

AGRO-FOOD PROCESSING IN BONOUA¹ INDUSTRIAL AREA AND EXPORT FROM THE PORT OF ABIDJAN (CÔTE D'IVOIRE)

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Abstract

Bonoua is covered with a 328 ha industrial area and is part of the second industrialization crown policy planned around Abidjan and its port. Created to enhance agricultural resources, agro-food processing figures prominently in this city. Proximity to the port gives Bonoua the advantage to export agro-food products. On this matter, literature does not really provide the researcher with information limited to a few writings on pineapple production. The current study aims to highlight the contribution of the port of Abidjan to industrial production export from Bonoua. Methodologically, literature search including interviews allows to understand agro-food processing industry originality in Bonoua. Direct observations associated with transcription of spatial realities help to explore agro-food factories and agricultural products transportation to the port of Abidjan. Findings in this study are in large part based on agro-food processing industries up to 68%. However, export products are only concerned with five factories which export 52% of their production by road to West Africa, 47% by sea to Senegal and Europe. The most important part of exports is oil production, which accounts for 64% from a typological perspective.

Keywords: agro-food processing, Bonoua, export, industrial area, port of Abidjan, West Africa.

Transformación agroalimentaria en la zona industrial de bonoua y exportación desde el puerto de Abiyán (Costa de Marfil)

Resumen

Bonoua cuenta con una zona industrial de 328 ha y forma parte de la segunda política de corona de industrialización prevista en torno a Abiyán y su puerto. Creada para valorizar los recursos agrícolas, la transformación agroalimentaria ocupa un lugar destacado en esta ciudad. La proximidad del puerto da a Bonoua la ventaja de exportar productos agroalimentarios. A este respecto, la literatura no proporciona realmente al investigador una información limitada a unos pocos escritos sobre la producción de piña. El presente estudio pretende poner de relieve la contribución del puerto de Abiyán a la producción industrial de exportación de Bonoua. Metodológicamente, la búsqueda bibliográfica que incluye entrevistas permite comprender la originalidad de la industria de transformación agroalimentaria en Bonoua. Las observaciones directas asociadas a la transcripción de realidades espaciales ayudan a explorar las fábricas agroalimentarias y el transporte de productos agrícolas al puerto de Abiyán. Los resultados de este estudio se basan en gran parte en las industrias de transformación agroalimentaria hasta un 68%. Sin embargo, los productos de exportación solo afectan a cinco fábricas que exportan el 52% de su producción por carretera a África Occidental y el 47% por mar a Senegal y Europa. La parte más importante de las exportaciones es la producción de aceite, que representa el 64% desde el punto de vista tipológico.

Palabras clave: Transformación agroalimentaria, Bonoua, exportación, zona industrial, puerto de Abiyán, África Occidental

¹ **Bonoua** is located 50 kilometres in south-eastern Côte d'Ivoire. Known as an industrial area, the city is largely involved in agro-food production and foodstuffs such as oil, mineral water and confectionery.

Introduction

Agro-food industry foundations in the port of Abidjan have been laid since colonization, but it really began in the 1960s under the guidance of Ivorian welfare state. The import substitution industry, which was considered the first industrial port, was a significant factor in this process. The objective was to produce consumer goods for the domestic market (N. N. Kouakou, 2014, p. 35). From 1970, this type of processing was replaced by the creation of industries for the recovery of local raw materials for external markets. Abidjan coastal areas, including Bonoua, have been impacted.

Large areas with agricultural and industrial complexes have been created for this purpose and include integrated sectors from upstream to downstream. Pineapple, coconut, oil palm, and other types of fruit processing are the main concerns. Considered the main focus of Bonoua's case, SALCI (Société des Alsacienne de Côte d'Ivoire) factory has been present with the pineapple sector since 1949. Pineapple processing factory that was first located on the edge of the lagoon had 180,000 tonnes production capacity per year. New SIACA has 75,000 tonnes production capacity per year, following SALCI, which was created after independence. This processing activity contributes to Bonoua economic development (Y. Monnier et al, 1974, p. 88) and takes an active part in the operations of the port of Abidjan. In 1980, Ivorian pineapple canneries, including that of Bonoua, sold their products more than 50% on European markets.

