
WORKING CONDITIONS OF CARTERS OF THE PRE-COLLECTION SYSTEM FOR SOLID HOUSEHOLD WASTE OF THE MUNICIPALITY OF ABOMEY-CALAVI IN

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ABSTRACT

This research aims to show the working conditions of carters in the municipality of Abomey-Calavi. In this commune, these workers help subscribed households to evacuate their waste to traditional landfills. They carry out this activity without any protection, in appalling conditions and exposed to various risks.

To conduct this research, a diagnosis of working conditions was carried out through documentary research, the questionnaire survey and the interview. 160 carters and 24 managers of pre-collection structures were interviewed. The data obtained was processed using Stat View version 5.0 software. and statistic R version.

The results obtained revealed that the carters of this commune exercise their activity in five (5) zones subdivided into one hundred and eighteen (118) sectors. Each team in pairs and trinomials for the majority respectively 59.8% and 36.4% of the teams formed in the field passes through its area of intervention for a frequency of kidnapping of twice a week. They serve an average of 100 households per day in one to three neighborhoods. These workers work at least 11 hours a day without an official break to receive a salary varying between 15,000 and 45,000 CFA francs per month. This salary does not reach the minimum wage (40,000 F CFA) for more than 2/3 sometimes arrive late or paid in installments. Compared to the means of transport, human-drawn

carts are operated by 80% of carters. Regarding protective tools, three tools are used more: gloves (20.69%) boots (7.52 %) and mufflers (6.24%). Under these conditions, these carters have no contract, leave, risk premium, health insurance, and are not declared to the National Social Security Fund (CNSS). It is therefore urgent that prompt action be taken to improve the working conditions of these workers and therefore their health so that they can effectively contribute to the sanitation of the town.

Keywords: Abomey-Calavi, Working conditions, Carter, DSM pre-collection,

INTRODUCTION

The issue of waste management has become more and more complex both for the countries of the North and for those of the South. The increasing volume of solid waste is currently a serious problem in urban areas. Population growth, the increase in the level of per capita income and the level of economic activity, especially consumption, have resulted in an increase in the production of solid waste which constitutes a threat to the quality of the environment. . According to Beede and Bloom (1995), with every 1% increase in per capita income, there is an associated 0.34% increase in waste generation, and with every 1% of population growth, there is an increase of waste generation by 1.04%. Thus, the flow of solid waste is continuously increasing across the world. With this exponential increase in the production of waste, the question of their management arises sharply thanks to the awareness of environmental and health problems.

In African cities, in this case the economic and political capitals, the large quantity of waste produced has not stopped increasing since 1960. This situation can be justified by the spectacular and almost exponential demographic growth experienced by these cities with growth rate close to double the world average: from 3.5 to 6.2% in Yaoundé (Cameroon) between 1977 and 2001, 4.8% between 1988 and 2000 in Niamey (Niger) (Wéthe et al, 2003). Added to this is economic development, which has as its corollary an increase in consumption and production of waste per capita (UNDP, 2011). Waste management has become a daily concern, because this waste is found at all levels of the home and affects public health. The commune of Abomey-Calavi, like other African cities, faces the challenge of managing municipal solid waste. In the 1990s, the liberalization of the national economy opened up the urban waste management sector to private and community structures, through Law 98-030 of 11 February 1999 on the framework law on the environment in the Republic. from Benin. The activities of these private companies and community structures in waste management have partly solved the problem of unemployment and that of the accumulation of waste. In addition, article 93 of chapter III of law n ° 97-029 of January 15, 1999, on the organization of the Communes in the Republic of Benin, confers on the Communes the competences in terms of environmental management, hygiene and public health (CREPA, 2011). Thus, the sanitation of the urban environment which was in the public domain is now the collective responsibility of the inhabitants of the neighborhoods where everyone must make their contribution. The management of solid household waste in the municipality of Abomey-Calavi comes down to pre-collection which is carried out by households and associative structures. These pre-collection structures use rudimentary equipment with unskilled and unskilled workers. These are carters who, for the most part, carry out this activity due to a lack of

skills and jobs. The handling of pre-collected waste by these carters without major precautions in terms of protection exposes them to real health risks. Faced with this situation, this article intends to contribute to a better knowledge of the working conditions of the carters of the research commune in order to suggest avenues for a more effective involvement of the workers of the pre-collection in the process of managing the waste. solid household waste both in the municipality of Abomey-Calavi and in other municipalities in Benin.

PRESENTATION OF THE RESEARCH FRAMEWORK

The Municipality of Abomey-Calavi is located in the south of the Republic of Benin and the Atlantic department. It is between 6 ° 10 'and 6 ° 22' north latitude then 2 ° 15 'and 2 ° 22' east longitude. This municipality covers an area of 539 km² with a density of 571 inhabitants/km². It is bounded to the north by the municipality of zê, to the south by the Atlantic Ocean, to the east by the towns of cotonou and sô-ava and to the west by those of ouidah and tori-bossito (figure 1). The research sector is part of the large ensemble of southern Benin dominated by the Beninian subequatorial climate. It receives an annual rainfall whose average oscillates around 1171.25 mm. Temperatures are generally quite high with an annual average hovering around 26.11 ° C. The months of February, March and April hold the record for heat while the months of July and August are the periods of cold.

