

Doi: 10.47209/2317-5729.v.9.n.2.p.11-18

SWOT Matrix (Strengths, Weaknesses, Opportunities and Threats) of a cooperative focused on logging and non-timber management in the Amazon

Darlisson Fernandes Bento^{1*}, Emanuelle Silva Gomes¹, Victor Martins Guedes¹, Erick Coelho¹

¹Federal University of Western Pará, Post-graduate Program in Natural Resources of the Amazon, Santarém-PA, Brazil.

*Autor para correspondência. E-mail: darlison.bento@gmail.com

Abstract: Managing the forest meeting the assumptions of good management requires the general knowledge of variables around the enterprise, the exploration product, the impacts caused on the social scenario and nature, of public legislation and policies, in addition to the factors that interfere with the performance of employees. For this reason, the objective of this article was to carry out a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) of a cooperative focused on timber and non-timber management in the Amazon. The SWOT matrix was applied in a cooperative located in the Amazon, COOMFLONA – Mixed Cooperative of the Tapajós National Forest, in Santarém, Pará, Brazil. The fortresses found are able to maintain the good performance of the cooperative. This is ensured by improvements in revenue, environmental certification and infrastructure, for example. External threats, such as the practice of agriculture around the Conservation Unit, do not pose a risk of a drop in economic, environmental and social performance, but need government support in relation to supervision. The opportunities are naturally present in the area, since they have the ecotourism potential of the place and activities of use of forest resources still without the well-deserved incentive, such as the use of forest waste and exploitation of fruit trees. Logging is well conducted by the cooperative. However, non-timber forest products, although they are inserted in the production chain, still do not receive the same attention.

Keywords: Forest management. Forest economy. Forest administration.

Matriz FOFA (Fortalezas, Oportunidades, Fraquezas e Ameaças) de uma cooperativa voltada para o manejo madeireiro e não-madeireiro na Amazônia

Resumo: Manejar a floresta atendendo os pressupostos de um bom manejo requer o conhecimento geral de variáveis no entorno do empreendimento, do produto de exploração, dos impactos causados no cenário social e na natureza, da legislação e políticas públicas, além dos fatores que interferem no desempenho dos colaboradores. Por isso, o objetivo deste artigo foi realizar a análise FOFA (Fortalezas, Oportunidades, Fraquezas e Ameaças) de uma cooperativa voltada para o manejo madeireiro e não-madeireiro na Amazônia. A matriz FOFA foi aplicada em uma cooperativa situada na Amazônia, a COOMFLONA – Cooperativa Mista da Floresta Nacional do Tapajós, em Santarém, Pará, Brasil. As fortalezas encontradas mostram-se capazes de manter o bom desempenho da cooperativa. Isso é assegurado pelas melhorias em receita, certificação ambiental e infraestrutura, por exemplo. As ameaças externas, como a prática da agricultura no entorno da Unidade de Conservação, não oferecem risco de queda no desempenho econômico, ambiental e social, porém precisam do apoio governamental em relação a fiscalização. As oportunidades apresentam-se naturalmente na área, uma vez que contam com o potencial ecoturístico do lugar e atividades de uso de recursos da floresta ainda sem o merecido incentivo, como aproveitamento de resíduos florestais e exploração de árvores frutíferas. A exploração madeireira é bem conduzida pela cooperativa, no entanto, os produtos florestais não madeireiros, apesar de estarem inseridos na cadeia produtiva, ainda não recebem a mesma atenção.

Palavras-chave: Manejo florestal. Economia florestal. Administração florestal.

Introduction

The economic potential of forests has been constantly used as an argument for both those who advocate using this argument to devastate it and to preserve it (Marcondes, 2011). It turns out that in the midst of this extremist and polarized vision there is a middle ground, where it is possible that natural resources may be explored without the need for destruction, acting in line with sustainable development (Baig *et al.*, 2019). According to Pereira and Calgaro (2016), this mistaken dilemma has been treated by researchers with caution, and lately, studies aimed at the consortium between conservation and economic use of the forest have been assertively disseminated, so that exploring logging and non-timber forest resources is feasible, relieving the impacts suffered by an exploration without proper care (Brito *et al.*, 2007). Moreover, the possibility of obtaining logging and non-timber resources is completely possible, as it can take advantage of the forest almost entirely, respecting the fauna, flora and maintenance of the local climate, besides generating development economic-social for the surrounding communities, as well as internal and external consumers (Bandeira *et al.*, 2010; Silva *et al.*, 2018)