The port of Abidjan is the primary source of fresh pineapple exports to Western European countries like France, Germany, Benelux, and Switzerland (B. Dian, 1985, pp. 315-316). SALCI and New SIACA factories were closed in the 1980s. As a result, companies were unable to withstand agro-food generalized crisis. Agro-food security was carried out by raw material crisis and factory closing down. Then, in response to agro-food crisis, Ivorian government has since 1988 initiated an extensive development programme for Bonoua industrial AREA in order to provide added value to agricultural raw materials. The pineapple chain value aimed at strengthening export earnings based on the port of Abidjan as part of the same dynamic. Despite the port's proximity promoting agro-food products export, Côte d'Ivoire still imports a significant amount of consumer goods, which accounts for 44.1% of total imports. At the same time, 50% of imports are food products (French Ministry of Economy, Finance and Industrial and Digital Sovereignty, 2022, p. 1).

Since Bonoua industrial area has come into existence, there has been a lack of knowledge in terms of nomenclature. Statistics on agro-food products export from Bonoua industrial area to the port of Abidjan. This central issue raises the following fundamental

question: What is the contribution of the port of Abidjan to the export of agro-food production from Bonoua industrial area? The hypothesis is that agro-food production in Bonoua industrial area is not very export-oriented despite its proximity to the port of Abidjan.

1. METHODOLOGICAL APPROACH

To achieve this objective, the methodology is based on document research, interviews and field investigations. Literature review is centred on agro-food processing industry terms, port operations and industrial area, including Bonoua and exports that bring them all together. To accomplish this, documents are examined within Felix Houphouët-Boigny University central library, Industrial Infrastructure Management and Development Agency (AGEDI), Port Customs Department, the Chamber of Commerce and Industry (CCI) documentation services and the Internet. The industrial policy implemented in Abidjan and surroundings, and more particularly Bonoua industrial area, is the primary source of information. AGEDI provided a base map that serves as a starting point for locating industrial areas.

The Port Customs Department uses statistical data to demonstrate the traceability of products manufactured by companies in Bonoua industrial area. In this respect, small quantities that could not exceed one tonne of raw material are not considered. Documentary research results in a significant capital contribution from interviews and field surveys. Direct observation of processing factories is taken into account. However, for lack of reliable database, an industrial inventory of sites results in twenty-two working factories. Interviews with industrial production executives focus on the typology, quantity in tonnes of processed and conveyed products to the port of Abidjan. The Port Customs Department is the only alternative because industrial production executives were reluctant to provide information. The task consists in identifying industrial factories, which send their productions to the port of Abidjan and provide quantitative data in tonnes. The research methodology leads to different outcomes.

2. Results

Results are divided into two parts. The first report indicates that agro-food processing activity is the dominant activity over others. The second part of the analysis examines transportation and export area of agro-food products in transit at the port of Abidjan.

