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Perception of the Vulnerability and the Resilience Status of Local Economic Enterprises: The Case Study of the São João Do Lago Do Tupé Community

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Abstract- The traditional inhabitants of the Amazon settled on the banks of the several rivers and streams that cut through the forest, and from there they take their daily livelihood through hunting, fishing and handicrafts made from the materials found around them. The actions of protection, preservation, care and conservation are imperative to guarantee the survival of the place. Especially when disruptive events affect the local balance, such as the effects of climate change or the economic and health crises, such as the COVID pandemic19. By restricting the movement of people to avoid contagion and the spread of the disease, it also restricted the spectrum of daily activities for a good portion of the population, which caused disruption in the system. Based on semi-open interview techniques and direct observation of economic entrepreneurs, the São João do Lago do Tupé riverside community, located in the Tupé Development Reserve, Manaus, Amazonas, the study aims to analyze the perception of the vulnerability of these enterprises in the market, finance, organization and cooperation dimensions and assess the state of resilience in the face of the adverse conditions that may reach them. As a result, the market dimension indicates a reasonable perception of the performance and profile of consumers. Finance and organization activities point to an irregular financial monitoring of economic activities, compromising the efficiency and productivity of local enterprises. Participation in cooperative activities indicates that not everyone is open to cooperation and networking. To reduce vulnerability in the face of eventual climate changes, economic and health crises, practices contained in the concept of resilience seek to balance the system, restoring its stability. Thus, the weakness of the Cooperation dimension seems to be the most important element to contribute to the balance of the system, since the participation of local politics, the financing by credit cooperatives and the active participation in solidarity economy networks and enterprises, could contribute to address drastically affected economic needs in times of crisis. Additionally, the existence of a document that guarantees the real right to use the land can strengthen the generation of income in the communities of the Tupé Reserve, safely allowing the offer of products and services to the local population, even though subsistence agriculture is an activity of relevance for the survival of communities.

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I. Introduction

The Amazon presents itself with a territorial immensity that is rich in contrasts and contradictions at the same time. Consisting of a large forest heritage, remarkable in biodiversity and beautiful natural landscapes, a hydrographic network of equally monumental extension stands out, the axis of movements and human activity that sometimes conserves it, sometimes destroys it.

Scattered across this almost continent, its traditional inhabitants settled on the banks of the various rivers and streams that cut through the forest, taking from there both their daily livelihood and a significant portion of the family's economic income, through hunting, fishing and manufactured handicrafts using the materials found around. The so-called people of the waters and the forest, after centuries of peaceful, harmonious, and healthy coexistence with the environment, see these vital spaces to be irrevocably altered by the ambition awakened by their resources. And, even more, with the consequent destruction of the means of subsistence, depredation of the landscape and the harmful effects of climate change that accelerated by human activity even very far from there reach them.

The actions of protection, preservation, care and conservation of the Amazon and everything it contains are thus imperative for the place and moment.

Primack and Rodrigues (2001, p. 200) claim that the protection of areas that are environmentally fragile or very sensitive to human interference can be done in many and endless ways. However, the two most common and consolidated mechanisms in conservation practices are government action (often at the national level, but also at the regional or local level) and the acquisition of land by individuals and conservation organizations.

Regarding to government action, the Public Authority established protected geographical areas in the national territory, called conservation units (CU's).

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The CU's areas are legally protected by the Law of the National System of Conservation Units (SNUC), with a goal to protect their resources in such a way that the possibilities of negative impacts on the environment are removed or reduced (BRASIL, 2000). Thus,

> The territory, previously physical space arbitrarily cut out, in spite of the practices, the meanings attributed to the space, and the needs for the use of local people and social groups, as was the case with conventional colonization and settlement projects, becomes space for dialogue, between different public agents and the social subjects politically constituted in the region, who start to claim, from their social movements, the recognition of specific territorialities. (SCHWEICKARDT, 2014, p. 283)

The State of Amazonas currently has one hundred and eighteen Conservation Units (CU's), 63 of which are federal, 45 State and 10 Municipal, covering about 35% of the state's territory (over 44 million hectares) (INSTITUTO SOCIOAMBIENTAL, 2021; SEMMAS, 2021). Out of this total, 58 are conservation units for sustainable use, which means, environmentally protected spaces where the human presence is sought to be compatible with the sustainable use of natural resources (SANTOS; ALEIXO; ANDRADE, 2015, p. 20). Due to the limits and legal guidelines given to the use of territorial space, within the Amazon's CU's there is a diverse population, needing public policies aimed not only at the subsistence of this population, but at the fullness of their quality of life, which means, socioeconomic and environmental development of territories and traditional populations.