Created by Law 9985 of 2012/Brazil, the Brazilian National Forests (FLONAs), inserted in the group of the areas of Sustainable Use of Conservation Units present themselves as a model for the use of forest resources in accordance with the guidelines of sustainable forest management, where the wood found in its territory is explored in annual cycles, where selectively, trees are slaughtered and the regeneration process of the exploited area is conducted in such a way as to recover the forest for future exploration (Brasil, 2020). This exploration cycle ensures that a currently exploited area is not completely affected, and the disturbances suffered there are the minimum possible, ensuring the maintenance of the ecosystem (Fearnside, 2015). In addition, private companies can also participate in the territory management process through the concession process, simply meeting some legal requirements that ensure compliance with the principles of sustainable forest management, including participation of the local community in exploration activities, thus ensuring a real gain of participation and collaboration for those involved in the management process, labor and product destination (Sampaio *et al.*, 2018). This is a way to reduce illegal logging, whose illegality has brought great impact to forests, especially in the Amazon (Waldhoff & Vidal, 2019)

Thus, companies, cooperatives and other institutions that wish to carry out forest management in The Brazilian territory must undergo these standards, whose purpose aims to democratize the use of natural resources, in addition to bringing greater security and confidence consumers regarding products from the management (Espada & Sobrinho, 2015).

At this point, cooperatives present themselves as one of the main actors in the aspect of managing community forest management, whose participation of local communities in logging activity is the main human resource used (Lopes, 2017). The exchange of traditional knowledge between the cooperative residents and professionals outside the community hired to work in the management is a positive point for the quality of the exploration, since they know the area where the management will be carried out. This exchange of knowledge, applied, generates positive points for forest administration (Almeida *et al.*, 2017). The main benefits of community forest management are seen in the forest that remains standing, housing the faunistic community, protecting the soil from erosive processes, in addition to protecting rivers and springs, helping to reduce the incidence of fires, among other advantages (ICMBIO, 2019). On the other hand, some complex aspects bring to the fore negative points, which hinder the development of activities. One of the main obstacles is exactly competition with illegal timber exploration, which leads the handler to opt for drastic reduction in legal trade prices, to meet the consumer who has as an option the offer of a low-priced wood (Paixão & Silva, 2019). Nevertheless, there is a positive inclination of the handlers to comply with environmental laws regarding the licensing and certification aspect of wood, although both producers and consumers still do not know the basic precepts that involve ensure that certain wood comes from a certified area, in addition to the lack of greater efforts in activities that foster the use and benefits of certified wood (Basso *et al.*, 2011; Silva *et al.*, 2014)

Thus, to elaborate a strategic mapping to know the scenario in which forest activity is inserted is fundamental so that the appropriate planning can be traced from the beginning of the project (Da Silva *et al.*, 2014), thus meeting the pillars of sustainable development, being economically viable, socially just and ecologically correct (Hummel, 2001). A technique adopted to analyze the scenario of an organization is the SWOT matrix, which aims to detect the weaknesses and strengths of a company, being an ideal tool to expand the opportunities and performance of the company (Hill & Westbrook, 1997).

Therefore, the objective of this work was to develop a SWOT (Strengths, Weakness, Opportunities and Threats) matrix of a cooperative focused on logging and non-timber management in western Pará, Brazil.

Material and Methods

Study area

The Mixed Cooperative of the Tapajós National Forest - COOMFLONA, based at Km 117 of highway BR 163 (Cuiabá-Santarém), is located within the limits of the Tapajós National Forest (FLONA Tapajós), in the west of Pará, covering the municipalities of Belterra, Aveiro, Placas and Rurópolis, having approximately 545,000 ha. It was created in 1974 and reformulated, regarding its management in 2000, with the entry into force of the National System of Conservation Units - SNUC (Law – 9.985/2000). Since then, the idea of participatory management was inserted, classifying it as a Sustainable Use Unit (Brazilian Institute of the Environment and Renewable Natural Resources - IBAMA, 2004).

