

Aperitifs at the biodiversity expense

© ANSA

ANALYSIS OF THE CASHEW INDUSTRYIN GUINEA-BISSAU, WHICH HAS BECOME ONE OF THE WORLD'S LEADING PRODUCERS IN LESS THAN 20 YEARS

FOOD WAVE
CO-FUNDED BY THE EUROPEAN UNION
PROMOTED BY Comune di Milano
manitese
UN IMPEGNO DI GIUSTIZIA

CASE STUDY CONDUCTED
BY MANI TESE UNDER THE
FOOD WAVE PROJECT

Project coordination:
Elisa Lenhard

Author:
Rosita Rijtano/lavialibera

Editing:
Elena Ciccarello/lavialibera

Graphics:
Davide Romanelli/lavialibera

Photo:
Rosita Rijtano/lavialibera
Andre Kosters/Epa via Ansa

Fixer:
Amatijane Candé

Graphic design and layout:
Lilian Visintainer Pinheiro

We thank the Mani Tese staff in
Guinea Bissau for their collaboration,
Francesco Mattioni, Martina Pizzolato



CO-FUNDED BY
THE EUROPEAN UNION

This publication was produced
with the financial support of the
Development Education and
Awareness Raising (DEAR)
Programme of the European Union.
Its contents are the sole
responsibility of Mani Tese
and do not necessarily reflect
the views of the European Union.

SUMMARY

Introduction 04

World cashew production and its double environmental impact (ignored by the EU) 06

Cashews boom in Guinea-Bissau: research 08

History of the cashew tree, a colonial import 10

Cashew cultivations expand, forest and biodiversity decline 12

Protected areas' vulnerability 15

Caju employees 18

Produced in Guinea-Bissau, processed elsewhere 21

Conclusions 26

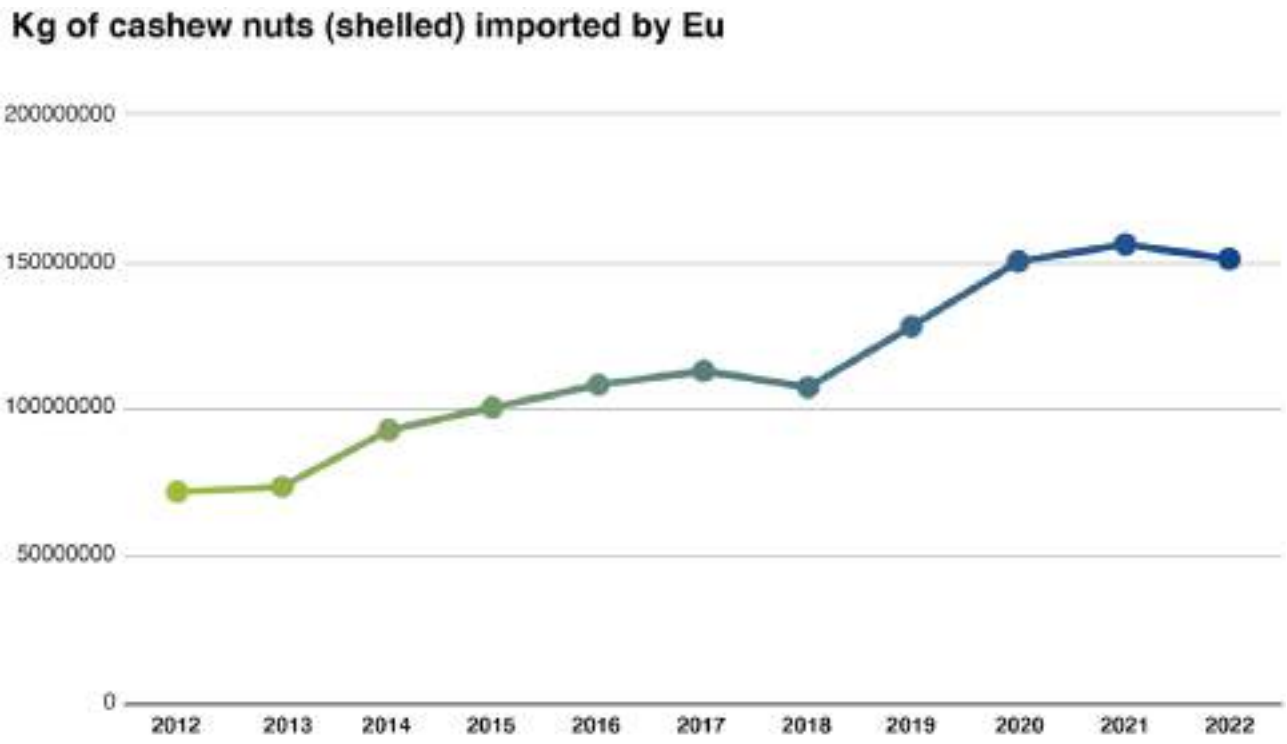
INTRODUCTION

“Everyone says cashew nuts are our gold, I think they are our hell”

Costantino Correia, an agronomist engineer and former head of the forestry agency of Guinea-Bissau, has been fighting against deforestation for 20 years. It has never been easy, he admitted. Guinea-Bissau is one of the poorest nations in the world and 85 per cent of the population depends on agriculture: deforestation has always meant survival.
But today the phenomenon has a different implication, he warned: “We have little time left, ten years at most, to save the ecosystem from irreversible damage.” Crammed into a small room with mould-stained walls, Correia showed photos of dozens of hectares of vegetation that have been burnt down. It happened between March and April, before the rainy season.
They were itinerant crops. You exploit the soil for a few years and then move on, giving the land time to regenerate. At least if only rice is planted. “Now rice is joined by caju, the cashew tree, which starts bearing fruit in three or four years. There is no turning back after that. Change is permanent. It is leading us towards self-destruction,” he said.



