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Agro-Industrial Activities and Socio-Environmental Risks in the Department of Aboisso: Case of the Oils in the Sub-Prefecture of Maféré

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ABSTRACT

Observing the installation and operation mode of three palm oil processing units in the sub-prefecture of Maféré allowed us to note that these processing plants are faced with a problem of managing their liquid waste as solid. In fact, all palm oil processing plants installed around waterways do not have a system for managing their liquid or solid waste, which creates a risk of water pollution in addition to the risk of air pollution, with direct or indirect consequences on the health of local populations and the aquatic ecosystem. Based on this fact, this contribution aims to highlight the socio-environmental and health impacts of the activities of oil mill agro-industries in the department of Aboisso, more particularly in the sub-prefecture of Maféré. To achieve this, we favored the qualitative approach. A total of twenty (20) people were interviewed using the principle of data saturation. The analysis of the results shows that the activity of oil mills in the sub-prefecture of Maféré, although providing employment for local youth, negatively affects the ecological state of rivers, the environment, food security and the health of local residents.

Keywords: Oil industry, Risks, Socio-Environmental, Maféré

INTRODUCTION

The oil palm sector began to develop in Ivory Coast during the colonial period, in the 1910s, its development has continued without interruption until now (Claude, 2010: 396). However, palm oil, which tends to become a strategic product for West African countries, holds a significant position in the list of sources of Ivorian currency. At the regional level, in the franc zone, palm oil is the second oil produced after peanut oil. Stimulated by agro-industrial development of the sector for 30 years, Côte d'Ivoire is today the main African exporter, accounting for 60% of total ECOWAS palm oil exports and supplies the regional market with crude and refined oils. as well as derived products such as soaps, cosmetics and margarines. (Frédéric et al., 2000: 166).

However, the development of the oil palm sector in the department of Aboisso in recent years has encouraged the installation of several processing companies, particularly in the sub-prefecture of Maféré, thus causing damage to the environment and the framework of life of the populations. In fact, palm oil processing plants in the sub-prefecture of Maféré are set up around waterways, dumping their liquid waste there without prior treatment. Since the installation of these processing units in the sub-prefecture of Maféré, the populations have only decried the change in the color of their various watercourses which surround them, the water gives off a nauseating odor, moreover they complain of itching after swimming and the presence of dead fish on the bank near the factories. Freshwater fishing is becoming unsuccessful and the availability of spring water for domestic needs has become problematic for local populations who formerly used these watercourses as a palliative source for consumption during water cuts for some and for others as the main source for the household. Without forgetting that we are currently seeing problems with the management of palm stalks from oil mill activities. It is therefore obvious that the oil mills in the sub-prefecture of Maféré are faced with a problem of sanitation and management of their liquid and solid waste. It

therefore seems right to us to analyze the socio-environmental risks of oil mill activities in the sub-prefecture of Maféré in order to highlight the impacts of these activities on the aquatic ecosystem and on the health of local populations.

To achieve our purposes, this contribution will follow the following structure: first of all, we will present the methodology, followed by the analysis of the socio-environmental risks of the activities of oil mills in the sub-prefecture of Maféré. Then the results of our research will be compared with those of other researchers and we will end with a conclusion.

METHODOLOGY

As part of this study we favored the qualitative approach motivated by the quality and status of the actors interviewed. Among the data collection techniques and tools we used documentary research, observation and interviews. Regarding documentary research, it allowed us to consult scientific articles and memoirs on socio-environmental risks. Then, as part of the collection of data in the field, we used the interview guide with the semi-structured interview as an interview technique.

For the sake of qualitative representativeness and especially by the nature of the essential variables linked, we chose to interview three (03) oil palm producers, one (01) representative of customary authorities, one (01) worshiper of oil palm courses. water, four (04) local community leaders (indigenous and non-native), three (03) representatives from the factories, one (01) Madam sub-prefect of Maféré and eight (07) heads of local households. In total, twenty (20) people were interviewed during individual and focus group interviews; this number was determined using the principle of data saturation.

Apart from interviews and documentary research, the data was collected using an observation grid from which we observed the different activities of the oil mills, the behavior of the actors involved and the relationships that develop between millers and local populations as well as administrative and customary authorities. Finally, the use of the data, which was carried out in parallel with the conduct of semi-directive interviews, allowed us to enrich the analysis of the elements collected by the interviews by comparing discourse and practices.