The area is limited to the north and east by highway BR 163 (Cuiabá-Santarém), to the south with the Transamazon highway and Cupari and Cuparaítinga rivers to the west, with the River Tapajós (Figure 1), demarcated by the coordinates 2°45' to 4°10'S and 54°45' to 55°30'W (Santos; Barbosa Filho; Coelho, 2014). As for the phytogeography of FLONA Tapajós, it is characterized by two predominant classes: the Dense Tropical Forest (DTF) and the Open Tropical Forest (OTF). Regarding the first class, woods of high economic value are found, such as Sucupira (*Diploptropis* sp.), Acariquara (*Minquartia guianensis* Aubl.), Castanheira (*Bertholletia excelsa* H.B.K.), and Cupiúba (*Goupia glabra* Aubl.), just like smaller trees like Muiraúba (*Mouriri brevipes* Hook.), Itaúba (*Mezilaurus itauba* (Meiss.) Taub ex Mez.), Mandioqueiras (*Qualea* sp.) and Maçaranduba (*Manilkara huberi* (Ducke) Standl.). Palm species are found in the DTF as Açaí (*Euterpeoleracea* Mart.) and Babaçu (*Orbignya phalerata* Mart.) (Espírito-Santo *et al.*, 2005; RADAMBRASIL, 1976).

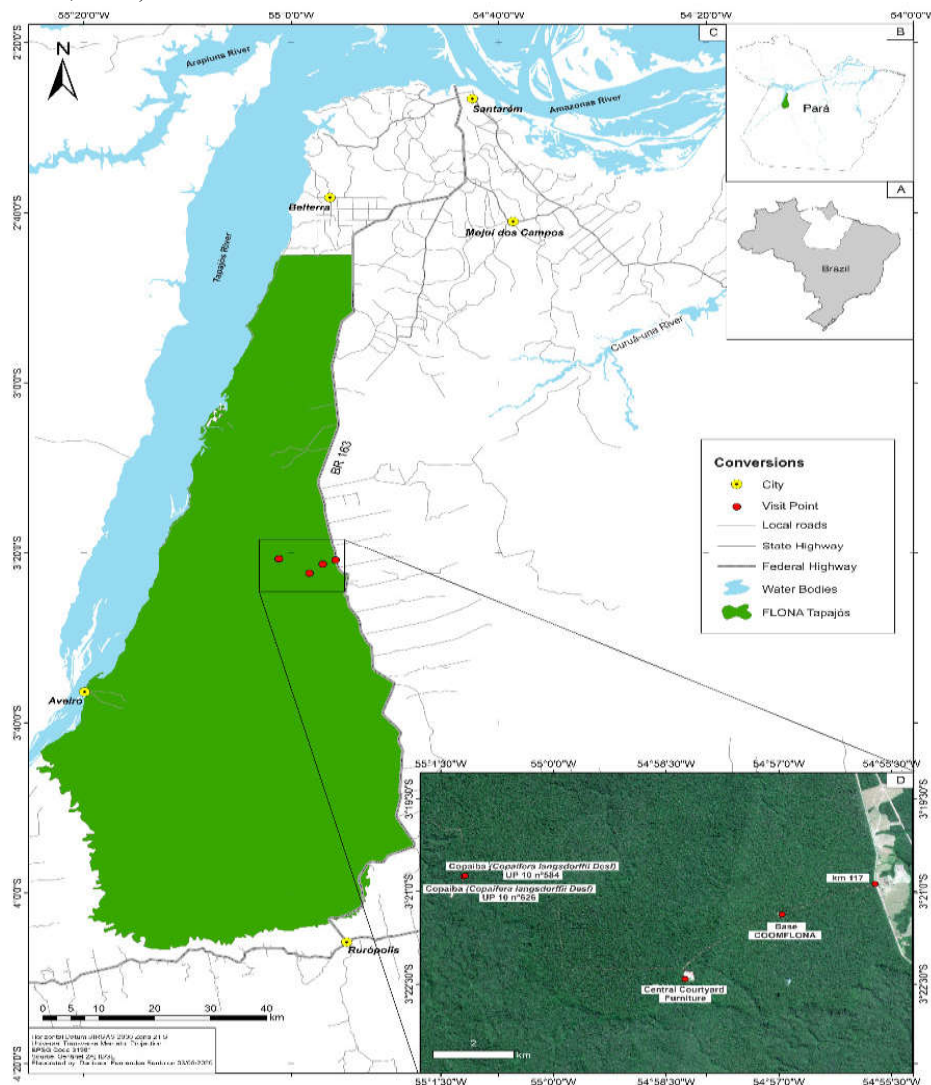


Figure 1. Map of location and access of FLONA Tapajós and points visited during technical activity at COOMFLONA.

