Chapter

Quilombo Communities and Opportunities for Market-Driven Mechanisms for the Protection of the Amazon Forest

Anna Kanele and Pedro Pablo Cardoso Castro

Abstract

Quilombos are communities created since colonial times by emancipated African-descendants who located their free communities in the deep forest north of the Amazon in Brazil. These vulnerable communities are still oppressed and neglected. Paradoxically, their actual economic activities based on Amazon products' extraction are becoming key for protecting the rainforest in the north of Brazil (state of Para). In this chapter, the analysis of Honey production illustrates their socio-economical context, organizational capabilities, and the potential of their economic activities to preserve the rainforest's integrity. It also illustrates the challenges and limitations that they face to access markets where the value of their products' attributes is appreciated based on the profile of blue businesses (e.g., fair trade, organic, rainforest friendly).

Keywords: Quilombo, Amazon, Para, Rainforest, Honey

1. Introduction

The state of Para in the north of Brazil is part of the official Amazon region [1, 2]. Its territory is mostly composed of savannas, wetlands, and hundreds of islands in the Amazon River's delta, including the world's largest fluvial island, attributes that, together with its seasonal weather, made it iconic for the study of the Amazon region [3, 4]. In terms of population, out of the 211.38 million habitants, 0.4% are indigenous, and 2.5% Quilombola [5–7]. However, – and yet as another form of neglection and discrimination - despite being the Quilombola six times higher than the Indigenous people, this community is underrepresented in the academic literature. This fact was evidenced using Google Scholar under the search term "Indigenous Communities," obtaining 2,990,000 results. In contrast, the search term "Quilombola Communities" only showed 17,400 results in a search made in July 2020 [8, 9].

Historically, the state was occupied by Indigenous tribes. Later, with the arrival and interbreed of Portuguese colonists, different communities developed, varying on the kind of labor and stile of living they developed (e.g., riveirinhos, occupying the riversides of the Amazon delta, working on fishing and seasonal crops). Adding to the racial mixture, the import of African slaves was made early during the colonial times to substitute the decreasing population of Indigenous people.

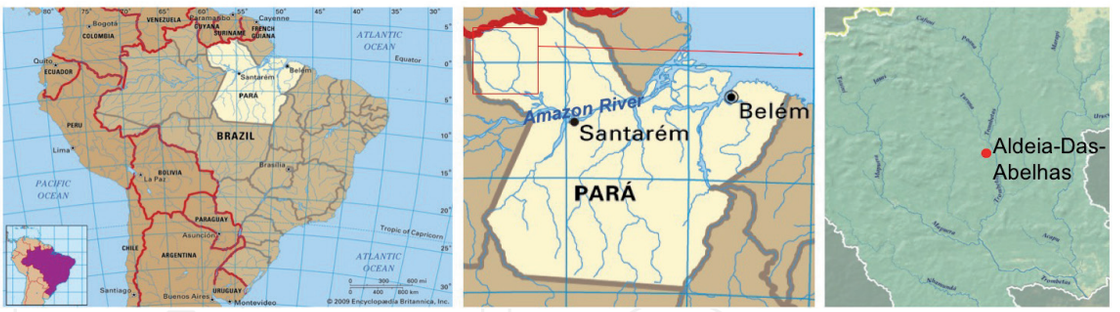


Figure 1.
Location of the district of Santarem – where many Quilombolas are located, and ubication of the archetypical Quilombo of "Aldeia-Das-Abelhas" (modified from [1, 14]).

In this colonization process, African slaves revealed and emancipated, escaping their captors and moving from the plantations to forest areas of difficult access, funding free autonomous colonies/communities (Quilombos, inhabited by Quilombolas), in a process that lasted until the abolition of slavery in 1888 [7, 10–12]. Consequently, many villages are located along the Upper Trombetas, Erepecuru, and Cumina Rivers [13], at the north of Santarem. To consolidate the description of the numerous Quilombos in the region, in this document, we will present an archetypic - fictional - Quilombo named "Aldeia-Das-Abelhas" located in the middle of the Trombetas River (**Figure 1**).

Due to their location and the nature of their social organization, these communities developed productive activities that did not demand large areas of terrain, with positive side effects for preserving the forest, as its integrity was key for the protection of the community. Also, their use and commercialization of local products is favored by good levels of (bio)diversity, which provides a diverse range of products. In this context, ironically, the discrimination towards these communities – and consequently, their limited access to technology – impose constrains to the level of transformation of their products. Consequently, their offer to the market is composed of natural products that can fit within the categories or organic or rainforest friendly, being Honey one of those with high potential for their socio-economic inclusion and forest production.

2. The Quilombola context

From their origins, the Quilombola founded various smaller villages as it made it more difficult for the government troops to find them, making the Quilombola more flexible and mobile as they could quickly relocate individual villages if they were in danger [10]. The National Institute for Colonization and Agrarian Reform has figures from Quilombola communes regarding the number of large families and hectares used. In these figures, it is noticeable that almost the same number of families in Belem and Santarem are listed, but Belem's area is less than 10% of Santarem's area. Within this context, the "Aldeia-Das-Abelhas" composed of 70 families, would have as much land as the municipalities in Santarem, occupying 4177 ha [15]. A large part of this Quilombo can hardly afford to eat and therefore live in deplorable conditions [16]. Some houses of the Quilombo have been built provisionally from mud and bamboo [17]. Also, the village partly shows problematic sanitary conditions, with limited access to sanitation [18].

In terms of land, the Quilombola community "Barro Vermelho" illustrates these communities' general situation when only after a long struggle, they received the official status as Quilombola land [19]. The recognition of the Quilombola land is

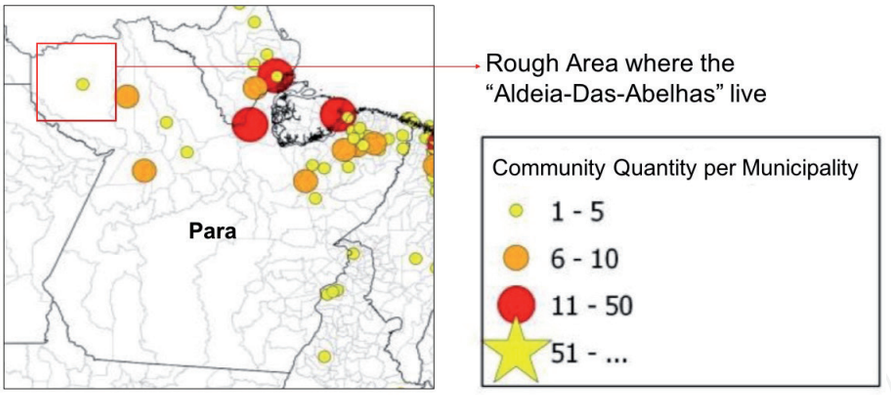


Figure 2.
Quilombola communities certified by municipalities (modified from [23]).

sometimes a very long process. Only 9.4% of the applications were recognized, and 44% of them still-open applications, which have been pending for more than ten years [6]. However, this title does not automatically imply the recognition of official land titling, as the example of the "Comunidade Quilombola do Saco Barreiro" shows [20]. The relevance of the land title comes from the fact that through the land title, the area where the Quilombola lives would be officially protected so that no clearing or mining would be allowed. According to title conservation, deforestation has decreased by 66% in areas where legal rights on the land have been granted [21]. However, Para is the only state in Brazil with more titles of Quilombola land than the land-titling processes of Quilombola lands; about a third (66 out of 181) of all pronounced Quilombola land titles fall on Para [22]. However, in the registers of CAISAN, the "Aldeia-Das-Abelhas" area has hardly been recognized as an official Quilombola community - see **Figure 2** [23]. Although the recognition of land in Para is generally relatively high, based on the data of CAISAN, for this document, we assumed that the "Aldeia-Das-Abelhas" have neither the official recognition as Quilombola or a land title.

It should be noted that even villages that have been granted the land continue to struggle for it, and their livelihood is still threatened. No one, except the government, can dispute the land after receiving the land title [17]. In this sense, Bolsonaros' administration plans to dispute these lands to introduce mining and agriculture in protected areas [21], as well as the legalization of deforestation in the Amazon. However, Bolsonaros' administration is not the first to adopt and to implement this approach. Previously, President Michel Temer abolished the Renca Reserve, which lies on the border between Amapa and Para [24]. The consequences of such systemic clearance of land by deforestation were defined by Mauricio Voivodic (executive director of WWF-Brazil) as irreversibly damaging local cultures, and it would also "... lead to an intensification of land conflicts and threats to indigenous peoples and traditional populations" [24]. Within this context of conflict between the communities protecting their land and the political and criminal interests who want to make the most lucrative use of the land and its resources in the short-term, gun violence would not deter economic interests. On the contrary, as reported by the nut collector Antonio Marcos de Lima: tractors, chainsaws, and gunfire now dominate a once quiet and peaceful jungle [25]. There has been a steady increase in direct violence against the villages and their inhabitants in the recent past [26].