Among the Amazonian CU's, the present study highlights for analysis the Tupé Sustainable Development Reserve - Tupé Reserve, a conservation unit located on the left bank of the Rio Negro, in the rural area of Manaus, with an approximate distance of 25 km from Manaus (SEMMAS, 2021).

The sustainable development reserve, as described in the SNUC Law (BRAZIL, 2000), is a natural area that houses traditional populations, whose existence is based on sustainable systems of exploitation of natural resources, developed over generations and adapted to conditions and that play a key role in protecting nature and maintaining biological diversity.

Regarding traditional populations and territories, Federal Decree No. 6,040, of February 7, 2007 (BRAZIL, 2007), presents the legal concepts of traditional peoples and communities as culturally differentiated groups that recognize themselves as such, who have their own forms of social organization, which occupy and use territories and natural resources as a condition for their cultural, social, religious, ancestral and economic reproduction, using knowledge, innovations and practices generated and transmitted by tradition. Traditional territories are the necessary spaces for cultural, social and economic reproduction of traditional peoples and communities, whether they are used permanently or temporarily, observing the peculiarities of indigenous and quilombola peoples, legally guaranteed.

Sustainable development are actions that seek to integrate in a balanced way the various dimensions of human activity in a systemic perspective (KOVALSKI, 2016; LAYRARGUES, 1997; VEIGA, 2015). It concerns the balanced use of natural resources, aimed at improving the quality of life of the present generation, but guaranteeing the same possibilities for future generations. For Veiga (2015, p. 46), "sustainable development" must be understood, therefore, as one of the most generous ideals. Comparable perhaps to the oldest "social justice", both express collective desires expressed by humanity, alongside peace, democracy, freedom, and equality.

The great challenge to achieve and maintain the perspective of sustainable development, however, is when global disruptive events affect the local systemic balance, such as climate change and its extreme effects on river levels, distribution of rain and increase in global temperature, affecting the continuity of means of survival (DIAS, 2014); or economic crises, such as the one that occurred in 2008, which triggered a reduction in public funds for social programs or support for the most vulnerable (CECHIN; MONTOYA, 2017); and also those related to health, such as the pandemic of COVID19, which, by restricting the movement of people to avoid contagion, also restricted the possibility of financial gains for a good portion of the population (CASTRO; LOPES; BRONDIZIO, 2020; DASPETT MENDONÇA et al., 2020).

Given the possibility of imbalance and even the systemic collapse of traditional communities in conservation units in the inland of the Amazon, two conditions are assessed here: regarding the internal environment, vulnerability; the external environment, resilience.

For the traditional population, the creation of sustainable development reserves seems to indicate structural difficulties that need to be reviewed. In opposition to the socioenvironmental stability achieved in centuries of interaction with the forest, commercial activities that depend receptively on the flow of people for visitation and consumption are not sustained in adverse situations, such as the Pandemic of COVID 19, changes in levels of rivers or sudden drops in the purchasing power of tourists and visitors of the commercial spaces built in communities belonging to the reserve. The guiding question of the study, therefore, is aimed at understanding how economic enterprises located in an area of environmental protection of sustainable development are vulnerable to changes in behaviors that impact their activities.

Based on semi-open interview techniques and direct observation of economic entrepreneurs located in

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the São João do Lago do Tupé riverside community, located in the Tupé Development Reserve, Manaus, Amazonas, the study seeks to analyze the perception of the vulnerability of these enterprises in the dimensions of market, finance, organization, and cooperation and assess the state of resilience in the face of the adverse conditions that may reach them.

The analysis of the market dimension seeks to observe the perception of knowledge of the area in which the enterprise operates and of the main characteristics and needs of customers. In the finance dimension, the perception of the organization and financial control of the enterprise is analyzed. In the organization dimension, the aim is to analyze the perception of the organizational, operational, and administrative structure of the enterprise and, finally, in the cooperation dimension, there is the perception of the participation and/or involvement of the members of the enterprise in cooperative and network activities.

II. Theoretical Foundation

In the Amazon, throughout history, it has been observed that land is an object of social, political, and economic interest, which has given it relevant value since the times of colonization, constituting a throbbing theme in everyday life. The legal responsibility for the administration and assignment of land belongs to the Public Authority, which, for reasons of different orders, has often carried out and performs the uneven distribution of these territorial spaces, thereby causing the emergence of latifundia and smallholdings, which means, huge portions of land concentrated in the hands of certain people, while small spaces are destined for communities, thus enabling concentration and land exclusion within the same context, in addition to agrarian conflicts and the consequent disruption of rural communities (LOUREIRO; PINTO, 2005).