The climate of this region is classified as Am in the Köppen system, i.e. humid tropical with annual thermal variation of less than 5° C. In the Gaussen system, the climate is classified as xerochemenic, presenting lower temperatures above 15° C and a dry period of up to 40 days. Climatic data collected in Belterra recorded an average annual temperature of 25.5° C, maximum of 30.6° C and a minimum of 21.0° C (Projeto Radar da Amazônia, 1976).

The profile of the communities resident in FLONA Tapajós, according to Santos *et al.* (2014), are characterized by the miscegenation of the Tapajós indigenous people, with northeastern migrants, as well as, in a smaller number, African peoples, resulting in approximately 5,000 community and small producers living in the 29 communities of the African Conservation (UC). These communities have agriculture as the main source of subsistence; fishing appears as secondary activity, also being verified activities such as horticulture and handicrafts (Silva; Souza; Bonfim, 2016). However, over the past decades, activities such as ecotourism and low intensity management, object of study, has increasingly been the main sources of income of several residents of FLONA Tapajós (Moran, 1994).

Evaluation method

The study was carried out based on a proposal to evaluate the activities of timber and non-timber products, a requirement of the discipline of Natural Resources Management, belonging to the Post-graduate Program in Natural Resources (PPGRNA) of the Federal University of Western Pará (UFOPA). The evaluation was the result of the students' perception and information obtained through forest technicians in a technical visit performed at COOMFLONA headquarters. To better understand the FOFA analysis, a table was generated, synthesizing all the aspects studied. From this, some correlations were made, exposing the aspects that form it, however, in a nonlinear way, considering that the tables are interrelated, mostly. A SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) is characterized by being a component of the strategic development plan, through which organizations can formulate strategies according to their internal capabilities or factors (Strengths and Weaknesses), as well as external possibilities or exogenous factors - Opportunities and Threats (Hill & Westbrook, 1997).

The SWOT analysis provides the external view of the manager's visualization of the current situation of the organization, providing competitive performance, in addition to organizational sustainability (Duran, 2016; Silva Filho, 2015). For Silva Filho (2014) uncertainties are causing the failures of several projects, which are generated by inadequate planning, little experience, misguided choice of project members, lack of knowledge of the market, misassessment of expectations of key stakeholders and communication problems between the members of the organization. All these characteristics can be rethought and planned from a SWOT analysis, conditioning (limiting) or enabling (leveraging) projects and actions (Kumer, 2016).

Results and Discussion

As for COOMFLONA, to better understand the SWOT analysis, Table 1 was generated, synthesizing all aspects studied, based on the perception of the students themselves, and what was exposed by the technicians-forestry, members of the technical framework of the cooperative. From this table, some correlations were made, exposing the aspects that form it, however, in a nonlinear way, considering that the tables are interrelated, mostly.

Objectively, the results of the analyses, synthesized in Table 1, showed the perception of a greater number of variables or processes with regard to internal factors. This greater number of aspects related to internal strengths and weaknesses may be related to the need for a more detailed external analysis, since the technical visit provides a limited point of view, covering, for the most part, the cooperative infrastructure itself.

Therefore, community participation in forest management acts as the main stronghold of COOMFLONA, which, in the opposite direction of the business system, there is a greater division of income among the cooperative, as well as greater flexibilization of the working system, compatible with the tradition of the community, being in accordance with the study conducted by Medina (2011), at FLONA Tapajós. Community participation is perceived in most jobs, contributing to the knowledge and experience of traditional communities, regarding the natural resources existing in this UC, however, some attributions are still contracted in a Consolidation of Labor Laws of Brazil (CLT), due to lack of specialized human resource among the cooperative, in all sectors, generating higher costs the cooperative, associated with an internal weakness. Another important point is related to the incompatibility between the CLT regime and the

cooperative system, since any member of the cooperative is unable to provide specialized services to their own, such as law firms, the COOMFLONA should be dismembered, inserting itself into the CLT regime.