According to INSAE (1988, 1994, 2004 and 2013), the municipality of Abomey-Calavi has 60,786 inhabitants in 1979, 126,507 inhabitants in 1992, 307,745 inhabitants and 656,358 inhabitants in 2002 and 2013 respectively, i.e. nearly 47% of the population of the Atlantic department in 2013. These statistics show a demographic growth which has doubled in eleven (11) years (2002-2013). This rate of increase in the population of the Municipality of Abomey-Calavi, which has become extremely rapid for the last three decades precisely from 1992, is an indicator of the trend in the production of solid household waste. This then poses a real problem of DSM management in this town. The populations can no longer find spaces near homes to dump their waste, this because of urban sprawl. The direct consequence of this situation is the intervention of the DSM pre-collection structures in this commune, which use the lowlands, the water bodies and the old sand quarries as landfill sites.

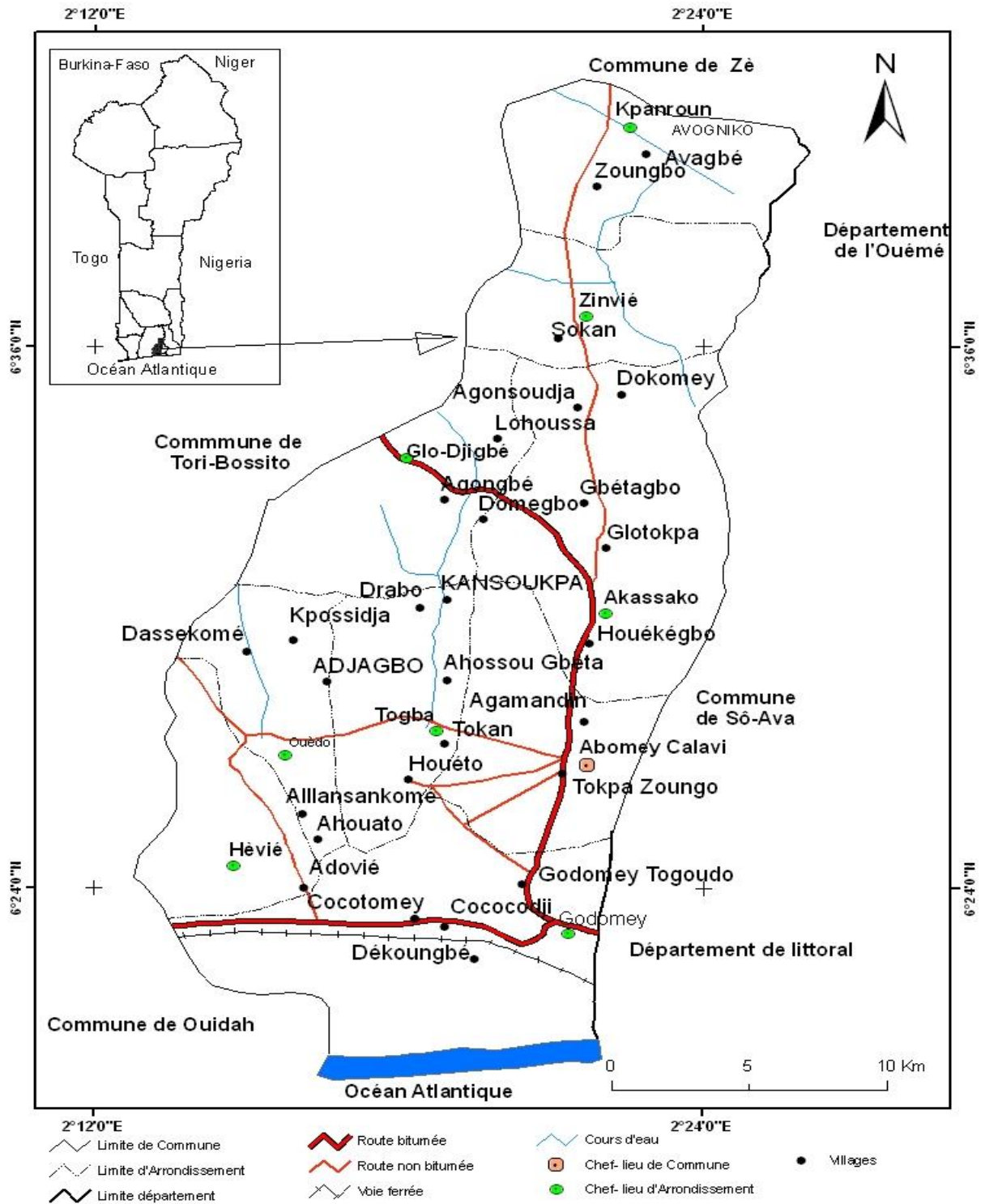


Figure 1: Geographical location of the municipality of Abomey-Calavi

METHODS

The methodological approach adopted has three phases: data collection (documentary research and fieldwork), data processing and analysis of results.

The data collected as part of this research is both quantitative and qualitative. The quantitative data relate to demographic and statistical data relating to the number of actors involved in the management of solid household waste (managers of pre-collection structures and carters, etc.), to the methods of waste management in the municipality. The qualitative data take into account the assessment of the carters' equipment and work tools and then the organization around the pre-collection activity.

To obtain data and information, we collected and used the various documents that exist on waste management in the municipality of Abomey-Calavi. This technique made it possible to identify scientific works, journals and articles on the research area and the theme relating to the working conditions of carters. The information from the documentary research was supplemented by the survey and direct observation in the field. Field investigations were carried out after the determination of a sample.