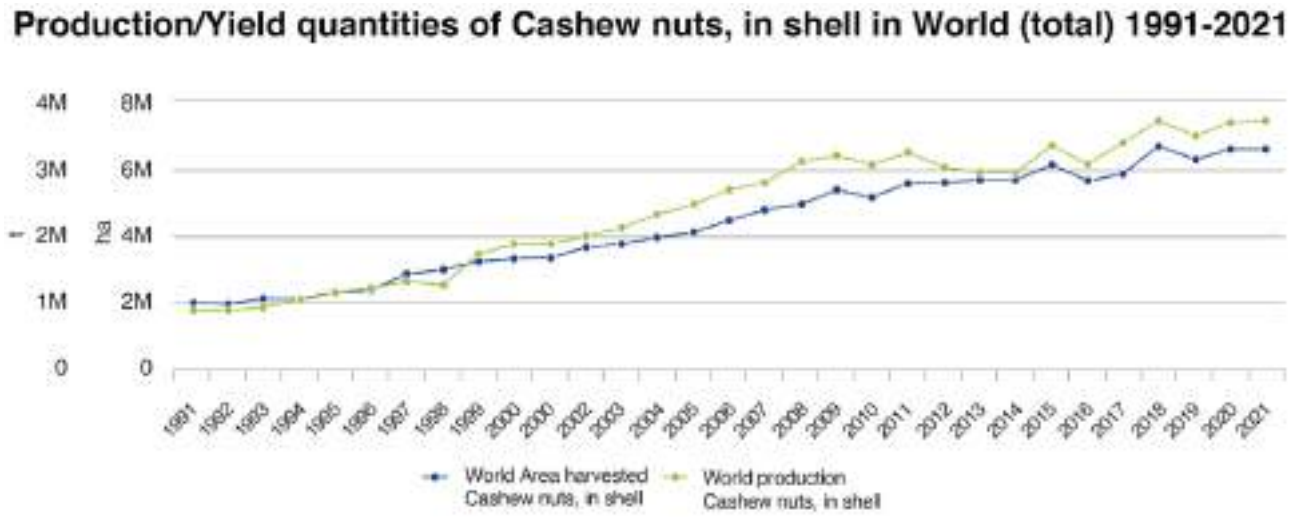
Cashew is a dry fruit rich in fat, carbohydrates, protein and magnesium. They call it the poor man's crop, but the rich man's food. Driven by health and vegetarian diets, which advertise its antioxidant and nutritional qualities, it quickly conquered Western markets. We find it in aperitif bowls, sushi, bars and in some ready-made products, such as pesto, where it has replaced the more expensive pine nuts. Eurostat data confirms that cashew sales are booming in Europe: in ten years, imports have increased by 111 per cent from 71,000 tons in 2012 to 151,000 tons in 2022. Italy is the fourth largest consumer, after Germany, Holland and France. There was a slump in international demand in 2023, but forecasts by the Netherlands Import Promotion Agency, which specialises in analysing European markets speak of stable growth at least in Europe.





World cashew production and its double environmental impact (ignored by the EU)

On a global scale, there were just over a million hectares under cashew cultivation in 1988. In 2020, the figure rose to 7.1 million. In 2020, the area of the world covered by cashew cultivation was much smaller than that occupied by soya (127 million hectares) and palm oil (29 million) but had almost reached the scale of cocoa (12 million) and coffee (11 million). Half of the production is in Africa, and particularly West Africa (42 per cent). The rest is in Asia (43 per cent) and Latin America.



Transport and deforestation are the two main environmental impacts of the cashew supply chain. The first is related to the long journey the product undergoes before reaching supermarket shelves. African countries plant, harvest and export. While the nuts, enclosed in a shell containing caustic liquid are dried and roasted by Asian factories where 87.5 per cent of the processing takes place according to a United Nations' 2021 report. Once processed, or semi-processed, cashews face a journey to Europe. But every step pollutes. In June 2022, a University of Sydney study estimated that the environmental impact of transporting consumed food accounts for seven per cent of global emissions.

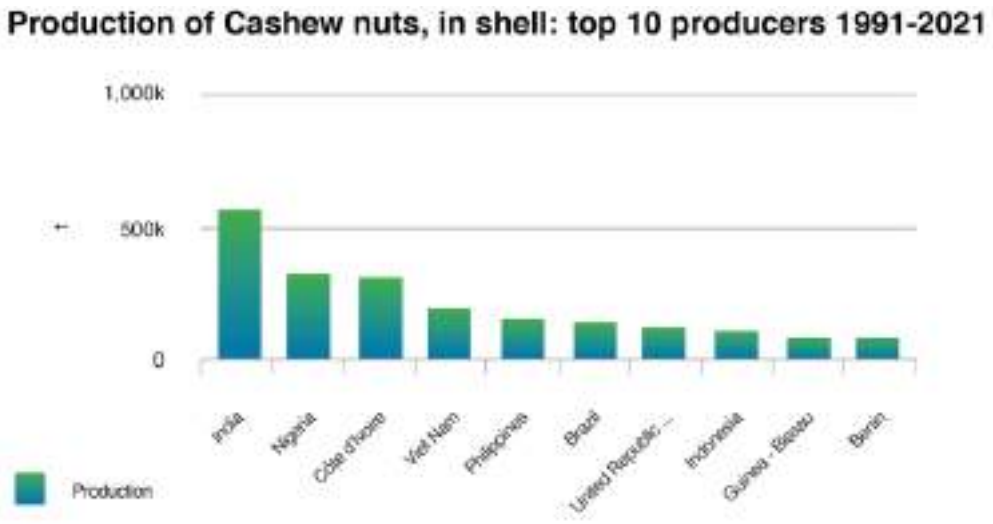
The uncontrolled expansion of plantations is contributing to the deforestation of the countries of origin - just like cocoa and coffee. These monocultures that, unlike cashew, are growing at a slower pace.

In the new law against deforestation, the EU does not take this development into account, which, according to a complaint by some researchers published in the scientific journal Science, makes the regulations ineffective and behind the fast pace of emerging crops. The regulations approved in May 2023, will be in force in about 18 months. They require companies working in the European market to implement strict control and verification mechanisms on certain incoming and outgoing goods. No company or product will be banned. The aim is to ensure that what is imported or exported from the EU has not been produced on land subject to deforestation or forest degradation, after 31 December 2020. The companies must verify compliance with the main regulations in the producing state, including human rights laws and the protection of indigenous people in cultivated areas. For now, the obligations only apply to those working with palm oil, cattle, coffee, cocoa, timber, soya and rubber, including derivatives. These goods are considered to be "at the root of most of the deforestation driven by EU consumption", according to a text approved by the EU Council. The standard provides for a periodic update of the products to be monitored, but there is a fear that it will come too late. Joana Capela, from the Cibio biodiversity and genetic resources research centre, based in Portugal, said: "The law fails to be preventive. It reacts to already established trends. The list of regulated products is based on old data, it does not capture the current situation. When it is updated, if it is, it will always be retrospective. Meanwhile, forests in tropical countries will have been destroyed to make room for cashews."



Cashews boom in Guinea-Bissau: research

Guinea-Bissau, more than other states, is an interesting case study for the analysis of the cashew production chain and its environmental impact. In less than 20 years, this country has become one of the top ten producers worldwide. In Africa it was second only to Ivory Coast, which is eight times larger. Today, caju accounts for 90 per cent of the country's exports, provides a living for 70 per cent of its population, and covers the highest share of cultivated land (34.4 per cent), surpassing rice (14.7 per cent) as the staple food.