Table 1. SWOT MATRIX (strengths, weaknesses, opportunities and threats)

VARIABLE OR PROCESS	
Internal Factors	Strengths
	Community cooperative
	Alternatives secondary to logging;
	Partnerships with public agencies and private institutions;
	Forest Stewardship Council (FSC) Certification;
	Investment fund, technical-educational-social and health
	Own equipment
	Training of new professionals, residents of FLONA
	Support in workers' displacement
	Use of the <i>Software</i> SISMANEJO
External Factors	Weaknesses
	Support in severe cases of co-operatives and uncooperatives diseases
	Absence of specialized human resources, residents of FLONA Tapajós, in all sectors
	Incompatibility between the cooperative system and the CLT scheme
	Low representation and female empowerment
	No investment in preventive health within FLONA for uncooperative
	Underuse of non-timber forest resources
	Lack of complete monitoring of existing natural resources at FLONA
	Lack of continuous monitoring of work safety techniques
	No investment in basic education for children and young people
External Factors	Threats
	Dependence on public policies and their bureaucratic processes.
	Threat of agro-industrial activities near FLONA area
	Opportunities
	Intensification of Ecotourism
External Factors	Income generation through fruit trees
	Internal processing
	Income generation through the residue generated by the furniture

The activities that result in FLONA Tapajós are basically restricted to male residents, resulting in a lack of representativeness and female empowerment, as well as restrictions on new opportunities for revenue generation, since excludes the evaluation of the production process from alternative points of view. COOMFLONA has logging as the main source of income, however, secondary alternatives were observed with the objective of increased revenue, through the extraction of PFNM, such as *Copaifera langsdorffii* oil, *Carapa guianensis* oil, latex extraction, production of biojewelry and other handicrafts, the latter marketed in an eco-store, located in the municipality of Santarém-PA, Brazil.

Despite the non-logging farm mentioned above, there is a underuse of these resources, with an example of the non-exploitation of fruit species and ecotourism activities. The limited monitoring of natural resources belonging to FLONA Tapajós may be associated with this underuse, especially regarding the fauna existing in the region.

Therefore, community participation in forest management acts as the main stronghold of COOMFLONA, which, in the opposite direction of the business system, there is a greater division of income among the cooperative, as well as greater flexibilization of the working system, compatible with the tradition of the community, being in accordance with the study conducted by Medina (2011), at FLONA Tapajós.

Community participation is perceived in most jobs, contributing to the knowledge and experience of traditional communities, regarding the natural resources existing in this UC, however, some attributions are still contracted in a Consolidation of Labor Laws of Brazil (CLL), due to lack of specialized human resource among the cooperative, in all sectors, generating higher costs the cooperative, associated with an internal weakness. Another important point is related to the incompatibility between the CLL regime and the cooperative system, since any member of the cooperative is unable to provide specialized services to their own, such as law firms, the COOMFLONA should be dismembered, inserting itself into the CLL regime.

Partnerships between COOMFLONA, private institutions and public agencies, are considered fortresses, considering that public institutions are responsible for the promotion of sustainable projects, in addition to the training of qualified professionals for the management of these projects. The performance of

ProGestão in the COOMFLONA training process stands out, acting as a source of fostering, training of community members and support in projects related to the management of forest management areas. However, some weaknesses are observed here called external threats, since they do not depend directly on COOMFLONA. The dependence of public agencies implies several bureaucratic processes, resulting in a higher cost and longer time for the occurrence of several procedures, important in the development of the cooperative.

COOMFLONA has logging units, some of which are partially exploited. To have a new area of exploitation, it is necessary approval of the management bodies, consistent with the above. The release of a new area of management implies an increase in the number of cooperatives and hiring directly and indirectly.

In 2013 COOMFLONA obtained FSC certification, which provided market recognition, with this adds value to products sold by the cooperative, resulting in higher revenues. The certification comes from the guarantee of origin of timber products, through the management of low intensity and actions related to the social responsibility of the project. The certification and recognition by the market is of great importance for the continuity of low intensity management within Flona Tapajós, in view of the pressure exerted by agro-industrial activities near the area under study.

In addition to certification, the increase in revenue is the result of cost reduction, through factors such as the creation of an investment fund, for which 45% of gross revenue is allocated, R\$ 8,000,000.00 recorded in 2015, the last economic data provided, which provided the obtaining of own equipment. In other, a technical, educational and social assistance fund, community support fund, health fund and reserve fund were created, aimed at training new professionals, support in workers' displacement and support in cases of diseases and serious accidents, the latter covering cooperative and uncooperative, residents of FLONA Tapajós.

