Journal of Sustainable Development; Vol. 14, No. 5; 2021
ISSN 1913-9063 E-ISSN 1913-9071
Published by Canadian Center of Science and Education

Adopt a Park: New Environmental Assistance in Conservation Units in the Amazon?

Josimar da Silva Freitas[1], Luciano Félix Florit[2], Milton Cordeiro Farias Filho[3], Armin Mathis[4], Alfredo Kingo Oyama Homma[5], Alexandre Almir Ferreira Rivas[6], José Valderi Farias de Souza[7], Gelson Dias Florentino[8] & José Francisco de Carvalho Ferreira[1]

[1] Federal University of Amapá, Macapá, Brazil

[2] Regional University of Blumenau, Blumenau, Brazil

[3] University Center of the State of Pará, Belém, Brazil

[4] Federal University of Pará, Belém, Brazil

[5] Embrapa Eastern Amazon, State University of Pará, Belém, Brazil

[6] Federal University of Amazonas, Manaus, Brazil

[7] Federal University of Acre, Cruzeiro do Sul, Brazil

[8] La Salle College, Manaus, Brazil

Correspondence: Josimar da Silva Freitas, Federal University of Amapá, Macapá, Brazil. E-mail: josimarfreitas55@gmail.com

Received: August 2, 2021 Accepted: September 3, 2021 Online Published: September 5, 2021

doi:10.5539/jsd.v14n5p59 URL: https://doi.org/10.5539/jsd.v14n5p59

Abstract

The extractive reserves (RESEXs) were founded with the objective of minimizing the environmental impacts caused by large producers and improving the lives of traditional Amazonian communities. Three decades later, the inhabitants of RESEXs still face challenges in ensuring food security and income that can maintain minimum well-being. This study aimed to evaluate whether the actions of the national state can promote socioeconomic development and sustainably maintain people, fauna, and flora in the Amazon RESEXs. From this perspective, the variables of economic and social groups are affected by interference from the institutions one. Here, we find that the income generated is too low to ensure subsistence because few families develop extraction, agriculture, and livestock activities in a coordinated way.

Keywords: household income, productive activities, socioeconomic development, environmental protection

1. Introduction

Poverty is a socioeconomic condition that limits the living conditions of individuals and the economic growth of countries (López & Teixeira, 2020), a complex phenomenon that is related to social, political, and economic development, as measured by the monetary variable (García & Acout, 2016; Sen, 2010). In this sense, poor inhabitants with insufficient monetary resources, below the income level to maintain a decent standard of living, are considered poor (CEPAL, 2018).

Depending on the economic downturn, approximately 150 million people worldwide live in extreme poverty (income less than US $1.90 per day) (World Bank, 2018). Among the world's new poor, 82% live in countries considered of middle income, such as Brazil (ONU, 2020). The Brazilian poverty rate is 26%, and extreme poverty is 6.5% (IBGE, 2019).

The Northern region of Brazil has a high rate of regional poverty, given that 42.4% are poor and 10.1% live in extreme poverty in households with a *per capita* monthly household income below half the minimum wage (PNAD, 2019). The phenomenon of poverty in the Amazon agrarian region is derived from crises resulting from adverse circumstances, persistent lack of rural productive structures, asymmetries in market relations, and imbalances in labor relations and processes that feed poor families in the region (Mattei & Maluf, 2011; Costa, 2019).

A similar phenomenon occurs in Amazon extractive reserves (RESEXs), which are areas that authorize traditional

communities both the permanence and development of productive activities combining environmental conservation and improvement in the living conditions of the inhabitants. However, the policies planned for sustainable use conservation units ([CUs] They correspond to areas of integral protection of high natural capital, and those of sustainable use, whose ecosystem wealth can be shared with traditional communities) direct financial investments to fauna, flora, and deforestation reduction (Speak et al., 2015). Few efforts are directed toward strengthening human dignity, specifically economic possibilities and meeting food needs (Freitas et al., 2021).

In addition, the weak agroextractive economy has not been able to sustain thousands of families, because production practices are rudimentary and the market does not trade forest products with prices that acknowledge the value of biodiversity (Barbosa & Moret, 2015; Berg & Ostry, 2017). The lack of connection between conservation and development causes high economic demands, food insecurity, rural exodus, poverty, and extreme poverty (Florentino et al., 2016; Cucchiella et al., 2017; Maciel et al., 2018; Medina & Barbosa, 2016; Freitas et al., 2018).

Currently, the state has not yet established a policy capable of reducing the socioeconomic uncertainty of the RESEXs system. For example, the Ministry of the Environment (MMA) launched a program, "Adopt a Park" with the following environmental objectives: consolidation and implementation of management plans, monitoring and environmental recovery of degraded areas, support for forest fire prevention and fighting, support the prevention and combat of illegal deforestation, and infrastructure investments and maintenance of federal CUs (Decree nº 10.623/21).

Furthermore, a public document ensures that more than 40 civil society organizations have classified the program as an attempt to promote the dismantling of social and environmental public policy and to boost the privatization and financialization of nature (Aberta, 2021). It is more coherent to interpret the program, "Adopt a Park," as an attempt by the federal government to offer private capital a way to positively link its brand to the preservation of the Amazon.

Based on these statements, we raise the following questions: Why are local inhabitants not recognized by the state for services provided to environmental conservation? Why are investments directed only to forest fauna and flora? Accordingly, the aim of this study was to evaluate whether the actions of the national state are capable of promoting socioeconomic development and sustainably maintaining man-fauna-flora in the Amazon RESEXs. This study advances the understanding of socioeconomic relations, the behavior of national state institutions, and the elements that influence the productive culture of traditional communities.

This paper is systematized into four sections. First, we present the materials and methods, specifically the research subjects, study design, specific procedures, and data analysis. Second, we analyze the principal results. Third, we discuss and validate our results. Fourth, we present our recommendations.

2. Political Elements of the "Adopt a Park" Program

On February 9, 2021 (Decree No. 10.623), the Brazilian government launched the "Adopt a Park" program for Brazilian and foreign individuals and legal entities. The program is coordinated by the Chico Mendes Institute for Biodiversity Conservation (ICMBio) and the Ministry of the Environment (MMA), and aims to contribute to the conservation, recovery, and improvement of federal CUs. Donations of goods and services by the adopter must be to integrate in the work plan and submitted to ICMBio. The actions may be implemented directly or by third parties hired by the adopter (Article 8); however, the choice of CUs able to integrate the program is the responsibility of the MMA.

Interested parties should express enthusiasm through a public call process (Article 9). If ICMBio accepts the proposal, the adopter receives the right to install identifying elements, insert the name in the signs, and the possibility of holder as a "partner company" of the region where the CU has been adopted. The work plan states that the duration of the adoption may reach five years, which may be extended if there is a preference for the adopter.

MMA Ordinance No. 73, on February 25, 2021, assigns the minimum values of BRL 50.00 per hectare to national individuals and legal entities, and ten euros to foreigners. The territorial coverage covers 132 marine and terrestrial CUs in the nine states of the Legal Amazon, equivalent to 64.4 million hectares and estimated to be worth R$ 3.218.478.450 (MMA, 2021).