At 36,000 square kilometres, Guinea-Bissau is one of the smallest countries in Africa. But it is inhabited by hundreds of animal and plant species.

Due to the canicular heat that blows in from the Sahel in the north and tropical climate that pushes in from the south, this Atlantic-fringed state is home to three different ecosystems and is a concentration of biodiversity. The savannah is parched in summer and green in the rainy season. The plains are dotted with forests. The great estuaries are inundated by the tides, which, if you look down on them from above, spread inland like large tree branches.

To investigate the caju cultivation expansion impact, Mani Tese and *lavialibera* conducted field research in Guinea-Bissau, to gain a complete picture of the supply chain, and its environmental and social impacts. The investigation team interviewed farmers, activists, trade associations, international organisations, researchers, biologists and government officials. The study was carried out in the Biombo, Oio, and Cacheu regions, where caju plantations are as large as forests, and the Tombali region, where new plantations are replacing native forest even in natural parks, i.e. protected areas. The mission ended with a visit to Djobel, a village threatened by rising seas and in conflict with the neighbouring community over land ownership. Although the fruit harvest ends in June, the study took place in September, when the product export is about to end. This made it possible to monitor the progress of the entire 2023 production year.

The field research revealed four main critical points related to the cashew supply chain in Guinea-Bissau:

- The expansion of cashew plantations is contributing significantly to Guinea Bissau deforestation, destroying the habitat of many animal species, with major impacts on the country's biodiversity;
- protected areas, implemented by the Guinea-Bissau governments since the 1990s, are insufficient to protect the environment;
- The large-scale introduction of cashews has made farmers more vulnerable to malnutrition and subjected their economy to the fluctuations of the international market;
- 95 per cent of caju seed processing takes place abroad and the sale of the raw material yields a local value that is more than 4000 per cent lower than the retail price of cashew in the European market. In other words, 0.004 per cent of the value that a cashew snack has in our supermarkets goes to the farmer.



History of the cashew tree, a colonial import

The cashew tree has a recent history in Guinea-Bissau. Until the beginning of 1953, the date of one of the first agricultural censuses, rice was mainly cultivated in the country, followed by various maize species. Peanuts were the only product destined for export. The colonial Portuguese encouraged the cultivation of the cashew tree (Anacardium occidentale), realising its commercial potential. In the 1960s, a reforestation programme was included: it was suggested to farmers to reforest soils impoverished by peanut cultivation, as it is a plant that needs little water and care. It grows almost spontaneously. The perfect shrub. The Instituto da biodiversidade e das àreas protegidas - IBAP (a national body created in 2004 to preserve the country's ecosystem) former director Justino Biai, said: "It became an issue when cashews started to have an economic value." The surge in demand in the international market, driven first by India and then Europe and North America, was a decisive factor. But not the only one. Successive governments since independence from Portugal in 1973 have focused on the caju nut as an export product, favouring its barter with cheap imported rice. In the 1990s, farmers could exchange a kilogram of cashew nuts for two kilograms of rice, which is much more laborious to cultivate.

The caju tree does not require much maintenance. The hope of making easy money took root quickly and the reasons are easy to guess given the local situation. Guinea-Bissau's recent history is marked by many coups, the last one allegedly (failed) in February 2022, and by a documented drug trade that fuels political instability while remaining invisible in the country: cocaine, arriving from Colombia, leaves immediately for Europe, almost without a trace. The Human Development Index has always placed the country among the last in the world. More than

two million people live below the international poverty line and malnutrition is widespread. In this country caju is a crucial resource, where growth opportunities are few and mostly related to international projects, which have a beginning and an end. This explains the uncontrolled expansion of cultivation.

According to data from the Guinean Ministry of Trade, the country exported 135,000 tons of cashews in their shells in 2012. While in 2022 it reached 200,000.

These estimates do not include smuggling with neighbouring states, especially Senegal, where the fruit more valuable. This trend does not seem likely to wane any time soon. According to the latest available data, as of 3 April 2023 more than 196,000 tons were exported.

“Planting caju is everyone’s plan,” admitted Jean Gomes, a 33-year-old farmer. Jean has the land bordering the road to Bissorã, a village surrounded by cashew cultivations. Together with his father, he recently deforested the land. At the moment no caju, only rice and peanuts, but in the future, he does not rule it out: “It’s in fashion.”





Cashew cultivations expand, forest and biodiversity decline

Biai said: “As the cashew orchards increase, the forest shrinks.”

The cashew tree is a not very tall shrub, reaching a maximum of 15 metres, with a wide and intricate canopy. The leaves are oblong, leathery and evergreen. This monoculture has already transformed large areas of Guinea-Bissau, standardising a landscape otherwise characterised by a complex mosaic of forests, ploughed fields and fallow land. This is most noticeable when passing through the Biombo and Oio regions, where the caju trees are so dense that they create a bright green forest. But the most controversial areas of expansion are in the north and south of the country, where new cashew nuts are being sown in protected areas. Biai said: “plantations are replacing native forests at an alarming rate.” It is difficult to quantify the exact impact, as data is not collected. The last official estimate of the extent of the state’s forest area dates to 1985. Constantino Correia pointed out the inconsistency: “Since then, all institutional documents continue to report that the forests cover 2,034,284 hectares, but it is impossible that this is still the case. Even at the time of the census, the estimated deforestation rate was 60-70,000 hectares annually. The figure can only be downwards considering the fast pace at which the population, and consequently the food required, has grown.” “Farmers deforest areas to make room for new caju, and other crops. To prevent vegetation growing under the crops, and in the hope of increasing productivity per hectare, shrubs were sown close to each other, making intercropping, i.e. the simultaneous cultivation of plants of different species on the same plot, impossible.

There are additional problems associated with the way the soil is prepared for planting. The stubble-burning technique, also called cut-and-burn agriculture, consists of burning all vegetation, and the creatures that inhabit it, without discrimination. Biai says that in the Cacheu and Cantanhez parks, analyses were carried out to establish how much carbon dioxide the forest could absorb, due to photosynthesis. While the results were positive in 2011, ten years later they showed that instead of absorbing carbon dioxide, the forest was emitting it.

Biai said: "'It's not only caju that should be condemned, but it's the main culprit."

The assertion finds partial, and unofficial, confirmation in research published in November 2020 in the Brazilian journal of environmental science. For the study, 89 per cent of the deforestation of native forests occurred between 2002 and 2017 is due to the expansion of cashew plantations.