As for the processing and analysis of qualitative data, we did it using the thematic content analysis method. The latter made it possible to identify the meaning of the speech of the people interviewed. Theoretically, we used rational choice theory. Indeed, the theory of rational choice has allowed us to understand that actors are aware of their actions because they adopt practices with the aim of having an advantage and for personal interest. To do this, they decide to minimize risks in order to maximize profits.

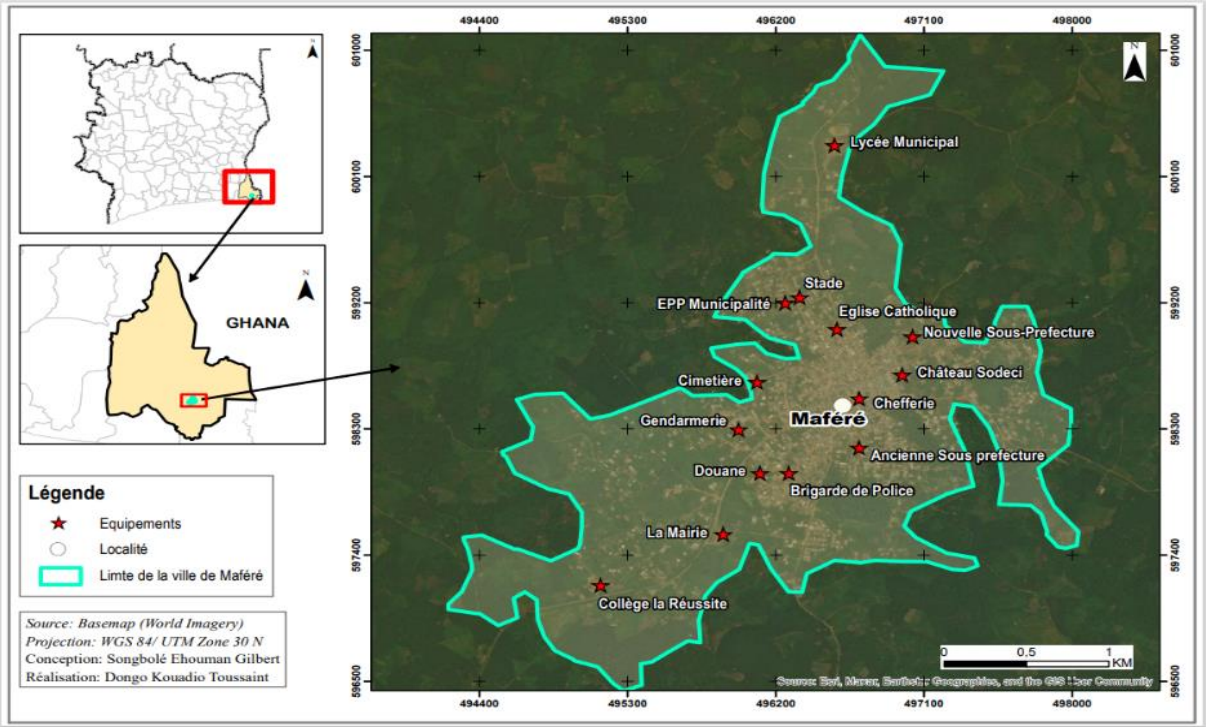

Figure 1: Presentation of the study area

The map above shows us the locality of Maféré, our area of investigation. Our choice fell on this locality in view of the atmospheric and environmental pollution and the risk of food and health insecurity represented by the activities of the oil mills installed around the watercourses.

RESULTS

Description of Agro-Industrial Oil Mill Activities in the Sub-Prefecture of Maféré

The raw raw material that allows oil mills to operate is the fruit of the oil palm: the palm bunch. The palm bunch consists of a spine bearing ears. These are garnished with fruits, the number of which can reach 1500 per bunch.

