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## RESEARCH ARTICLE

# URBAN WASTE MANAGEMENT IN CÔTE D'IVOIRE: THE SITUATION IN THE CITY OF DABOU (SOUTH CÔTE D'IVOIRE)

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### ABSTRACT

Located in the south corner of Côte d'Ivoire, Dabou knows for several decades a diversification of economic activities. This diversification of activities is accompanied by a strong spatial and demographic dynamic. The latter has led to a proliferation of household waste in the city. Despite the efforts made by the authorities, the removal of this waste remains a crucial problem. If we stick to the various studies that have highlighted the environmental and health consequences of household waste, the proliferation of this waste in the town of Dabou deserves special attention to avoid possible disasters. In this logic, the present study in a qualitative approach determinates, on the one hand, the mode of production of household waste in the city of Dabou. And, on the other hand, the study analyses the risks associated with the proliferation of this household waste. In short, this study suggests that the issue of the proliferation of household waste must be considered by local authorities to prevent possible ecological and health risks.

## INTRODUCTION

Because of uncontrolled urbanization, the safeguarding of the urban environment is becoming more and more worrying in developing countries (Sy, 2006, Touré, 2005). Indeed, the rampant urbanization that many cities experience has led to the proliferation of economic activities and the disruption of consumption patterns. It has also led to a diversification of the sources of waste production (Yassi, 2006). This insalubrity linked to the difficulties of adequate disposal of wild waste depots, at the scale of urban spaces, constitutes a real environmental and sanitary problem that must be eradicated in daily spaces with a high human concentration. The competent authorities to cope with an ever increasing production of household waste, visible daily in the urban space, made it possible to inscribe the problem of insalubrity at the heart of environmental problems in Côte d'Ivoire. Given the scale of the problem related to the sustainable management of household waste, in a context marked by the economic crisis of

the 1980s, the State of Côte d'Ivoire withdrew from centralized management to entrust it to local authorities to through the decentralization policy (Op. cit.). Since 2003, local and regional authorities have been involved in the management of household waste. Indeed, the distribution of competencies, made by the Ministry of the Interior and Decentralization in 2002, allocated, in accordance with the law N° 2003-208 of July 07, 2003, to the communes, the pre-collection of the garbage and the transport of the waste at the grouping station. Therefore, the municipalities are responsible for the construction and management of waste disposal centers. As for the District, it is responsible for the realization and management of the waste consolidation stations. The District is also responsible for the transportation of garbage from the unregulated stations to the District Landfill (Kouassi, 2007). Despite the distribution of skills in the context of household waste management in developing countries, communities face enormous difficulties. These difficulties have led to the proliferation of waste in urban cities. This situation has given rise to numerous scientific studies. It is in this context that Tini (2003), through a study on solid waste management in Niamey, revealed that the huge amount of household waste produced in the Nigerian capital is a daily nuisance to

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sanitation, with risks to public health and hygiene. These nuisances evoked by the author come from the putrefaction of the waste which clogs the gutters and the collectors of waste water. They are characterized by their dual visual and olfactory appearance. Thus, from a visual point of view, the heaps of rubbish that strew the streets and public spaces tarnish the image of the city. He also emphasized that nauseating odors, revealing olfactory nuisances, greatly impede the use of public spaces by users and local populations. In the same vein, Nyassogbo (2005) argued that the inadequacies identified in the way household waste is collected and managed, and the pervasiveness of garbage in cities, have many implications for the urban landscape and health of population. The author indicated that mismanagement of garbage is a source of pollution of the air, soil and groundwater. In addition, the effect of waste on health emanates from the release of toxic gases through the incineration of garbage piles that emit black fumes and gases (hydrochloric gas, sulfur dioxide (SO<sub>2</sub>), sulphide hydrogen (H<sub>2</sub>S), phosphogen and other deleterious gases) that have harmful effects on the health of those who inhale them (Op. cit.). The degree of harmfulness of household waste varies according to their characteristic. The influence of environmental degradation affects health. El Heit (2004) indicated that beyond nuisances, waste can cause an impact on the environment because of its release, its treatment, or more indirectly the impact generated by the exploitation of materials and Energy. As can be seen, defective management of household waste may pose health and environmental risks for the population. Le Bris, quoted by Koffi (2006), states that insalubrity and bad odors are at the origin of certain serious diseases. These unhygienic diseases such as cholera, malaria, diarrhea, dysentery, schistosomiasis, typhoid fever and acute respiratory infections cause many deaths.