The program was guided by proposals similar to the states of São Paulo (Portaria Normativa, FF/DE nº. 306/2021), Rio Grande do Sul (Decree No. 36.722/1996) and Rio de Janeiro (Law No. 5788/2014), but the program's objectives became the target of criticism from civil society organizations. For example, the World Wide Fund for Nature (WWF) explains the lack of transparency in the design and choice of UCs (WWF, 2021). The National

Council of Extractive Populations (CNS) filed a request to the MMA requesting the exclusion of RESEXs from all UCs fit for adoption (CNS, 2021). The reasons are based on the absence of prior consultation, the existence of management plans, and deliberative councils that define the ways of using RESEXs.

At the launch of the program, the president of Carrefour Latin America was present (Correio Braziliense, 2021). The group's interest in the adoption of a CU in the Amazon became public by MMA prior to the launch of the program. On the day of the officialization (February 9, 2021), the Carrefour Brazil group signed a term of adoption of the Cuniã Lake RESEX for R$ 3.7 million. Carrefour Brazil's communiqués deserve some examination. The company reports the signing of the adoption term; however, only on March 4, the call for legal proceedings became public. To configure a protocol of intent, Carrefour Brazil had access to the Decree, the list of CUs, and the value of the investment provided before the information became public.

Additionally, on March 2, the second company to sign the protocol of intentions with MMA was Genial Investimentos (MMA, 2021), the object of the adoption protocol of the Area of Relevant Ecological Interest Biological Dynamics Project of Forest Fragments (AREI). These actions demonstrate a lack of transparency, ethics, and responsibility for the public interest.

3. Material and Method

3.1 Research Subjects

The study was conducted in two RESEXs in two Brazilian states, Alto Juruá (Marechal Thaumaturgo, Acre) and Rio Ouro Preto (Guajará Mirim, Rondônia). Based on Decree nº 98.863, the RESEX Alto Juruá (Figure 1) was founded on January 23, 1990, with 537,946 hectares, between the geographical coordinates: 08 45' and 09 45' South latitude and 720 00' and 730 00' longitude to the west (ICMBio, 2021).

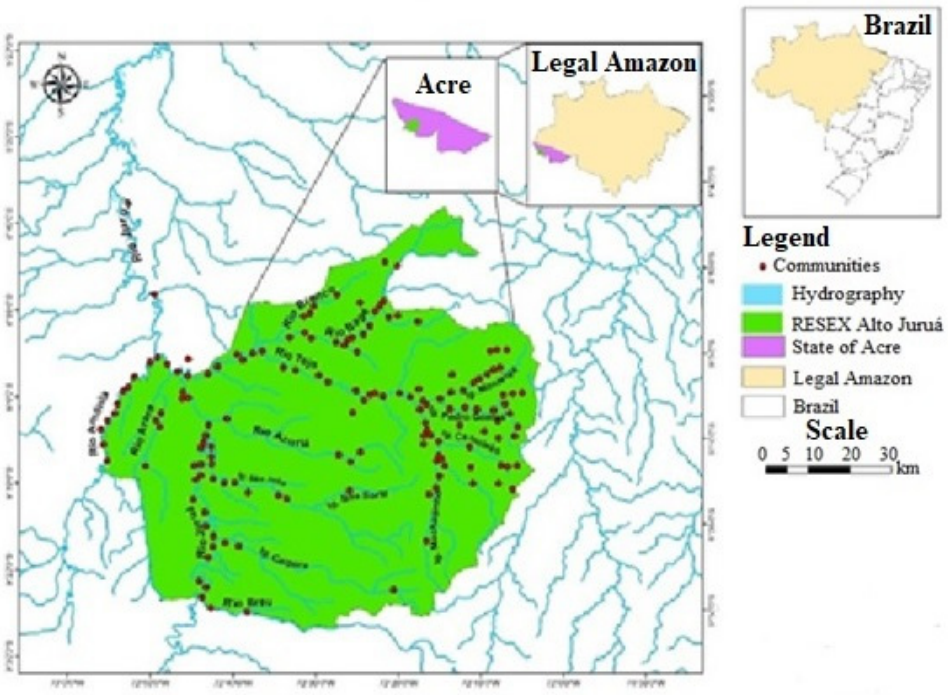

Figure 1. Area of the RESEX Alto Juruá and its spatial elements

Source: The author (2017)

According to the latest Demographic Census, 4,170 inhabitants live in the RESEX Alto Juruá, equivalent to 1.042 families in 80 communities, on the banks of the Juruá, Tejo, Amônia, Breu, and Manteiga Rivers (IBGE, 2010). They are families that develop productive activities of cassava flour, tobacco, small animal husbandry, cattle, and buffaloes. Moreover, both river fish and wild animal hunting have become scarce, which makes it impossible to rely on these protein sources for the whole year.

The RESEX Rio Ouro Preto (Figure 2) was founded on March 13, 1990 (Decree No. 99.166) with 204,631

hectares, among the respective geographical coordinates: 64º 18 'e 65º 16' West and 10º 35 'e 11º 03' South (ICMBio, 2021).

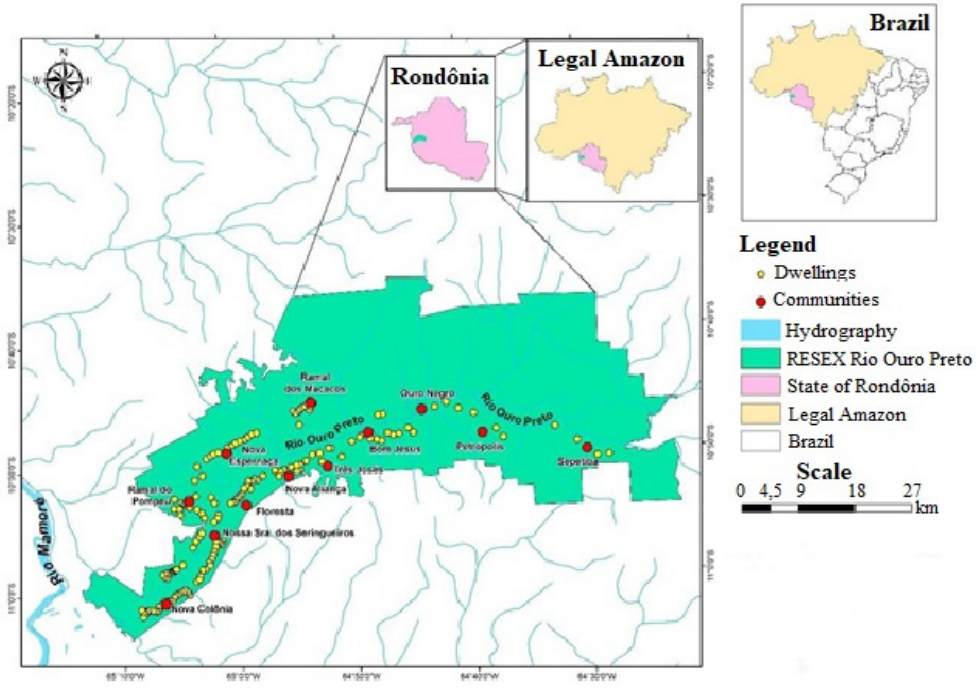

Figure 2. Area of RESEX Rio Ouro Preto and its spatial elements

Source: The author (2017)**.**

In the RESEX River Ouro Preto, there are 699 inhabitants, specifically 172 families distributed in 12 communities, along back roads, and the banks of the Ouro Preto river, the main river that crosses the RESEX (IBGE, 2010). The inhabitants collect Brazil nuts, produce cassava flour, breed small animals, cattle, and buffaloes, and sporadically go hunting and fishing because of the scarcity of the two protein sources that plagues RESEX.