3. Current situation

Bolsonaros' administration policy is to use the rainforest area to expand industrial agriculture developments, incentivizing the deforestation – legal and illegal – of the

Amazon [27]. In this context, and adding the historical process of displacement from their lands and neglection from state protection and recognition, the traditionally living people who claim their land [22] are a thorn in the side. This policy was first illustrated in Bolsonaro's election campaign in which he spoke out for the possession of weapons and against the lands claiming of the Indigenous and Quilombola [25, 28]. Bolsonaro said, "You can be sure that there will not be money for NGOs if I get there (Presidency of the Republic). If it is up to me, every citizen will have a firearm. There will not be a centimeter marked for an Indigenous reservation or a Quilombola." [29].

After winning the presidential election, Bolsonaro's policy focused on short-term profit maximization. To this end, the policy uses the high yield of rainforest land without regard to the long-term consequences for the environment and people [30]. Concerning as it is, Bolsonaros' administration continued to pursue this goal weakening the support of Indigenous and Quilombola. Accordingly, the Brazilian office FUNAI, which protects primarily the Indigenous and supports the Quilombola, has had its funds cut. Its management changed several times and was moved under the Ministry of Agriculture administration, which in line with governmental direction, has no interest in protecting the territories of traditional peoples living in the rainforest [31, 32]. Bolsonaro also tried with the appointment of Ricardo Lopes Dias (an evangelical missionary who has set himself the goal of evangelizing everyone, including the Indigenous and Quilombola) as head of FUNAI in February 2020, to weaken the social organization of Indigenous and Quilombola communities. However, in May 2020, the court ruled that the appointment of Lopes Dias was illegal because the judges have seen an apparent conflict of interest between Lopes Dias's believes and the mission of FUNAI. Consequently, Lopes Dias was dismissed with immediate effect [11]. Furthermore, as registered by Sarah Shenker (from Survival International): "It was an essential part of Bolsonaro's explicit policy to destroy the country's Indigenous peoples - to dissolve the teams protecting their territories and sell their land to loggers, miners, and ranchers." [11].

Russau describes Brazilian Indigenous/Quilombola politics as submissive assistentialist welfare state thinking and explicit paternalism, further saying that the current situation of the Brazilian Quilombola can be summarized as poverty, dependence, and exclusion [33]. These affirmations ignore - particularly for the Quilombolas – their long history as emancipated communities and their development of autonomous governance and social structures that made them self-sufficient communities. Since colonial times, they have been prosecuted, neglected, and systematically excluded from socio-economic development, and yet, able to coordinate their activities, survive and preserve their identity, culture, and traditions.

4. Quilombola production and logistics

Many Quilombola living in rural areas work on collectively-owned land with natural resources [7]. Within this form of productive organization, some Quilombos produce traditional jewelry and sell the surplus of their agricultural production to third parties [18, 34]. Their offer is mostly composed of Cassava (*Manihot esculenta*) – and domestically processed from it, farinha; raw fruits like Acai (*Euterpe oleracea*), Cupuassu (*Theobroma grandiflorum*), Nuts (*Bertholletia excelsa*); Honey, and other seasonal Amazon fruits. The product in many Quilombolas that is less dependent on the tenure of the land and seasonal changes and more suitable to the communities' sporadic mobility is Honey. Despite the popularity of products as Acai in the local (and now in the international) market, and Brazil Nuts that demand intense labor to collect, peel and prepare to present to the end consumer.

Honey production requires little labor and maintenance, low technology for the production and processing - adding value - of the final product, and can be delivered almost directly to the end consumer without processing, making it less susceptible to intermediaries' occurrence. Opposite to Acai, that needs treatment/processing to add value to the product, and refrigeration once processed. Also, due to the Acai's fragility and the lack of the communities' logistic resources, the product makes them more susceptible to depend on intermediaries to deliver to the market. It also demands a long-term settlement to develop the crop – hence, stability and clear rights on the land, if investment in adding value technologies is required. The case of Brazil Nuts demands a considerable extension of territory to provide commercial volumes of raw product, being a disadvantage, the intensive labor required to peel the Nut, and prepare it for the final consumer.

Concerning Honey production, mostly the two native bee species Melipona flavoneata and Melipona fasciculate, are used in Para for Honey production, as well as Apis mellifera [35], which is one of the most frequently used Honeybees worldwide. Of these, Melipona fasciculate has been identified as the best adapted and most productive in the Amazon context, standing out, among the native bees, for Honey production [36]. The native stingless bees are also highly adapted to "... the different soils, geographical location, good climatic conditions and the large diversity of plants and, in particular, flowering plants" [35], p. 1136. With these references, we can assume that the "Aldeia-Das-Abelhas" use Melipona fasciculate for Honey production.

Within this context, the Quilombola are partly dependent on selling their products in the nearest town or even directly in Belem, traveling by boat on a journey that can last several hours. For instance, for the "Aldeia-Das-Abelhas," Porto Trombetas is the nearest town, covering a distance of about 300 km on the Trombetas River, on a trip that can last up to 8.5 hours. Considering this logistic challenge and the characteristics summarized for the "Aldeia-Das-Abelhas," the community cannot afford a small fleet of boats to mobilize large amounts of products and keep fishing or other subsistence activities. Thus, they sell a significant part of their production to intermediaries; and trade directly in the city products that demand less labor, have more added or perceived value per unit of volume, and do not require refrigeration or any special treatment (e.g., Honey). These facts lead to the assumption that the "Aldeia-Das-Abelhas" have experience in selling to the middleman, limited experience in direct sales in the city. Therefore, their trading know-how is limited to local trade without the administrative or logistical experience for regional, national, or international trade.

As a counter-example, the "Itunuvico" historical development is presented. The "Itunuvico" started producing Honey in 2006 with nine people, and in thirteen years, they have grown to 180 small producers in Oaxaca-Mexico. The "Itunuvico" exported about 600 tons of organic Honey to Germany in 2018. The Mexican community further reports that they had their Honey certified organic through "Naturland," which has significantly increased yield. However, such certification is very costly [37]. This case also suggests developing skills in international trade and logistics - via partnerships with international ONGs, and the existence of logistics that facilitate the consolidation of production and its preparation for international distribution.

Without a reliable census in the region, due to the convenient size of the "Aldeia-Das-Abelhas," it is safe to assume that the community has around seven small producers. Each producer consists of the union of two families. About 20% of the population of the "Aldeia-Das-Abelhas" are trained in beekeeping. A total of 3 tons of Honey can be sold per year. This figure assumes that "Aldeia-Das-Abelhas" uses part of the Honey for own consumption, and they are not yet as efficient as the "Itunuvico"; as the "Itunuvico" can fall back on many years of experience, and have a different logistic context for the commercialization of their

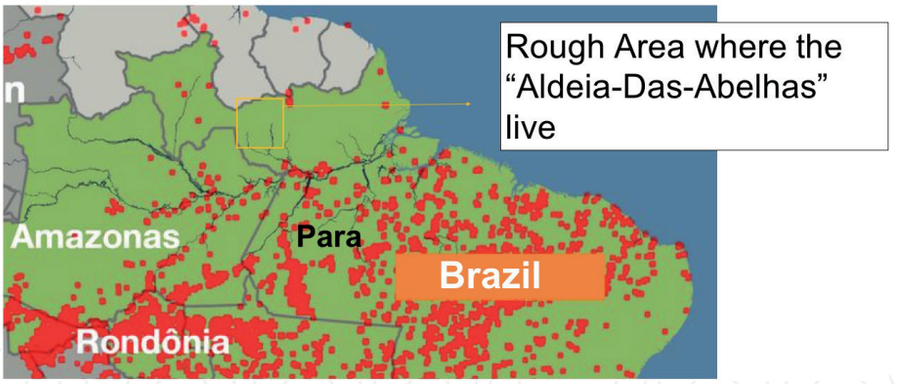


Figure 3.
Wildfire in Para, August 2019. Each red dot represents a fire (modified from [43]).

production. Considering the production context, we can assume that the Honey from the "Aldeia-Das-Abelhas" would satisfy the certification criteria for fair trade, rainforest friendly, and organic, but such certifications do not exist.

However, there is a danger that Honey production is unsteady, and even the bees are endangered. From December 2018 to February 2019, high bee mortality (about 500 million) became known, especially in the south and adjacent regions of the southeast and central west of Brazil [38, 39]. Fast-tracked approval of almost 300 pesticides, together with the acceleration of the green frontier's expansion, might cause high bee mortality [39]. Particularly when known, these pesticides were already banned in other countries for their toxic effect on bees - among other effects on other species. In contrast, the counter-case of "Itunuvico" demonstrates that they do not have any problems with bee mortality due to strict organic certification regulations. This normative control restricts the boundaries and growth of the expansion of commercial crops, based on the trade-off that Honey production brings to the planning of the local rural economic development [37]. Adding to the threats to Honey production in the region, dos Santos and de Oliveira have found that temperatures in Para have risen in recent years and see the change in the natural landscape as the cause for the increased temperatures [40]. Clearing of the rainforests will increase the dry seasons [41], which harms the flora and, therefore, impacts the Honey production negatively [19].