The writings mentioned above reflect the situation of many cities in Côte d'Ivoire. This is the example of the city of Dabou. Indeed, because of its proximity to Abidjan, the economic capital of the country, the presence of agro-industrial complexes, the standard of living relatively acceptable compared to Abidjan, knows a strong urbanization and not mastered. As a result, the strong demography and spatial extension of the city has fostered the proliferation of household waste in the city. They are compiled in certain places and become real wild deposits. This situation seems to be the consequence of the irregularity and the insufficiency of the mechanisms put in place by the municipal authorities. If we stick to the various studies that have highlighted the environmental and health consequences of household waste, the proliferation of this waste in the town of Dabou deserves special attention to avoid possible disasters.

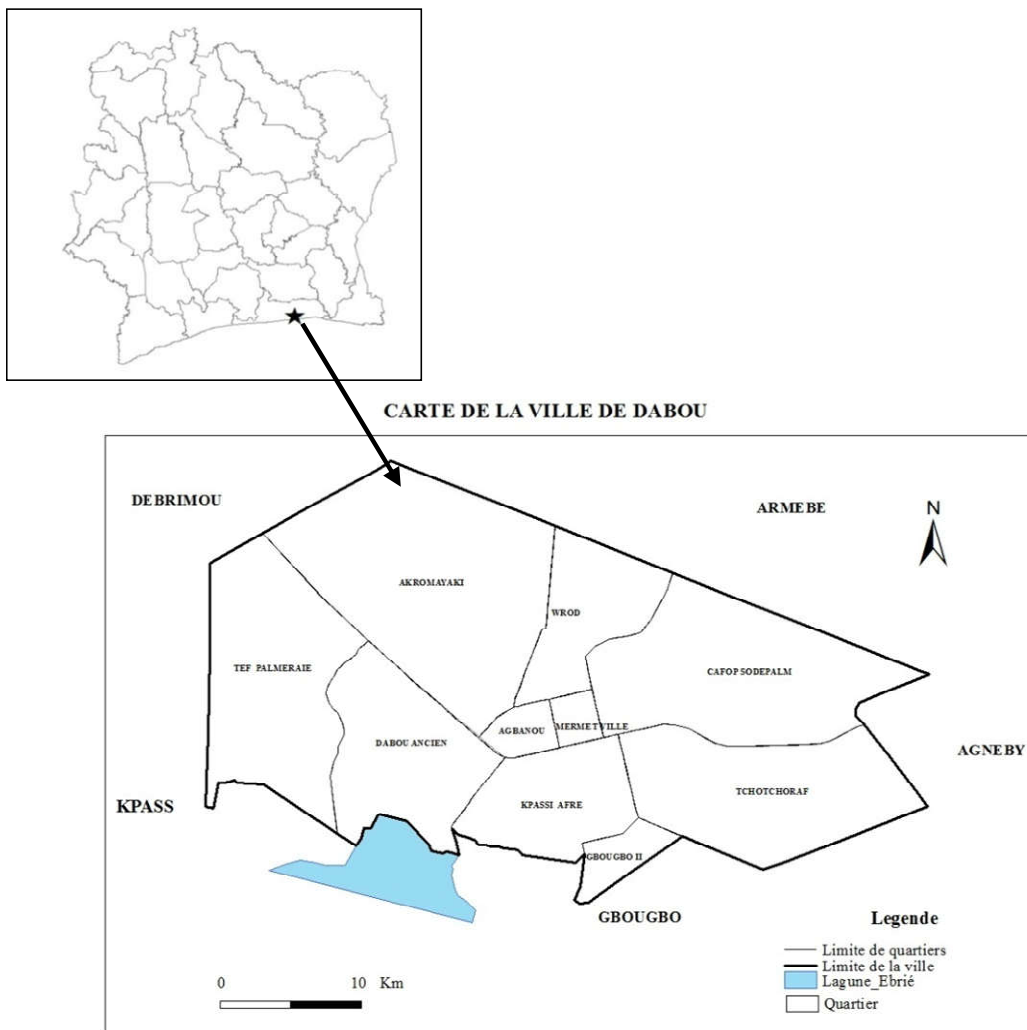
It is in this logic that this study analyzes the state of play of waste management marked by proliferation in the commune of Dabou. In this transdisciplinary work carried out in a qualitative approach, after the presentation of the geographical scope of the study, it is question of determining the mode of production of household waste in the commune of Dabou. Then, the study analyzes the risks related to the proliferation of this household waste. The study took place in the south of Côte d'Ivoire in the region of large bridges. Specifically, the study took place in the city of Dabou (Map 1). Erected in chief town of region in 2011 by the decree n° 2011-263 of September 28th, 2011, the city of Dabou is limited to the East by the commune of Songon, in the North by the commune of Sikensi, to the West by the commune of Grand-Lahou and in the South