The use of SISMANEJO software can also be considered a form of fundamental organizational control for increasing productivity, aiming to control the production of each worker, individually, and total production of the cooperative. On the other hand, preventive health practices were not observed in relation to non-cooperative health, not investment in basic education for children and young people, residents of FLONA Tapajós and the effective control of good work safety practices, such as the use of PPE (Personal Protective Equipment), such as masks, as well as collective protection, such as fire extinguishers.

Despite large investments in COOMFLONA's infrastructure in recent years, some opportunities have been observed, i.e., potential, which can be exploited by the cooperative in order to increase its revenue, as well as better exploitation of natural resources that are not loggers and, mainly, use the waste generated by the furniture.

In response to the questioning about the use of waste generated by the furniture, the forest technicians interviewed said that there was the intention to establish partnerships with private initiatives, for energy generation, as well as partnerships with the management body (ICMbio), however not yet defined.

It was proposed to evaluate the management of non-timber products by the use of the manual with suggestions for participatory management in communities in the Amazon, proposed by Machado (2008). In this work, the author classifies community management in 4 stages, these are: 1) Pre-Collection Step; 2) Stage Survey of Local Potential; 3) Mapping of Productive Individuals and 4) Management Licensing. The author is highlighted by the variation regarding the period of realization of these steps, not configuring itself as a linear chronological order, and a less advanced step can be performed after a more advanced step.

However, for this type of evaluation there were difficulties in accessing information, due to the lack of knowledge of forest technicians, responsible for technical visit. In the pre-collection, participation, organization and strengthening of the working group, survey of local potential, mapping of productive individuals and management licensing, occurred in the initial phase of implementation of COOMFLONA, was observed through the Promanagement. In the collection phase, it was reported that *Copaifera langsdorffii* oil extraction cycle has an approximate interval of 3 years. The last phase, called post-collection, covers the stages of processing, transportation, storage and monitoring of management and its impacts, but not enough information was provided for such discussion.

Conclusion

Based on the information acquired and subsequently, the evaluations on COOMFLONA were made, some questions were raised. The forces described are sufficient for the proper functioning of the cooperative, verified by successive increases in revenues, infrastructure, environmental certification, among others, however some weaknesses are still encountered, limiting this development, moreover, external threats, so far, are not considered sufficient for economic, social and environmental decline. How many opportunities

are feasible for future application, assisting in the development of the cooperative, with greater participation of FLONA's resident community of Tapajós. A good management of logging was observed, however, the non-timber forest products, based on what was exposed by the forest technicians, do not receive the same attention.