Looking at the vast wildfires at the end of August 2019, although Para was severely affected, the "Aldeia-Das-Abelhas" area was not under risk (**Figure 3**). An early assessment of the impact of these recent changes in the region determined that weather conditions have become more extreme, which leads to the assumption that this trend has further increased in recent years [42]. Consequently, the wildfires do not directly threaten the "Aldeia-Das-Abelhas," but that they are already slightly affected by the extent of the rising temperatures and the resulting prolongation of the drought periods. In turn, they are being at risk of not being able to increase or maintain their Honey production.

5. The Quilombola case for honey as economic activity

Between 29 and 39% of the carbon dioxide (CO_2) released by deforestation is caused by international trade [44]. Forests are cut to make room for pastures and agricultural land. Based on the current demands of international investors [45] and in line with the Quilombola culture [25], clearing the rainforest for economic use and thus as a source of income is not an option. Additionally, Manoel Santiago (a Quilombola resident of "Pedras Negras") reports that some villages have lost their livelihoods

due to the pandemic because they lived on tourism, selling homemade jewelry or traditional food [18]. Therefore, in the sense of the Quilombola, a sustainable basis of income should be created, where they can live independently from tourism.

Beekeeping offers an excellent alternative source of income compared to the sale of woodland to commercial enterprises or the commercialization of non-timber forest products. In connection with climate change, forest destruction can have devastating effects such as droughts or the deterioration of water supply [46, 47]. Accordingly, beekeeping is not only protecting the rainforest, but it is also an important income source, especially for small communities [48, 49]. The environmental richness emerging in Brazil, including pollen and nectar, is favorable to Honey production and positively impacts the socio-economy development of a state living in impoverished circumstances - considering the local low human development index of 639 [36]. In this context, the Honey production chain has a favorable trade balance based on the low capital input and the activity's fast financial profitability. This activity generates income for small and medium-sized farms [50, 51]. Successful beekeeping, as demonstrated by the communities of "Barro Vermelho" in northeast Brazil [19] and "Itunuvico" Mexico [37], both exporting their Honey to the EU; can provide effective economic integration of marginal communities to - even international - markets.

Since previous publications do not indicate which areas are particularly suitable for Quilombola beekeeping in the rainforest, a suitable area is determined based on the Quilombo's location and the conditions there. Unlike the Indigenous people, who are widely distributed in Brazil [52], the Quilombolas are relatively centralized. The Quilombola, with official titles of their land living primarily in Maranhao and Para [7]. Silva et al. see Para as "... one of Brazil's most promising regions for the production of distinct types of Honey..." [35], p. 1135. Another argument for Para is that the population density in Para (about 8.67 million inhabitants on 1,248,000 km^2) is lower than in Maranhao (about 7.10 million inhabitants on 331,982 km^2) [53] the area per inhabitant is more significant in Para and therefore offers more space for beekeeping. Para's significantly larger area is crucial concerning other farmers who may use pesticides, which may cause a significantly increased bee mortality rate [38, 39].

Furthermore, the latest figures from INPE show that Para requires especially strong support, as it accounted for around 40% (3862 km^2) of all clearings in Brazil in 2019 (**Figure 4**) [54]. The impact of forest reduction can already be seen today in Belem's increasingly extreme weather conditions [42].

An additional - but omnipresent - issue affecting the possibility of integration to the market of the Quilombola is racism. Since most Brazilians of African origin are still at the bottom of the social pyramid [12], it means being invisible, poorly paid,

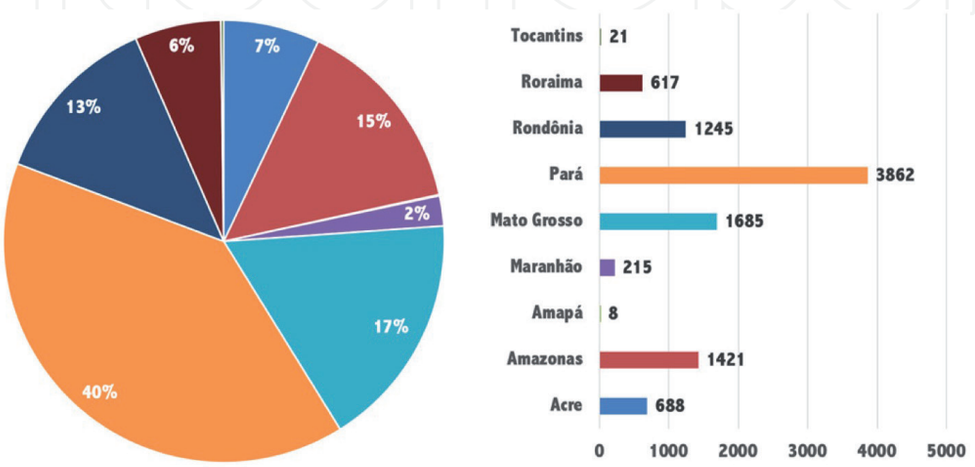
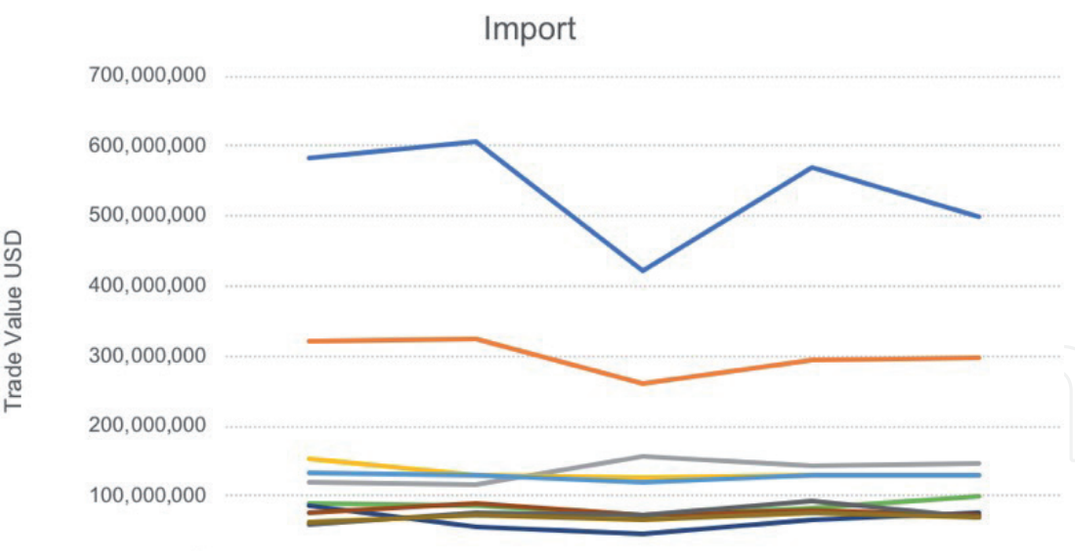


Figure 4.
Deforestation (km^2) by state in the Brazil Amazon in 2019 (from [54]).

and deprived of the most basic civil rights. To counter the racism of the Quilombola, the Brazilian government must create instruments that focus on both class and racial inequalities [55]. Brandao et al. describe that "There is a high degree of institutional distance between state and local governments and the Quilombola communities." [56], p. 10. Due to the prevailing structural racism, i.e., the social system, with its legal concepts, and its political and economic structures, causes minorities [57]. Due to the segregation often associated with this, i.e., in the context of the Quilombola, a separation of the different living spaces and the resulting social status and stigmas, e.g., black and rural poor, there are unequal life chances [34, 58]. This idea leads to the fact that it is difficult for Quilombola to sell their products on the Brazilian market. Because the population living in cities considers the people living in the Amazon (forest) as inferior [59], which can lead to a lower willingness to buy or fairly pay for their products. To bypass this barrier to access the market, one option could be to export Quilombola Honey - or any of the other traditional products such as Acai, Brazil Nuts, or fruits as Cupuassu, with similar benefits for protecting the rainforest. However, there are no reports or technical studies on assessing its viability, despite its enormous potential to provide economic inclusion and the positive consequences in protecting the rainforest and its biodiversity.