3.2 Study Delineation

This study is based on the method of association by interference between variables, specifically in the economic, social, and institutional groups (Elster, 1994; Volpato, 2013). To the extent that the state (institutional group) does not assist with technologies to strengthen extractive production, and there is no organization of associations, cooperatives, and articulation of markets for the commercialization of extractive products, the results are too unreliable to provide the household income of families (economic group).

There are at least two causes of market failure related to this reasoning. The first is imperfect information, and the second is inappropriate government intervention (Kahn & Rivas, 2014). To the extent that inappropriate government actions exist, which may be direct interventions or not, they can potentiate problems such as those presented here. One way for this to happen is through recognition by the residents of the RESEXs, especially by identifying the inadequacy of the policies applied. Such a situation may lead them to make choices incompatible with the objectives of these policies. Additionally, the lack of adequate planning and knowledge of reality contributes to the asymmetry of information, further expanding market failures and generating negative externalities.

Similarly, when the state does not maintain transportation networks, technical assistance, technology to agricultural products, and the provision of rural credits, there is both a fall in production and an improvement in the quality of life of the inhabitants (social group). However, the state prohibition on the creation of cattle ranching in RESEXs hinders the consumption of meat and milk by families (food security).

Clearly, there is a causal relationship or direct dependence between variables of social and economic groups and institutional, so that socioeconomic interference makes it prevents to obtain food security, clothing, clinical treatment of diseases, and an improvement in the living conditions of local inhabitants.

3.3 Specific Procedures

The RESEXs Alto Juruá and Rio Ouro Preto were selected for their ability to offer relevant contributions. These contributions include the historical and cultural potential of traditional communities, the possibility of evaluating public policies for education, health, productive activities, living conditions, income, richness of fauna and flora, and human pressure on natural and environmental resources.

Entry into a RESEXs was made only after approval of the research project by the Biodiversity Authorization and Information System (SISBIO) of the ICMBio. Data were collected through the completion of semi-open questionnaires and audio interviews with 150 male and female chief members of families (identified by rural producers), of which 99 inhabited the RESEX Alto Juruá and 51 inhabited the RESEX Rio Ouro Preto.

The questionnaires contained 18 questions related to income from the productive extraction, agriculture, cattle, income transfers, retirement, and formal and informal work. Some questions addressed the organization of associations, cooperatives, articulation of products to markets, technical assistance, transportation, technologies for productive support, and implementation of mini-factories for productive strengthening.

Data were collected during February to April 2019, and the trips to the RESEXs and communities took place through commercial airplanes, 4x4 pickup trucks (hard-to-traverse roads), and speedboats (fast river transport).

The survey was conducted in 20 of 80 communities of the RESEX Alto Juruá (Tartaruga I, Tartaruga II, Pau Brasil, Foz do Piranha, Arenal, Fazenda Cachoeira, Belforte, Adão e Eva, São Luiz, Bandeirante I, Bandeirante II, Pedra Alta, São José, Bethânia, Tapuã, Acuriá I, Acuriá II, Jardim da Palma, Matrinchã and Foz do Tejo), and 09 out of 12 communities of the RESEX Rio Ouro Preto (Alfredo Carneiro, Seringueiro, Pompeu, Nova Aliança, Bom Jesus, Três Josés, Ouro Preto, Floresta and Nossa Senhora do Seringueiro). The choice criterion was based on simple random sampling, and all communities had equal probabilities at the time of the survey.

The entrance to the RESEX Alto Juruá is exclusively by river, the communities are distant from each other, and the rivers have low volume in the Amazon summer, which makes access to the communities impossible. At the RESEX Rio Ouro Preto, access is divided into river and land, which facilitates land transport in the summer, but makes river access difficult. For these reasons, we chose to conduct the research only during the time of the floods – the Amazonian winter. Although the roads are difficult to traverse at this time, 4x4 pickup trucks can still reach most communities.

3.4 Data Analyses

Data were collected through a qualitative approach, specifically using observations, informal conversations, and filling out forms using a voice recorder, when authorized by the residents. This procedure was fundamental for understanding the relations with the territory, state, knowledge and experience of each interviewee.

To complement the qualitative approach, the responses obtained in the survey forms were transformed into quantitative assessments. This procedure was performed through descriptive statistical frequency analysis, at which time mean, median, fashion, standard deviation, variance, and correlation tests were performed.

For the elaboration of the maps, the following sources were used: management plan and use of RESEXs, the National Institute of Space Research (INPE/PRODES), the Brazilian Institute of Geography and Statistics (IBGE), the National Water Agency (ANA), along with vector data analysis, drainage matrix, locality, and hydrography.

4. Results

Figure 3 shows the interviewees' opinion of monthly household income and some needs and challenges for strengthening plant extraction.

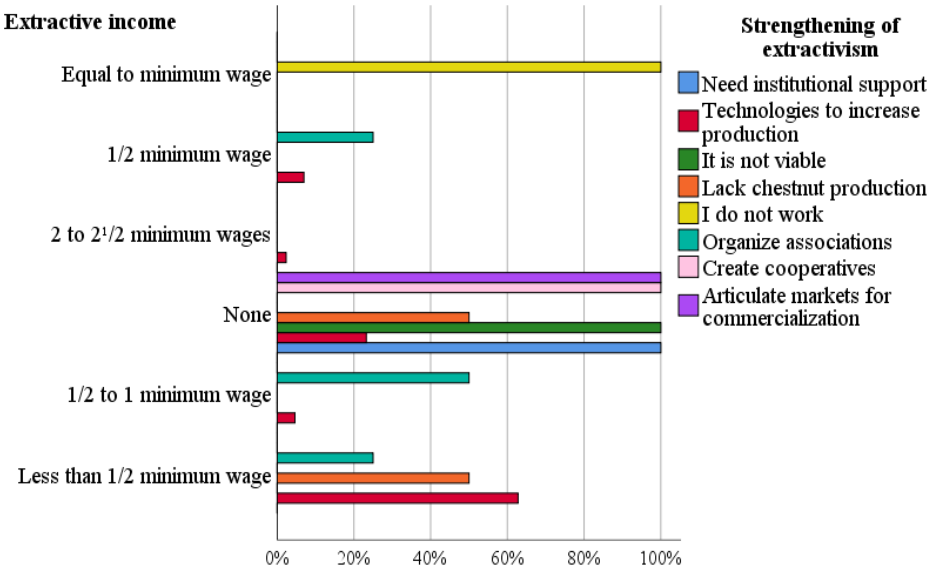

Figure 3. Opinion of the interviewees in relation to household income, needs and challenges of the residents of the RESEXs Alto Juruá and Rio Ouro Preto

Source: The authors (2019).

According to respondents, extraction was an important activity because it suited the creation of the RESEXs and caused less environmental impact than other productive activities. However, most do not work with extractive production due to low production of nuts (the harvest takes place between October and April and oscillates every year), economic unviability, lack of technologies to strengthen production, and lack of institutional support. The current situation of productive activity occurs because the state does not promote incentives for human, financial, and technological capital to ensure subsistence and competitiveness with other activities.

Next, the productive activity of agriculture demonstrates monthly household income and some possibilities aimed at reducing the impacts on impacts on biological diversity and improving the living conditions of residents (Figure 4).