In relation to space, place, and forms of perception, Fraxe, Witkoski and Castro (2006, p. 235) assert that:

> The trajectory of the process and hominization is marked by the relationship between man and the natural environment. This relationship, at first, was determined by the strong fear of the unknown and uncontrollable forces of nature. Subsequently, men are faced with the desire to unravel the mysteries behind the feared phenomena, with the aim of knowing, overcoming, and dominating them. At the heart of the process of knowing, overcoming and mastering natural phenomena, man transcends himself and ends up promoting articulations between his intentions and the existing world, having nature as a life support, producing, as a result of the interaction between man and nature, the space.

To highlight the social forces that operate in the observed socio-territorial space, in this study, the theoretical model of sociological analysis proposed by Jonathan H. Turner (2010) is considered. In this conceptual scheme, the more abstract analytical dimensions or categories allow us to distinguish different types or levels of social relations. Those that occur at the microstructural level are related to the interaction between subjects; at the mesostructural level, they are particularly linked to the constitution and dynamics of groups; and, at the macro-structural level, it speaks about systemic interdependence. Due to the particularities of a given context, in its historical, economic, social, cultural, and political elements, different ways of standardizing these relations operate. As suggested by the notions of risk, vulnerability, and resilience present in the systemic approach of the epidemiological approach or, similarly, in the interaction of the economic, social and environmental components of sustainability (ELKINGTON, 2008).

Conforme descreve a Organização Panamericana de Saúde (2002, p. 19), o enfoque epidemiológico, a partir do exame dos casos e das ocorrências de determinada doença numa população, local ou tempo específicos, mostra-nos que existe uma cadeia de causalidade e de fatores associados que contribuem para que sua distribuição não seja homogênea e nem fortuita. Considera que a "doença na população é um fenômeno dinâmico e sua propagação depende da interação entre a exposição e a suscetibilidade dos indivíduos e grupos constituintes da dita população aos fatores determinantes da presença da doença". E denomina como Tríade Epidemiológica ao "modelo tradicional de causalidade das doenças transmissíveis indica-nos que a doença é o resultado da interação entre o agente, o hospedeiro suscetível e o ambiente". Não é, portanto, um fator ou conjunto de fatores que determina a emergência da morbidade, possibilidade de tratamento, prevenção ou cura, mas, sim, a associação que sob certas condições, cada qual necessária e suficiente, as reúne.

As described by the Pan American Health Organization (2002, p. 19), the epidemiological approach, based on examining the cases and occurrences of a specific disease in a specific population, place or time, shows us that there is a chain of causality and associated factors that contribute to its distribution not being homogeneous or fortuitous. He considers that "the disease in the population is a dynamic phenomenon and its spread depends on the interaction between the exposure and the susceptibility of the individuals and constituent groups of that population to the determinants of the presence of the disease". And he calls the "Epidemiological Triad" the traditional model of causality of communicable diseases that indicates that the disease is the result of the interaction between the agent, the susceptible host and the environment ". It is not, therefore, a factor or set of factors that determines the emergence of morbidity, the possibility of treatment, prevention, or cure, but rather

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the association that, under certain conditions, each necessary and sufficient, brings them together.

As does Kaja Mandiüe and Katica Pavloviü (2020), we can conceptualize resilience as the ability of a person to adapt to changes and to resist impacts and stressful situations after trauma, accident, tragedy or illness, maintaining or restoring normal functioning. So that the greater the resilience, the less the vulnerability and the risk of illness.

John Elkinton (2008, p. 51) proposes that in order to achieve sustainable development, society depends on the economy - and the economy depends on the global ecosystem, whose health represents the final result. The economic, social, and environmental dimensions or the "triple bottom line" is not a stable relationship; they are in constant flux, due to social, political, economic and environmental pressures, cycles and conflicts. Therefore, the sustainability challenge is more difficult than any of the other challenges in isolation. What requires a systemic approach for your understanding.

Summing up the authors' argument, while risk refers to the possibility that a threat to groups or systems may materialize, vulnerability refers to individual susceptibilities to stress caused by a particular event or predispositions to negative responses and consequences in the face of the threat made (JANCZURA, 2012; MARIOSA, DUARCIDES FERREIRA et al., 2015). Resilience, in turn, refers to the ability or possibility of individuals, groups or systems to be able to restore the original balance or previous state (PICKETT; CADENASSO; GROVE, 2004).