The number of carters taken into account was defined on the basis of the survey results of the census of carters obtained during the research work. A total of one hundred and sixty (160) carters were identified and interviewed. They are distributed according to the number of carters identified by arrondissement as presented in Table I.

Table I: Distribution by district of the number of carters

Boroughs	Number of carters
Abomey-Calavi	36
Akassato	13
Glo-Djigbé	02
Godomey	84
Hévié	02
Ouedo	10
Togba	13
Total	160

Source: Fieldwork

As for those responsible for the pre-collection structures, the size of the sample to be surveyed was 24.

The survey itself was carried out on the basis of a questionnaire for carters and an interview guide for those in charge of the pre-collection structures. This survey made it possible to collect information from the managers of the pre-collection structures and workers on the pre-collection activity and the working conditions of the carters.

Direct observation made it possible to understand on the one hand, on the one hand, and on the other hand, when loading and transporting the carts, the working conditions of the carters and to carefully examine the behavior of the latter. from pre-collection to disposal.

Data collected in the field are processed manually. The information is grouped by center of interest and processed with Excel software, which was used to calculate the frequencies, averages, percentages and to produce tables and graphs. As for the maps, they were produced using Arc-View software. The results obtained from statistical and graphic processing were analyzed. It was carried out in a descriptive, analytical and comparative manner.

RESULTS

Carters working environment

The work environment includes the pre-collection and discharge places for DSMs

DSM pre-collection locations

The door-to-door pre-collection activity of DSMs in the municipality of Abomey-Calavi respects the principle of zoning. According to the survey results from the pre-collection structures grouped together within COSGAC and the heads of the technical services of the Abomey-Calavi Town Hall, the town is subdivided into five (5) zones made up of one or more boroughs. Figure 2 shows these different areas for the pre-collection of household solid waste.

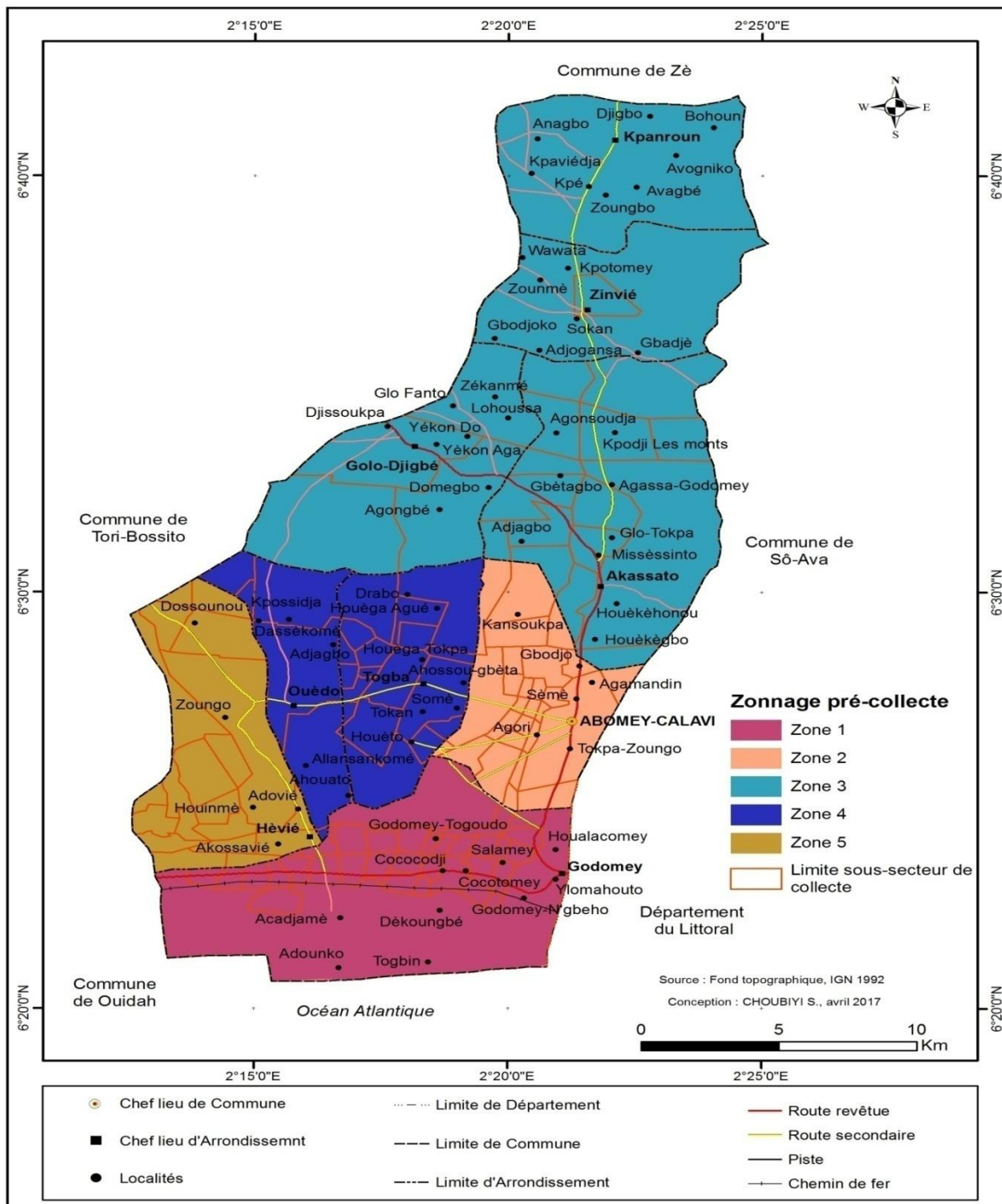


Figure 2: Zoning of the municipality of Abomey-Calavi for the DSM pre-collection

From Figure 2, it is noted that each area is subdivided into sub-area or sector consisting of one or more neighborhoods. According to the results of the field surveys, there are a total of one hundred and eighteen (118) sectors allocated to the ninety-three (93) functional associations and registered in the COSGAC register. Thus, each pre-collection structure has an intervention sector granted to it by COSGAC. The carters of this town pass through their area of intervention and collect waste from subscribed households (board) for a collection frequency of twice a week.