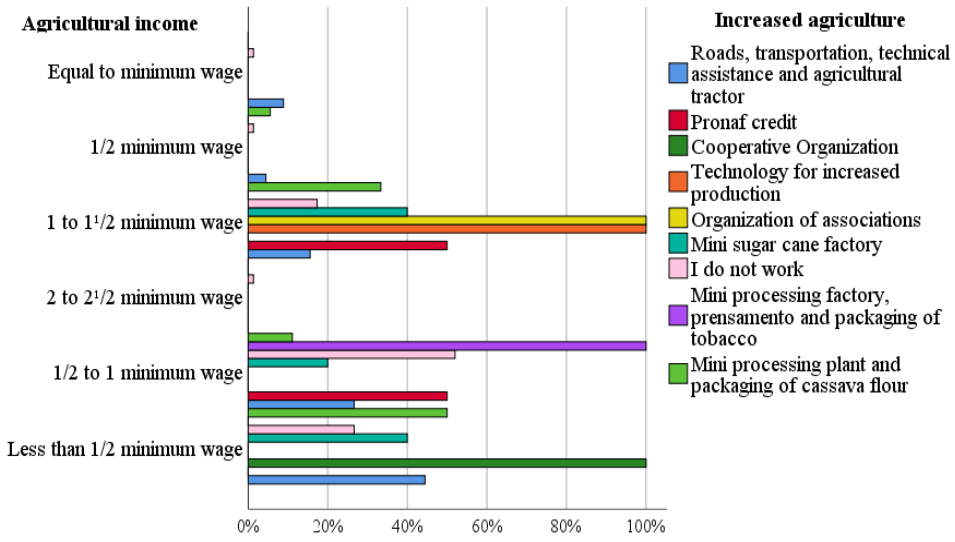

Figure 4. Opinion of the interviewees in relation to household income of agricultural activity and some recommendations for increased activity in the RESEXs Alto Juruá and Rio Ouro Preto

Source: The authors (2019).

Based on the experiences of the interviewees, the monthly income of household agricultural production reaches 1¹/² minimum wage and comes from the production of cassava flour, tobacco, brown sugar, rice, beans, corn, and potatoes. According to the interviewees, household income can be increased if the following are available: good roads, transport, technical assistance, agricultural tractors, cooperative organization, the National Program for Strengthening Family Agriculture (PRONAF) credits, agricultural technologies, and mini sugar cane factories (there is relevant production to meet requests). This reality characterizes the lack of institutional support for residents of the RESEXs.

Figure 5 represents the productive activity of cattle, showing monthly household income and some advantages and disadvantages declared by residents.

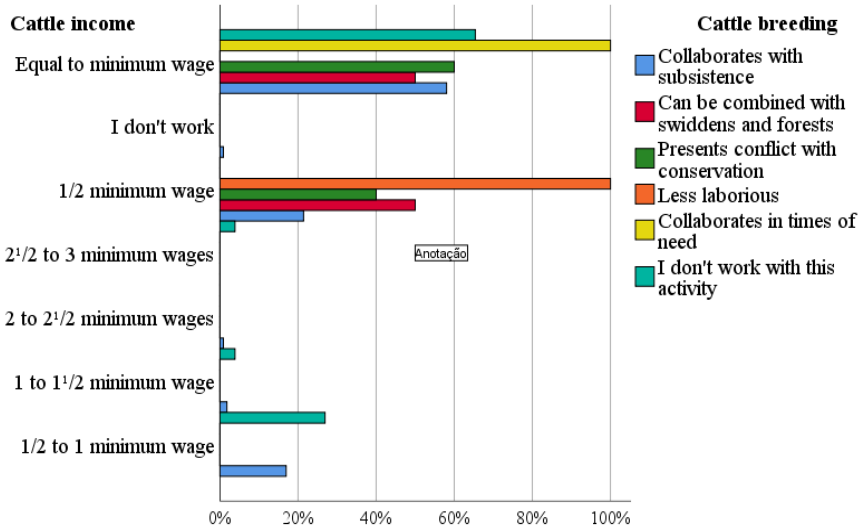

Figure 5. Opinion of the interviewees in relation to the family income of bovine and buffalo activity, and advantages and disadvantages of cattle in the RESEXs Alto Juruá and Rio Ouro Preto

Source: The authors (2019).

In the opinion of respondents, the monthly household income of bovine cattle equaled 1 minimum wage. Although this activity is in conflict with environmental conservation, it is of great importance for residents because it collaborates in the time of needs (milk and meat), it can be combined with swiddens and forests, and contributes to the subsistence of families.

In complementarity the income of productive activities, Figure 6 shows the income transfers of the Family Grant Program (PBF) and Green Scholarship Program (PBV), both managed and implemented by the Brazilian Federal Government.

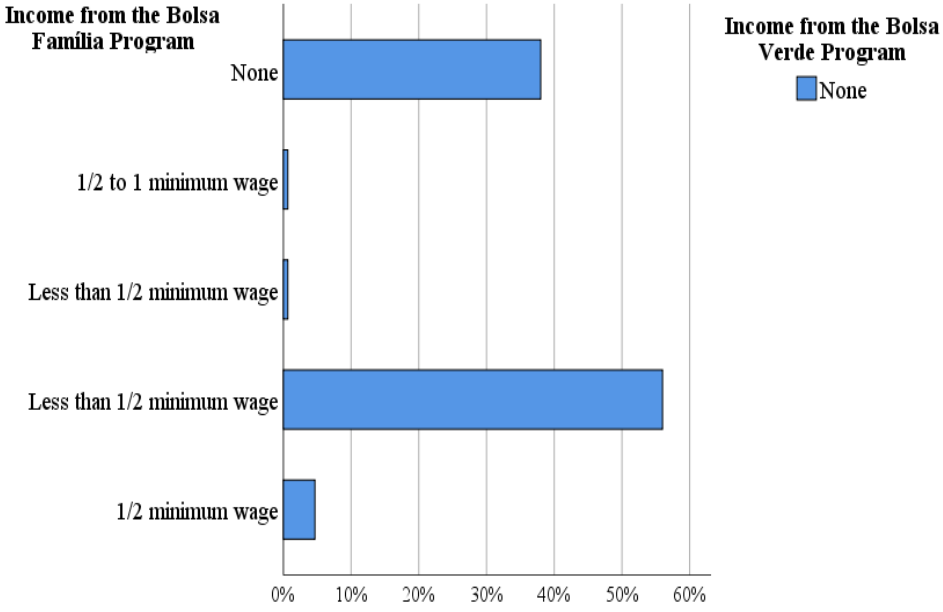

Figure 6. Opinion of the interviewees in relation to the income transfers of the Family Grant Program and Green Scholarship Programs in the RESEXs Alto Juruá and Rio Ouro Preto

Source: The authors (2019).

Based on respondents, those contemplated by the PBF (directed to poverty and extreme poverty throughout the country) receive financial resources of less than half minimum wage. The PBV was created to encourage environmental conservation of forests in rural Brazil. The value of BRL 300,00 was passed on (the PBV was closed on 13.01.2020) every three months to a small number of families living in the six Brazilian biomes (Amazon, Caatinga, Cerrado, Atlantic Forest, Pampa, and Pantanal). The PBF continues to serve families who obtain *per capita* monthly income between BRL 89,00 and BRL 178,00, and children and adolescents (up to 17 years) must be enrolled in public schools.