As forests shrink, replaced by caju, the habitat occupied by animal species is disrupted. Some species manage to adapt, others do not. Scientific studies are still in their infancy, but initial evidence indicates that coexistence is possible for mammals if cashew plantations and forest trees are alternated. The situation is different for large-scale cultivation. Nine studies conducted in Nigeria, India and Guinea-Bissau suggest that caju orchards can reduce the species richness of fungi, butterflies, birds and other land mammals in an ecosystem by four to 89 per cent. The growth of orchards in the Guinea-Bissau's Bafatà and Gabu regions has led to a reduction of butterflies and a lower species diversity. The most penalised are those that can only live in small habitats with specific features. For the Dedos unidos Colibuia association, one of the few local organisations committed to the preservation of biodiversity.

One of the organisation's founders Bocar Seidi said by phone: "the caju has drastically reduced the number of elephants, buffaloes and gazelles in the area."

We are in the Tombali region, on the border with Guinea. The area hosts an important transboundary wildlife corridor and one of Africa's remaining sub-humid forests, identified by the Worldwide Fund for Nature as one of the world's 200 most important ecoregions. The break in the landscape is visible once you pass the rapids of Saltinho and Cusselinta, small natural pools of the Corubal River.

Behind, grasslands and palm groves. In front, tall, big, narrow trees form almost a single canopy. Known as Professor Lemos, because he was a teacher and now a school inspector, Seidi has received death threats several times by the community living in the area where the association is active. He knows the environmental importance of the region, and believes that “there can be no good quality of life without safeguarding the environment”, but “people prefer to destroy nature to plant cashews”

The offices of Dedos unidos Colibuia are in the village of Colibuia. These are just a few rooms without tables or chairs, between unpainted walls. The pride of the association is a tractor obtained through an EU project, which is supposed to make work in the rice fields less strenuous and convince farmers not to abandon them, to ease the pressure on the forests. Even Mamadu Cabiro Seidi, Lemos’ deputy who greeted us in an ash-blue galabia, said he had been threatened. When he accompanied us inside the Cantanhez national park, where the population was planting new cashews on the edge of the forest, breaking the prohibitions, he preferred not to go through the village. Instead, he chose a longer side road.

“There were elephants here before. But they have not been seen for two years. Elephants like quiet places, without too much movement”

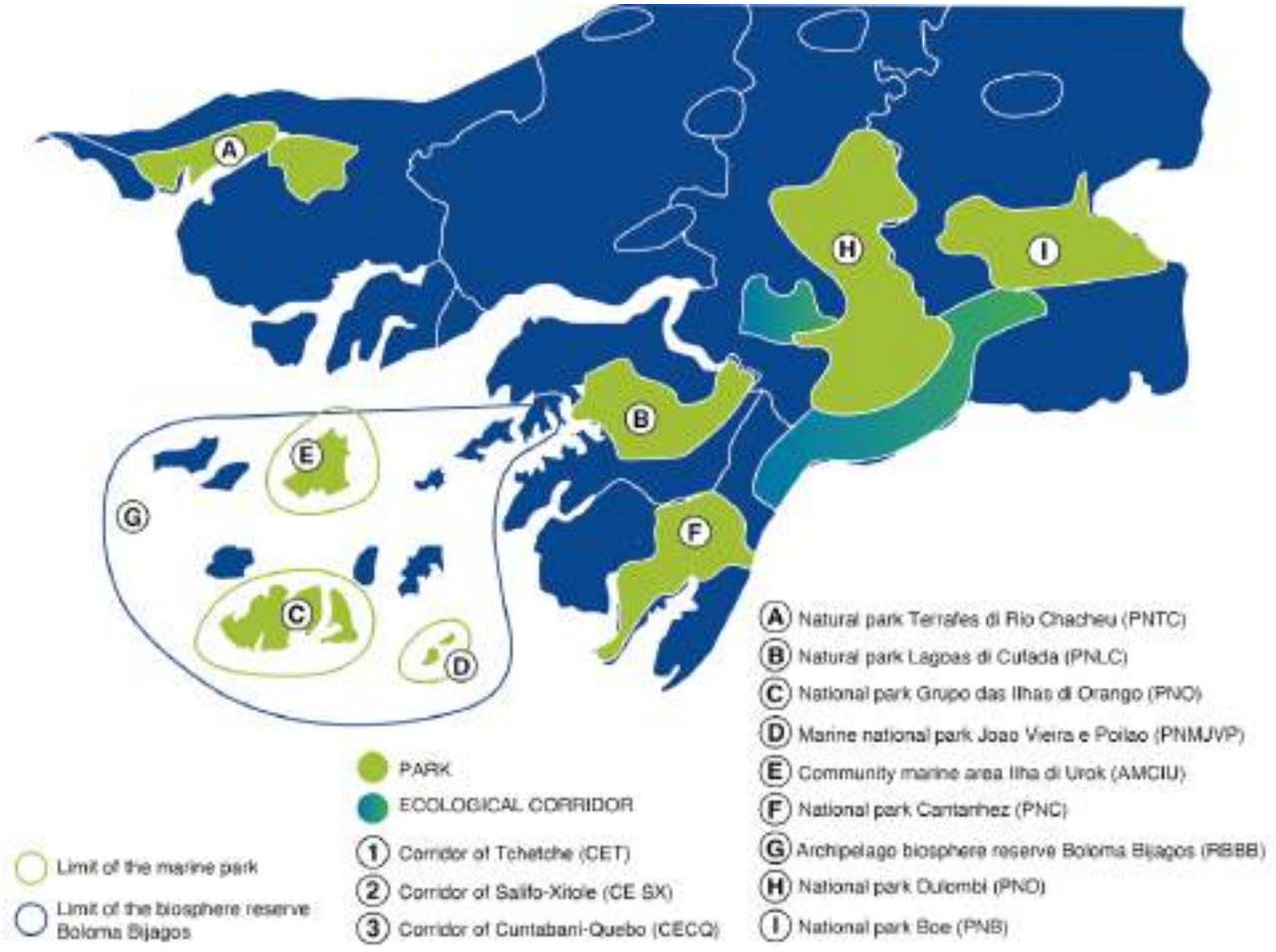
he said. In August 2023, scientists documented the presence of a population of elephants, which were almost extinct in neighbouring countries: Senegal and Guinea. They urgently called for a conservation plan to safeguard the habitat of the mammal which is endangered due to the “expansion of cashew orchards, charcoal production, fires set by hunters, road construction, and over-exploitation of the African fan palm, an important food resource for elephants.”