In the present study, the conditions of vulnerability and resilience are addressed in the Amazonian context, in an area of environmental protection, where the local population exercises its economic activities in dialogue with the structural conditions offered at three levels of interaction of social forces: macro, meso and microstructural.

a) Macrostructural Dimension of Social Forces

The National System of Conservation Units (SNUC) was conceived, aiming at the possibility of managing specially protected spaces, as well as bringing benefits to traditional and indigenous populations living in the conservation and surrounding areas, researchers, and visitors. In this sense, the purpose of the conservation units is to promote the preservation of the variety of living organisms from all origins included in terrestrial, marine ecosystems and ecological complexes. The specially protected territorial spaces consist of important and strategic geographic areas in the environmental and social contexts, with the Public Power being responsible for defining, creating, and managing these places, in order to enable the protection of species, the conservation of natural resources and the socioeconomic development of the people that inhabit them. Heline Sivini (2007, p. 263) describes that, in its ecological sense, it can be said that the expression territorial spaces and their components refers to the concept of ecosystem, here understood as an integral part of a broader concept, which is biodiversity.

Thus, the SNUC establishes criteria and standards for the creation, implementation and management of CU's, establishing two groups of Conservation Units, the Integral Protection Units (IPU), which consist of spaces for the maintenance of ecosystems protected from changes caused by human interference, only the indirect use of its natural attributes and the Sustainable Use Units (SUU), which are the rationally protected environmental areas for the purpose of conserving the environment. The Tupé Sustainable Development Reserve, object of this study, is included in this category.

b) Mesostructural Dimension of Social Forces

The National Policy for the Sustainable Development of Traditional Peoples and Communities (PNPCT) foresees their integration, coordinated and systematic, observing the recognition, appreciation, and respect for the socio-environmental and cultural diversity of traditional peoples and communities. Its expression through the full and effective exercise of citizenship: the socio-environmental, economic, and cultural plurality of communities and traditional peoples that interact in different biomes and ecosystems, whether in rural or urban areas, as well as, among others, recognition, and consolidation rights (BRASIL, 2007, p. 040).

The basic objective of the sustainable development reserve is the preservation of nature and, at the same time, the assurance of the conditions and means necessary for reproduction and the improvement of the ways and quality of life and exploitation of the natural resources of traditional populations, as well as valuing, conserving, and improving the knowledge and techniques of management of the environment, developed by these populations. Above all, society/ community is the main recipient of the right to a vital space for housing and social and economic subsistence, regardless of the location in which it is legitimately settled, in order to provide an improvement in the quality of life. And, consequently, conditions worthy of existence through public policies aimed at the preservation of biodiversity, allowing socioenvironmental inclusion through the integrated, participatory, and sustainable management of the natural resources existing in the territorial spaces of the Amazon conservation units.

c) Microstructural Dimension of Social Forces

In general, the traditional populations present in the conservation units of Amazonas were already installed in those lands even before they were transformed, by force of law, into specially protected

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territorial spaces. And even though in the social sphere, the communities located in the Tupé SDR legally behave the right to socioeconomic development and consequently to the survival of these populations, however, the real right of use can constitute an important legitimizing instrument of land tenure by traditional inhabiting populations of conservation units in Amazonas. So far, it hasn't happened.

Facing the insecurity that the absence of a document that confers the real right to use the land, the generation of income in the communities of the Tupé Reserve is directed towards offering products and services to the local population and, particularly, to visitors, tourists, as well as other residents who, having income from retirement, pensions, and other paid activities in Manaus, chose to live there. In addition, to subsistence agriculture, mainly because it is perhaps the only way to guarantee the interests and economic activity in these spaces for the traditional population.

III. Methodological Procedures

The present text consists of an exploratory, observational, and descriptive study (PEREIRA, 2001), based, methodologically, from the analysis of the data collected in an original field research, carried out in the first week of July 2018, and in consulted bibliography on the theme addressed throughout the study. In this collection, semi-open interview techniques and direct observation of economic entrepreneurs located in the riparian community of São João do Lago do Tupé were used (GIL, 2010).

The objective of this procedure was to identify and characterize local economic enterprises and based on observations, interviews and informal dialogues, to analyze the perception of the vulnerability of these enterprises in the dimensions of market, finance, organization and cooperation and to assess the state of resilience.

As a study area, the Tupé Sustainable Development Reserve (see figure 1) is a conservation unit with 11,973 hectares, located on the left bank of the Rio Negro, in the rural area of Manaus, with an approximate distance of 25 km in a straight line from the city center. It aims at the preservation of nature through the guarantee and rational use of natural resources by the traditional populations inhabiting it, as well as the improvement of the techniques of management of the environment by these populations. Its creation took place through Municipal Decree nº 8.044, of August 25, 2005 from the Manaus City Hall. It's only accessible by river (SEMMAS, 2021).