6. Analysis of the potential export market for Quilombola honey

Honey is a trendy product nowadays [60]. This trend is illustrated by the global Honey market, where Honey's international production is continuously increasing [61, 62]. Garcia (President of the International Organization of Honey Exporters)



	2014	2015	2016	2017	2018
USA	582,237,980	605,042,946	422,381,731	568,734,072	497,705,051
Germany	322,024,225	324,993,295	261,881,677	292,771,537	296,993,631
Japan	120,196,038	117,643,056	157,705,833	143,010,858	145,367,382
France	153,619,194	128,473,081	126,518,253	130,491,542	129,298,226
United Kingdom	132,779,730	131,230,886	120,051,585	130,779,119	128,605,692
Italy	91,183,112	84,707,526	72,435,680	82,153,122	100,944,149
Saudi Arabia	86,191,703	56,968,565	44,448,322	67,550,125	76,976,744
Belgium	77,640,862	89,854,686	74,038,640	79,566,883	73,294,380
China	58,626,731	74,826,315	72,771,567	91,408,659	70,129,174
Spain	61,181,244	72,746,319	65,270,041	76,788,688	67,977,527

Figure 5.
Trade import value of honey 2014–2018. Top ten importing countries measured by 2018 [68].

attributes the rise in production to the increased demand. Garcia explains the increase in consumption by the increased world population and interest in natural nutrition [63]. The growing consumption of Honey can be explained to its image as a natural product that is not directly linked by society as a source of sugar and is, therefore, not associated with obesity [64]. However, Honey is rich in sugar and is not necessarily healthier [65]. Furthermore, Honey is also very popular within home medicine remedy [66, 67], contributing to increased consumption.

Many countries are no longer able to cover their domestic production needs and import Honey [63]. The trade import value from 2014 to 2018 is shown in **Figure** 5 and illustrates the high demand. By far, the USA had the highest import rate in 2018, followed by Germany and Japan, France, and the UK. The chart also displays that the USA and Germany's ranking remained constant over the period shown [68].

However, to answer which export market is the most promising for the Brazilian community, no reports exist in the literature. Thus, adopting a pragmatic approach, we will concentrate on the two largest importers, the USA and Germany.

7. The US and German honey market

With imports of 197,866,579 kg, the USA offers a higher volume than Germany with 82,483,285 kg, in 2018, which makes the market opportunities in the USA appear more promising. However, comparing the revenues it in the USA (EUR 2.14/kg) was gained less than in Germany (EUR 2.85/kg) [68] and looking at the EU import prices of Brazil Honey (EUR 3.34/kg) is even higher in 2018 [69]. However, depending on the use, quality (e.g., conventional, organic), and distribution channel of the Honey, a substantial price differentiation occurs in Germany [70–72]. In contrast, the USA has little or no price differentiation between conventional and organic Honey [73]. Also, the United States Department of Agriculture shows a significant drop in organic Honey prices in 2018; it shows a price alignment within the US market [74].

In 2019, the EU concluded a free trade agreement with the Mercosur states (Argentina, Brazil, Paraguay, and Uruguay), under which around 92% of taxes on imported goods are to be abolished. Accordingly, it can be presumed that revenues from sales to the EU will increase further. However, within the agreement, the Mercosur states have committed themselves to sustainable forest management [75]. Klöckner (Federal Minister of Agriculture from Germany) emphasized under the current rainforest clearing that if Brazil does not meet its commitment to sustainable forest management, the German government will not accept it inactively [76]. Germany also supports Brazil within the framework of the "bilateral development cooperation," which (as of 20 February 2020) supports 104 projects and programs with a total of EUR 1.76 billion [77]. Nevertheless, it should be noted that the EU is in favor of stringent product safety regulations [78–85]. Thus, the barriers to selling a food product on the EU market are correspondingly high.

Guaranteeing the safety of products is also essential in the USA. The Food and Drug Administration (FDA) regulates the guidelines for food. Production facilities and dealers must be registered with the FDA [86]. The USA also has Honey specific regulations such as proper labeling "FDA-2006-P-0207" [87]. In 2014, the Agricultural Marketing Service had asked: "How a Federal standard of identity for Honey would be in the interest of consumers, the Honey industry, and US agriculture?" [88]. Moreover, it responds to various petitions that demand such clarification [88]. In principle, there is also significant economic cooperation between the USA and Brazil. The USA claims to be the second largest trading partner of Brazil, which resulted in an overall trade surplus of more than USD 20 billion on the part of the USA in 2017 [89].

On the fact sheet "Bilateral Relations between the USA and Brazil," it is pointed out that both countries have, among other things, "...respect for human rights,..." as a shared commitment and refer to the Partnership for Conservation of Amazon Biodiversity (PCAB). The PCAB intends to strengthen Brazil's vast protected area systems with USD 80 million over 2016–2024, including Indigenous territories to support the "...sustainable forest-friendly value chains..." [89]. However, because of the previously presented policy of Bolsonaro [29, 33], and Trump's trade wars, which reinforces Bolsonaro's clearing policy [90], the achievement of the project's objectives is questionable.

This paper suggests concentrating on the German market as an export country. Firstly, because Germany financially values Brazilian Honey in its conventional and organic form. Secondly, Germany's political attitude is an advantage for Quilombola, as it is the opposite of Trump's policy indirectly supporting the deforestation of the rainforest. Thirdly, Germany, together with the EU, is facilitating the export of many products through tax cuts. Lastly, concentrate on the German market on the first-hand makes it is easier to expand the export market to other EU countries such as France and Italy, which also have high imports. Therefore, the German market is for the export of Quilombola Honey more interesting.

8. Protection of the rainforest in the international trade

In the international context, Brazil is under increasing pressure concerning deforestation in the Amazon region. Since president Bolsonaro initially refused to accept the G7 countries' offer of help to fight the forest fires in the Amazon in August 2019, Brazil's governors had feared international punitive measures [76]. Within this context, afraid of the implications of the neglecting attitude from the national government and its aggressive promotion of extractivist production policies for the Amazon; Barbalho (Governor of Para) said: "I think we should now address our problems and send a signal to the world of environmental diplomacy because it is fundamental to (our) agriculture. Otherwise, we will suffer serious damage to our image, which is already a cause for concern." [76].

To understand the rate of deforestation concerning the country's total area, Brazils' forest area was around 67% of the territory in 1990 and only around 60% in 2010 [91]. According to Brazil's National Space Research Institute [92], which is publishing the official numbers of rainforest deforestation, estimates around 10,129 km^2 for the period from August 2018 to July 2019, which is 3.8% higher than the government estimated in November 2019 (**Figure 6**). This dynamic is aggravated by the fact that the rainforest's clearing will prolong the drought periods [41]. This behavior creates a vicious circle because, with increasing periods of drought, the effect of self-reinforcing forest loss would occur, estimating that the self-reinforcing forest loss could cause up to 10–13% additional rainforest death [94].

Despite these warnings, the Brazilian government does not seem to care about international pressure to reduce or even wholly refrain from clearing [76]. Evidence of this challenging - and even displacing - attitude is the fact that the Brazilian government is planning to step up its deforestation efforts. Ricardo Salles (current Brazilian Minister of the Environment) wants to take advantage of the COVIT-19 pandemic to change and simplify rainforest deforestation regulations so that mining, agroindustry, and lumberjacks would get even easier and legal access to the rainforest [30]. INPE [92] has accordingly established a record number of 1200 km^2 of deforestation from January to April 2020; this is over 50% more than in the same period in 2019.

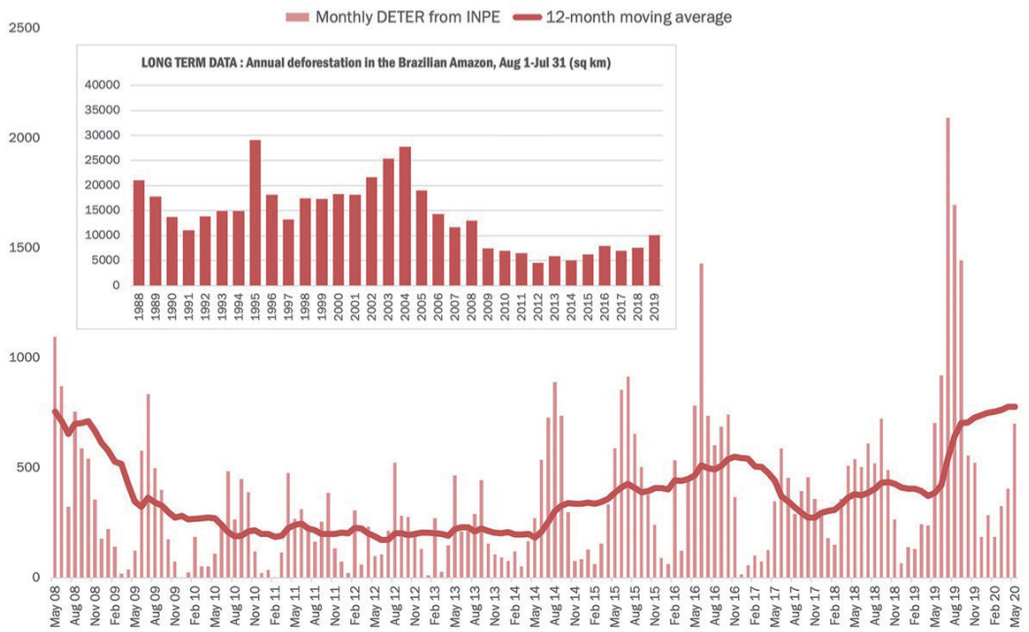


Figure 6.
Monthly deforestation alert data 2008–2020 plus yearly data 1988–2019 (from [93]). Note the peaks on the years 1995 and 2004 and their coincidence with the period of expansion of the green frontier, and the IIRSA plan for the development of big projects of infrastructure in the Amazon region.