by the Ebrié lagoon. Extent on an area of 2048 km<sup>2</sup> with 1114 ha. This communal area has 10 neighborhoods (Agbanou, Akromayaki, Old Dabou, Kpassiaffre, Mermet city, Wrod, Cafop-sodepalm, Gbougbo II, Chochhoraf and Tef palmeraie) with a population of 61,942 inhabitants (RGPH, 2014). Selected from the reasoned choice sampling technic, the resource persons in this study consisted of the Director of Technical Services and the Health and Sanitation Department of the Dabou City Council, the City Council's garbage collectors, a Officer of the Regional Directorate of Environment and Urban Sanitation, the various Heads of Quarters, the Director of the General Hospital of Dabou and the Chief Medical Officer of the School and University Health Service and the Dabou District Health and with the heads of households. In a qualitative approach, this transdisciplinary study used data production techniques, documentary research, direct observation and individual semi-directive interviews. For this purpose, a maintenance guide, a dictaphone, a reading grid, an observation grid and a digital camera were used as tools. The data produced were subjected to a double, comprehensive and interactionist analysis in order to identify the logics of the actors involved as well as the meaning of the strategies developed by them.

## RESULTS AND DISCUSSION

**Mode of production of household waste in the municipality of Dabou: Producers of household waste:** Analysis of the data obtained revealed that the waste produced in the commune of Dabou came from several sources. First, the first source of waste production, as the name suggests, comes from households in the municipality. Households are the main level in the waste production process in the commune of Dabou. This could justify the name of household waste. According to the National Agency of the Environment (ANDE, 2001), the national average daily production of household waste in a locality depends on the number of its population (Table 1). At the last General Census of Population and Housing (RGPH) in 2014, there was the population of the city of Dabou 61 942 inhabitants distributed in 16002 households. .