Currently, within the Tupé SDR, according to the management plan, six communities are recognized: São João do Lago do Tupé, studied location, in addition to the communities of Colônia Central, Nossa Senhora of Livramento, Julião, Agrovila and Tatu, also called Tatulândia. The current population is estimated at around 2,000 inhabitants (MARIOSA et al., 2014).

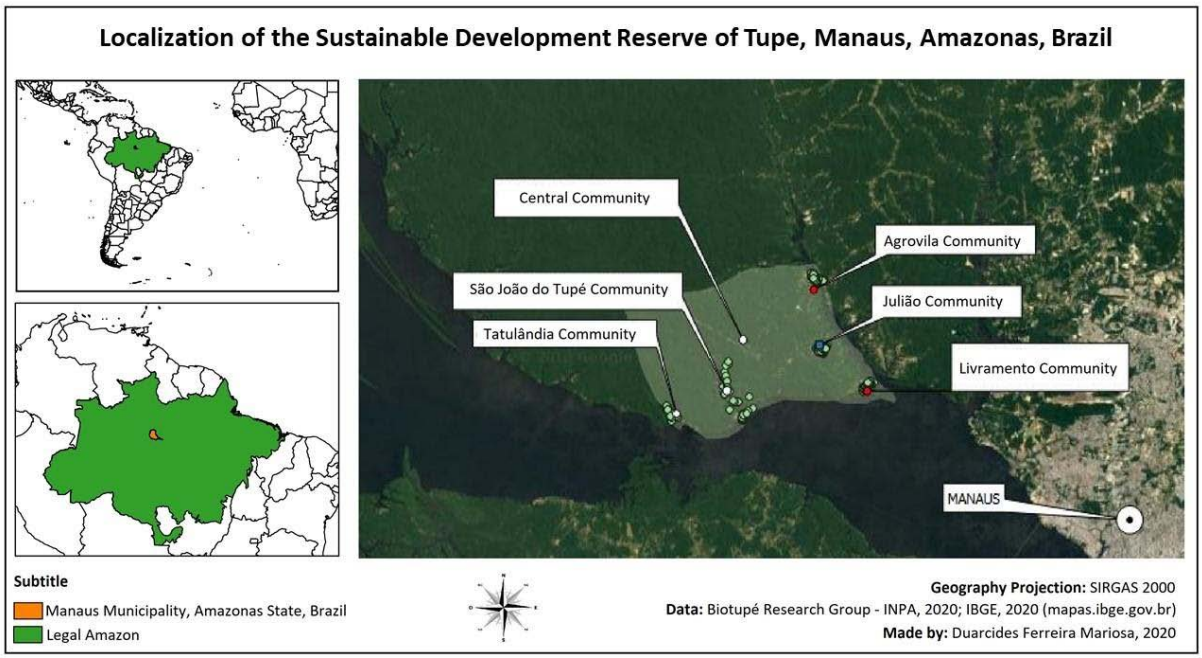

Figure 1: Location of the study area - SDR Tupé, Amazonas

The economic activities of 11 local entrepreneurs were the object of this study, that is, those who develop some economic activity, or which result in economic and/or financial gains, regardless of their formal situation or not. Data collection took place through interviews with entrepreneurs located in the

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central perimeter of the community and who agreed, after being informed and clarified of the research objectives in preparatory meetings, with the research objectives, authorizing the academic use of the information.

The interviews were structured based on open questions that sought to collect information about the general characteristics of each enterprise in its market, financial, organizational and strategy variables of cooperation networks, having as reference for the questions Chart 1.