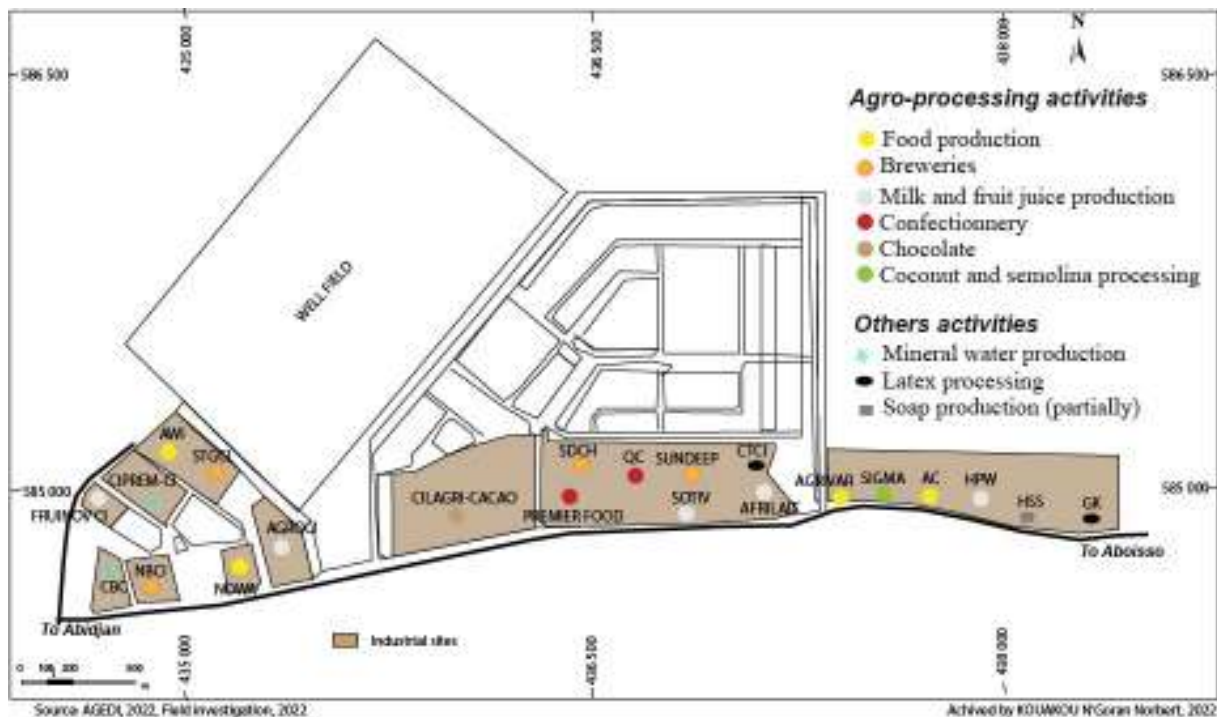
2.1. A production activity dominated by agro-food processing

Agro-industrial processing is the dominant type of production activity in Bonoua industrial area.

2.1.1. Bonoua industrial area and agro-food processing diversification

Due to its geographical location and agricultural heritage, Bonoua benefits from favourable conditions for the export of crops such as coconut, oil palm, rubber, cocoa, banana and in particular pineapple. Private companies and local peasant population, sometimes organised in cooperatives, are involved in plantation products' cultivation and marketing. Crops abundance in industrial area leads to use agricultural raw materials for Bonoua food-type industrial factories. As a result, Bonoua has a diverse range agro-food production sub-sectors. The classification lists six unequally distributed agro-food activity sectors (Figure 1), which represent 68% of the industries located in Bonoua.

Figure 1: Bonoua's industrial area and subsectors of industrial production



However, the most numerous factory facilities are in brewery oil production and soft drinks production sub-sectors, or even in fruit juices, dried fruits, milk, yogurts, and cheese production. Oil production sub-sector encompasses five factories, namely Agro-industrie Variée (AGRIVAR), Nada oil West Africa (NOWA), Ajami Coprah SA (AC). Two other factories, i.e. Africa West Industrie (AWI) and Huilerie et savonnerie du Sud (HSS) produce

oil with the purpose to manufacture soap. There are four breweries and soft drink production companies in the sub-sector, including Sundeep-industries Côte d'Ivoire (SUNDEEP-INDUSTRIES), Nouvelle Brasserie de Côte d'Ivoire (NBCI), Distribution Commerce Holding Industrie (SDCH INDUSTRIE CI) and Société de Technique Générale de Côte d'Ivoire (STG-CI). Assinie brand mineral water is produced by NBCI factory. In Photo 1, a sign indicates the brands of beverages produced at the main entrance of the NBCI factory.