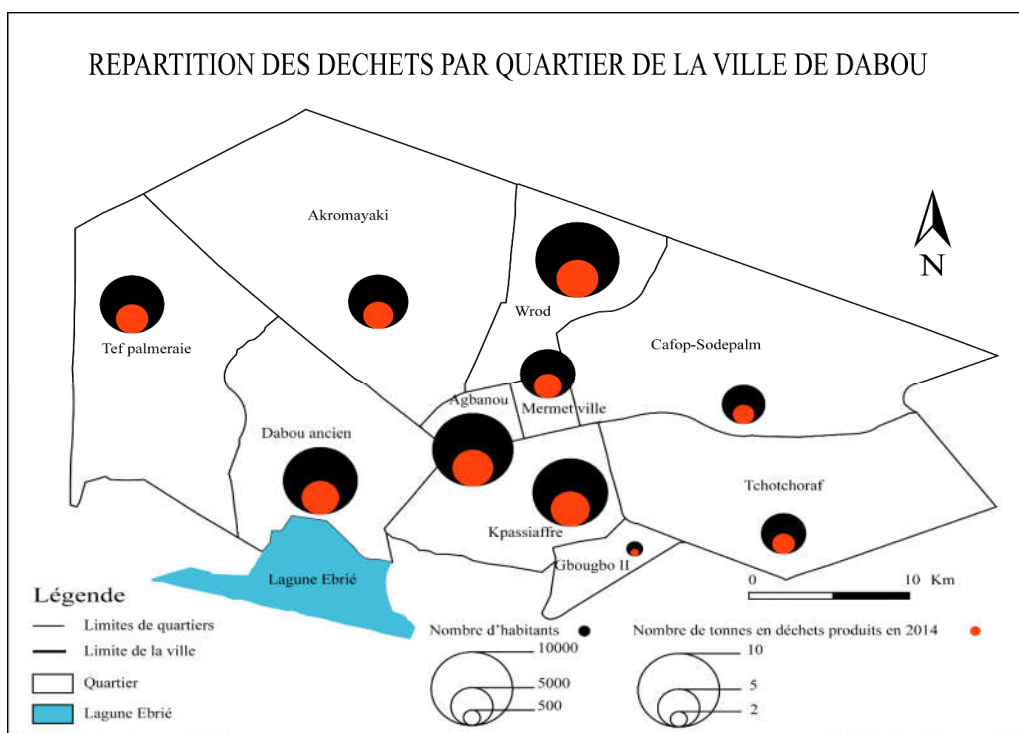
Therefore, according to the table, the city of Dabou is part of the average cities with a population of between 40,000 and 100,000 inhabitants, of which 0.75 kg of waste is produced per day by a resident. Thus, on the basis of Table 1, we can estimate the amount of waste produced in Dabou at 46456.5 Kg per day. Then come craftsmen and small industrial units such as modern cabinetmakers, real producers of household waste. Craftsmen whose activities are likely to produce this waste are: dressmakers, carpenters, hairdressers, glaziers, photographers, etc. In addition, we can mention the traders who identify themselves through the super markets, the vendors in the markets, the restorers, the shops, etc. In this category of producers, the largest producers of waste are those who sell rapidly perishable foodstuffs. To this end, according to municipal authorities, the commune of Dabou has more than 80 restorers. During field investigations 10 restorers were interviewed. In each restaurant, there were an average of 2 to 3 bags of rubbish bins, with around 15 kg of waste. It could be deduced that the 10 restorers surveyed produce about 150 kg of household waste on average per day. Finally, public places and settlements can be considered as potential producers of household waste.



Source: Google Map,2016

Conception et Réalisation: Ahounou, 2016

Figure 1. Carte de localisation de la commune de Dabou



Source: Google map,2016

Réalisation: Ahounou,2016

Figure 2. Carte de la répartition de la production journalière des déchets urbains par quartier en fonction de la population

Indeed, in the city of Dabou, there are several public places producing household waste. In these places, the production of wastes is periodic and often related to the rates of use of users.

This is the public garden, places of rest and cultural events. In these places, the people who come to relax or honor possible appointments reject the waste on the ground.



Source : (Ahounou, 2016)

**Figure 3. Benne preneuse de 10 tonnes**



Source : (Ahounou, 2016)

**Figure 4. Benne de 5 tonnes**



Source: (Ahounou, 2016)

**Figure 5. Dépôt sauvage de déchets**



Source: (Ahounou, 2016)

**Figure 6. Déchets déversés dans un champ de gombo**



Source: (Ahounou, 2016)

**Figure 7. Déchets déversés dans un champ d'Hévée**

In these public places, some human settlements in the city of Dabou are real producers of household waste. The biggest producers are schools and training establishments. The city of Dabou has more than fifty schools and training. The amount of waste produced in these places is related to rate and period of attendance. The amount of waste produced in these places is related to rate and period of attendance. In view of the above results, it appears that the waste produced in the city of Daloa comes from various sources. This waste comes especially from households. They also emanate from certain human settlements (industries, administrations, school buildings, markets, prisons, hospitals, barracks, shopping malls, etc.), green spaces. All these origins highlight human activities. Many studies on the subject have more or less obtained the same results, with a particular emphasis on human actions. It is in this Bertolini (1990), defines the waste as an inevitable product resulting from the human activity. By this approach, most household waste is produced by man in his perpetual quest for his well-being. However, by their nature or composition, there are several producers. From the outset, there are households. They are real centers of production of household waste. This production varies according to the level of household income

but also according to the importance of the city. After the households, Kaboré (2009) shows that the waste comes from collective sanitation. In addition, there are also producers of household waste in the markets.