Crude palm oil

Crude palm oil is obtained in processing factories, following a complex but well-established processing process. After the harvest stage on the group's plantations, the bunches are transported to the factories. The first step in the production process is sterilization. This involves steaming the diets in tanks (sterilizers). The fruits are then separated from the stalk using a destemmer. This step is called destemming. The fruit, after these first two stages, is passed through mixers for half an hour, to be reduced in the form of fibrous paste (kneading). A homogeneous mixture of fibers, pulps and nuts is obtained. The extraction of oil from the fruits thus prepared is ensured by means of continuous screw presses. The juice obtained by pressing, called raw juice, will go through a process of successive heating and decantation. This last step, called clarification, makes it possible to obtain finished crude palm oil that meets commercial standards. The oil is stored in tanks with a total capacity of 755 tonnes per oil mill.

Photo 1: Trucks loaded with bunches of palm leaves parked at the entrance to the factory
Source: Field survey data, 2023

These photos show us an oil palm processing factory installed between Mouyassué Maféré near the Kpalifouè river.

Photo 2: Overview of the oil mill installed on the Baffia road
Source: Field survey data, 2023

This photo shows an oil mill in the sub-prefecture of Maféré located between the municipal high school of Maféré and the N'Gotokpré river on the Baffia-Koffikro road. The activities of this oil mill have a direct impact on the ecological state of this river, according to the words of the Maféré river worshiper we met: *« before when there was no water tower, the different neighborhoods around the waterways surrounding Maféré went to get water there to drink but today we cannot drink it water of N'Gotokpré, the water smell ».* He goes on and says this: *« what flows to go down there we can't drink but those who are up here can drink (...) because down below the liquid waste from the factory which goes in makes it oil on the water »* as if to say that because of the activities of the oil mill, the water from the N'Gotokpré river is no longer usable for the needs of households downstream of the river.

Environmental Risks

Among the environmental risks, the results of our survey show that there are two types of pollution, namely the risks of water pollution and the risks of air pollution.

Risk of water pollution

The activities of oil mills in the sub-prefecture of Maféré are the basis of the risk of pollution of waterways. In fact, the palm oil processing factories in the sub-prefecture of Maféré are all installed near watercourses and make several uses of them in their operations. This can deteriorate the quality of water to the point of making it unsuitable for certain uses, such as human consumption. This is what this community leader we interviewed tried to describe to us : *« Here in Maféré, several camps lack drinking water ; the water from the N'Gotokpré river that they use is also polluted by discharge from oil mills, unfortunately the populations suffer from this »* "community leaders interview". In the words of this community leader we can see that the oil mills installed around the N'Gotokpré river impact the quality of

the watercourse, hence the risk of pollution of this watercourse. Another respondent pursues and accuses : *« The factory workers in complicity with the authorities and the chiefdom have spoiled our watercourse for their interests today we are suffering ».* He ends up giving us his heartfelt cry to the authorities : *« My heartfelt cry to the authorities: Dear authorities, an ecological tragedy is happening before our eyes and we pretend not to see. Our N'Gotokpré River is being polluted ».* "Maféré youth interview".

Photo 3: A view of the N'Gotokpré river invaded by oil residues
Source: Field exploration data, 2022

Photo 4: Discharge of liquid waste from a factory into the river

Photo 5: Flow and infiltration of remaining oil into the river

Source: Field survey data, 2023

In addition to this, the risk of pollution of waterways in the sub-prefecture of Maféré can also cause various types of nuisance for aquatic species, notably fish mortality which can go as far as the disappearance of certain aquatic species : *« Last time I saw several dead fish in the water, it's all their factory that does this, I really feel sick to my heart before when we were little when your mom puts her sauce on the fire you can tell her say mom wait for me I'm going fishing I'll come back when you come back you come with a lot of fish but now if you want to go fishing for three days you won't have anything all the fish are dead otherwise because the water is polluted »* "resident household manager interview".

Photo 6: Decomposing fish near the palm factory located on the Baffia road
Source: field survey data, 2023

These photos corroborate the comments of our respondents by demonstrating the impact of oil milling activities on waterways and aquatic species.