Another source that contributes to some families' income in the RESEXs is retirement payment, which benefits workers who live in the countryside and perform dynamics in the parameters of the family economy (Figure 7). Only men aged 60 years and women over 55 years are entitled to benefit from a fixed amount of 1 minimum wage. By contribution time, it amounts to 35 years for men and 30 years for women.

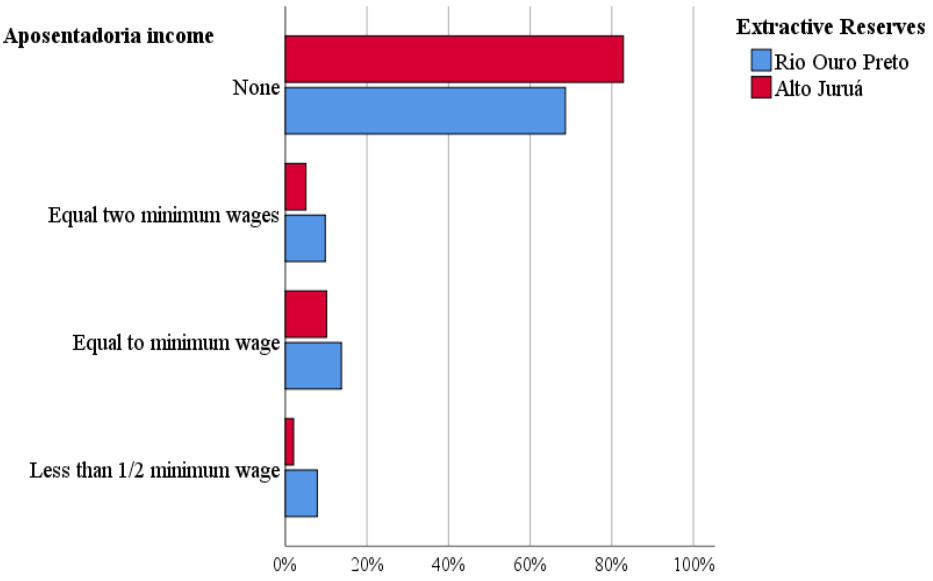

Figure 7. Opinion of the interviewees in relation to retirement by age, contribution time, and rubber soldiers with monthly benefit lifetime in the RESEXs Alto Juruá and Rio Ouro Preto

Source: The authors (2019).

Although some retirees receive an income equal to 1 minimum wage, they correspond to retirees by age (60 and 55 years) or contribution time (35 and 30 years). The few with 2 minimum wages refer to the remaining workers (or widows and dependents) who extracted latex from rubber trees (*Hevea brasiliensis*) during World War II in the Brazilian Amazon and guaranteed the monthly lifetime benefit. Generally, widowed retirees live with children, and retirement income contributes to household income.

Wage work (formal) corresponds to the category of teachers and community health agents who live and perform professional work in the communities of the RESEXs. Based on the field information, the income ranges from 1 to 3 minimum wages received by 8% of the interviewees in this study. Self-employed workers (informal), specifically those who work on extraction and in the swidden, amount to 16% of the interviewees and earn incomes of less than one half of the minimum wage.

Moreover, the RESEXs Alto Juruá and Rio Ouro Preto are on the list of CUs and await the adopters, but so far there has been no expression of interest from investors. By the end of June 2021, ICMBio made public the names of eight companies that expressed interest in the adoption of CUs (Table 1).

Table 1. List of CUs, hectares, adopters, financial investments, and dates of institutional processes

Date of the Protocol of Intent	Date of Results Minutes according to Public Call notice	Conservation Units	Hectares	Adopters	Value of investments R$
09/02/2021	06/05/2021	Lago do Cuniã RESEX – RO	75,877	Carrefour Commerce and Industry LFDA	3,793,850,00
02/03/2021	08/04/2021	Dinâmica Biológica Fragmentos Florestais ARIE - AM	3,180	Genial Investiments CVM	159,000,00
17/03/2021	08/04/2021	São João da Ponta RESEX – PA	3,408	COOPECREDI Guariba – Credit Cooperative	170,400,00
25/03/2021	13/04/2021	Chocoaré-Mato Grosso RESEX – PA	2,783	Geoflorestas Soluções Ambientais Ltda	141,000,00
29/03/2021		Seringal Nova Esperança ARIE – AC	2,574	Agroindustrial Cooperative (COPLANA)	128,700,00
05/04/2021		do Quilombo Flexal RESEX – MA	9,338	HNK BR Beverage Industry Ltd. – Heineken	466,900,00
14/04/2021		Marinha Cuinarana – MA RESEX	11,017	MRV Engineering and Participations AS	466,900,00
29/04/2021		Javari Buriti ARIE – AM	13,177	Coca Cola	658,850,00

Source: MMA adapt (2021)

This information shows that there are no programatic affinities between the companies and the CUs chosen by them, except for Carrefour, where the CU choice criterion occurred because of the investments required to carry out the adoption. Those who were able to express their interest first had the opportunity to choose both the CUs and the lowest investment values. That said, the return that the program offers to the users is the same and does not depend on the allocated investment, since this behavior follows the logic of cost accounting – benefit.

5. Discussion

Here, we find that households' generated income is low to ensure subsistence, because only few families develop extraction, agriculture, and livestock husbandry in a coordinated way. The transfers of income from the Programs Families Scholarship and Green Scholarship are irrelevant to the total composition of the income of the communities, as well as the isolated cases of retirees, public servants (formal), and formal workers (day workers) do not provide food security for families.

The weakening of the prices of extractive products (Silva & Paraense, 2019), the decline in the production of rubber and Brazil nuts, the unavailability of technological innovations (Maciel et al., 2018), the lack of financial support in the form of subsidies, and the absence of public policies were the main causes of low incomes (Maciel et al., 2018; Lopes et al., 2019). These findings are pertinent to what we find in the field; however, we add that the extraction of Brazil nuts presents inelasticity of supply and demand, which means that there is variation in production and price each year. This phenomenon occurs because of the increase in temperature and decrease in precipitation, which impair the flowering and formation of fruits.

Researchers, environmentalists, and activists consider extraction and its associated practices ecologically sustainable (Gaoue et al., 2016; Homma, 2015); however, this productive activity failed to build a virtuous circle and add high value to products in the market (Jaramillo-Giraldo et al., 2017). The field showed the potential of extraction, but market prices caused the maintenance and development of systems to decline. Wear reduction,

financial investments, and the inclusion of projects with technological innovations in production processes would enable lasting expansion of extraction and greater income for traditional communities.

The absence of these strategic elements has caused traditional communities to change their non-timber productive resources to productive activities of agriculture and cattle (Peres, 2011; Walter et al., 2016; Lagesse & Thondhlana, 2016; Awasthi et al., 2016; Collins & Mitchard, 2017; Camilotti et al., 2020). The choice of agents creates expectations and involves contractual relationships and controls in the productive processes of economic activities (Harff & Lamarche, 1988; Cochet, 2008; Fiani, 2011; Schneider, 2016). Such findings in the literature are still relevant, according to observations in RESEXs communities. Therefore, we must ensure that agriculture and livestock activities (in small amounts) do not have technologies and present problems similar to those of extraction. However, agricultural diversity, the high price of beef and buffalo, and market facilities stimulate the migration of producers to these activities, which represents an environmental risk.