Referências

- Almeida, R., Coelho, R. Miranda, K.F. & Silva, M.S. Formar Florestal – O protagonismo dos povos da floresta no uso dos recursos naturais nas regiões da transamazônica e da BR-163. *Revista Margens Interdisciplinar*. 10 (15). doi: <http://dx.doi.org/10.18542/rmi.v10i15.4521>
- Baig, M.B., Pulhin J., El-Juhany L. & Straquadine G.S. (2019) Ensuring sustainability in forests through the participation of locals: implications for extension education. In: Behnassi M., Pollmann O., Gupta H. (Eds) *Climate Change, Food Security and Natural Resource Management*. Springer, Cham https://doi.org/10.1007/978-3-319-97091-2_17
- Bandeira, R., Coslovsky, S., Pereira, J., Quintella, R. & Veríssimo, A. (2010) O potencial econômico nas florestas estaduais da calha norte. Belém:Imazon, Technical Report. Available in: https://imazon.org.br/pdfimazon/portugues/calha_norte/estudos_calhanorte/otencial-economico-nas-florestas-estaduais-da.pdf
- Basso, V.M., Jacovine, L.A.G., Alves, R.R., Vieira, S.L.P. & Silva, F.L. (2011) Certificação florestal em grupo no Brasil. *Revista Floresta & Ambiente*, 18, 160-170. *Floresta e Ambiente*. 18(2):160-170. doi: 10.4322/floram.2011.034
- Brito, J. (2007). O Uso Energético da Madeira. *Estudos Avançados* 21 (59), 185-193. <http://www.scielo.br/pdf/%0d/ea/v21n59/a14v2159.pdf>
- Da Silva, J. C., De Almeida, A. N. & Pompermaye, R.S. (2014). Análise estratégica do manejo florestal na amazônia brasileira. *Floresta*, 44 (3) 341-348. doi:<http://dx.doi.org/10.5380/rf.v44i3.33979>.
- Espada, A. L. V. & Sobrinho, M. V. (2015). Manejo comunitário e governança ambiental para o desenvolvimento local: análise de uma experiência de uso sustentável de floresta na amazônia. *Administração Pública E Gestão Social*, 7(4), 169-177. doi: <http://dx.doi.org/10.21118/apgs.v7i4.669>
- Fearnside, P. M (2015). Pesquisa sobre conservação e manejo florestal. Available in: http://philip.inpa.gov.br/publ_livres/2015/pesquisa_sobre_conserva%c3%a7%c3%a3o-11-manejo_florestal.pdf
- Hill, T., Westbrook, R. (1997) "Swot Analysis: It'S Time For A Product Recall". *Long Range Planning*, 30 (1) 46-52, doi: [https://doi.org/10.1016/s0024-6301\(96\)00095-7](https://doi.org/10.1016/s0024-6301(96)00095-7)
- Hummel, A. C. (2001). Normas de acesso ao recurso florestal na Amazônia brasileira: o caso do manejo florestal brasileiro. 2001. 101f. Dissertation (Master of Science) - INPA, Manaus, AM. <https://bdtd.inpa.gov.br/handle/tede/3130>
- Lopes, S. R. M. (2017). Gestão das florestas públicas com ênfase a participação social. *Lex Humana*, <http://seer.ucp.br/seer/index.php/lexhumana>, 9 (2) 133-155 <http://seer.ucp.br/seer/index.php/lexhumana/article/view/1379>
- Marcondes, D. *Floresta, para que floresta?* Entenda o que está em jogo com as propostas de mudança no atual Código Florestal. (2011). Available in: <http://www.mobilizadores.org.br/wp-content/uploads/2014/05/floresta-para-que-floresta.pdf>
- Paixão, F.M. & Silva, M.L. (2019) A educação ambiental como política pública para gestão integrada dos recursos naturais: um estudo de caso do município de Paragominas no estado do Pará. *Novos Cadernos NAEA*. 22(2) doi:<http://dx.doi.org/10.5801/ncn.v22i2.4292>
- Pereira, A. O. K. & Calgaro, C. (2016.) Desenvolvimento sustentável e o consumocentrismo: o paradoxo da modernidade. In: Pereira, A. O. K., Calgaro, C. & Pereira, H. M. K. *O Consumo Na Sociedade Moderna* [Recurso Eletrônico]: Consequências Jurídicas e Ambientais. Caxias Do Sul: Educs, 2016. 33-51. Available in: https://www.ucs.br/site/midia/arquivos/ebook-consumo-sociedade_3.pdf#page=33

- Sampaio, C.A.C., Procopiuck, M., Grimm, I.J., Freder, S.M., Silva, F.P.S.S. & Figueiredo, S.L. (2018) Ecosocioeconomias Urbanas: Arranjos socioprodutivos, auto-gestão comunitária e desenvolvimento territorial sustentável, 21(2). *Novos cadernos* NAEA. p.9-31. <http://dx.doi.org/10.5801/ncn.v21i1.5407>.
- Silva, A.J.R., Botelho, S. C. C., Hoogerheide, E. S. S., Tonini, H., Baldoni, A. B. & Botelho, F.M. (2018). A importância das boas práticas no manejo e coleta da castanha-do-brasil para coletores de itaúba, MT. <https://www.alice.cnptia.embrapa.br/handle/doc/1098721>
- Silva, D., De Araújo, M., Silva, V. & Bernard, E. (2014). Contradições no comércio de madeira certificada em uma região metropolitana do nordeste do Brasil. *Floresta*, 44(3), 403-410. doi: <http://dx.doi.org/10.5380/ufv.v44i3.32022>
- Waldhoff, P. & Vidal, E. (2019) Manejo florestal comunitário na Amazônia: Comparação entre um modelo introduzido e a extração ilegal de madeira. *Novos Cadernos*. 22 (1) Available in: <https://periodicos.ufpa.br/index.php/ncn/article/view/5617>