Risk of air pollution

According to the data from our survey we can say that the activities of oil mills in the sub-prefecture of Maféré are the basis of the risk of air pollution. Indeed, during their operations, oil mills emit enough smoke which is the basis of air pollution. In addition to this aspect, the difficulty of factories to manage the solid waste resulting from their activities leads them to either burn it or dump it in the producers' fields. This is what a factory worker tries to explain to us: *« We at our level take out the stalks which we store on a site and then we burn them »* "interview with one of the managers of the oil company". A manager tells us: *« For the management of our liquid and solid waste since our installation we have not been followed by professionals but I think that now we are trying to do better »* responsible oil mill maintenance. Another says this: *« For the stalks we remove them on the site to give them time to dry and then we throw them back into the plantations as fertilizer and all that ».* However, for the producers, the stalks that the factory workers dump in their fields do not play the role of fertilizer as they claim because according to them the factory workers use this argument as a pretext to get rid of their waste: *« They made us believe that it was fertilizer, we went to pick it up and dump it in our field but we didn't see anything. I think they were pranking us to allow us to dispose of their waste in our fields, because that it is only the humidity that is retained in the field »* "maintenance of oil palm producer in Maféré". The analysis we can make is that the millers in their quest to manage palm stalks cause atmospheric pollution.

Photo 7: Burning of seed stalks
Source: Field survey data, 2023

Photo 8: Seed cob residue after burning
Source: Field survey data, 2023

Social Risks

We distinguish two types of risks, namely positive social risks and negative social risks. With regard to positive social risks, we have job creation in fact, the installation of factories is a source of employment for many young people. The sub-prefecture. This is what one of the notables we interviewed tried to explain to us: *« This company is a development company which allows all our children here and those from surrounding villages to work, so this honors us and helps us a lot on a social level » "*interview with the Mouyassué chiefdom". Another continues and says: « *Before I didn't do anything because I didn't have a diploma but thanks to the company I had a job until I was able to buy a motorbike* ». The analysis that we can make of these remarks is that the installation of oil factories in the sub-prefecture of Maféré is a source of employment and social security for young people looking for work. In addition to this, a producer told us this: *« before during the big trade it was very difficult to sell our production for us who do not have a truck our production was rotting but since the company came to settle on the road to Baffia here it helps us a lot to buy even directly our production already even in the field you have your money ».* In the words of this producer we can see that the installation of oil palm processing plants has solved a real problem of production flow for producers whatever the social level.

However, even if the arrival of these agro-industrial factories in the sub-prefecture of Maféré provides enormous positive social benefits. It should also be noted that in their operation these factories are the basis of several negative social risks, notably food insecurity. As the president of the young people of Maféré tries to explain to us in these terms: *« The river became very black and we noticed fish that were so dead that we followed the tracks and saw that the waste from the seed was dragging in the river ».* "Interview with the president of the young people of Maféré Kotokolo-Anvo district*"*. Another tells us this: *« it's at night they open their movement, there, their false, false movements there I don't know what it is but it's pipes when they open it goes into the river there yet we use the water to wash our plates and our clothes often even go swimming there ».* "Maféré youth interview". A producer goes on and says: *« We drank before but from the moment we noticed that it was polluting we could no longer drink but there are camps nearby that don't have running water so they don't have no choice. Even today, when there is a water cut, we have to go there »* "producer interview". In these words we can say that the poor management of liquid and solid waste from factories is the basis of food insecurity in the localities bordering the watercourses which fed on the fish from these waters without forgetting the fact that the As water is no longer potable for consumption, populations have difficulty meeting their vital needs. As evidenced by this young person we met in the Maféré high school district: *« Already there is no water in Maféré, the pollution of this river increases the suffering of the population, please act dear authorities as well as factory managers. Dear factory managers who are causing this inconvenience, if you can hear me, please stop. Think about the future generation, be eco-responsible ».*

Health Risks

Data from our field survey show that the activities of oil mills in the sub-prefecture of Maféré are responsible for the appearance of chronic diseases, itching, diarrhea as evidenced by the comments of this producer : *« There are cases of illness for example there are others who start to cough, there are others who have itching, even I myself do not know if it is this water that I wash myself with. with it but I washed myself with it without realizing that it was polluting currently I have a side that burns me I don't know if it's the polluting water which is used in the factories which gave me this illness ».* "oil palm producer maintenance". Another, the youth president, said this: « *When we wash with water our body often itches and we also get little pimples, in any case the use of river water currently is not without consequences for all the residents who are nearby of this water* ». "Interview president of the youth of Kokotilé Anvo". What his counterpart in Maféré seems to confirm: *« The health of populations is threatened, the environment is polluted, there are collateral effects of exploitation so it is important that mitigation measures are take »* "focus group community leaders from Maféré".