Photo 1: NBCI factory main entrance: brands of manufactured drinks



Source: photography by KOUAKOU N'Goran N. (2022)

Moreover, fruit juices, dried fruits, milk, yogurt and cheese production sub-sector also consists of five factories and includes Agro-industrie de Côte d'Ivoire (AGROCI), FRUINOV Côte d'Ivoire (FRUINOV CI), Société de Transformation Ivoirienne (SOTIV), AFRILAIT Côte d'Ivoire (AFRILAIT CI) and HPW DRY AND FRESH (HPW). Similarly, to the NBCI factory, AGROCI is expanding Kirène brand mineral water production.

Afterwards, two factories are responsible for driving the confectionery sub-sector. Factories include Quality Candy (Q. C) and PREMIER FOODS. The rest is a matter of chocolate production sub-sectors represented by CILAGRI-CACAO factory and SIGMA

factory specialised in semolina and coconut production. The uniqueness of these different sub-sectors lies in the ability to enhance agricultural-derived foodstuffs added value. Other sectors are located nearby, but they are in a minority situation.

2.1. 2. Activities beyond agro-food processing in a minority setting

Agro-food processing is connected to other types of activities like mineral water production. This activity, which is not related to agriculture, is based on mineral water quality manufacturerd in Bonoua. Indeed, Compagnie Ivoirienne de Production d'Eau Minérale (CIPREM-CI) and Continental Beverage Company (C. B. C) are two large factories specialized in mineral water production, i.e. Céleste and Olgane. Bonoua industrial area does not only accommodate factories that produce food. In this industrial city, latex is transformed into rubber by some companies, such as GROUPE KELLY (GK) and Compagnie de transformation de Caoutchouc (CTCI). Furthermore, oil factories mentioned earlier are not solely aimed at producing oil. In reality, AC Coprah utilizes a copra oil portion to manufacture cosmetic products. HSS and AWI activities are predominantly dedicated to soaps manufacturing.

In a few words, operators' response to promoting various foodstuffs from agricultural plantation areas entrenches food processing industries' predominance. The analysis shows that the only issue is whether companies' productions reach the port of Abidjan or look for countries of destination and product distribution channels.

2.2. Agro-food export from Abidjan port area

Processed industrial goods warehoused at the port of Abidjan are destined for shipment to different routes to foreland and hinterland.

2.2.1. Agro-food products proportion: from Bonoua to the port of Abidjan.

Out of seventeen food processing factories located in Bonoua industrial area, only five have been identified for their various productions that are in transit to the port of Abidjan. These are AWI, AGRIVAR, NOWA, PREMIER FOODS and SIGMA that export across all products over 46,415 tonnes. With regard to this, figures highlight the fact that untraceable production from other factories at the port of Abidjan is intended for the national or local market. Thus, agro-food production is assigned to 48% or 22,236 tonnes, since industries export both foodstuffs and products like soap or cosmetics. Soap or cosmetics, with the exception of agro-foodstuffs, accounted for 52%. Specifically, AWI is in position to ship 11,018 tonnes out of

22,236 tonnes of in-transit food production, i.e. nearly 50% crude oil from nut and almond cakes (Table I).

Table I: Agro-food production in Bonoua industrial area

Food products			
FACTORY	Type	Production (t)	TOTAL
AWI	Crude Oil	10, 518	11, 018
	Walnut cakes, almonds	500	
AGRIVAR	Huile brute	3, 157	3, 157
NOWA	Palm oils and their fractions	7, 404	7, 404
PREMIER FOODS	Biscuits, Dried Flour Pasta	72	72
SIGMA	Coconut processed and semolina	585	585
TOTAL			22, 236

Source: Port Customs Department, 2022

AWI is followed by NOWA with 7404 tonnes equivalent to 33% palm oil and its fractions, or 16% of the total. AGRIVAR's portion, which is made up of crude oil, constitutes 14% of food products (3,157 tonnes), or 7% of the total. SIGMA's transit portion includes processed coconut and lint is 3%, resulting in 585 tonnes. PREMIER FOODS sends 72 tonnes of biscuits, dried pasta, and flour, which is very insignificant at 0.3%. In contrast to food production that consists of crude oil, walnut cakes, and almonds, Table II shows that AWI exports 24,168 tonnes of soap. This net tonnage represents 68.67% of its traffic transiting through the port of Abidjan.