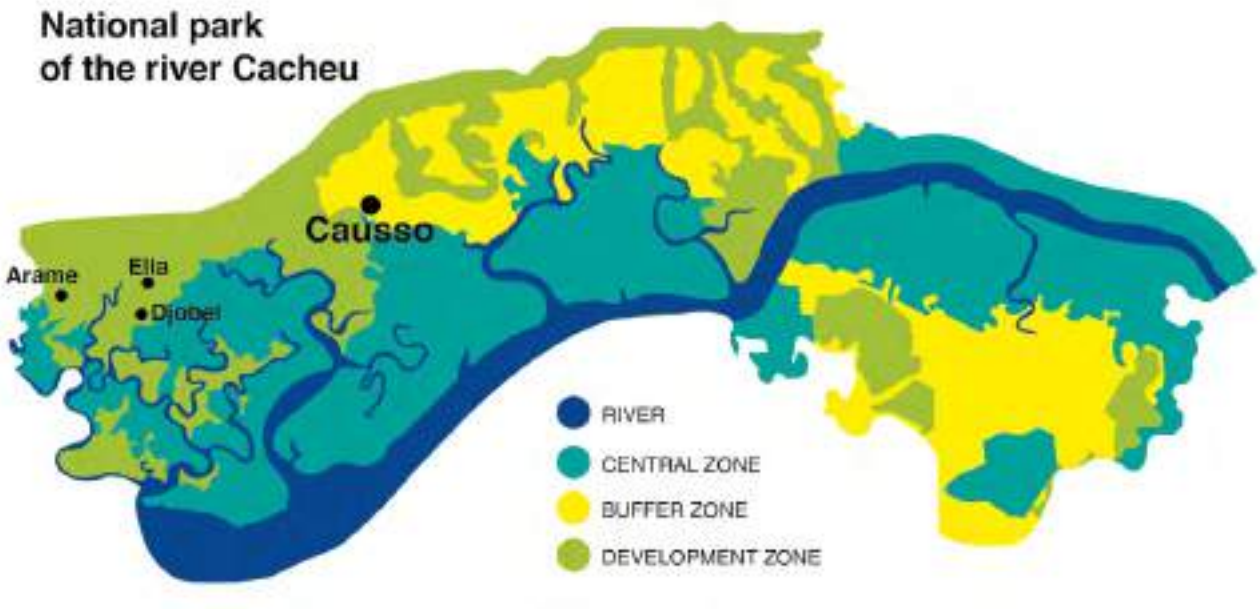


Protected areas' vulnerability

The protected areas created by the governments of Guinea-Bissau since the 1990s, covering 26.3 per cent of the country's land and sea area, are insufficient to protect the forests. There are eight national parks and three ecological corridors connecting inland to coastal areas for animal transit.



These protected areas were established allowing the population to continue living within them, albeit with certain restrictions. It is a model that has a historical precedent in the extractive reserves for which the environmentalist and trade unionist Chico Mendes, later killed by a landowner, fought in Brazil. Local resources are accessible to the resident community for subsistence purposes. The system is divided into three different areas. No human activity is permitted in the core zone, the primary purpose of which is the protection of fauna and flora. Agriculture, fishing and subsistence hunting are permitted in the buffer zone, but not the replacement of the original vegetation. There is the development zone, where natural resources can be exploited while respecting biodiversity. According to interviews with officials of the Instituto da biodiversidade e das àreas protegidas (IBAP) forest rangers and representatives of international organisations, the divisions are ignored. There are two types of violation: farmers plant new caju orchards where they could not or sell their land to people outside the park. We collected two testimonies about this in the Cacheu region in the north of the country.



Near Causso, a woman who lives in a village in the protected area's buffer zone, answered some of our questions. She said she was from another town, Canchungo, outside the park, and did not know it was protected.

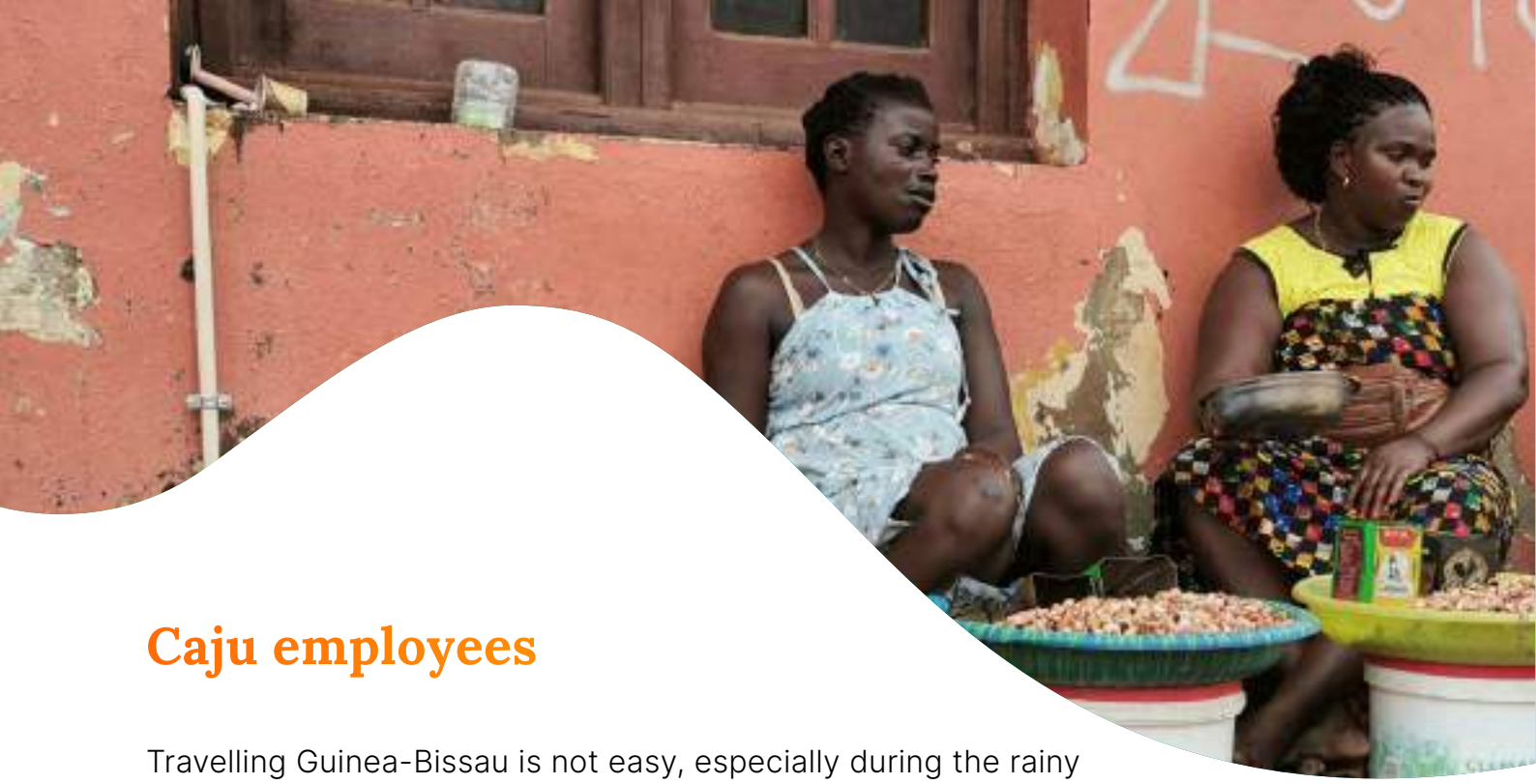
"My husband bought a plot of land nearby in 2011. It was scrubland. We cleaned the area to plant cashew nuts. Then the owner of the land gave us this space to live near the plantation,"

she said. Not far away, a 35-year-old man admitted that he had recently prepared the area for the new cashew plantation using the stubble-burning technique (cut-and-burn agriculture). He claimed he had no information about the protected areas and believed their existence was just a way to make money. The problem is not confined to Cacheu. Multiple sources confirm the same dynamics are repeated throughout Guinea-Bissau's protected areas and not only in the buffer zones, even in the core zones, where all activities should be prohibited.