Photo 9: Children swimming in N'Gotokpré
Source: Field survey data, 2022

The analysis we can make is that local populations are aware of the risks they run by using water from rivers and streams in the sub-prefecture of Maféré. However, having no other paliative sources to meet their vital needs, they are sometimes forced to turn to these polluted sources, which is not without consequences on their state of health.

DISCUSSION

As part of this study, the analysis of socio-environmental and health risks carried out on the agro-industrial activities of oil mills in the sub-prefecture of Maféré clearly indicates the existence of a very close link between socio- environmental and health risks incurred by the environment and social actors present in the sub-prefecture of Maféré and the activities of oil mills. Clearly, the results of our investigation showed that the environment in the sub-prefecture of Maféré is exposed to several risks, notably the risks of water and air pollution. Our results are in line with those of Bessou and Dubos (2020), since for their part they have also demonstrated that in the industrial transformation of both artisanal and industrial sectors, the management of co-products has a significant influence on the environmental balance sheet. Indeed, according to these authors, secondary processing products have a necessarily greater impact than that of oils but for a large majority of impact categories, the oil production phases contribute to more than half of the impacts. Going in the same direction, the West African Development Bank (BOAD, 2023: 1) in its operational guidelines report underlines that the most significant dangers that the agro-industrial sector poses to the environment concern the risks of pollution of the water and atmosphere, and solid waste management.

With regard to social risks, the field survey allowed us to identify two types of risks, notably positive social risks and negative social risks. Regarding negative social risks, our investigations have shown that local populations in the sub-prefecture of Maféré are exposed

to the risk of food insecurity. Indeed, these populations who once benefited from a huge number of ecosystem services from the courses today find themselves confronted with the scarcity of fish and other aquatic species linked to mortality caused by the activities of oil mills, worse the pollution of the courses of water prevents populations from meeting their drinking needs for fear of being sick. These results are similar to those of Salamé (2017: 4) who, for her part, explains that climate change, urbanization, economic growth, pollution, demographic changes, changes in land use, Ecosystem degradation, energy development, health and food security have all had, and continue to have, an impact on water. However, in addition to these positive social risks, our results also revealed that there are positive social risks, namely the rapid flow of producers' production and the improvement of the employability of youth in the sub-prefecture. These results are in line with those obtained by Cumunel (2020: 10) who explains that agro-industrialists are committed to helping populations in social and environmental responsibility (CSR) approaches. Using the example of the Sifca group which is carrying out ambitious actions in terms of housing, schooling, the establishment of hospitals, health centers and other crucial services which improve the quality of life of rural populations located near their sites and not only that of employees of factories and plantations.

Finally, the data from our field survey also show that the activities of oil mills in the sub-prefecture of Maféré are responsible for the appearance of chronic diseases, itching, diarrhea among local populations. Even if the populations are aware of the risks they run by using water from the rivers of the sub-prefecture given that they have no other paliative sources to meet their vital needs, these are sometimes forced to turn to these polluted sources which is not without consequences on their state of health. These results are in line with those obtained by the Cabinet of Engineering, Training and Consulting in Environment, Agro-Food and Rural Development (Enval, 2004: 11). Any industrial activity can generate damage, nuisances and occupational illnesses. Following the same logic, Hortense (2023: 274) affirms that market gardeners are aware of the effects of polluted water on crops and therefore, in turn, on humans and the environment. While they use water from sumps which are polluted by phytosanitary products without asking questions or they pretend not to know the consequences. She goes further when she says that market gardeners pretend not to know the harmful effects of the products on them. But in reality, they are aware of these effects on their health and on the health of populations. Because according to her, the impact of products on the health of the population is due to risky practices and is confirmed by the pathologies linked to the use of phytosanitary products (Hortense, 2023 : 275).

CONCLUSIONS

Ultimately, we can say that the socio-environmental and health risks linked to the agro-industrial activities of oil mills in the sub-prefecture of Maféré is a phenomenon which poses an environmental and social problem which deserves to be studied in depth and try to provide solutions with the aim of reducing the negative social impacts of these activities on the environment and the state of health of local populations. However, this contribution highlighted the risks of water and air pollution and the positive and negative risks as well as the risks to the health of populations. However, given the depth of the subject and the topicality of the phenomenon in the Aboisso department, a study of the institutional actors and the regulatory framework for oil mill activities is necessary.

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