Photo 1: Collection of garbage cans by carters from a household subscribed to Cocotomey



Photo 2: Collection of bins by the carters from a household subscribed to Akassato-center

Plate I: Collection of bins by carters at the level of subscribed households in the districts of the research municipality

Shooting: Choubiyi, October 2017

Plate I shows the pre-collection of waste by carters in households.

Field observations, it emerges that these workers during this operation crisscross winding, narrow and sandy alleys (Plate II).



Photo 3: Carters in an alley in the Agori district for the DSM pre-collection



Photo 4: Carters in an alley in the Cocotomey district for the DSM pre-collection



Photo 5: Condition of a road in the Agamadin district crisscrossed by carters for the Pre-DSM collection

Plate II: Ways crisscrossed by carters for the pre-collection of DSM in the research commune

Shooting: Choubiyi, October 2017

Plate II, shows that the carters walk down degraded and low pressure roads. Field observations reveal that these routes have altitudes of 5 and 30 m for slopes of 1 to 5%. From the comments gathered from the latter, it should be remembered that the condition of the tracks does not make it easy for them, especially when the carts are full to be transported to the landfill sites.

DSM discharge points

Carters in the commune of Abomey-Calavi operate informal dump sites that are located all over the city or village neighborhoods. They are located in lowlands, old sand quarries, lost wells, spaces not yet occupied. Figure 3 shows the different landfill sites (not exhaustive) in the municipality of Abomey-Calavi.

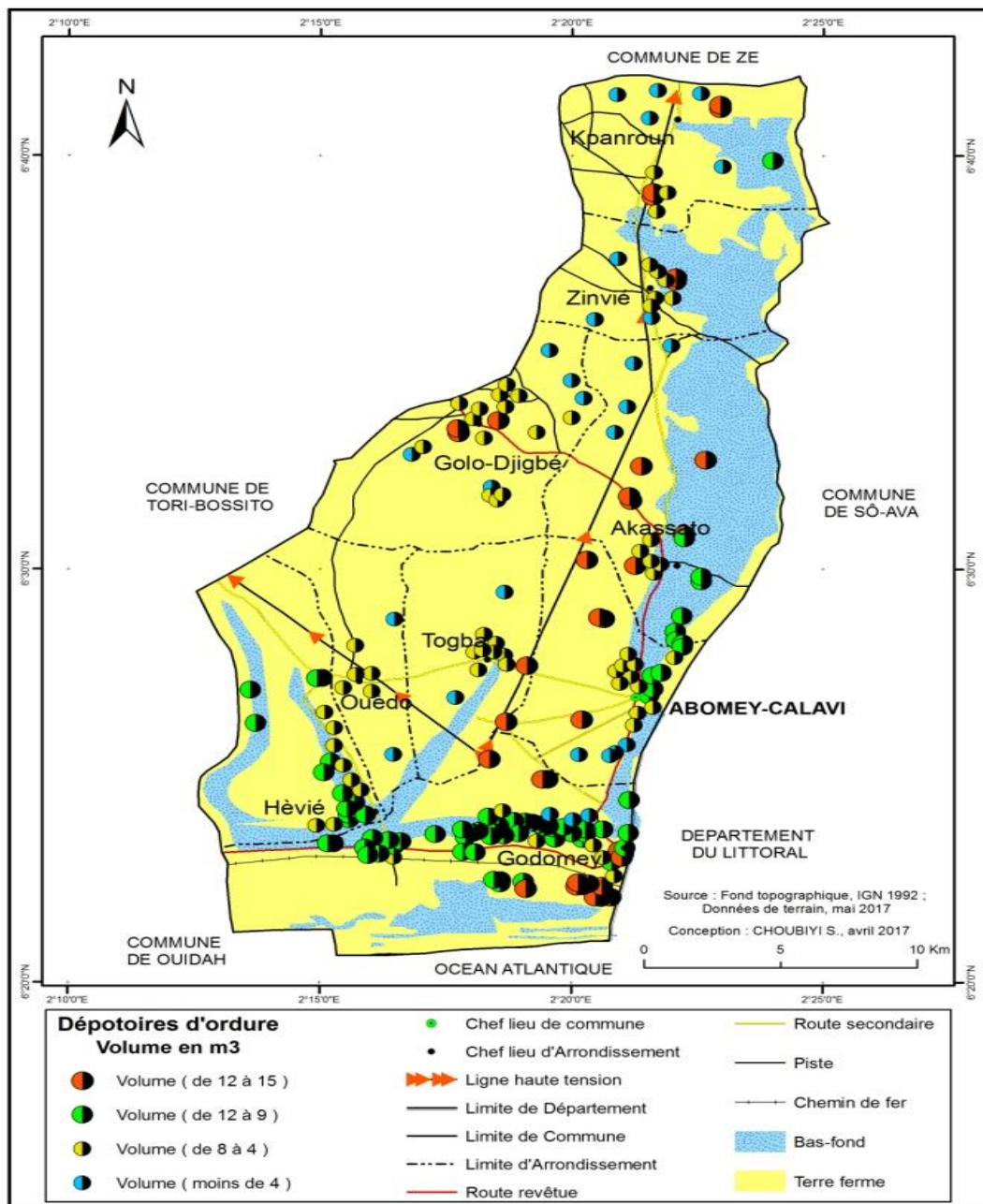


Figure 3: Distribution of landfill sites in the municipality of Abomey-Calavi

The carters declared that on these landfill sites, especially those located in lowlands and old sand quarries (Figure 3), they are faced with sinking problems. They also notified that they periodically burn and clean these decahrges (Photos 6 and 7).