The human presence within the preservation areas causes conflicts between the tribes and IBAP, which, despite its political nature, is an entity with administrative and financial autonomy, i.e., it is financed by international projects. It suffers from a shortage of funds and personnel. The chief of Amindara, a village nestled in Cantanhez Park Momo Djassin said proudly: "I am the first to stand up to IBAP." He ended up in court for violating the regulations. The case is still ongoing. The story does not feature caju, but it is significant in understanding the conflict. According to IBAP, the tribe cut down about 144 trees with the intention of selling them in the capital, Bissau, while the village's forest products, according to the rules, can only be used for domestic consumption and not for trade. When the institute officials discovered and confiscated the timber, the population protested, there were fights and injured officers. 'IPAB does not authorise us to do anything," Djassin complained.

"This land is the only thing our ancestors left us. They obtained it by offering two virgins to the demons. We cannot live in peace with those who prevent us from inhabiting and exploiting it."

Djassin has no doubts on forest protection: "We already protect it. We do not touch it." Cantanehz park manager Quebo Quecuta described a different reality: "This year a woman planted caju near the wildlife corridor. We removed it. This was not the first time. Local communities were involved in the creation of the protected areas, and they are still consulted, but that is not enough. We cannot provide an alternative that can replace cashews. We have tried honey production, non-timber forest product processing and wetland reclamation. It was not enough. Nothing can compete with the value of caju, bartered for rice." Supervising what is happening is difficult because of the disproportionate resources available: the park is 1,057 square kilometres and is inhabited by 159 communities, but "there are only ten of us working on it, including me," Quecuta said.



Caju employees

Travelling Guinea-Bissau is not easy, especially during the rainy season. The torrential rain turns the laterite roads into one huge, brick-red chasm of earth, which swallows the asphalt until it disappears. All around nature explodes: mangroves with intricate geometries and termite mounds so large they look like cathedrals. In the background, the villages. For some years now, the houses' roofs have been replaced with zinc. There are small solar panels, for electricity, and dirt bikes to move around the fields. It is the wealth brought by caju, they explained.

The improvement that this fruit has brought to the lives of Guinea-Bissau farmers is most visible in the areas where caju plantations are most extensive. Interviewed farmers told us that they had improved their living conditions due to cashew nuts. Daniel Sambu, 35, said: "We used to grow rice, then we switched to cashew nuts: it provides more. I now have a zinc roof and a solar panel for electricity. I bought a motorbike and fixed the house's walls." The importance of this fruit for Guineans can be seen in many areas of daily life. The cashew tree demarcates land ownership and the acid contained in the caju nut is used to make tattoos. Harvesting the fruit involves the whole family, including women and children. Quinta Kabi, a farmer who is part of the Lampara du campu cooperative in the Cacheu region, said:

"We put the fruit in the baskets. On average, we collect four baskets daily. It is hard work, but it gives us something to eat.

Ines, 16 in November, said she participated in the cashew harvest, like her family, even though it takes place during the school months. She went to the plantations every day at noon, then returned home at three in the afternoon. She picked the caju apple, removed the stone, and crushed the pulp.



The introduction of cashew nuts on a large scale marked the transition from subsistence farming, where most of the crop is consumed within the family and only a small part is sold, to cash crop farming, where all or almost all the produce is sold. However, this change made the farmers more vulnerable to malnutrition and has made their economy subject to international market demand, which is variable.

In 2022, for example, farmers could sell a kilogram of cashew nuts for up to 80 cents. This year the same quantity was 20 cents. Celestino Fernando, technical coordinator of Ressan-Gb, an association that promotes food security in Guinea-Bissau, explained the problem: “Land once used for the cultivation of various cereals, tubers, peanuts and fruit trees such as bananas is now being used to plant cashews. The production of rice, which is the staple food, although growing, could not keep up with the needs of the increasing population. According to the Ministry of Agriculture, the country now imports about 70 per cent of the rice needed for domestic needs. In 2012, it was 40 per cent (FAO figure). Former advisor to the UN Food and Agriculture Organisation (FAO), and now UNDP analyst, Elisabete Dumbia said: “If we put cashew nut production figures and rice production and import figures on a scale, it is easy to see that we are on the brink of a disaster. Instead of growing rice, farmers plant cashew nuts in exchange for rice.

Mamadu Saliu Lamba, owner of a caju plantation, and appointed the new Minister of Agriculture and Rural Development in August 2023, said he was working to fix this. “We are raising awareness of farmers, so they do not submit to a monopoly. For this reason, we are working to ensure that farmers do not plant the cashew trees too close together but safeguard the necessary space between trees to allow sunlight and rain to penetrate. In this way, the area around the caju tree can be used for other crops.”

Cashew trees and climate change fuel conflicts between tribes

In Guinea-Bissau, the ownership of land cultivated with cashew nuts, and the rising sea level, are fuelling conflicts between tribes. An interesting case is Djobel, an archipelago struggling not to be submerged, which has become a symbol of climate change.

Guinea-Bissau is the fourth most vulnerable state in the world to rising sea levels. Since 2015, more than 170,000 Guineans have been affected by the floods, which are estimated to have destroyed eight per cent of rice production. The situation is bound to worsen. The UN estimates that in the future the agricultural sector will be permanently damaged by increasingly brackish, if not flooded, land. Djobel village chief Bassiro Nango said: “We have built a new dam, but we don’t know how long it will last, last year’s strong waves have already swamped it.” Ines Djisselen, 29, said: “My brother’s hut was destroyed. The water is taking everything. We are forced to leave.”

This forced migration is the cause of a conflict with the neighbouring Arame tribe. Arame owns a portion of land that the government allocated to the displaced Djobel people. The two tribes are related. For Arame, however, Djobel trespassed on their allotted portion of land, destroying their most valuable asset: the caju plantations. For Djobel, however, this space is theirs. It is ancient history, and the war has been going on for years, with deaths and injuries.