**Tableau 1. Répartition de la production des déchets par type de ville**

Types de localité	Population	Production
Abidjan	Supérieure à 3 000 000	0,9 kg/hab/jour
Grandes villes	Comprise entre 100 000 et 300 000	0,8 kg/hab/jour
Villes moyennes	Comprise entre 40 000 et 100 000	0,75 kg/hab/jour
Petites villes	Comprise entre 10 000 et 40 000	0,5 kg/hab/jour
Villages	Comprise entre 2000 et 10 000	0,35 kg/hab/jour
Campements	Inférieure à 2000	0,2 kg/hab/jour

Source : (ANDE, 2001)

They concentrate almost all the nature and all the compositions of household waste produced by households. The variation of this production differs according to several variables which are: the size of the market, the type of article sold and the period. The variation of this production differs according to several variables which are: the size of the market, the type of article sold and the period. Apart from the markets, the restaurant tenants are also real producers of household waste. To these are added the different human settlements.

**Composition of household waste produced in the municipality of Dabou:** The analysis of the data of the study showed that the composition of the household waste produced in the commune of Dabou depends on the activities of the producers of these wastes. For example, household waste consists of putrescible, biodegradable residues from leftover food. We also have leaves, starches, fruits, vegetables, peelings of bananas, cassava and yams. Then the dry, rot-proof household waste, which degrades over a very long period. This detritus includes papers, woods, ashes, shards, bottles, plastics, glasses, yogurt and canned goods packaging, used household appliances. As for artisans and industrial units, we have: textiles, pieces and wood powder, hair, paper and glass breezes. Concerning the tradesmen, one notes the remains of foods and sweepings. Finally, in public places and human settlements, waste consists of paper, plastic packaging and leftover food. Moreover, the analysis of the data shows that the quantity of waste produced is a function of the period, the number of inhabitants, the economic situation and the size of the households. Indeed, the most populated areas of the city of Dabou are those that produce more household waste including Wrod, former Dabou, Kpassiaffre and Agbanou, with a daily output of between 6 and 10 tons. The populated areas such as Tef palmeraie, Akromayaki and Mermetville have a production of between 5 and 6 tons per day. The new, less populated neighborhoods, such as Cafop-sodepalm, Chochhoraf have a daily output of less than 5 tons. Lastly, the Gboubo II district, much less populated, from the last subdivision of the city and under construction, has a production of less than 500 kilograms (Map 2). With regard to the economic situation of households, it appears that the production of waste is higher among heads of households who have a monthly income in general. This can be explained by the fact that these household heads, with their income, have time to stock up or predict their consumption during the month. This proves that in these households, members are able to meet their daily needs on a regular basis. Hence, the production of large amount of solid household waste.

Hence, the production of large amount of solid household waste. After households with monthly incomes, waste production seems more pronounced among heads of households with a daily income. These heads of households, although they have no forecast projects, always manage to produce waste in the satisfaction of the vital needs of their households. Here, the amount of waste production is not uniform due to the variability of daily income insured or not. Here, the amount of waste production is not uniform due to the variability of daily income insured or not. A third household category identifies itself through heads of households with a weekly income. These household heads would likely be dependent on an unstable supply source. Either one of the parents is active outside the city and returns every weekend, or these heads of households are workers who are paid according to their weekly output. This state of affairs is likely to change the food supply. This could explain the small amount of waste produced by these. This could explain the small amount of waste produced by these.