Table II: Soaps production and other products in Bonoua

Soaps and other production (t)		Production (t)
AWI	Soaps	24, 168
PREMIER FOODS	Other products	11
TOTAL		24, 179

Source: Port Customs Department, 2022

The contribution is substantial, but only 11 tonnes of non-agro-food products are part of PREMIER FOODS foodstuffs. Agro-food products are transported from the port of Abidjan by road, sea, and rail in different proportions.

2.2.2. Abidjan's port distribution channels and the hinterland's destinations.

Agro-food products are transported by land, primarily by roads, but also by sea.

2.2.2.1. Roads: main route to West African countries

Agro-food products are warehoused with the purpose to protect them from bad weather once they reach the port of Abidjan. Warehouses are used for storing products to be exported by road, using trucks. Photography 2 shows a private warehouse located in the duty-free area of the port, which provides services to AWI factory for products export to Sahel countries, particularly Niger.

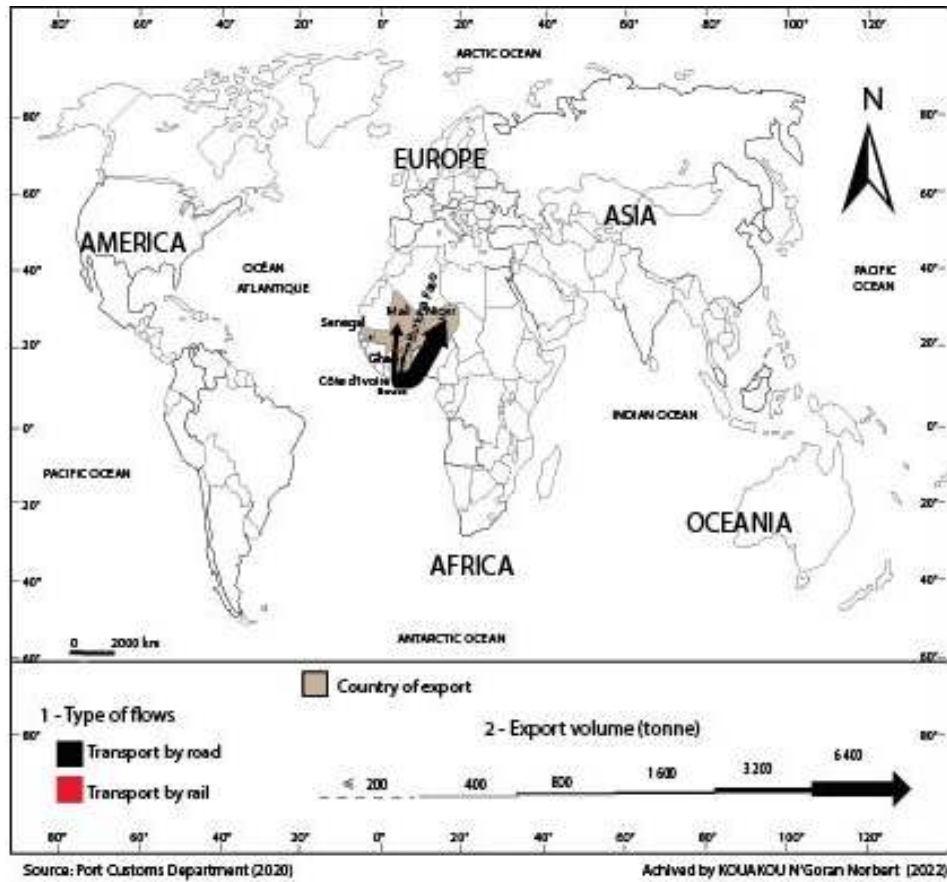
Photo 2: Trucks waiting to be loaded in front of the private warehouse assigned to AWI



Source: photography by KOUAKOU N'Goran N. (2022)

West Africa is the main destination for agro-food products, which are sent through the port of Abidjan. Moreover, the road is the main service route, all the more so as it provides 52% of this traffic. The port of Abidjan is where 29% of the production exports from the Bonoua industrial area are currently in transit. Crude oil, mostly from AWI, accounts for 55% of road traffic, which is 6,465 tonnes. A small quantity of AGRIVAR is exported to Niger by truck (Figure 2).