Climate change and the cashew trees play a central role in the dispute, said local coordinator of Mani Tese, Issa Indjai: “The site granted to Djobel lies next to land disputed by another tribe, Elijah. A community used to cultivate mangrove rice, but recently converted to cashew nuts, annexing the land of neighbouring communities. Now these people want to take advantage of the dispute, building a strategic alliance with Djobel and encouraging trespassing.” What is the reason for the cultivation change? Indjai said: “The rising sea destroyed the marshes and salinated the soil.

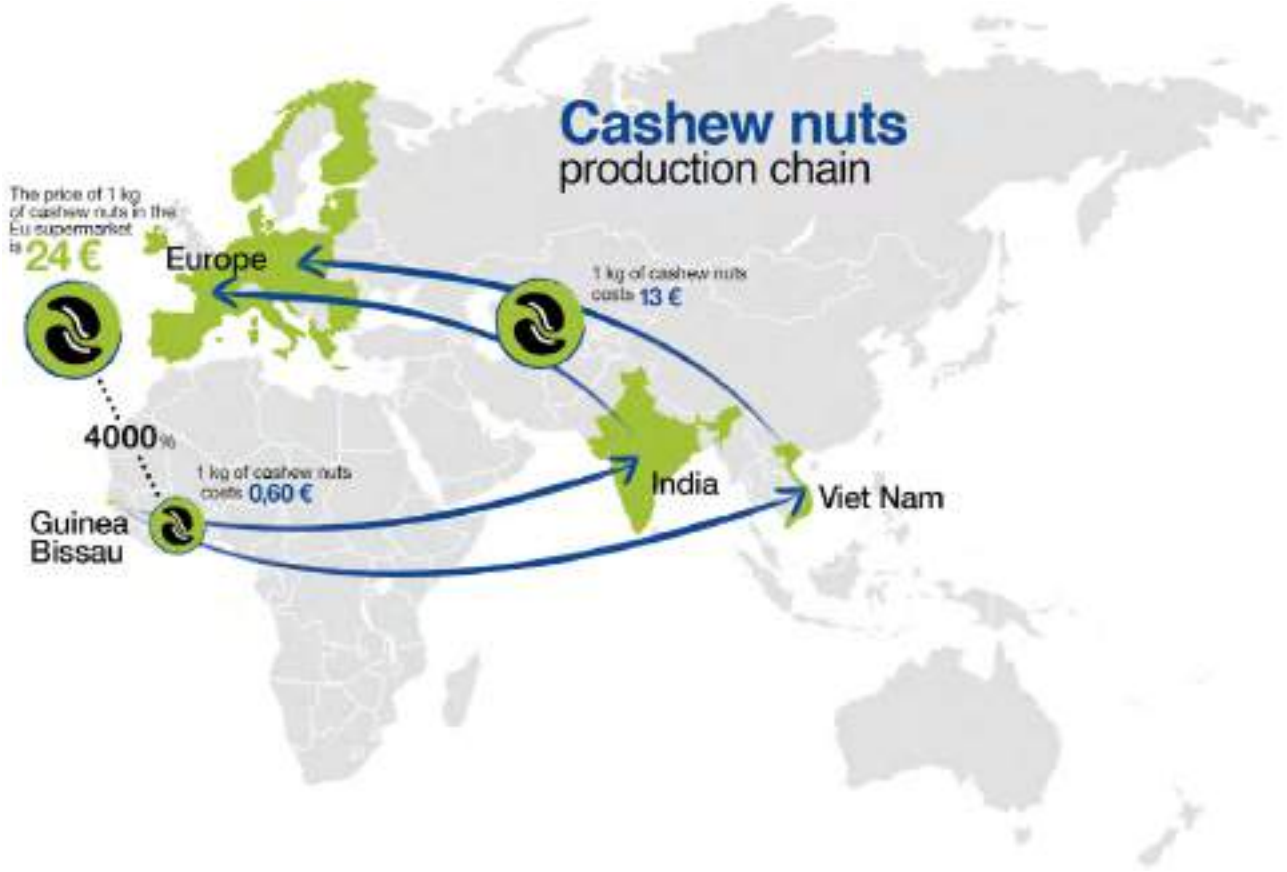


Produced in Guinea-Bissau, processed elsewhere

Despite booming exports, which have been achieved at the expense of the environment, Guinea-Bissau continues to receive the smallest share of the big cashew business. The most penalised are the farmers. More than 90 per cent of the caju seeds are processed abroad and the sale of the raw material yields a local value of more than 2000 per cent lower than the price of shelled cashew nuts in the European market. The value increases by 4000 per cent in retail.

There are only a few companies in the country capable of processing the caju seed, which must be steamed, dried, shelled and cleaned before it can be eaten. The process requires time, machinery and appropriate protective measures for workers: the liquid contained in the shell is dangerous and burns the skin. Agriculture Minister Lamba said: “We only process five per cent of the cashew nuts produced here.” The supply chain is long, but for descriptive reasons it can be divided into two stages. The first is internal to Guinea-Bissau. Farmers do not deal directly with exporters, but with traders, who act as intermediaries. They crowd the villages during the sale and have the means to take the sacks of caju to Bissau, to the exporters’ hangars. From June to September, Rua Guerra Mendes, a peripheral artery of the capital that stretches to the port, fills up with trucks loaded with sacks of cashew nuts waiting to be shipped. Exchange between farmers and traders almost always takes the form of barter.

In theory, every year at the beginning of the season, the government sets a minimum price for a kilogram of cashew nuts, but in practice, this is never respected at the end of the season. The exporters decide how much to pay, depending on market developments. In 2023, the officially set minimum price was 350 CFA francs (the currency circulating in West African Economic and Monetary Union countries),



about € 0.50. In September, the end of the season, the price paid to farmers was 150 CFA francs (23 cents). José Formoso Vàz said this situation resulted in him getting into debt: “At the beginning of the season, for 350 CFA francs, I traded the cement I needed to finish the housework, but then the value of a kilogram of cashew nuts fell by more than half.” Agriculture Minister Lamba admitted the problem, but argued that institutions could do little:

“The market is stronger.”

In the second phase, export, the caju nut moves from Guinea-Bissau to India or Vietnam factories. A part of the raw material, (it is impossible to determine the percentage), goes back to Europe. Here the product can undergo further processing, such as salting and packaging.

