protected areas.

Demonstrating that more studies have to be conducted for it helps to improve environmental preservation.

In the area, near 60 thousand hectares are planted with soy, corn, cotton and other crops; however, there are no data on the subsistence culture. The desertification area, that is the Dune of Jalapão, has a thousand hectares. There are no informal constructions in the area. The protected area comprises the Jalapão State Park, Environmental Protection Area of Jalapão (APA of Jalapão), Ecological Station Serra Geral do Tocantins and National Park Nascentes do Rio Parnaíba. The city has a protected area of 86% and the attractions that are inside the Park are: the Dunes, Mirante, Formiga's Waterfall, Fervedouro do Ceíça, Buritizinho, do Korubo and Rio Sono, Encontro das Águas, Recanto do Salto and the Mumbuca community. Of all of these only the Dunes and Mirante are not administered by its owners.

Like the social data, the area lacks environmental ones that enable actions to better preserve the environment and planning the sustainable development utilizing tourism.

Due the lack of scientific research on the region, there are no economic data related to the UN indicators. For that reason, it was used secondary data to picture the economic condition of the site.

Reference [12] shows that ecotourism and the agriculture were responsible for 1.667% increase on the average income of the population of Mateiros from 2000 to 2010, rising to R\$ 1.110, from R\$ 117, per month. The Municipal Human Development Index, which in 2000 was 0,281 and in 2010 went to 0,607, corroborates these numbers [11]. The agriculture GDP in 2009 was 61.227, the industrial was 1.622 and the service one was 20.239 [11]. Again, more research is needed to actualize and systematize the data.

#### IV. CONCLUSION

Jalapão region is characterized by its richness of beauties and attractions within a large environmental diversity from plants to animals.

Mateiros is still in need related to the three scopes of sustainable development (social, economic and environmental), because by the lack of data, lot of necessary investments are lost, affecting the population and the tourists.

From the little data collected, the research conclude that new research are necessary so more and vital data can be summarized and presented to the competent bodies, so the public policies can promote the sustainable development for the community itself and tourism as well.

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**Pedro Henrique Sardinha Messetti** is a student of the Federal Institute of Education, Science and Technology Tocantins State, coursing Tourism Management and has a scholarship of scientific initiation.

**Mary Lucia Gomes Silveira Senna**, Brazilian, graduated in pedagogy, Specialist in Tourism from the Catholic University of Brasília (2005), Master in Environmental Sciences from the Federal University of Tocantins / Brazil (2008), PhD in Science from the University of São Paulo Brazil (USP / IPEN). Effective acts as Professor of the Instituto Federal do Tocantins. He worked in the pedagogical disciplines of Bachelor courses. Currently, Minister disciplines of the area of Tourism, Hospitality and Leisure on campus Palmas. Research on Environmental Indicators and the Tourism Research Group member NEHTUS - Center for Studies in Education, Tourism and Sustainability CNPQ / IFTO, which possesses articles and the book "Sustainable Development Indicators: an academic view" of Sirius Network publisher, published in this área

**Afonso Rodrigues Aquino** has graduation at Química Bacharel by Universidade Federal do Rio de Janeiro (1976), specialization at Teoria e Prática da Divulgação Científica by Escola de Comunicação e Artes da Universidade de São Paulo (2002), master's by Instituto de Pesquisas Energéticas e Nucleares (1988), Ph.D. at Doutorado em Ciências by Instituto de Química da Universidade de São Paulo (1996) and Postdoctorate by Instituto de Química da Universidade de São Paulo (2000). Currently is pesquisador of Instituto de Pesquisas Energéticas e Nucleares. Série Planejamento e Gestão Ambiental e Membro de corpo editorial of Thex Editora - Meio Ambiente. Has experience in the area of Nuclear Engineering. Focused, mainly, in the subjects: Clinker, Inorganic Chemistry, Mixed Oxide, industrial chemistry, meio ambiente e Analytical Chemistry.