Photo 6: Burnt dumpsite in Godomey by the carters



Photo 7: Cleaning up a landfill site in Sèmè by the carters

Shooting: Choubiyi, October 2017

From the observation of plate II and figure 16, it is noted that the landfill sites of the research municipality are open-air and have areas varying between 9.8m² and 2943.7m² and then heights between 0, 1m and 12m. Their volume varies between 10m³ and 850m³. They are often far from living quarters, so carters travel long distances to remove pre-collected waste. Investigation results show that more than 4/5 of the carters travel 2-6 km to reach the dump. The rest of the carters, ie 18.74%, cover a distance of more than 6 km. From observations made in the field, it should be noted that these workers use the inter-state road in very heavy traffic before reaching the landfill sites (Photos 8 and 9).



Photo 8: Carters on a track from Calavi to the landfill site



Photo 9: Carter on the track at Akassato for the landfill site

Plate III: Carters in full circulation to convey waste to the sites of dump

Shooting: Choubiyi, October 2017

Plate III, shows the carters in full circulation for the transport of waste to landfill sites. Observation made in the field reveals that carters are exposed to traffic hazards especially at rush hour.

Organizational conditions for pre-collection of DSMs

Work team of workers

From field surveys, it appears that the work teams are organized by the managers of the pre-collection structures. Teams of one to three carters are formed. The daily workspace allocated to the cart teams spans one or three neighborhoods. Thirty-six percent (36%) of the carters questioned declared that they covered one neighborhood and 64% two (02) to three (03) neighborhoods per day. One hundred percent (100%) of the carters interviewed said they serve an average of one hundred (100) households per day (Table II).

Table II: Number of households covered depending on the size of the team of carters

Size of teams carters Household sizes serviced per day	1	2	3	Total
	Percentage (%)	Percentage (%)	Percentage (%)	
[0-100]	1,4	37,5	24,4	63,3
Plus de 100	1,4	22,3	13	36,7
Total	2,8	59,8	37,4	100

Source: Field survey, October 2017

From the analysis of Table II, it emerges that the majority of carters work in pairs and trinomials, ie respectively 59.8% and 36.4% of the teams trained in the field. Also, it should be noted that more than 3/5 of the carters pre-collect waste from at least 100 households per day. It should therefore be emphasized that the size of the teams does not depend on the number of households to be served.

Working hours

From the field investigations, it should be remembered that the carters of the research commune start the pre-collection activity from 6 a.m. and finish around 5 p.m. They then work at least 11 hours a day. Thirteen point two percent (13.2%) of them enjoy about an hour's break a day. The rest, the 86.8%, do not have an official break.

Salary treatment

The carters of the DSM pre-collection structures in the municipality of Abomey-Calavi receive their wages weekly or monthly. 99.2% of the carters questioned declared that they received their salary per month and the rest, i.e. 0.8% per week. According to field investigations, the wages that the carters of this commune receive per month vary between 15,000 and 45,000 CFA francs (Figure 4).

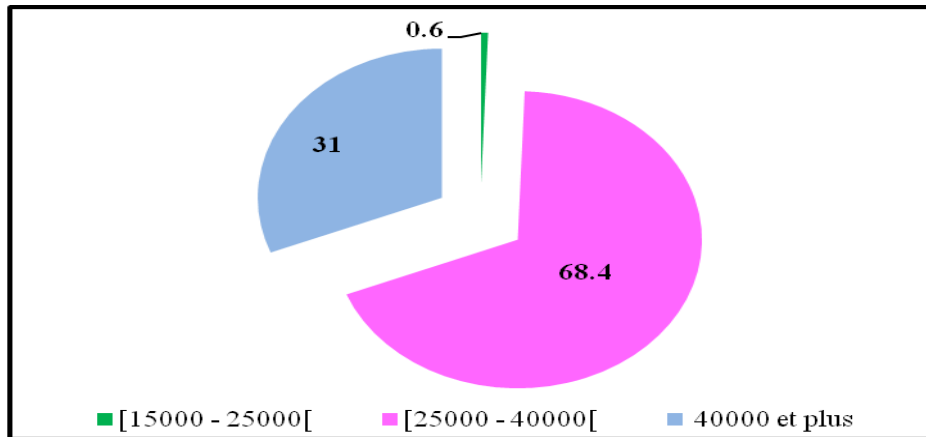


Figure 4: Monthly salary of carters in the municipality of Abomey-Calavi

Source: Field data, October 2017

From the observation of Figure 4, it should be noted that 69% or more than 2/3 of the carters of the DSM pre-collection structures are not paid at the minimum wage which is 40,000 CFA francs. This salary they are receiving is not regular and comes late. This was testified by 20% of the carters. This delay in salary is two weeks for more than 1/12 of the latter (Figure 5).