Figure 2: Agro-food production trucking

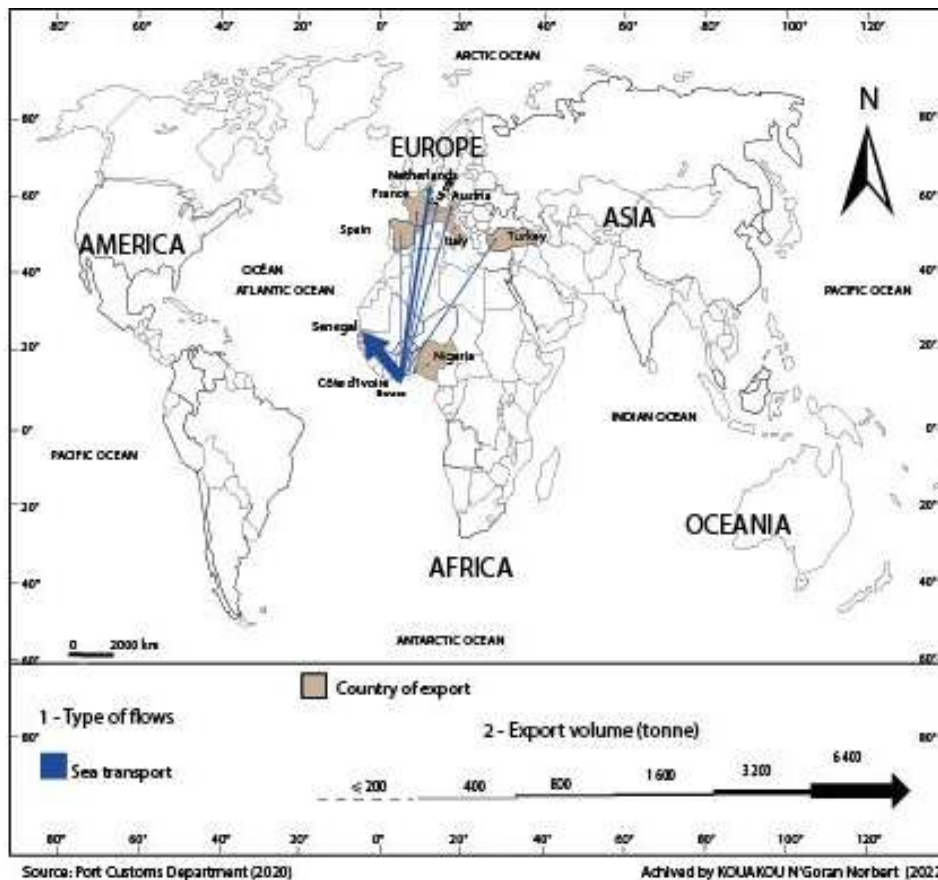


The supply of these same types of products in Mali is up to 28%, or 3,253 tonnes. In Mali, PREMIER FOODS exports 1,553 tonnes of biscuits and dried flour pasta, i.e. (13%). Nonetheless, there is a variety of available products, including crude oil from AWI and biscuits from PREMIER FOODS, processed coconuts and SIGMA semolina or fluff accounting for 4% of road traffic (436 tonnes) are exported to Ghana. Finally, an insignificant proportion of crude oil of less than 1% of AGRIVAR accounting for 50 tonnes is exported to Senegal.

2.2.2.2. Shipping: another means of transportation

Sea route is the second distribution channel that accounts for 47% of agro-food exports. Senegal is the most popular sea destination this time (Figure 3).