In July 2020, 39 Brazilian companies, including some of the country's largest, have started to build up further pressure on the region - towards refraining the deforestation in the Amazon. The reason for the companies' reaction is that their international investors are threatening to withdraw their funds if the Brazilian government does not stop the rapid destruction of the country's forests [45]. Relevant to the case of the north and northeast of Brazil, Coe et al. [41] say that "...indigenous lands, sustainable-use production forests and reserves, and strictly protected forests..." are core elements of rainforest conservation. Especially Amazon's traditional peoples are rainforest protectors, as they live in and from the rainforest [25].

9. Final remarks

Some elements of the economic activity of the traditional people of the Amazon seem to be of practical use for the preservation of the rainforest. For instance, cultural practices that do not demand large extensions of territory and do not substantially affect the forest and its biodiversity. In particular, the Quilombola communities are of interest due to their focal ubication in the north of the Amazon, their family structure, and their forms of use of the land; concentrated in the production of food, the development of crops, and harvest of Amazon fruits (e.g., Acai) and the production of Honey. Out of these products, Honey seems to be the one that benefits the most from the existence of a healthy forest. Moreover, its development does not affect the forest and plays an essential role in its preservation (e.g., pollination services); Honey production does not compete with other agroforest products; it actually complements and benefits from them.

Economically, Honey has been documented in other communities as a successful product able to induce economic inclusion, even with the potential to bypass local constrains by targeting and gaining receptivity in international markets. Additionally, due to their production's biophysical characteristics, it has the potential to be certified as organic, fair trade, rainforest friendly, and many other

certification schemes such as forest-friendly value chain. These certifications provide the possibility of better reception and value in some international markets. However, the development of such initiatives in Para presents some challenges: the formalization of these communities' land ownership and legal security is a significant deterrent to investment. Also, these communities' location in areas with difficult access and no infrastructure makes the logistics cost of developing a reliable provision to international markets too risky and expensive.

Politically, despite the current hostile environment under Bolsonaros' administration, it is evident that such policies are not sustainable in the middle/long-term. These practices depend on the prevalence of an ideology losing support both in the national and the international arena. Additionally, intense pressure is being made by international investors and governments from which Brazil depends to activate and support its economic development. This fact adds to the reaction of local governments in Brazil who are starting to act in opposition to Bolsonaro's policies as a consequence of the international pressure. Adding to these limitations is the fact that these communities do not have experience in international trade. However, historically they have proved to be adaptable and resilient. Also, considering the examples of other communities with similar products in Mexico and Brazil, it is reasonable to believe that this issue is not an impediment.

From the market perspective, there is an opportunity to position Honey in the international market as demand increases, particularly in the two biggest markets. In general, the case for Honey suggests that the development of commercial opportunities for traditional Amazon products, directly from the traditional people of the Amazon is not just feasible but desirable. Considering the potential for the development of socio-economic inclusion, the protection (and eventually the regeneration of) in some areas of the Amazon, and preserving the culture and biodiversity; the promotion of plans to capitalize on these productive activities should be better articulated among interested parties internationally - especially from countries interested in importing such products.

Author details

Anna Kanele and Pedro Pablo Cardoso Castro*
Leeds Beckett University, Great Britain

*Address all correspondence to: p.p.cardoso-castro@leedsbeckett.ac.uk

References

[1] Encyclopaedia Britannica (2020). Para state, Brazil. [Online]. Available from: https://www.britannica.com/place/Para-state-Brazil [Accessed 5 August 2020].

[2] IBGE (2019). Areas Territoriais. [Online]. Available from: https://www.ibge.gov.br/geociencias/organizacao-do-territorio/estrutura-territorial/15761-areas-dos-municipios.html?=&t=downloads [Accessed 5 August 2020].

[3] Pereira, L., Mendes, C., Monteiro, M. and Asp, N. (2009). Morphological and Sedimentological Changes in a Macrotidal Sand Beach in the Amazon Littoral (Vila Dos Pescadores, Pará, Brazil). Journal of Coastal Research, 56 (1), pp. 113-117, [Online]. Available from: https://www.jstor.org/stable/25737548?seq=1# metadata_info_tab_contents [Accessed 11 August 2020].

[4] Furtado Gonçalves, M., Cavalcante Blanco, C., dos Santos, V., dos Santos Oliveira, L. and Lira Pessoa, F. (2016). El Niño and La Niña and Rainfall Decrease in the state of Pará, Brazilian Amazon. Acta Scientiarum, 38 (2), pp. 209-216, [Online]. Available from: https://www.redalyc.org/pdf/3032/303245370010.pdf [Accessed 5 August 2020].

[5] IMF (2019). Population: Brazil. International Monetary Fund, October, [Online]. Available from: https://www.imf.org/external/datamapper/LP@WEO/BRA [Accessed 28 March 2020].

[6] Burns, N. (2019). Indigenous and Quilombola Land Demarcation in Brazil. Wilson Center: Brazil Institute, January, [Online]. Available from: https://www. wilsoncenter.org/article/indigenous-and-quilombola-land-demarcation-brazil [Accessed 28 March 2020].

[7] Prado, M. (2018). Quilombola Communities of Brazil. Wilson Center: Brazil Institute, August, [Online]. Available from: https://www.wilsoncenter.org/article/quilombola-communities-brazil [Accessed 28 March 2020].

[8] Google Scholar (2020a). Indigenous Communities. Available from: https://scholar.google.com/scholar?hl=de&as_sdt=0%2C5&q=indigenous+communities&btnG= [Accessed 23 July 2020].

[9] Google Scholar (2020b). Quilombola Communities. Available from: https://scholar.google.com/scholar?hl=de&as_sdt=0%2C5&q=Quilombola+communities&btnG= [Accessed 23 July 2020].

[10] Salles, V. (1988). O Negro no Pará sob o regime de escravidão. Cited in: Andrade, L. (2002) THE QUILOMBOS OF THE TROMBETAS RIVER BASIN: BRIEF HISTORY. [Online]. Available from: https://www.academia.edu/34345324/THE_ QUILOMBOS_OF_THE_TROMBETAS_RIVER_BASIN_BRIEF_HISTORY [Accessed 7 August 2020].

[11] Survival International (2020). Brazilian Indians. [Online]. Available from: https://www.survivalinternational.org/tribes/brazilian [Accessed 5 March 2020].

[12] Ruffato, L. (2013). Rassendemokratie ist ein Mythos. Festrede zur Eröffnung der Buchmesse 2013. Faust Kultur, Translation: Kegel, M. Available from: https://faustkultur.de/1456-0-Festrede-von-Luiz-Ruffato.html#.U9H_trXlpdg [Accessed 7 July 2020].

[13] Andrade, L. (2002). The Quilombolos of the Trombetas River Basin: Brief History. [Online]. Available from: https://www.academia.edu/34345324/THE_

QUILOMBOS_OF_THE_TROMBETAS_RIVER_BASIN_BRIEF_HISTORY [Accessed 7 August 2020].

[14] WCS (2020). Trombetas. Wildlife Conservation Society. [Online]. Available from: http://amazonwaters.org/basins/great-sub-basins/trombetas/ [Accessed 10 August 2020].

[15] INCRA (2019). Andamento dos Processos - Quadro Geral. Casa Civil da Presi-dência da República Instituto Nacional de Colonização e Reforma Agrária Diretoria de Ordenamento da Estrutura Fundiária Coordenação Geral de Regularização de Territórios Quilombolas – DFQ, January, [Online]. Available from: http://www.incra.gov.br/media/docs/quilombolas/andamento_processos.pdf [Accessed 11 August 2020].

[16] Gubert, M., Segall-Correa, A., Pedroso, J., Campos Coelho, S. and Perez-Escamilla, R. (2017). Household food insecurity in black-slaves descendant communities in Brazil: has the legacy of slavery truly ended?. Public Health Nutrition, 29 (8), pp. 1513-1522, [Online]. Available from: https://www.cambridge.org/core/journals/public-health-nutrition/article/household-food-insecurity-in-blackslaves-descendant-communities-in-brazil-has-the-legacy-of-slavery-truly-ended/486C22F7D836B6ECBCB16BC3AD61F98D/core-reader [Accessed 11 August 2020].

[17] Planas, R. (2017). Brazil's 'Quilombo' Movement May Be The World's Largest Slavery Reparations Program. Huffpost, updated December, Original: October, 2014, [Online]. Available from: https://www.huffpost.com/entry/brazil-quilombos_n_5572236?guccounter=1 [Accessed 7 July 2020].

[18] Campos Lima, E. (2020). Brazil is the epicenter of the Covid-19 pandemic in Latin America. Rural communities have it worse. America Magazine, May, [Online]. Available from: https://www.americamagazine.org/politics-society/2020/05/27/brazil-epicenter-covid-19-pandemic-latin-america-rural-communities-have [Accessed 4 August 2020].