PERCEPTION SCALE OF VULNERABILITY OF LOCAL ENTERPRISES

Item	Dimension	Question	Perception of Performance
1	**MARKET: knowledge of the area of operation of the enterprise and the main characteristics and needs of customers**	Q1	Ability to Satisfy Customers
2		Q2	Customer Demands Research
3		Q3	Knows Local Market Growth
4		Q4	Has Knowledge of Competitors
5		Q5	Keeps Prices Up to Date
6		Q6	Motivated Sales Force
7		Q7	Plan Marketing Activities
8	**FINANCE: organization and financial control of the enterprise**	Q8	Has Satisfactory Withdrawals
9		Q9	Prepares Annual Budget
10		Q10	Efficient Use of Cash Budget
11		Q11	Strict Control of Accounts
12		Q12	Updated Financial Position
13		Q13	Adequate Income Statements
14		Q14	Efficient Cost System
15		Q15	Consistent and Competitive Prices
16	**ORGANIZATION: organizational, operational and administrative structure of the enterprise**	Q16	Enterprise Efficiency and Productivity
17		Q17	Adequate and Productive Organizational Structure
18		Q18	Balanced Liability Distribution
19		Q19	Cooperation and Coordination Between Segments
20		Q20	Adequate Material Instruments and Conditions
21		Q21	The Enterprise is Organized
22		Q22	Member Turnover
23	**COOPERATION: participation and / or involvement of members of the enterprise in cooperative activities and activities in collaborative networks**	Q23	Operates in the form of a network
24		Q24	Financing by Credit Unions
25		Q25	Participation in SEE Events
26		Q26	Constant Update of the Business Plan
27		Q27	Active Participation in SEE Network
28		Q28	Participation in Training Activities
29		Q29	Perspective of Future Growth
30		Q30	Local Political Participation
(1) Strongly Disagree			(10) Strongly Agree

Source: Questions elaborated based on Nigel Slack's proposal for an Importance-Performance matrix as a determinant of the improvement priority (Slack, 1994).

Chart 1: Issues that Compose the Analytical Scale of Perception of the Vulnerability of Local Economic Enterprises

For the assembly of the tables and construction of the LIKERT perception scale of vulnerability of local economic enterprises, the "Focus Group" technique was used, in which the evaluation is conducted by specialists who, in order to obtain consensus on the scalar measures of each question or variable, dialogues with the interviewing group of each enterprise based on the content previously defined for the interviews and observations carried out (TRAD, 2009). Therefore, the values assigned to each of the variables are the scores given from 1 to 10 for each item in Chart 1 and which, multiplied by the number of occurrences found, allows the vulnerability of each project or unique characteristic of the desired projects to be assessed.

The original data were systematized using measures of centrality, averages and relative frequency, with an estimated margin of error of 5% and a confidence interval of 95%. Using the SPSS 27 software (Statistical Packet for Social Sciences), the internal data reliability test (Cronbach's alpha) was performed to verify that they did not contain significant biases. For greater reliability of the test, all 30 variables of the instrument were evaluated in their contribution to change the final value of Cronbach's Alpha. The results achieved were

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between 0.885 and 0.906, which demonstrates the internal consistency of the applied scale.

In the interpretation of the data, the ecological model or the Bioecological Approach to Human Development, originally proposed by Urie Bronfenbrenner, was followed, Urie, looking for evidence of an association between demographic, environmental, social and economic variables observed directly or inferred through statistical techniques to measure the level of vulnerability of the enterprises (Silveira et al. 2009) (LIMA-COSTA AND BARRETO, 2003).

Subsequently, after analyzing the perception of vulnerability, the state of resilience in the face of the adverse conditions that they can reach, such as those resulting from climate change, economic and health crises, was assessed. In particular, the COVID-19 pandemic, which, by reducing the circulation of people, also restricted the possibility of financial gains for a good portion of the population, unbalancing the existing trade system in place and, consequently, affecting the sustainable development goals of the region.

IV. Analysis of the Perception of the Vulnerability and the State of Resilience

When analyzing the perception of the vulnerability of local enterprises, from the intersection of the information contained in chart 1 and table 1, it can be observed that questions 1 to 7, that is, those that concern the aspects associated with the market dimension of the local enterprises, reaches the value of 6.45 out of 10 possible, indicating a reasonable perception of the performance and the customer's profiles. However, due to the average standard deviation found (2.18), it is possible to deduce a serious heterogeneity between the enterprises.

Table 1: Scale of Perception of the Vulnerability of Local Community Developments in São João Do Lago Do Tupé.

UNIT	STATISTICAL PARAMETERS	MARKET							
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	MEAN
SÃO JOÃO DO TUPÉ	N	11	11	11	11	11	11	11	**11,00**
	MEAN	8,18	5,45	6,55	8	6,82	5,36	4,82	**6,45**
	STANDARD DEVIATION	0,874	2,622	2,622	1,483	2,04	2,693	2,892	**2,18**

UNIT	STATISTICAL PARAMETERS	FINANCES								
		Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	MEAN
SÃO JOÃO DO TUPÉ	N	11	11	10	10	11	11	11	11	**10,75**
	MEAN	4,91	5,55	5,1	6,3	6,27	4,64	4,73	7,91	**5,68**
	STANDARD DEVIATION	1,758	2,734	1,912	2,058	2,054	1,804	3,036	1,446	**2,10**