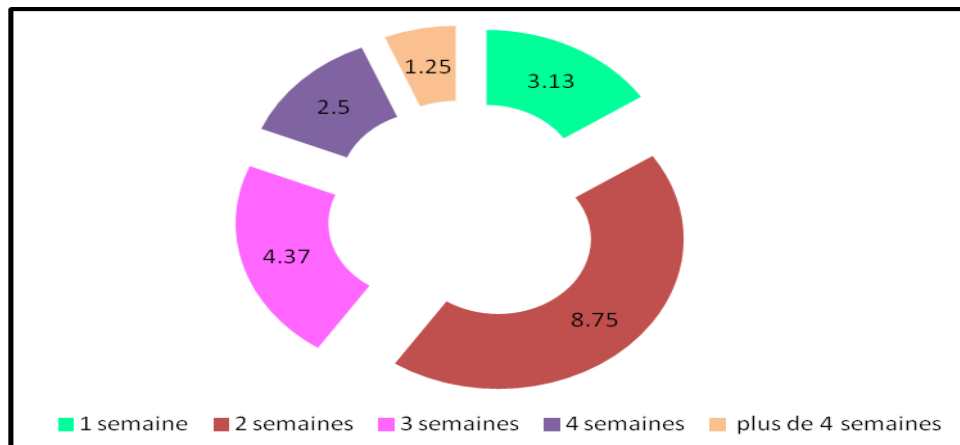


Figure 5: Late pay for carters

Source: Field data, October 2017

Figure 5 shows that carters' wages are quite behind schedule and may go unpaid until next month. According to the declaration of the carters, the salary can remain unpaid for at least two months. In this situation, the wages that these workers earn allow them to meet two main needs which are in order of importance: food declared by 34% of workers and housing notified by 32.6%. The other three basic needs remain almost unmet. Education is provided by 14.7% of garment workers 13%, and health 5.7%. The distribution of the salary according to the coverage of needs is detailed in Table III.

Table III: Distribution of the wages of carters according to the needs covered

Needs covered	Monthly salary in CFA franc		
	[15000-25000[[25000-40000[Over 40,000
Housing	0,2	23,4	09
Food	0,4	23,8	9,8
Clothing	00	8,3	4,7
Education of children	00	9,4	5,3
Health	00	3,5	2,2

Source: Field data, October 2017

From the results of Table III, it can be noted that carters receiving salaries between 15,000 and 24,000 FCFA only manage to find accommodation and food. Also those with salaries above 24000F CFA invest more in housing and food. So this work only helps these workers to survive and not to lift them out of their situation of poverty.

DSM pre-collection equipment and protection equipment for carters in the municipality of Abomey-Calavi

DSM pre-collection equipment in the municipality of Abomey-Calavi

Observations and results of field investigations reveal that manual or human-drawn carts (Photo 10) are the most used and represent (80%) of the means used by carters followed respectively by motorized carts (Photo 11) 17.6% and vans or 2.4% (Photo 12).



Photo 10: Loading of a human-drawn cart



Photo 11: Loading a motorized cart



Photo 12: Unloading a van on a landfill

Plate IV: DSM pre-collection equipment in the municipality of Abomey-Calavi

Shooting: Choubiyi, October 2017

These pre-collection equipment (Plate IV) carry bags (photo 13) which are used to store the objects recovered during the exercise of their work. Also, they are covered by mosquito nets (photo 14). According to the survey results, 20% of the carters questioned cover their cart.



Photo 13: Motorized cart carrying bags for storing recovered waste

Photo 14: Human-drawn cart covered by a mosquito net

Shooting: Choubiyi, October 2017

The objects recovered in the bags (photo 13) are sold, reused, reused or consumed according to the declaration of the carters. In mosquitoes (photo 14) which they use during transport, it should be noted the use of peels for collecting waste that has failed on the track. Survey results showed that only a minority or 3.8% of the carters interviewed use shovels. This tool is also used to unload waste on landfills. 97.6% of the carters questioned also use sticks, forks and rakes to facilitate unloading. Also, they use these tools for excavations at landfill sites.

Observations made in the field show that the majority of carters do the pre-collection without protective tools.

Protective equipment and practices during pre-collection

Figure 6 shows the protection tools used by carters in the municipality of Abomey-Calavi in the course of their work.



Figure 6: Tools for protecting carters in the municipality of Abomey-Calavi

Source: Field data, October 2017

As shown in Figure 6, five protective tools (boots, gloves, mufflers, glasses and helmets) are used by the carters of the research municipality. The most exploited are in order of importance: gloves (20.69%), boots (7.52%) and mufflers (6.27). Field observations show that some carters have these tools but do not use them or use them poorly (Photo 15). Others use rags or whatever to replace these tools (Photo16). Also these protective tools are very dirty and sometimes torn.



Photo 15: Muffler placed at chin level by a carter



Photo 16: Habit used as a muffler by a carter

Plate V: protection tools for carters of the community, and Abomey-Calavi

Shooting: Choubiyi, October 2017

From plate V, it should be noted that the protection tools are used indiscriminately by the carters of the research commune. Several reasons underlie the non or the misuse of these tools by the carters. More than 4/5 of the carters not wearing a muffler cited choking caused by this protective tool as the reason. Regarding the rims, 3/4 of the carters who took part in the survey

mentioned the problem of heat which causes the ribbons to slip and prevent them from pulling the carts or lifting the bins. This same problem is reported by 2/3 of the carters who answered the questionnaires for not using the boots. For the latter, the slipping of the boots makes their movement very difficult during transport.