In terms of the market, there are many verbal agreements and "verbal contracts" that build instruments of protection, social networks, and the expectations of agents (Beckert, 2010). Commercial transactions are not built solely on the logic of economic rationality, since many agents choose to negotiate with firms with lower financial returns, because they consider elements of proximity, a short period of time, knowledge, or the relationship of trust at the time of exchange (Wesz Junior, 2019). This was typical in the RESEXs, specifically because they are small producers seeking subsistence and sale of surplus. When livestock farmers need to sell some animals, they prefer that marketing takes place at home, so as not to worry about logistics and other expenses.

In a complementary way, agroforestry activities can be combined with minimal environmental impact (Homma, 2010; Klimas et al., 2012), obeying the rules, territorial limits, environmental resources, and socioeconomic transactions (Smelser & Swedberg, 2005). These arguments characterize the needs and desires of local communities. For this, institutional partners and the inclusion of technologies appropriate to each productive activity are indispensable, so that the impacts ecosystem are minimal and the products obtain high added value.

These opportunities increase productivity, promote the domestication and cultivation of plants, replace imports (internal and external) of tropical products (rubber, palm oil, cocoa, rice, milk, poultry, eggs, vegetables, etc.), encourage the recovery of areas that should not have been deforested (Homma, 2021) and guarantee livelihoods for local inhabitants (Spínola, 2019; Calegare & Higuchi, 2019). Effectively, the inhabitants of the RESEXs face everyday challenges to ensure food security and income. There is no public policy of support or subsidy for the development of these productive activities.

For example, at the Chico Mendes RESEX, more than 50% of the families have an income level of less than 1 minimum wage; 35% belong to the economic groups of classes C, D, and E; about 15% are below the poverty line, living daily with food insecurity (Maciel et al., 2018). This reality is compatible with the RESEXs under study, in which poverty and extreme poverty predominate. A situation in which the hunting of permitted wild animals becomes scarce, fish from rivers, stream lands, and lakes occur in short annual periods, establishing the low socioeconomic conditions of families.

Rural retirement softens food expenses, but retirees work in productive activities, as they consider it insufficient to live only on retirement payments (Boscardin & Spanevello, 2019). Another motivation for work is the loss of rural credit after retirement and increased costs, particularly because beneficiaries live with children, grandchildren, and other family members in the RESEXs. Therefore, there are professionals who perform waged activities (formal workers) (Sousa, 2019), while others are identified as daily workers (formal workers) (Souza & Macedo, 2020). In the RESEXs, few education employees (teachers, cooks, etc.) and health (health technicians, health agents, etc.) correspond to the employees of municipal governments. Day laborers (pay per day) and contractors (payment per negotiated service amount) characterize weeding workers, fence repairs, and so on.

In general terms, it is not the income transfers of the Family Grant and Green Scholarship programs that will help vulnerable families to have access to instrumental freedoms (food well, rest, etc.), to achieve substantive relief (to be in good health) (Southier & Triches, 2020; Pinheiro, 2012). The non-effectiveness of changes in structures and the low monetary value used in income transfer programs caused this type of public policy to have little or no influence on class ascension (Cavaler et al., 2020). Therefore, it is fundamental to define priorities with the participation of traditional communities, so that public policies establish a balance between the conservation of natural resources and improvement in the living conditions of the inhabitants.

It is not the program, “Adopt a Park,” which will save the lives of thousands of families from poverty and extreme poverty, since it is characterized as a new form of environmental assistance. Specifically, financial resources are planned for the maintenance of environmental resources and not for the well-being of people. Even with the possibility of high investments in the environments of the RESEXs, it is a mistake the state decision to ignore the

local inhabitants, because they are in daily contact with nature. The established financial allocation should be controlled by population criteria and not by the diversity of the fauna and flora of the CUs.

6. Recommendations

In the Legal Amazon, there are about 750,000 small producers, representing 83% of the total of producers, who are in need of agricultural technologies, new alternatives with the domestication of biodiversity products, fish farming, increase the productivity of labor and land to exit of "agriculture of stub," technical assistance, among others. The use of technologies in the production processes of extraction, management, and processing cooperate with the reduction of deforestation of primary forests, better use of secondary vegetation, and additional value to extractive products (market potential), agriculture, and cattle of the RESEXs.

The bioeconomy as presented will benefit only some pharmaceutical cosmetics industries and the production of input. In many national and international events, the bioeconomy in the Amazon became a "buzzword," notably in reference to the collection of forest products and their transformation into cosmetics, drugs, natural insecticides, biojuices, etc., as a way to leverage the region and end deforestation and burning. The data from this survey have revealed another reality.

Acknowledgments

We thank the Coordination for the Improvement of Higher Education Personnel (CAPES) for financial support during the postdoctoral internship (Regional University of Blumenau, FURB). We also acknowledge the financial cooperation provided by the National Council for Scientific and Technological Development (CNPQ).

References

Awasthi, N., Kumar, U., Qureshi, Q., Pradhan, A., & Jhala, Y. V. (2016). Effect of human use, season and habitat on ungulate density in Kanha Tiger Reserve, Madhya Pradesh, India. *Regional Environmental Change, 116*(1), 31-41.

Barbosa, M. A. M., & Moret, A. S. (2015). Produção e comercialização da castanha do brasil: economia e disponibilidade financeira (subsistência das famílias residentes em RESEXs). *Revista de Gestão e Sustentabilidade Ambiental, 4*(2), 413-428.

Beckert, J. (2010). How do fields change? The interrelations of institutions, networks and cognition in the dynamics of markets. *Organization Studies, 31*(5), 605-627.

Boscardin, M., & Spanevello, R. M. (2019). A importância da aposentadoria rural para agricultores familiares sem sucessores no norte do Rio Grande do Sul: o município de Frederico Westphalen. *Revista Estudo & Debate, 26*(2), 35-51.

Brasil. (1966). Decreto nº 36.722, de 05 de junho de 1996. *Regulamenta o Programa Adote um Parque*. Retrieved July 1, 2021, from https://www.icmbio.gov.br/cepsul/images/stories/legislacao/Decretos/1996/dec_rs_36722_1996_programa_adoteumparque_rs.pdf

Brasil. (2014). Lei nº 5788, de 23 de setembro de 2014. *Institui Programa Adote o Rio*. Retrieved July 1, 2021, from https://leismunicipais.com.br/a/rj/r/rio-de-janeiro/lei-ordinaria/2014/578/5788/lei-organica-rio-de-janeiro-rj

Brasil. (2019). Portaria Normativa FF/DE nº 306/2019. *Institui o Programa de Parcerias com a Iniciativa Privada da Fundação Florestal de São Paulo e regulamenta os procedimentos para recebimento de doações pela Fundação Florestal*. Retrieved July 1, 2021, from https://smastr16.blob.core.windows.net/fundacaoflorestal/2019/05/306-pn-doacao.pdf

Brasil. (2021). Decreto nº 10.632, de 9 de fevereiro de 2021. *Institui o Programa Adote um Parque*. Diário Oficial da União: edição 28, seção 1, Brasília, 2021. Retrieved June 17, 2021, from https://www.in.gov.br/en/web/dou/-/decreto-n-10.623-de-9-de-fevereiro-de-2021-302915383

Calegare, M. G. A., & Higuchi, M. I. G. (2018). Participatory action research in an Amazon protected area: Lessons for community psychology in Northern Brazil. *Journal of Comunity & Applied Social Psychology*, 1-12. https://doi.org/10.1002/casp.2379

Camilotti, V. L., Pinho, P., Brondízio, E. S., & Escada, M. I. S. (2020). The importance of forest extractive resources for income generation and subsistence among Caboclos and colonists in the Brazilian Amazon. *Human Ecology*, 1-33. https://doi.org/10.1007/s10745-020-00127-7

Carta Aberta. (2021). *Saldão do governo Bolsonaro sobre as unidades de conservação*! Retrieved July 1, 2021,

from https://www.cartadebelem.org.br/saldao-do-governo-bolsonaro-sobre-as-unidades-de-conservacao-organizacoes-e-movimentos-sociais-se-mobilizam-contra-o-programa-adote-um-parque/

Cavaler, C., Vitali, M. M., Landro, M., Quadros, L. F. A., Castro, A., & Soratto, J. (2020). Representações sociais de "pobreza" e "bolsa família" para mulheres beneficiárias de programas de transferência de renda. *Barbaróí, 57*, 119-140. https://doi.org/10.17058/barbaroi.v0i57.14975

CEPAL. Comisión Económica para América Latina y el Caribe. (2018). *Observatório demográfico*. Santiago: Cepal.