In each value chain, i.e. the intermediate steps between the production and the final sale, the price of the product increases. In many agri-food chains, where production, processing and distribution are spread over several countries, the producers of the raw material take a much smaller share of the finished product value. In the case of cocoa, it is estimated that out of the $107 billion business value, only $6.6 comes to farmers. The disproportion we detected between what a farmer in Guinea-Bissau

earns and the price at which a cashew nut is sold in our supermarkets is much higher than in other supply chains. According to our calculations and the information available, the producers of the caju nut get about 0.004 of the value that cashew nuts have in European retail. We take 2021 as a reference period, when the prices were in line with the average of the last decade.

According to official figures from the government of Guinea-Bissau, that year the country's farmers received 400 CFA francs for a kilogram of cashew nuts, still in their shell. The equivalent of about € 0.60.

In 2021, according to Eurostat, the European Union imported the shelled dried fruit at an average price of € 12.70, with an increase in the product value of 2116.67 per cent. A 125-gram packet of cashew nuts available from supermarkets is about € 3 which is 189 per cent higher than what the EU pays for importing the product and 4,000 per cent higher than what the farmer in Guinea-Bissau receives. The farmer received 0.002 per cent of the value of the finished product in Europe. And 0.004 per cent of the price of a supermarket-bought cashew nut snack. Even if we do not know the revenues and costs associated with each supply chain step (processing, transport, and taxes), the difference is huge. There are some European companies that buy processed, or semi-processed, cashew nuts directly in Guinea-Bissau. In this case, the average price is around € 5 per kilogram. According to Eurostat data, the quantity of shelled fruit imported into the EU directly from Guinea-Bissau has increased. It stood at around 1 ton in 2012, while in 2022 it was 600 tons. However, this is an infinitesimal share compared to the tons exported annually by the country (200,000 last year). During the research, we identified two European companies that purchase the processed product directly in Guinea-Bissau: the German company Naturkost Ernst Weber and the Tabanka cooperative in Verona. Naturkost Ernst Weber buys up the production of the plantations of Ajuda de Desenvolvimento de Povo para Povo na Guiné-Bissau (Adpp), a non-governmental organisation. While the Tabanka cooperative, which markets cashew nuts in Italy, buys them from Sao Francisco da Floresta, an agricultural cooperative in the Tombali region. The farmer loses most of the value from growing the cashew tree because they do not process the caju apple: the stalk to which the nut is attached. André Nanque, of the Centro de Promoção do Caju (Cpc), a private institute with a public purpose, said: "The cashew nut accounts for only 30 per cent of the value of caju, 70 per cent being the fruit pulp. To obtain one kilogram of caju seed, approximately four kilograms of caju

apple pulp are produced. This means that the country produces around 800,000 tons of cashew pulp annually, which is rich in fibre and could be exploited for the production and export of juices, flour, biscuits. Much of it, however, is wasted - little or nothing remains." Associação nacional dos agricultores da Guiné-Bissau (Anag) head, Jaime Boles, said: "Agricultural conditions in Guinea-Bissau are very bad. The techniques are rudimentary. Farmers do not have the appropriate scientific or technological skills. Most of the activities are manual and any form of mechanisation is almost non-existent."

When we asked André Nanque why there are no industrial companies in Guinea-Bissau, the head of the Centro de Promoção do Caju replied that there are no funds or incentives.

"We do not have investment banks, but commercial banks with high interest rates."

FAO former consultant and project coordinator for the Guinea-Bissau government, Nanque could set up a $20 million cashew industrialisation fund with local and foreign money. But the 2012 coup blocked the initiative. The Ivory coast, which made the fund, is now the country in Africa that processes the most cashew nuts. His solution could be foreign investment capital, to be subjected to specific rules to prevent the uncontrolled and predatory exploitation of local resources.

Finding a successful case study in cashew processing is difficult. In 2015, Deutsche Welle (DW), the German public broadcaster, told the story of the Buwondena cooperative. In the video, a young woman talked about a positive experience. Her name was Mariama Bonso and she was described as "a cashew producer in Guinea-Bissau." According to Dw's report, processing her product in the Buwondena cooperative allowed Bonso "to send her children to school" and "taught local producers a new approach." However, today Bonso said that the cooperative's machinery no longer works. It was supported by an international project, which ended. She said:

“We used to retrieve the caju apple from neighbouring plantations to make juice and biscuits. Then people stopped participating in the cooperative because they thought they could earn something, but they received no income. For two years the machines have not been working.”

Since machinery is unavailable to clean the nut, and earn a little more money, Bonso resorted to DIY. But this poses health risks because, as documented, the liquid contained in the cashew seed shell corrodes the skin. On Bonso’s legs are the permanent stains left by the acid that comes out of the caju nut when she puts it on the fire.



Conclusions

Everyone we interviewed during the research stated that they were aware of the negative environmental and socio-economic impacts caused by cashew monoculture in Guinea-Bissau. But the prevailing opinion, even among scientists, is that the problem is not the tree, but the use of the agricultural land that consists of cultivating a single species, or variety, of plants for several years on the same land. Cibio Portuguese research centre in biodiversity and genetic resources, Researcher, Luis Palma said: "The environmental impact could be minimised by spacing the trees apart so that other crops can be grown at the same time."

The interviews with the researchers highlighted the need to set clear limits to the extension of cashew plantations to protect the forests and biodiversity in Guinea-Bissau and improve the implementation of protected areas, which are currently insufficient to ensure adequate protection of native forests and ecological corridors. Civil society in Europe could raise the EU's awareness so that the law against deforestation keep pace with emerging crops. For Filipa Monteiro, a researcher specialising in tropical biodiversity, it is important to implement an ethical supply chain for cashew nuts produced in Guinea-Bissau, to ensure that the raw material is not the result of deforestation and exploitation. Monteiro said: "The ethical supply chain is the

best and quickest way to increase the value of the raw material to the benefit of the government and farmers and prevent the price from being too affected by international market fluctuations. Certification would recognise the quality of cashew nuts produced in Guinea-Bissau, which are completely organic: free of pesticides or herbicides."

In conclusion, the cultivation of cashew nuts in Guinea-Bissau, if well researched and planned, could contribute significantly to improving the livelihoods of producers, providing additional employment as the sector becomes industrialised, and limiting the environmental impact within a perimeter of sustainability. A desirable development could be adopting a concerted strategy between the government and players involved in the production process, to increase the processing and export of the caju seed and cashew tree fruit-derived products.

According to Mani Tese for West Africa head, Giovanni Sartor, the analysis of the cashew sector in Guinea-Bissau is interesting and confirms that, in line with the strategy adopted by the NGO in the area, it is necessary to continue working towards agroecological transition in this country. The aim is to address the important environmental and socio-economic impact that cashew tree cultivation has in Guinea-Bissau, by incorporating the tree into an ecosystem which enhances biodiversity and the opportunities provided by different environmental frameworks. This would contribute to the population's subsistence needs and improve living conditions.