An analysis of the above results shows that the composition and quantity of household waste produced in a municipality depend on the number of inhabitants, the neighborhood, and the socio-economic situation of household heads. These results corroborate those of many authors. In this regard, Onibokun et al (2001) associate the growth and diversity of waste produced with the socio-economic changes recorded in urban areas. The various perceptible changes through the consumption patterns are apprehended by analyzing the waste produced according to a qualitative and quantitative approach. For Coing and Montano (1985), the total amount of urban waste generated varies greatly depending on the level of development and income. By way of example, these authors indicated that in 1979 per capita production was 2.7 kg / capita / year in the United States; while it was 1.8 kg / person / year in Europe and 0.45 kg / person / year in India. This observation is valid within the same country. The contrast appears even better, if one takes into account, within each agglomeration, the differences between the social groups and the types of neighborhood. The contrast appears even better, if one takes into account, within each agglomeration, the differences between the social groups and the types of neighborhood. These authors took the illustrative example of the agglomeration of Abidjan in 1973. At that date, the average production of waste per capita was on average 0.88 kg / inhabitant. However, it reaches 1.45 kg / inhabitant in Plateau, 0.93 kg / inhabitant in Koumassi and Abobo. Thus, through these figures, Coing and Montano (1985) have highlighted the importance of socio-economic factors in the variation of household waste production in Abidjan. Therefore, the level of garbage production in Abidjan varies according to the 18 types of habitats (Attahi, 2001, Youssouf, 2002 and Djjouka, 1987).

**Household waste management in the city of Dabou:** According to Article 66 of Law No. 96-766 of 03 October 1996 on the Côte d'Ivoire Environment Code, in force, municipalities are responsible for the collection, transportation and disposal of household waste. This law specifies that these municipalities have the obligation to elaborate the schemes of collection and treatment of household waste with the assistance of the technical services of the competent structures. With regard to this article, it can be seen that the household waste produced must be evacuated to appropriate places or landfills. For this purpose, the municipal authorities are primarily responsible for this operation. They must therefore implement

an effective household waste management policy in their respective municipalities. However, data on household waste management in the cities of Côte d'Ivoire, especially in Dabou, show that despite the willingness of municipal authorities to efficiently manage household waste, they face several constraints (Ori, 1994). Dianous, 1998 and Yassi, 2006). Indeed, it appears that in order to manage the household waste of the municipality of Dabou, several resources were mobilized by the municipal authorities. These are human, financial and material resources. Regarding human resources, there are 53 individuals in the management of household waste. There are 14 garbage collectors, 09 road and market sweepers, 16 curators and 14 weeders. However, given the daily rate of waste produced, estimated at 46456.5 kg distributed in the 10 districts of the city of Dabou (RGPH, 2014), one could deduce that the number of garbage collectors hired by the municipal authorities is very small. Because, with 16002 households that counts the commune of Dabou, the ratio scavenger / household is about 1 scavenger for 1143 households.

In reality, this ratio remains very low. This situation reflects a difficulty in human resources set up by the technical service of the municipality. This situation reflects a difficulty in human resources set up by the technical service of the municipality. As for financial resources, we note that the municipal budget for the year of the study (2016) was 1.040549 billion. Of this budget, 16 million or 2% was allocated to household waste management. This amount should be used for the purchase of fuel, the maintenance of different gear and other necessary equipment. This amount should be used for the purchase of fuel, the maintenance of different gear and other necessary equipment. However, according to the National Agency for the Environment (ANDE, 2001), 4 to 10% of the municipal budget must be used to finance the removal of garbage from cities in the interior of the country.

What demonstrates the budget allocated to household waste management in the community of Dabou is below this recommendation. What demonstrates the budget allocated to household waste management in the community of Dabou is below this recommendation. In terms of material resources, the town hall of Dabou disposes for the removal of household waste from a 5-tonne dump truck, a 10-tonne grab bucket granted by the Presidential Emergency Program (PPU) (Figures 3 and 4). These two trucks complement three tricycles motorcycles granted by the Fund for Financing Urban Health Programs (FFPSU) through the Community Support Program (PAC). Thus, on the 10 districts of the commune, these two trucks furrow an average of 2 or 3 neighborhoods per day. Moreover, during periods of heavy rainfall, certain areas of these neighborhoods are difficult to reach because of the condition of the roads. We would have to wait until the following week. This assumes that all household waste produced in the municipality per day is not fully collected. This assumes that all household waste produced in the municipality per day is not fully collected. The constraints related to human, financial and material resources in the management of household waste in the municipality of Dabou also have an influence on the chain of the waste management sector. Because the low number of garbage collectors, the lack of material and the lack of financial means greatly affect the operations of pre-collection, collection, landfill and disposal of household waste. This situation is at the root of the proliferation and the wild deposits