CNS. Conselho Nacional das Populações Extrativistas. (2021). *Requerimento do CNS ao Ministro do MMA*. Retrieved July 1, 2021, from https://institutoestudosamazonicos.org.br/wp-content/uploads/2021/04/REQUERIMENTO-DO-CNS-AO-MINISTRO-DO-MMA-23.03.21.pdf

Cochet, H. (2008). Vers une nouvelle relation entre la terre, le capital et le travail. *Etudes foncières, 134*, 24–29.

Collins, B. M., & Mitchard, A. T. E. (2017). A small subset of protected areas are a highly significant source of carbon emissions. *Scientific Reports, 7*(41902), 1-11. https://doi.org/10.1038/srep41902

Correio Braziliense. (2021). *Bolsonaro pede ajuda a empresas privadas para manutenção de parques na Amazônia*. Retrieved July 1, 2021, from https://www.correiobraziliense.com.br/politica/2021/02/4905638-bolsonaro-pede-ajuda-a-empresas-privadas-para-manutencao-de-parques-na-amazonia.html

Costa, F. A. (2019). Dinâmica agrária na Amazônia, situação reprodutiva e pobreza: uma contextualização estrutural. *Papers do NAEA, 28*, 11-70.

Cucchiella, F., Berardinis, P., Koh, L., & Rotilio, M. (2017): "Planning restoration of a historical landscape: a case study for integrating a sustainable street lighting system with conservation of historical values". *Journal of Cleaner Production, 165*, 579-588.

Elster, J. (1994). *Peças e Engrenagens das Ciências Sociais*. Rio de Janeiro: Relume Dumara.

Fiani, R. (2011). *Cooperação e conflito: instituições e desenvolvimento econômico.* Rio de Janeiro: Elsevier.

Florentino, G. D., Silva, D. C. C., & Freitas, J. S. (2016). Análise das Reservas Extrativistas a partir da economia ecológica. *Observatorio de La Economía Latinoamericana, 6*, 1-10.

Freitas, J. S., Farias Filho, M. C., Homma, A. K. O., & Mathis, A. (2018). Reservas Extrativistas sem extrativismo: uma tendência em curso na Amazônia? *Revista de Gestão Social e Ambiental, 12*(1), 56-72. http://dx.doi.org/10.24857/rgsa.v12i1.1388

Freitas, J. S., Florit, L. F., Farias Filho, M. C., & Homma, A. K. O. (2021). Social weaknesses versus environmental conservation of extractive reserves in the Amazon. *Caderno de Geografia, 31*(64), 225-248. htpps://doi.org/10.5752/p.2318-2962.2021v31n64p225

Gaoue, O. G., Jiang, J., Ding, W., Agusto, F. B., & Lenhart, S. (2016). Optimal harvesting strategies for timber and non-timber forest products in tropical ecosystems. *Theoretical Biology, 9*, 287-297. https://doi.org/10.1007/s12080-015-0286-4

García, L. A. C., & Acout, R. B. (2016). El sector artesanal en México y el combate contra la pobreza. *Transitare, 2*(2), 233-250.

Harff, Y., & Lamarche, H. (1988). Le travail en agriculture: nouvelles demandes, nouveaux enjeux. *Economie rurale, 244*, 3–11.

Homma, A. K. O. (2010). Política agrícola ou política ambiental para resolver os problemas da Amazônia? *Revista de Política Agrícola, 19*(1), 99-102.

Homma, A. K. O. (2015). Em favor de uma nova agricultura na Amazônia. *Terceira Margem Amazônia, 1*(5), 19-34.

Homma, A. K. O. (2021). Amazônia: venda de serviços ambientais ou de atividades produtivas? *Revista Terceira Margem Amazônia, 6*(16), 23-34. http://dx.doi.org/10.36882/2525-4812.2021v6i16.ed.esp.p23-34

IBGE. Instituto Brasileiro de Geografia e Estatística. (2010). *Censo demográfico 2010*. Retrieved June 15, 2021, from https://www.censo2010.gov.br/sinopse/index.php?dados=p6&uf=00

IBGE. Instituto Brasileiro de Geografia e Estatística. (2019). *Síntese de indicadores sociais*: uma análise das condições de vida da população brasileira: 2019. Rio de Janeiro, 2019. 130 p. (Estudos e pesquisas. Informação demográfica e socioeconômica; n. 40). Retrieved June 17, 2021, from

https://biblioteca.ibge.gov.br/visualizacao/livros/liv101678.pdf

Jaramillo-Giraldo, C., Soares- Filho, B., Ribeiro, C. M. S., & Gonçalves, C. R. (2017). Is it possible to make rubber extraction ecologically and economically viable in the Amazon? The southern Acre and Chico Mendes Reserve case study. *Ecological Economics, 134*, 186-197.

Kahn, J. R.., & Rivas, A. A. (2014). A economia e a falha dos mercados. (Org.) *Economia e valoração de serviços ambientais utilizando técnicas de preferências declaradas* (pp. 137-173). Manaus: Editora da Universidade Federal do Amazonas.

Klimas, C. A., Cropeer Jr., W. P., Kainer, K. A., & Wadt, L. H. O. (2012). Viability of combined timber and non-timber harvests for one species: a carapa guianensis case study. *Ecological Modelling, 246*, 147-156. https://doi.org/10.1016/j.ecolmodel.2012.07.022

Lagesse, J., & Thondhlana, G. (2016). The effect of land-use on small mammal diversity inside and outside the Great Fish River Nature Reserve, Eastern Cape, South Africa. *Journal of Arid Environments, 130*, 76-83.

Lopes, E., Soares-Filho, B., Souza, F., Rajão, R., Merry, F., & Carvalho Ribeiro, S. (2019). Mapping the socio-ecology of Non Timber Forest Products (NTFP) extraction in the Brazilian Amazon: the case of açaí (Euterpe precatoria Mart) in Acre. *Landscape and Urban Planning, 188*, 110-117.

López, A. D. C., & Teixeira, E. C. (2020). Efeitos dos investimentos em infraestrutura pública sobre a pobreza e pobreza extrema na América Latina. *Economía, Sociedad y Territorio, 20*(64), 667-692. https://doi.org/10.22136/est20201605

Maciel, R. C. G., Almeida, A. M., & Menezes, H. C. S. (2018). Avaliação econômica da pecuária de gado na RESEX Chico Mendes. *56ª Congresso Brasileiro de Administração, Economia e Sociologia Rural (SOBER*), 29 jul. a 1º de ago. Campinas: Unicamp.