Social conditions

Sanitary devices at the carters of the commune of Abomey-Calavi

The results of the field survey showed that 63.4% of carters resort to phytotherapeutic self-medication, 34.5% to modern self-medication and 2.10 to health centers when they develop ailments or in injury and accident cases. According to comments from these workers, it is only if there is a complication that most go to the health center. The main reason given is the lack of financial means. Also, according to field investigations, 97.9% of carters said they never do an annual health check-up and 100% do not have health insurance.

Social relations among the carters of the DSM pre-collection system

Field investigations revealed three forms of social relations among carters in the performance of their work. These are the relationships between the carters, with their manager and the subscriber households.

Collaboration between carters

The collaboration between carters in the municipality of Abomey-Calavi comes down to assistance and solidarity. According to the field investigations, 85.4% of the carters declared to have benefited from the help of colleagues on the dumping grounds during the digging of the carts (Photos 17), 67.9 admitted to having received the help colleagues when they were in tears, 22.5% when they were indisposed and 77.2% affirmed to communicate the prices and the places of disposal of the recovered objects. It should also be noted that 38.2% of the carters questioned reported that they formed tontine groups in order to be able to make achievements.



Photo 17: Support of the carters to their colleagues to remove a cart stuck on a landfill in the research municipality

Shooting: Choubiyi, October 2017

Photo 17 shows the collaboration that exists between the carters. It shows carters from various teams grouped around a cart driven into a dump to help fellow workers get the cart out.

Relations between carters and their manager

The relationship between carters and those in charge of the pre-collection structures is a worker and boss relationship. The results of the field survey revealed that most of the carters questioned (93.4%) have a good relationship with their manager. Conflicts related to late wages were reported by 6.6% of carters. According to the declaration of those in charge of the pre-collection structures of the DSMs, the sources of conflicts between them and the carters are often the delay of wages and the behavior of ill-intentioned carters who directly perceive the costs of waste collection from households not subscribers.

Relationship between carters and subscriber households

The results of field surveys revealed that most of the households investigated, ie 65.5%, have good relations with the carters. The remaining 34.5% declared having conflicting relations with these workers. For the latter, the sources of conflict are the non-respect of the frequency of passage for the removal of waste noted by 19.89%, the disrespectful behavior adopted by the carters underlined by 13.5% and the scattering of waste in the region. level of household storefronts during their passage to empty trash cans notified by 1.11%.

On the side of the carters, the origin of the conflicts is, in order of importance, the mixture of putrescibles and sanitary waste (diapers for women and children) with other waste reported by 28.7% of the carters investigated, the non-respect of the close which consists of depositing the bins in front of the houses on the day of passage of the carters highlighted by 16.63%, the condition and poor maintenance of the bins notified by 10.3% then the mistreatment of certain households declared by 19.8% carters who answered the questionnaire.

DISCUSSION

Carters' working environment

Door-to-door pre-collection of DSMs in the municipality of Abomey-Calavi is carried out by zone. Five (05) zones were constituted and subdivided into one hundred and eighteen (118) sectors. For the pre-collection umbrella structure, four criteria underlie the distribution of these sectors. These criteria are: the material means, the coverage rate, the quality of the services, and the experience of the structures. But not all structures adhere to these criteria set by the collective supported by the technical services of the Abomey-Calavi town hall. Abodou's results in 2015 are closer to ours. He underlined that to facilitate the pre-collection of solid household waste, the municipality of Yopougon is subdivided into eight (8) zones equipped into thirty five (35) sites for grouping pre-collected waste, of which twenty seven (27) are functional. Note that in the research municipality, the zoning is done without thinking about the regrouping sites. The waste pre-collected by the carters is evacuated in the lowlands, the old sand quarries, the lost wells, the spaces not yet occupied. These results confirm those of Dossou in 2005 and Yêmadjè in 2015. These authors underlined that the pre-collection structures of the DSM of the municipality of

Abomey-Calavi did not provide waste dumping places before embarking on the project. the activity. This situation is similar to that of the city of Cotonou where the favorite places for dumping rubbish by pre-collection NGOs are the lowlands and lagoon banks (UNDP, 2011). Let us add that the dumps are also places of restoration of the carters and the exercise of other vices such as the taking of prohibited products. These practices expose carters to many injuries that range from a simple cut and sting to diseases transmitted through sharp and sharp objects or diseases caused by poor hygiene.

Organizational conditions for pre-collection of DSMs

In the commune of Abomey-Calavi, carters work alone or in teams of two to three workers to serve an average of one hundred (100) households per day in one to three neighborhoods. Note that the size of the teams does not depend on the number of households to be served and the neighborhoods to be covered. The managers of the DSM pre-collection structures in the research municipality, justify this situation by the lack of workers and pre-collection equipment and then the high number of subscribers. This situation can be explained by the fact that a manager can have several structures even outside the cost research commune, he has difficulties in organizing both carters, subscribers and work equipment. Unlike the commune of Abomey-Calavi, the work teams are better structured in the canton of Agoè-Nyivé in Togo. Dandonougbo (2013) observed that the number of workers depends on the means of transport and the size of the subscribers.