[19] Dancey-Downs (2018). How beekeeping has turned around the lives of a community in Brazil. Ecologist: The Journal for the Post-Industrial Age, May, [Online]. Available from: https://theecologist.org/2018/may/04/how-beekeeping-has-turned-around-lives-community-brazil [Accessed 18 March 2020].

[20] Berr, K. and Jenal C. (2019). Landschaftskonflikte. Chapter written by Neuburger, M. and Rau, R. Die Kolonialität der brasilianischen Energielandschaft. Wiesbaden: Springer, [Online]. Available from: https://books.google.co.uk/books?id=XiaeDwAAQBAJ&pg=PA495&lpg=PA495&dq=bedrohung+quilombola&source=bl&ots=BKjpbfzhBu&sig=ACfU3U1wZkR0muq0s70P090kieDKg26CHA&hl=de&sa=X&ved=2-ahUKEwjv37a4s7_oAhVRqHEKHZfLCjYQ6AEwA3oECAoQAQ#v=onepage&q=bedrohung%20quilombola&f=false [Accessed 29 March 2020].

[21] Moloney, A. (2020). Deforestation in Brazil's Amazon two-thirds lower on titled indigenous land. Reuters, August, [Online]. Available from: https://www.reuters.com/article/us-brazil-forests-indigenous-rights/deforestation-in-brazils-amazon-two-thirds-lower-on-titled-indigenous-land-idUSKCN2562GH [Accessed 12 August 2020].

[22] CPISP (2019). Quilombolas communities in Brazil. Comissao Pro-Indio de Sao Paulo, [Online]. Available from: https://cpisp.org.br/direitosquilombolas/observatorio-terras-quilombolas/quilombolas-communities-in-brazil/ [Accessed 7 August 2020].

[23] CAISAN (2013). Direitos territoriais e patrimoniais dos povos indígenas e quilombolas – contribuições ao debate da XI Plenária do Consea – agosto de 2013. Interministerial Chamber for Food and Nutrition Security, [Online]. Available from: http://www.mds.gov.br/webarquivos/arquivo/seguranca_alimentar/caisan/caisan_nacional/documentos/terra_territorio/Subsidio_CAISAN_Plenaria_CONSEA_Direitos_Territoriais_agosto_2013.pdf [Accessed 12 August 2020].

[24] Watts, J. (2017). Brazil abolishes huge Amazon reserve in "biggest attack" in 50 years. The Guardian, August, [Online]. Available from: https://www.theguardian.com/environment/2017/aug/24/brazil-abolishes-huge-amazon-reserve-in-biggest-attack-in-50-years [Accessed 4 August 2020].

[25] Harris, B., Cowie, S., Schipani, A. and Gross, A. (2019). Powerful interests pose threat to Amazon's forest communities. Financial Times, December, [Online]. Available from: https://www.ft.com/content/355966ba-e539-11e9-b8e0-026e07cbe5b4 [Accessed 28 March 2020].

[26] Campos Lima, E. (2019). What the Catholic Church is doing to protect the Amazon in Bolsonaro's Brazil. America Magazine, October, [Online]. Available from: https://www.americamagazine.org/politics-society/2019/10/22/what-catholic-church-doing-protect-amazon-bolsonaros-brazil [Accessed 7 August 2020].

[27] Sullivan, Z. (2018). Illegale Abholzung und Bergbau bedrohen Gemeinde im Amazonasgebiet. Deutsche Welle, October, [Online]. Available from: https://www. dw.com/de/illegale-abholzung-und-bergbau-bedrohen-gemeinden-im-amazonasgebiet/a-45656372 [Accessed 7 August 2020].

[28] Cowie, S. (2018). Präsident Bolsonaro bedroht Brasiliens Regenwald - Schlechte Nachrichten für Brasiliens Umwelt: Der gerade gewählte, rechtsradikale Präsident Jair Bolsonaro möchte Umweltagenturen schließen und industriellen Großprojekten im Amazonas-Regenwald den Weg ebnen. Deutsche Welle, [Online], October. Available from: https://www.dw.com/de/präsident-bolsonaro-bedroht-brasiliens-regenwald/a-46079231 [Accessed 1 February 2020].

[29] The Intercept Brasil (2017). Bolsonaro faz discurso de ódio no Clube Hebraica. April. Available from: https://www.youtube.com/watch?v=zSTdTjsio5g [Accessed 7 July 2020].

[30] Käufer, T. and Samuel, R. (2020). Die Welt schaut weg – und Brasilien holzt ab. Welt.de, June. Available from: https://www.welt.de/politik/ausland/article2090 76003/Regenwald-Die-Welt-schaut-weg-und-Brasilien-holzt-ab.html [Accessed 5 July 2020].

[31] Boadle, A. (2019). Brazil's Bolsonaro hands indigenous land decisions back to farm sector. Reuters, June, [Online]. Available from: https://www.reuters.com/article/us-brazil-politics-indigenous/brazils-bolsonaro-hands-indigenous-land-decisions-back-to-farm-sector-idUSKCN1TK37O [Accessed 12 August 2020].

[32] Senpinar, R. (2019). Die Indigenen müssen um ihr Leben fürchten - Goldgräber und Sojafarmer verdrängen Einheimische im Amazonas. Wie die Indigenen unter den Bränden leiden, erzählt die Mitarbeiterin einer Hilfsorganisation. Zeit Online, [Online], August. Available from: https://www.zeit.de/2019-08/brasilien-indigene-voelker-waldbraende-survival-international-ngo [Accessed 1 February 2020].

[33] Russau, C. (2020). Schwerer Verbalangriff der FUNAI auf Indigenemissionsrat CIMI und

internatile Geldgeber. Kooperation Brasilien, May. Available from: https://www.kooperation-brasilien.org/de/themen/landkonflikte-umwelt/schwerer-verbalangriff-der-funai-auf-indigenenmissionsrat-cimi-und-internationale-geldgeber [Accessed 5 July 2020].

[34] Penna-Firme and Brondizio, E. (2007). The risk of commodifying poverty: rural communities, Quilombola identity and nature conservation in Brazil. Habitus, 5 (2), pp. 355-373, [Online]. Available from: http://seer.pucgoias.edu.br/index.php/habitus/article/view/541/431 [Accessed 11 August 2020].

[35] Silva, A., Alves, C., Fernandes, K. and Müller, R. (2013). Classification of Honeys from Pará State (Amazon Region, Brazil) Produced by Three Different Species of Bees using Chemometric Methods. Journal of the Brazilian chemical society, 24 (7), pp. 1135-1145, [Online]. Available from: http://static.sites.sbq.org.br/jbcs.sbq.org.br/pdf/v24n7a07.pdf [Accessed 13 August 2020].

[36] Fernandes, R., Rosa, I. and Conti-Silva, A. (2020). Honey from Tibua stingless bees (*Melipona fasciculata*) produced in different ecosystems: physical and sensory studies. Journal of the Science of Food and Agriculture, 100 (9), pp. 3748-3754, [Online]. Available from: https://onlinelibrary-wiley-com.ezproxy.leedsbeckett.ac.uk/doi/epdf/10.1002/jsfa.10415 [Accessed 13 August 2020].

[37] DW (2019a). Mexiko: Tonnenweise Bio-Honig für Deutschland. Deutsche Welle, February, [Online]. Available from: https://www.dw.com/de/mexiko-tonnenweise-bio-honig-für-deutschland/a-47406856 [Accessed 7 March 2020].

[38] Hanson, T. (2019). Why have 500m bees died in Brazil in the past three months?. The Guardian, August, [Online]. Available from: https://www.theguardian.com/commentisfree/2019/aug/29/500-million-bees-brazil-three-months [Accessed 28 March 2020].

[39] Grigori, P. (2019). Half a billion bees dead as Brazil approved hundreds more pesticides. Mongabay, August, [Online]. Available from: https://news.mongabay.com/2019/08/half-a-billion-bees-dead-as-brazil-approves-hundreds-more-pesticides/ [Accessed 28 March 2020].

[40] dos Santos, C. and de Oliveira, V. (2017). Trends in Extreme Climate Indices for Para State, Brazil. Revista Brasileira de Meteorologia, 32 (1), pp. 13-24, [Online]. Available from: https://www.scielo.br/pdf/rbmet/v32n1/0102-7786-rbmet-32-01-0013.pdf [Accessed 5 August 2020].

[41] Coe, M., Marthews, T., Costa, M., Galbraith, D., Greenglas, N., Imbuzeiro, H., Levine, N., Malhi, Y., Moorcroft, P., Muza, M., Powell, T., Saleska, S., Solorzano, L. and Wand, J. (2013). Deforestation and climate feedbacks threaten the ecological integrity of south-southeastern Amazonia. Philosophical transactions of the royal society, 368 (1619), June, [Online]. Available from: https://royalsocietypublishing.org/doi/full/10.1098/rstb.2012.0155 [Accessed 6 August 2020].