UNIT	STATISTICAL PARAMETERS	ORGANIZATION							
		Q16	Q17	Q18	Q19	Q20	Q21	Q22	MEAN
SÃO JOÃO DO TUPÉ	N	11	11	11	11	10	11	11	**10,86**
	MEAN	7,45	5,18	6,18	6,09	5,9	7,36	6,91	**6,44**
	STANDARD DEVIATION	1,368	2,523	2,75	1,814	2,558	1,629	3,3	**2,28**

UNIT	STATISTICAL PARAMETERS	COOPERATION								
		Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	MEAN
SÃO JOÃO DO TUPÉ	N	11	10	10	6	10	10	10	10	**9,63**
	MEAN	5,18	1,8	3	4,33	4,4	3,2	7,1	6,1	**4,39**
	STANDARD DEVIATION	2,359	2,936	1,826	1,966	2,413	2,781	2,079	2,726	**2,39**

	CATEGORY	MARKET	FINANCES	ORGANIZATION	COOPERATION	TOTAL
SÃO JOÃO DO TUPÉ	N	11	10,75	10,86	9,63	**10,56**
	MEAN	6,45	5,68	6,44	4,39	**5,74**
	STANDARD DEVIATION	2,18	2,1	2,28	2,39	**2,24**

The same situation appears to occur when analyzing the three other variables on the vulnerability scale. In terms of finances (5.68) and the indexes found on the vulnerability scale regarding the organizational structure (6.44), they point to an irregular financial monitoring of the economic activities evaluated, compromising the efficiency and productivity of local enterprises, as indicated by the standard deviation for

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finances (2.10) and for the organization of enterprises (2.28).

The participation and involvement of the members of the enterprises in cooperative activities and in collaborative networks actions was limited to a low index: 4.39. Furthermore, the intra-enterprise heterogeneity (standard deviation equal to 2.39) indicates that not everyone is open to cooperation and networking, suggesting the need for an awareness of the possibilities of generating work and income based on their real potential in the context of a local articulation for cooperation and solidarity.

Analyzing the answers, it can be seen that the questions that stand out positively, with consensus in perception (standard deviation less than 1.5 and average response greater than 7.45), are: Q1 - ability to satisfy customers (average 8.18 and standard deviation 0.874) and Q4 - be aware of competitors (average 8.0 and standard deviation 1.483) from the Market dimension; Q15 - consistent and competitive prices (average 7.91 and standard deviation 1.445) from the Finance dimension; and Q16 - efficiency and productivity of the enterprise (average 7.45 and standard deviation 1.388) from the Organization dimension.

In the Cooperation dimension, there are no responses with positive results. This dimension presented the worst result, and the average of the questions Q24 - financing of credit unions (average 1.8), Q25 - participation in events Solidarity Economy Enterprises (average 3.0) and Q28 - participation in training activities (average 3.2), can be highlighted negatively.

Additionally, based on direct observation, interviews and informal dialogues with the residents, it was also noticed that in the São João do Lago do Tupé Community there are mixed behavioral characteristics, within the scope of its population, due to the verification of rural and urban habits, possibly due to the proximity of about 25 km from Manaus, but located in a Sustainable Development Reserve in the middle of the Amazon rainforest.

That specially protected territorial space is rich in biodiversity, with emphasis on water resources (Tupé beach), as well as in its perimeter individuals belonging to different traditional population groups, with emphasis on an indigenous group "Dessana", with well-defined spatial occupation and apparent recognition of the limits of each resident group.

The traditional population living in the São João community of Tupé, such as the family units of Amazonian peasants, practices agriculture, hunting and fishing, in addition to raising animals. Due to tourism, this population also practices trade activities, seeking to increase subsistence income. Many of the community's residents are still beneficiaries of the *Bolsa Família* program from both the Federal government and the Manaus City Hall.

The indigenous population, ethnic Dessana, is dedicated to ecotourism through presentations of their rituals and customs, as well as the sale of indigenous handicrafts to visitors of the community. The Dessanas have a cultural project called Cultural Forest *Herisãrõ* that translates into knowledge and respect for the sacred space, enabling the discovery of the culture and experience of that people.

On the occasion of the field visit, several vacation properties were found, used only on weekends by residents of Manaus called landlords, who, during this period, travel to that community by boats to relax, showing that the creation of Tupé SDR, where the São João do Lago do Tupé community is located, by means of Municipal Decree nº 8044/2005, based on the dictates of the Law of the National System of Conservation Units (SNUC), did not achieve its main effect, which is to contain real estate speculation in that place, as well as the excessive use of natural resources.

It was also observed that the place is not subject to inspection by the Public Power, and the only contact of the community with a public agent is characterized by the monthly visit of a doctor from the Municipality of Manaus or politicians during the electoral period.