Figure 3: Agro-food production destination by sea



Indeed, NOVA charters ships belonging to the company CMA-CGM to ship 61% of the traffic transiting by sea. In other words, 6,374 tonnes of palm oil and its fractions are being transported to Senegal. The Netherlands (27%, or 1,785 tonnes) and Switzerland (27%, or 716 tonnes) receive crude oil from AGRIVAR shipped by the FRISIA OSLO ships. Turkey and France charter IRENES, REMEDY, and FLORIDA BAY ships to take up 5% of the space for navigation. Oil is the most frequently exported product, with over 64% coming from AWI and AGRIVAR. Furthermore, agro-food products, which are shipped to Europe, are not only intended for metropolitan France. Turkey receives 500 tonnes of walnut and almond meal from the AWI factory, while France asks for 495 tonnes of processed coconuts and semolina from SIGMA to achieve this goal. Austria and Spain are roughly sharing 292 and 290 tonnes of AGRIVAR crude oil that are transported by HAMMONIA BALTICA and IRENES ships. As a result, these two countries export 3% of food products transported by sea. Nigeria concludes the loop with a small portion of about 11 tonnes of biscuits, dried pasta, and flour produced by PREMIER FOODS.

As a whole, industrial products from Bonoua industrial area are trucked to the port of Abidjan and then exported to West African countries. However, sub-regional destinations predominance vis-à-vis other regions of the world is partly due to West African Economic and Monetary Union (WAEMU), Economic Community of West African States (ECOWAS) free-trade agreements. Despite the proximity of the port of Abidjan, agro-food production in Bonoua industrial area does not sound a truly outward-looking industry.

Notwithstanding the above, result concerns the areas of transportation and export of agro-food production in industrial area transiting through the port of Abidjan, Bonoua's economy has long been characterized by food-processing sector: canning, dairy industry, agricultural products and marketing of pineapple. B. Dian (1985, p. 315) argues that marketing circuits are spread out at two levels: fruit circuit and processed products. Given the second case, which refers to canned pineapple, B. Dian alludes that private companies' commercial services are responsible for marketing, which involves exporting 50% of agro-food products to European markets.

The evolution of cocoa derivative exports has been demonstrated by S. Ouattara, N. H. J. Kablan, and N. N. Kouakou (2016, p. 90) on the export side, i.e. butter, pastes, cakes, powder, and chocolate from 1996 to 2006 transiting through the port of Abidjan. The inclusion of agro-food type production can be found in N. Kouakou and S. Ouattara's work (2018, p. 52) Western Europe by sea is the primary destination for containerized exports from the hinterland of Ivorian ports. Crude oil produced by eleven oil mills has been previously managed by PALMINDUSTRIE, as indicated by B. Dian (1985, p. 313) regarding countries of destination. Crude oil is exported to European Economy Community's countries, particularly West Germany, the Netherlands, France, and Italy. On the contrary, the current study has been specifically centred on Bonoua industrial area, while showing that most of the exports by road and sea, make the West African region the focal point of agro-food products shipping and trucking.

CONCLUSION

This current study has focused primarily on Bonoua industrial area. The contribution of the port of Abidjan to the export of products connects this agro-food production area. Only 29% of agro-food factories and 23% of all agro-food industries in Bonoua industrial area have their products transported to the port of Abidjan for shipping and trucking. The hypothesis that the

agro-food production of Bonoua industrial area is not strongly export-oriented despite its proximity to the port of Abidjan has been a valuable experiment.

In this regard, agro-food processing plays a key role, accounting for 68% of all industrial activities in Bonoua. The reason for this importance is the desire to add value to the diversity of agricultural foodstuffs. However, Abidjan's port traceability is restricted to exports from five agro-food industries. Railroad, which only accounts for less than 1% of exports, is negatively impacted by the fact that 52% of agro-food products are trucked by road. In addition, 47% of shipping by sea to Europe and Asia in the following descending order: the Netherlands (17%), Switzerland (7%), Turkey and France (5%), Austria and Spain (3%). In shipping, Western Africa remains present with Senegal (61%). Does industrial economic weakness not relate to the lack of traceability of agro-food products from Bonoua industrial area in transit through the port of Abidjan?

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