Maciel, R. C. G., Cavalcante Filho, P. G., Araújo, W. S. A., & Oliveira, O. F. (2018). Pobreza, segurança alimentar e autoconsumo na RESEX Chico Mendes. *56ª Congresso Brasileiro de Administração, Economia e Sociologia Rural (SOBER),* 29 jul. a 1º de ago. Campinas: Unicamp.

Maciel, R. C. G., Cavalcante Filho, P. G., Ribeiro, L. N., & Silva, G. S. A. L. (2018). Distribuição de renda e pobreza na RESEX Chico Mendes. *56ª Congresso Brasileiro de Administração, Economia e Sociologia Rural (SOBER)*, 29 jul. a 1º de ago. Campinas: Unicamp.

Maciel, R. C. G., Cavalcanti, F. C. S., Souza, E. F., Oliveira, O. F., & Cavalcanti Filho, P. G. (2018). The "Chico Mendes" extractive reserve and land governance in the Amazon: Some lessons from the two last decades. *Journal of Environmental Management, 223*, 403–408. https://doi.org/10.1016/j.jenvman.2018.06.064

Medina, G. S., & Barbosa, C. W. S. (2016). A questão produtiva nas reservas extrativistas. *Novos Cadernos NAEA, 19*(2), 69-88.

MMA. Ministério do Meio Ambiente. (2021). *Adote um Parque*. Brasília, 2021. Retrieved June 17, 2021, from https://www.gov.br/mma/pt-br/assuntos/areasprotegidasecoturismo/adoteumparque

MMA. Ministério do Meio Ambiente. (2021). *Programa Adote um Parque prepara segunda adoção de parque nacional*. Retrieved July 1, 2021, from https://www.gov.br/mma/pt-br/assuntos/noticias/programa-adote-um-parque-prepara-segunda-adocao-de-parque-nacional

ONU. Organização das Nações Unidas. (2020). *Pobreza extrema aumenta pela primeira vez em 20 anos*. Brasília, 2020 (Centro de imprensa). Retrieved June 17, 2021, from https://brasil.un.org/pt-br/94835-pobreza-extrema-aumenta-pela-primeira-vez-em-20-anos-diz-banco-mundial

Peres, C. (2011). Conservation in sustainable-use tropical forest reserves. *Conservation Biology, 25*(26), 1124-1129.

Pinheiro, M., & Saboya, M. (2012). *As liberdades humanas como base do desenvolvimento: uma análise conceitual de abordagem das capacidades humanas de Amartya Sen.* Rio de Janeiro: Ipea.

PNAD. Pesquisa Nacional por Amostra de Domicílios. (2019). *Síntese de Indicadores Sociais*: em 2019, proporção de pobres cai para 24,7% e extrema pobreza se mantém em 6,5% da população. Brasília, 2019 (Agência IBGE notícias). Retrieved June 17, 2021, from https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/29431-sintese-de-indicadores-sociais-em-2019-proporcao-de-pobres-cai-para-24-7-e-extrema-pobreza-se-mantem-em-6-5-da-populacao

Schneider, S. (2016). Mercados e agricultura familiar. In F. C. Marques, F. C., Conterato, M. A., & Schneider, S.

(Eds.), *Construção de mercados e agricultura familiar: desafios para o desenvolvimento rural*. Porto Alegre: Editora da UFRGS.

Sen, A. (2010). *Desenvolvimento como Liberdade*. Tradução: Laura Teixeira Motta, L. T. São Paulo: Companhia das Letras.

Silva, A. S. O., & Paraense, V. C. (2019). Production chain for brazil-nuts (Bertholletia excelsa Bonpl.) at Ipaú-Anilzinho extractive reserve, municipality of Baião, Pará, Amazonian Brazil. *Revista Agro@mbiente, 13*, 68-80. https://doi.org/10.18227/1982-8470ragro.v13i0.5413

Smelser, N. J., & Swedberg, R. (2005). Introducing economic sociology. *The Handbook of Economic Sociology* (2nd ed.). New Jersey: Princeton University Press.

Sousa, R. B. (2019). Quando o trabalhador assalariado é camponês: um estudo dos agricultores camponeses nos campos de dendê no nordeste paraense. *Campo-Território: Revista de Geografia Agrária, 14*(32), 28-52.

Southier, N., & Triches, R. M. (2020). Programa Bolsa Família: impacto na alimentação e papel da aquisição não monetária no meio urbano e rural. *Interações, 21*(4), 871-884.

Souza, E. F. (2008). *Os polos agroflorestais como política de desenvolvimento rural sustentável em Rio Branco no Acre: da proposição à realidade.* Viçosa: DED/UFV, 2008. 180p. Dissertação (Mestrado em Economia Doméstica) – Universidade Federal de Viçosa.

Souza, R. B., & Macedo, C. O. (2020). Territorialidade camponesa e relações de trabalho no espaço agrário da Amazônia Paraense. *Ciência Geográfica, 24*(3), 11521-1538.

Speak, A. F., Mizgajski, A., & Borysiak, J. (2015). Allotment gardens and parks: provision of ecosystem services with na emphasis on biodiversity. *Urban Forestry & Urban Greening, 14*, 772-781.

Spínola, J. N. (2019). Criação de gado em Reservas Extrativistas: ameaça ou necessidade? O caso da Reserva Extrativista Tapajós Arapiuns, Pará, Brasil. *Desenvolvimento e Meio Ambiente, 51*, 224-246. https://doi.org/10.5380/dma.v51i0.62902.

The World Bank. (2018). *Quase metade do Mundo vive com menos de US $5.50 por dia*. Washington (Comunicado à imprensa nº 2019/044/DEC-GPV). Retrieved June 17, 2021, from https://www.worldbank.org/pt/news/press-release/2018/10/17/nearly-half-the-world-lives-on-less-than-550-a-day-brazilian-portuguese

UCs-Brasil. Unidades de Conservação no Brasil. (2021). Reserva Extrativista Alto Juruá. *Sinopse*. Retrieved June 14, 2021, from https://uc.socioambiental.org/pt-br/arp/625

UCs-Brasil. Unidades de Conservação no Brasil. (2021). Reserva Extrativista Rio Ouro Preto. *Sinopse.* Retrieved June 14, 2021, from https://uc.socioambiental.org/pt-br/arp/628#

Volpato, G. L. (2013). *Ciência: da filosofia à publicação* (6th ed.). São Paulo: Cultura Acadêmica.

Walter, M., Tomás, S., Munda, G., & Larrea, C. (2016). A social multi-criteria evaluation approach to assess extractive and non-extractive scenarios in Ecuador: Intag case study. *Land Use Policy, 57*, 444-458.

Wesz Junior, V. J. (2019). O Mercado da Soja no Sudeste de Mato Grosso (Brasil): uma Análise das Relações entre Produtores Rurais e Empresas a partir da Sociologia Econômica. *Dados, 62*(1), 1-36. https://dx.doi.org/10.1590/001152582019170

WWW-Brasil. (2021). *Adote 1 parque*: apoio privado para conservação é bom, mas não resolve a falta de gestão pública. Retrieved July 1, 2021, from https://www.wwf.org.br/?77769/Adote-1-Parque-apoio-privado-para-conservacao-e-bom-mas-nao-resolve-falta-de-gestao-publica