of household waste in the commune of Dabou. This has been highlighted by Ori (1994). According to this author, there are both technical, structural and financial constraints which, in a context of economic crisis, weaken the experimentation of a closer management of the local authorities, are at the origin of the According to this author, there are both technical, structural and financial constraints which, in a context of economic crisis, weaken the experimentation of a closer management of the local authorities, are at the origin of the. This dysfunction is illustrated by the proliferation of waste and wild garbage cans in cities with risks. Risks related to the proliferation of household waste in the municipality of Dabou. The proliferation of household waste and wild deposits poses enormous risks, both environmental and health.

**At the environmental level:** The results presented above have shown that the municipal authorities, in the exercise of their functions faced constraints, which would be at the origin of the dysfunction in the system of household waste management in Dabou. This situation would have led to the proliferation and the appearance of several wild garbage dumps in the commune of Dabou (Figure 5). In practice, the irregularity of informal pre-collectors and the difficulties encountered by formal pre-collectors lead some households to reject their waste in the wild on the pretext that the collection sites are very far from their homes or that they are the city council to find solutions to access their sector. In addition, the lack of discharge of household waste leads garbage collectors and some pre-collectors to dump garbage in nature and often in unsuitable spaces. As for the garbage collectors of the town hall, it can be seen that they dispose of household waste collected in the wild for incineration or in agricultural plots (Figures 6 and 7).

As for the garbage collectors of the town hall, it can be seen that they dispose of household waste collected in the wild for incineration or in agricultural plots (Figures 6 and 7). These different attitudes result in the proliferation of wild deposits of household waste followed by pollution of water, air and soil. For, according to Ngnikame (1993), runoff that leaches garbage bins usually carries hazardous pollutants. These materials can seep into the water table. This infiltration leads to the pollution of wells near these wild deposits or uncontrolled landfills. In addition, the incineration of household waste has consequences on the ozone layer. It is in this context, Fall (2002) means that the incineration in the open air of household waste causes the release of toxic gases. These gases can be carbon monoxide (NO), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), hydrochloric acid (HCl), sulfuric acid (H<sub>2</sub>S) and carbon dioxide. carbon (CO<sub>2</sub>) which are destructive to the ozone layer. He goes further by showing that the accumulation of household waste for a long time at the same place causes anaerobic fermentation with production of methane (CH<sub>4</sub>) very toxic. In addition, waste dumped into the sewage system contributes to the obstruction of these gutters. Campan (2007) approaches in the same direction and argues that this waste, released on the ground without pre-treatment, are sources nuisances and well-known pollution: degradation of sites; pollution of surface water and groundwater; atmospheric pollution (release of dust, fumes, foul and foul odors ...).

**At the health level:** To apprehend the risks of the proliferation of household waste on the health of the populations of Dabou, we were interested in the different diseases related to an unsanitary environment, that could have contracted these

populations. The exchanges with resource persons in this area revealed that the most frequent diseases are: malaria, acute respiratory infections, typhoid fever, skin diseases. In the different households we find that members have contracted either one, two or sometimes three diseases at the same time. In this regard, a review conducted with health officials indicates that in 2015, health facilities in the city recorded 41,334 consultations. Of these patients, 35,730 people visited the hospital due to environmental illness in general and particularly to poor household waste management. Among these diseases, malaria is dominant, with about 19,798 cases. Then, acute respiratory infections are added with 9003 cases, then dermatoses with 2843 cases, finally diarrhea and typhoid fever with 2700 and 1386 cases. This high propensity for malaria is linked to the numerous swampy areas, but also to the stagnation of wastewater often blocked by household waste. Acute respiratory infections are in second position due to the proximity of wild deposits, and also the incineration of this waste near residences. In view of these results, we realize that, in addition to the risks posed by the proliferation of household waste on the physical environment, it objectively affects the health of populations. For this reason, WHO (1994) emphasizes that environmental damage is related to environmental health including all aspects of human health, including the quality of life. These aspects are determined by physical factors, chemical, biological, social and aesthetic aspects of our environment, chemical, biological, social and aesthetic aspects of our environment.