[42] Martorano, L., Vitorino, M., da Silva, B., de Moraes, J., Lisboa, L., Sotta, E. and Reichardt, R. (2017) Climate conditions in the eastern amazon: Rainfall variability in Belem and indicative of soil water deficit. African Journal of Agricultural Research, 12 (21), May, pp.1801-1810, [Online]. Available from: https://pdfs.semanticscholar.org/ 6a41/07d4b38 12f212a407fc18c7ed526a9b0f1c4.pdf [Accessed 28 March 2020].

[43] FIRMS and NASA (2019). Cited in: ZDF (2020). Zerstörung des

Amazonas-Walds nimmt stark zu. January, [Online]. Available from: https://www.zdf.de/nachrichten/panorama/amazonas-wald-zerstoerung-drastisch-zugenommen-100.html [Accessed 12 August 2020].

[44] Pendrill, F., Persson U., Gobar, J., Kastner, T., Moran, D., Schmidt, S. and Wood, R. (2019). Agricultural and forestry trade drives large share of tropical deforestation emissions. Global Environmental Change, 56, pp. 1-10, [Online]. Available from: https://reader.elsevier.com/reader/sd/pii/S0959378018314365?token=2F8B4E74FAB2F0F21CC1A14A0E619DC516B728FB569FA44ECE38523608B1C58CE45C86B96961795DDCEA7CBB19145C6F [Accessed 7 August 2020].

[45] Spiegel (2020) Brasilianische Firmen machen Druck gegen Regenbwaldzerstörung. Spiegel Wirtschaft, July, [Online]. Available from: https://www.spiegel.de/wirtschaft/unternehmen/brasilianische-firmen-machen-druck-gegen-regenwald-zerstoerung-a-10143ab9-0918-4525-aff8-52095bd85c58 [Accessed 6 August 2020].

[46] Bosma, W., Suti, S. and Deeks, P. (2017). Beekeeping as Pro-forest Income Diversification in Solomon Islands. Part of the Climate Change Management book series, Springer, February, [Online]. Available from: https://link.springer.com/chapter/10.1007/978-3-319-50094-2_23 [Accessed 18 March 2020].

[47] Lowore, J., Meaton, J. and Wood, A. (2018). African Forest Honey: an Overlooked NTFP with Potential to Support Livelihoods and Forests. Environmental Management, 62, pp. 15-28, [Online]. Available from: https://link.springer.com/article/10.1007/s00267-018-1015-8 [Accessed 18 March 2020].

[48] Watts, J. (2019). Bees in Amazon 'are greatest ally to halt rainforest destruction'. The Guardian, December, [Online]. Available from: https://www.theguardian.com/society/2019/dec/06/bees-in-amazon-are-greatest-ally-to-halt-rainforest-destruction [Accessed 18 March 2020].

[49] Mavhunga, C. (2017). Ein süßer Neuanfang in Simbabwe – Bäume retten mit Honig. Deutsche Welle, June, [Online]. Available from: https://www.dw.com/de/ein-süßer-neuanfang-in-simbabwe-bäume-retten-mit-honig/a-39430726 [Accessed 6 August 2020].

[50] Carvalho, G., Ribeiro, M., Araujo, A., Barbosa, M. Oliveira, F. and Albuquerue, P. (2016). Flora de importancia polinica utilizada por Melipona (Melikerria) fasciculata Smith, 1854 (Hymenoptera: Apidae:Meliponini) em uma area de foresta amazonica na regiao da baixada maranhense. Brasil Oecologia Australis, 20, pp. 58-68. Cited in: Fernandes, R., Rosa, I. and Conti-Silva, A. (2020) Honey from Tibu stingless bees (*Melipona fasciculata*) produced in different ecosystems: physical and sensory studies. Journal of the Science of Food and Agriculture, 100 (9), pp. 3748-3754, [Online]. Available from: https://onlinelibrary-wiley-com.ezproxy.leedsbeckett.ac.uk/doi/epdf/10.1002/jsfa.10415 [Accessed 13 August 2020].

[51] Bezerra, F., Bernardo, T., Ximenes, L. and Valente Junior A. (2015). Perfil socio-econômico do Maranhão. Banco do Nordeste do Brasil, Fortaleza. Cited in: Fernandes, R., Rosa, I. and Conti-Silva, A. (2020) Honey from Tibu stingless bees (*Melipona fasciculata*) produced in different ecosystems: physical and sensory studies. Journal of the Science of Food and Agriculture, 100 (9), pp. 3748-3754, [Online]. Available from: https://onlinelibrary-wiley-com.ezproxy.leedsbeckett.ac.uk/doi/epdf/10.1002/jsfa.10415 [Accessed 13 August 2020].

[52] Rodgers, C. (2018) Indigenous People of Brazil. Wilson Center: Brazil Institute, January, [Online]. Available from: https://www.wilsoncenter.org/article/indigenous-peoples-brazil [Accessed 28 March 2020].

[53] IBGE (2020) Projeção da população do Brasil e das Unidades da Federação. Istituto Brasileiro de Geografia e Estatistica, [Online]. Available from: https://www. ibge.gov.br/apps/populacao/projecao/index.html?utm_source=portal&utm_medium=popclock&utm_campaign=novo_popclock [Accessed 28 March 2020].

[54] INPE (2019). cited in: Butler, R. (2019) Amazon deforestation rises to 11 year high in Brazil. Mongabay, November. Available from: https://news.mongabay.com/2019/11/amazon-deforestation-rises-to-11-year-high-in-brazil/ [Accessed 7 July 2020].

[55] Silva, N. (2000) Extensão e natureza das desigualdades raciais no Brasil. In A. S. A. Guimarães & L. Huntley (Orgs.), Tirando a máscara: ensaios sobre o racismo no Brasil, pp. 33-51. São Paulo: Paz e Terra. Cited in: Costa, E. and Scarcelli, I. (2016) Psychology, public policy for quilombola populations and racism. Psicol, 27 (2), [Online]. Available from: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-65642016000200357&lng=pt&tlng=pt [Accessed 6 August 2020].

[56] Brandao, A., da Dalt, S. and Gouveia, V. (2010). Comunidades quilombolas no Brasil: características socioeconômicas, processos de etnogênese e políticas sociais. Cited in: Costa, E. and Scarcelli, I. (2016) Psychology, public policy for quilombola populations and racism. Psicol, 27 (2), [Online]. Available from: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-65642016000200357&lng=pt&tlng=pt [Accessed 6 August 2020].

[57] Hormel, U. and Scherr, A. (2010). Diskriminierung – Grundlagen und Forschungsergebnisse. Wiesbaden: Springer VS.

[58] Rotondano, R. (2019). Brazilian apartheid: racism and segregation in Salvador, Brazil. International Journal of Sociology and Social Policy, 39 (11/12), pp. 950-961, [Online]. Available from: https://www-emerald-com.ezproxy.leedsbeckett.ac.uk/insight/content/doi/10.1108/IJSSP-12-2018-0228/full/pdf?title=brazilian-apartheid-racism-and-segregation-in-salvador-brazil [Accessed 8 August 2020].

[59] Behrman, J., Gaviria, A. and Szekely, M. Social Exclusion in Latin America. In: Behrman, J., Gaviria, A. and Szekely, M. (2003). Who's in and Who's out – Social Exclusion in Latin America. Washington: IDB Publications, [Online]. Available from: https://books.google.de/books?hl=en&lr=&id=LvEzYAfbSh0C&oi=fnd&pg=PP5&dq=social+status+segregation+indigenous&ots=IJtecdMX1L&sig=8U5V9nytIn-ohb9MvVwf_tz_UFvE&redir_esc=y#v=onepage&q=social%20status%20segregation%20indigenous&f=false [Accessed 7 August 2020].

[60] Firmenich (2015) FIRMENICH NAMES HONEY THE 2015 'FLAVOR OF THE YEAR'. December, [Online]. Available from: https://www.firmenich.com/en_INT/company/news/flavor-of-the-year.html [Accessed 14 March 2020].

[61] FAO (2019). Food and Agriculture Organization of the United Nations. February. Cited in: Shahbandeh, M. (2020). Global production volume of natural honey in 2000-2017. Statista, February, [Online]. Available from: https://www-statista-com.ezproxy.leedsbeckett.ac.uk/statistics/755215/natural-honey-production-volume-worldwide/ [Accessed 6 March 2020].

[62] Orbis Research (2018). Cited in: Shahbandeh, M. (2018) Forecast value of organic honey market worldwide from 2017 to 2023. Statista, October, [Online]. Available from: https://www-statista-com.ezproxy.leedsbeckett.ac.uk/statistics/933490/global-organic-honey-market-value/ [Accessed 6 March 2020].

[63] Garcia, N. (2018). The Current Situation on the International Honey Market. International Bee Research Association, Bee World, 95 (3), July, pp.89-94, [Online]. Available from: https://www.tandfonline.com/doi/abs/10.1080/0005772X.2018.1483814?journalCode=tbee20 [Accessed 6 March 2020].