The commercial activity developed within the Community (Traditional Population), mostly small sales of stowage and drinks, develops, according to the report of the community members, without any accompaniment, technical assistance, concerning minimal notions of entrepreneurship, in addition to a huge logistical difficulty in the dry season, when goods purchased in Manaus, need to be carried a long way to commercial establishments in the locality.

Community members also complain about bureaucracy within the scope of the Municipal Secretariat for the Environment and Sustainability (SEMMAS) of the Manaus City Hall, especially regarding requests for the development of agricultural activities, such as planting monoculture, in addition to the plan of Management of the Tupé Reserve that, due to insufficient regulation of the economic activities to be developed in that place causes a real problem to solve these issues.

Despite living in apparent peace, the conceptions drawn between the Traditional Population and the Indigenous Population in the Community of São João do Lago do Tupé remain clear. While the Traditional Population understands the indigenous people as withdrawn and enveloped in the space destined for them, in another way, the indigenous people see the riverside people as explorers and little pacific.

As for the state of resilience, there is a perception of limitations in view of the adverse

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conditions that permeate economic activities in the area of environmental preservation observed. Given the difficulties of this population to deal with the effects of eventual climate changes, economic and health crises, such as the epidemic of COVID 19, where the flow of visitors and tourists has decreased dramatically, measures that seek to reinforce compensatory strategies, would be very important to be employed. However, finding ways to rebalance the system, which has been severely affected by exogenous factors, finds adaptive barriers at the internal level of communities, groups and individuals.

Analyzing the dimensions and issues, the notorious weakness of the Cooperation dimension presented, seems to be the most important element to maintain the balance of the system, since the participation of local policy (Q30), financing by credit unions (Q24) and active participation in networks and solidarity economy ventures (Q27), could contribute to meeting economic needs drastically affected in times of crisis. In addition, the existence of a document that guarantees the real right to use the land, can strengthen the generation of income in the communities of the Tupé Reserve, with the offer of products and services to the local population, with subsistence agriculture as an activity of relevance to the survival of communities.

Public policies aimed at the preservation of biodiversity, the Public Power being responsible for defining, creating and managing these sites, allowing for socio-environmental inclusion through integrated and participatory management, would be an alternative to guarantee income for local communities, socioeconomic development and, consequently, less dependence of visitors and tourists. In this case, the protection, preservation, care and conservation actions become imperative for the place and time.

V. Conclusion

The main theme addressed in the present work consisted of analyzing the perception of the vulnerability of economic enterprises in the dimensions of market, finance, organization and cooperation and assessing the state of resilience in the face of the adverse conditions that may reach them. In this sense, all the weaknesses found in the four dimensions analyzed are subject to adjustments and corrections, however, the greatest concern and vulnerability stems from possible climate changes, economic and health crises, such as COVID 19 where the resilience concept becomes imperative for the community's survival when seeking to balance the system.

Considering the legal and socio-environmental aspects related to the Community of São João do Lago of Tupé, it appears that this research carried out from a practical contextual approach, it provides significant reflections on the Amazonian legal and socio-environmental system.

When considering the different types or levels of social relationships occurring at the microstructural level, such as those that occur in the interaction between the inhabitants of the Tupé SDR; at the mesostructural level, regarding the constitution and dynamics of traditional population groups; and, at the macrostructural level, related to the systemic interdependence and influence of protective measures to the environment, public and social policies of governments and even the deleterious effects of global economic and health crises, there is a rough notion of the complexity of the situation studied. Especially regarding traditional populations and indigenous peoples living in Conservation Units and who, like any citizen, seek to survive through agriculture, hunting, fishing and animal breeding, as well as economic activities seeking to improve the quality of life.

On the other hand, it is necessary to conceive the importance of the environment in the lives of these Amazonian populations, who also hold the Environment as a common good for everyone and necessary for their healthy quality of life. The Principle of Sustainable Development provides for the conciliation between human development - economic and social - and the preservation of the environment. However, it is not intended to prevent human development, but must be carried out in such a way as to enable the conditions of environmental quality, and quality of life for present and future generations. It is important to note that it is legally imposed on the Public Power, in addition to the collectivity, the duty to preserve and defend the Environment for present and future generations.

In conclusion, community participation in local politics, financing by credit unions and active participation in network and solidarity economy enterprises, could contribute to meet economic needs drastically affected in times of crisis, making the system resilient. Additionally, the existence of a document that guarantees the real right to use the land, can strengthen income generation in the communities of the Tupé Reserve with the provision of products and services to the local population, having subsistence agriculture as an activity of relevance for the survival of communities.

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