Therefore, it can be said that living in an unsanitary environment means being exposed to many diseases. It is in this, Bourrelier (1996) emphasizes that the air we breathe outside and inside the premises, the water and food we eat, the noise and radiation we are exposed to influence more or less directly on our health. It is in the same vein that the researches of several authors (Domenach and Picouet, 2000, Sanou, 2005 and Coulibaly, 2006) on the consequences of garbage on the health showed that the proliferation of waste is a source of pests, lung and carcinogenic diseases, visual nuisances, etc. The proliferation of waste is a source of pests, lung and carcinogenic diseases, visual nuisances, etc. Moreover, Yassi (2006) writes that the larvae of insects and flies in the household garbage at the beginning of the fermentation take 48 hours to hatch, the waste not evacuated to the dumps over tens of days poses a problem of hygienic order because of the stench that emanates from the waste. Tudor (1996) shows that in developing countries open and uncontrolled landfills are real limits in the household waste management system. These landfills are found near buildings due to rampant urbanization leading to serious health risks with the risk of spreading contagious diseases by rodents, insects that are true breeding grounds. These landfills are found near buildings due to rampant urbanization leading to serious health risks with the risk of spreading contagious diseases by rodents, insects that are true breeding grounds. As for the households that burn garbage that has become too cumbersome in the many wild deposits that thrive in the city, "the fires of the plant remains maintain very often thick clouds. Their effects on urban health are similar to those measured by WHO researchers in Kenya and The Gambia: the average indoor dust concentration ranges from 400 to 2300mg / m<sup>3</sup> while the WHO reference standard provides levels ranging from 100 to 150 mg / m<sup>3</sup>. Beyond this, respiratory problems appear "(Pigeon, 1995). Provides levels ranging from 100 to 150 mg / m<sup>3</sup>. Beyond this, respiratory problems appear "(Pigeon, 1995).

At the level of the municipal authorities, the current method consists of the disposal of household waste in open dumps. Occasionally, a bulldozer is used to spread loads and improve accessibility for dump trucks. These raw or unloaded landfills without adequate equipment can be a source of long-term danger to the population. Examples in the world are legion. In Istanbul, "like an erupting volcano," the Umraniye garbage dump exploded on April 28, 1995, spilling tons of waste into the nearby slum. To date, 27 bodies have been removed from the rubble of about a dozen houses crushed by the dumping of rubbish. Other missing persons, whose exact number is unknown, will probably never be found. Negligence on the part of the authorities, ignorance and fatalism on the part of the inhabitants contributed to this tragedy, caused by the accumulation of methane gas, which could have been avoided "

## Conclusion

At the end of the present study, it appears that the waste produced in the commune of Dabou comes from several orders. These include households, artisans, small industrial units, traders and public places and human settlements. The composition of this waste depends on the activities of the different producers. Also, the quantity of this waste depends on the periods, the number of inhabitants, the economic situation and the size of the households. Moreover, the study shows that the management of household waste by the municipal authorities presents enormous constraints. These constraints are reflected in the low number of human resources, the inadequacy of the allocated budget and the lack of material for the collection of waste. These different constraints influence the system of household waste management, namely pre-collection, collection, land filling and waste disposal. This situation is at the base of the proliferation and the birth of several wild deposits in the commune of Dabou. This research indicates that the proliferation of these wastes has enormous environmental and health risks. At the environmental level, these risks are manifested through the pollution of water, air and soil. In terms of health, the risks are reflected in the most frequent diseases in health centers in Dabou: malaria, acute respiratory infections, typhoid fever, skin diseases, etc. From the foregoing, it is imperative to note that the issue of sustainable management of household waste is at the heart of local government governance programs to prevent potential ecological and health risks.

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