[64] Carreck, N. (2018) Special issue: Honey. Journal of Apicultural Research, 57 (1), January, [Online]. Available from: https://www.tandfonline.com/doi/full/10.1080/00218839.2017.1412565?src=recsys [Accessed 10 March 2020].

[65] Menn (n.d.) Honig: Gesund essen. Bundeszentrum für Ernährung, [Online]. Available from: https://www.bzfe.de/inhalt/honig-gesund-essen-33942.html [Accessed 8 March 2020].

[66] Pasupuleti, V., Sammugam, L., Ramaseh, N. and Gan, S. (2017) Honey, Propolis, and Royal Jelly: A Comprehensive Review of Their Biological Actions and Health Benefits. Oxidative Medicine and Celluar Longevity (Oxid Med Cell Longev), July, [Online]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5549483/ [Accessed 8 March 2020].

[67] Hery-Moßmann, N. (2017). Honig als Heilmittel – so funktioniert's. Focus Online, August, [Online]. Available from: https://praxistipps.focus.de/honig-als-heilmittel-so-funktionierts_95273 [Accessed 8 March 2020].

[68] U.N. (2020) Comtrade. [Online]. Available from: https://comtrade.un.org/data/ [Accessed 6 March 2020].

[69] CMO (2019) Honey Market Presentation. European Commission, April, [Online]. Available from: https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/animals_and_animal_products/presentations/market-presentation-honey_en.pdf/ [Accessed 6 March 2020].

[70] ProFound (2015a). Cited in: CBI (2015a) CBI Product Factsheet: Industrial honey in Germany. Center for the Promotion of Imports, November [Online]. Available from: https://www.cbi.eu/sites/default/files/market_information/researches/product-factsheet-germany-industrial-honey-2015.pdf [Accessed 14 March 2020].

[71] ProFound (2015b). Cited in: CBI (2015b) CBI Product Factsheet: Organic honey in Germany. Center for the Promotion of Imports, November [Online]. Available from: https://www.cbi.eu/sites/default/files/market_information/researches/product-factsheet-germany-organic-honey-2015.pdf [Accessed 15 March 2020].

[72] CBI (2015b) CBI Product Factsheet: Organic honey in Germany. Center for the Promotion of Imports, November [Online]. Available from: https://www.cbi.eu/sites/default/files/market_information/researches/product-factsheet-germany-organic-honey-2015.pdf [Accessed 15 March 2020].

[73] Phipps, R. (2018) International Honey Market. American Bee Journal, November. Available from: https://www.apiservices.biz/documents/articles-en/international_honey_market_report_november_2018.pdf [Accessed 13 July 2020].

[74] USDA (2018) National Honey Report. Cited in: NHB (2020) International Bulk Prices. National Honey Board, [Online]. Available from: https://www.honey.com/honey-industry/statistics/

international-bulk-prices [Accessed 13 July 2020].

[75] EC (2019). EU and Mercosur reach agreement on trade. European Commission, June, [Online]. Available from: https://ec.europa.eu/commission/presscorner/detail/en/IP_19_3396 [Accessed 14 March 2020].

[76] DW (2019b) Widerstand gegen Bolsonaros Amazonas-Politik. Deutsche Welle, August, [Online]. Available from: https://www.dw.com/de/widerstand-gegen-bolsonaros-amazonas-politik/a-50190837 [Accessed 6 August 2020].

[77] BMZ (2020) Brasilien: Bilaterale Entwicklungszusammenarbeit. Bundesministerium für wirtschaftiche Zusammenarbeit und Entwicklung, [Online]. Available from: https://www.bmz.de/de/ministerium/zahlen_fakten/transparenz-fuer-mehr-Wirksamkeit/iati/index.jsp [Accessed 7 March 2020].

[78] BMEL (2020) Sichere Lebensmittel. Bundesministerium für Ernähung und Landwirschaft [Online]. Available from: https://www.bmel.de/DE/Ernaehrung /Sichere Lebensmittel/sichereLebensmittel_node.html [Accessed 14 March 2020].

[79] EC (2002a) REGULATION (EC) No 178/2002 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 28 January 2002: laying down the general principles and requirements of food law, establishing the European Food Safety. Official Journal of the European Communities, L31, pp. 1-24, February, [Online]. Available from: https://mobil.bfr.bund.de/cm/343/2002_178_en_efsa.pdf [Accessed 14 March 2020].

[80] EC (2002b) COUNCIL DIRECTIVE 2001/110/EC of 20 December 2001 relating to honey. Official Journal of the European Communities, L10, pp. 47-52, December, [Online]. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0110&from=en [Accessed 14 March 2020].

[81] EC (2004). REGULATION (EC) No 852/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004: on the hygiene of foodstuffs. Official Journal of the European Communities, L139, April, [Online]. Available from: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:139:0001:0054:en:PDF [Accessed 14 March 2020].

[82] EC (2011). REGULATION (EU) No 1169/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2011: on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004. Official Journal of the European Communities, L304, November, [Online]. Available from: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:304:0018:0063:EN:PDF [Accessed 14 March 2020].

[83] EU (2018) REGULATION (EU) 2018/848 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018: on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007. Official Journal of the European Union, L150, June, [Online]. Available from: https://eur-lex.europa.eu/legal-con-tent/EN/TXT/?uri=uriserv:OJ.L_.2018.150.01.0001.01.ENG&toc=OJ:L:20 18:150:TOC [Accessed 15 March 2020].

[84] EU (2019) COMMISSION IMPLEMENTING REGULATION

(EU) 2019/2164 of 17 December 2019: amending Regulation (EC) No 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control. Official Journal of the European Union, L328, December, [Online]. Available from: https://eur-lex.europa.eu/legal-con-tent/EN/TXT/?uri=uriserv:OJ.L_.2019.328.01.0061.01.ENG&toc=OJ:L:2019:328:TOC [Accessed 15 March 2020].

[85] HonigV. (2020). Honigverordnung. Bundesministerium der Justiz und für Verbraucher, [Online]. Available from: https://www.gesetze-im-internet.de/honigv _2004/BJNR009200004.html [Accessed 7 March 2020].

[86] FDA (2018a) Importing Food Products into the United States. Food and Drug Administration, March, [Online]. Available from: https://www.fda.gov/food/food-imports-exports/importing-food-products-united-states [Accessed 18 March 2020].

[87] FDA (2018b) Proper Labeling of Honey and Honey Products: Guidance for Industry. Food and Drug Administration, February, [Online]. Available from: https://www.fda.gov/files/food/published/PDF---Guidance-for-Industry--Proper-Labeling-of-Honey-and-Honey-Products.pdf [Accessed 18 March 2020].

[88] Federal Register (2014) United States Standard of Identity for Honey. August, [Online]. Available from: https://www.federalregister.gov/documents/2014/08/20/2014-19770/united-states-standard-of-identity-for-honey [Accessed 18 March 2020].

[89] State.Gov (2019) U.S. Relations with Brazil – Bilateral Relations Fact Sheet. October. Available from: https://www.state.gov/u-s-relations-with-brazil/ [Accessed 19 July 2020].

[90] Cullen, A. (2019) How Trump's trade wars are fueling the Amazon fires. The Guardian, September. Available from: https://www.theguardian.com/commentisfree/2019/sep/01/brazil-amazon-wildfires-trump-trade-wars [Accessed 19 July 2020].

[91] Imöhl, S. (2020) Die zehn größten Länder der Welt nach Fläche. Handelsblatt, January, [Online]. Available from: https://www.handelsblatt.com/politik/international/top-ten-die-zehn-groessten-laender-der-welt-nach-flaeche/24428374.html?ticket=ST-563453-iKegeqAR5l6Z207MZtAG-ap4 [Accessed 28 March 2020].

[92] INPE (2020) cited in: Gurk (2020) Der Regenwald als Beute. Süddeutsche Zeitung, May, Available from: https://www.sueddeutsche.de/politik/brasilien-regenwald-bolsonaro-abholzung-landraub-indigene-coronavirus-1.4906376 [Accessed 8 July 2020].

[93] INPE and DETER (2020) cited in: Butler, R. (2020) Brazil revises deforestation data: Amazon rainforest loss topped 10,000 km in 2019. Mongabay, June, [Online]. Available from: https://news.mongabay.com/2020/06/brazil-revises-deforestation-data-amazon-rainforest-loss-topped-10000-sq-km-in-2019/ [Accessed 4 August 2020].

[94] Zemp, D., Schleussner, C-F., Barbosa, H., Hirota, M., Montade, V., Sampaio, G., Staal, A., Wang-Erlandsson, L. and Ramming A. (2017) Self-amplified Amazon forest loss due to vegetation-atmosphere feedbacks. Nature Communications, 8, Document nr. 14681, March, [Online]. Available from: https://www.nature.com/articles/ncom ms14681.pdf [Accessed 6 August 2020].