Regarding working hours, these workers work at least 11 hours a day and do not have an official break for the majority, ie 86.8%. Working hours (6 a.m. to 5 p.m.) are a source of conflict between carters and households. According to information collected from households, these hours constitute a penalty for them because they sometimes disturb their sleep or their break times. Zinsou (2003) also made the same observations in the city of Ouidah. He reported that the pre-collectors work from 8 a.m. to 5 p.m. Households in this city also complain about the passage of carters to rest hours.

In relation to the salary, the carters of the research commune receive their salary either per month for 99.2% and per week for the remaining 0.8%. The salary varies between 15,000 and 45,000 CFA francs per month. This salary, which does not reach the minimum wage (40,000 F CFA) for more than 2/3 of the carters, is late. It can go unpaid for at least two months. This state of affairs leads the carters to take more interest in collection activities and individual and clandestine pre-collection from non-subscribed households in order to obtain a little money. This competition with their manager was the basis of many licensees. This situation is one of the causes of the irregularity of pre-collection of waste from subscribed households and is therefore often the object of their unsubscription. Similarly, this problem prevents these workers from flourishing and fully satisfying basic needs. In 2017, Enda in 2012 made the same observation in Addis Ababa. He pointed out that many pre-collectors are unable to cover basic expenses such as housing, food, education for their children and health care. For Zinsou (2003), this situation means that they are always looking for small money and leaving subscribed households for the benefit of non-subscribers from whom they receive damn sums.

DSM pre-collection equipment and protection equipment for carters in the municipality of Abomey-Calavi

The waste transport tool in the municipality of Abomey-Calavi remains rudimentary and traditional. Human-drawn carts are the most exploited and represent 80% of the means of transport used by carters. These means of transport are mostly old with worn tires. This causes breakdowns of various forms, especially that of punctures. This state of affairs leads the carters to exert more physical effort during the pre-collection. Kindékpo and Noutaï in 2016 made the same point. They reported that human-drawn carts are the most used and represent 70% of the means of transporting waste in the Abomey-Calavi district. In fact in Antananarivo, Addis Ababa and Bogota in 2012, studies reveal that the means of transporting waste differ quite strongly from one city to another, but in all cases manual traction predominates. During transport, these carts are generally covered by mosquito nets in the research area by a minority, ie 20% of the carters who participated in the field survey. Only a minority or 3.8% of carters use shovels to collect this waste, but the majority leave it on the tracks. This practice is a source of conflict between carters and households. Other tools such as sticks and forks are used for dumping and excavating landfills. Lavergne and Gabert (2005) reported that, the recovery activity exposes the pre-collectors to respiratory diseases due to the inhalation of foul odors and toxic fumes on landfills and then to dermatological problems which are due to direct contact with these. last with irritants. The situation is alarming given that 58.06% of these workers work without protective tools. Some of these workers justified this attitude by the lack of financial means. Others have blamed NGO leaders for failing to provide them with these materials and who turn deaf and mute when demanded. This habit of managers was revealed by Amoulé (2014) who noted that the bosses remain indifferent to the situations of the carters and their sole objective is to safeguard their interests. As for the carters who have the protective tools, i.e. 34.48% of the carters questioned (Figure 6), field observations have shown that some do not use them or misuse them (Photo 15). Most of them cited the following reasons: suffocation and heat accompanied by sweat. These practices constitute sources of risk for these carters who adopt unsavory behavior. Brou in 2014 found similar results, he mentioned that it is rare to see carters working with adequate protective gear (gloves, mufflers, forks, etc.). He added that the practice of handling waste with bare hands developed by workers exposes them to the risk of disease and injury.

Social conditions

Carters in the municipality of Abomey-Calavi use self-medication and regularly dope with exciting products that can influence their state of health. Despite the difficulties, they live in harmony and help each other. It should be noted that the relations t are of short duration. This could be explained by the fact that these workers very often do a short time in the activity or in the same structure. It is surely this situation that weakens the establishment of an association that can help them claim their rights in order to have better working conditions. Beyond all these workers for the majority (93.4%) are on good terms with their managers. For a minority, ie 6.6% of workers and managers interviewed, the fundamental cause that weakens the relationship between managers and carters is salary treatment. This state of affairs may be at the origin of the resignations and the transhumance of carters. This situation could create the problem of shortage

or scarcity of workers. In this circumstance both those in charge of structures and households will be strongly affected. Not always perceiving this reality, households for the most part are in conflict with the carters. The sources of conflicts mentioned by these households are: failure to respect the frequency of passage for waste removal noted by 19.89%, disrespectful behavior adopted by carters underlined by 13.5%, the scattering of waste at the level of household storefronts during the pre-collection notified by 1.11%. In other research, some authors have mentioned similar facts. Zinsou (2004), Enda et al (2012), noted the irregularity and the passage of carters to rest hours.

Conclusion

In the light of the results obtained, it can be remembered that in the municipality of Abomey-Calavi, the management of solid household waste has become more and more complex, due to the lack of a clear policy and a formal commitment of the authorities. It is based on door-to-door pre-collection practiced by associative structures which use a workforce mainly made up of carters. Although being a sensitive link in the pre-collection of DSMs, the carters of the municipality of Abomey-Calavi, work in precarious conditions. They do not use the protective equipment, receive ridiculous salaries. They make long distances with heavy loads to reach the illegal dumps where the pre-collected DSM are dumped. They are not only exposed to several risks, but are not registered with the national social security fund. Improving the living and working conditions of carters calls for a better commitment from each actor in the sector, namely the central State, the politico-administrative officials of the town hall of Abomey-Calavi, the heads of the pre-collection, household managers and carters.

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