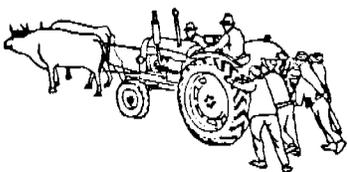


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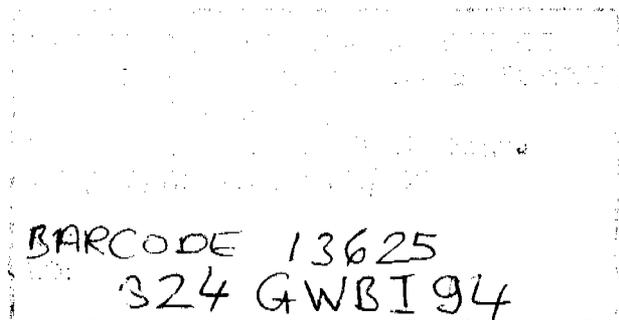


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URBAN ENVIRONMENT
POLICY DOCUMENT 1994 - 1996

Projecto do Melhoramento
dos Bairros de Bissau (PMBB)

11 August 1994



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LIST OF NAMES AND ABBREVIATIONS

| | |
|----------|---|
| AD | Acção para o Desenvolvimento |
| Alternag | Associação Guineense de Estudos e Alternativos |
| AMUR | Agência Municipal de Urbanização e Reordenamento |
| COFESFA | Coopérative des Femmes pour l'Education, la Santé Familiale et l'Assainissement |
| CMB | Câmara Municipal de Bissau |
| DGIS | Dutch Ministry of Development Cooperation |
| EAGB | Companhia de Electricidade e Agua |
| ENDA TM | Environmental Development Action in the Third World |
| GIE | Groupe d'Intérêt Economique |
| MAPET | Manual Pit Emptying Technology |
| MOPCU | Ministério de Obras Públicas, Construção e Urbanismo |
| NGO | Non-Governmental Organization |
| OOPP | Objective Oriented Project Planning |
| PADE | Programme d'Assainissement de Diokoul et Environnants |
| PAIGC | Partido Africano para a Independência da Guiné-Bissau e Cabo Verde |
| PMBB | Projecto de Melhoramento dos Bairros de Bissau |
| SAP | Programa de Reajustamento Estrutural |
| SNV | Netherlands development organisation |
| UDEMU | PAIGC's women's league |

A. BACKGROUND INFORMATION

1. Introduction

1.1. Background of the policy document

The Projecto do Melhoramento dos Bairros de Bissau (PMBB) is a neighbourhood upgrading project in Bissau with a historical emphasis on infrastructural works. The project is financed by the Directorate General on International Cooperation of the Netherlands (DGIS), while the Municipality of Bissau (CMB) and the Dutch Development Organization (SNV) are the executing agencies.

In its work PMBB encountered several environmental problems related to drinking water, sanitation, waste and erosion and decided to pay specific attention to these subjects. This was also in line with the DGIS' policy and thus, in May 1993 an experiment was carried out at the request of DGIS drafting guidelines for an environmental impact assessment procedure. However, the methodology used proved not to be a success. It was too much oriented at the Dutch situation and although the document provides an introduction into the various problems, some issues like community development in the context of Guinea-Bissau were not sufficiently elaborated. Also, although some recommendations were given for follow-up actions, a general strategy was lacking. ENDA TM, Senegal, and WASTE Consultants, the Netherlands, were then approached by PMBB to develop a policy document on environmental issues.

Ecological sustainability as an area of concern fits in the policy of Guinea-Bissau, PMBB, SNV and DGIS. PMBB has also paid attention to other specific themes, such as gender and employment, two subjects that have important interlinkages with environmental issues. At the request of PMBB, Hoyer has carried out a research project on gender issues in Cupilom de Baixo, while Rodrigues has done an investigation of the employment situation in Reino-Gambeafada. Both neighbourhoods are low-income areas, where PMBB recently started its intervention programme. Other important elements in PMBB's policy are international exchange and cooperation, which are strengthened by the cooperation with ENDA and WASTE Consultants, who participate in international networks related to urban environment and community development.

1.2. The status of the document

This report is to be read as a policy document and aims at providing a solid basis for environmental actions in the coming years (1994 - 1996). It is meant to lay the foundations for a systematic and coherent approach of PMBB concerning environmental issues in Bissau. The document is written by ENDA and WASTE consultants in close cooperation with the PMBB staff.

Policy making and strategy planning form part of a dynamic process, in which decisions have to be taken regarding PMBB's commitment in the proposed follow-up actions. This document describes the actual situation and sets out some lines for the future. Also some

concrete actions are proposed. In a later stage, specific activities can be elaborated upon by PMBB and the writers of the document.

1.3. The mission's approach

In April 1994, a mission was carried out by ENDA and WASTE Consultants supporting the development of an environmental policy for PMBB. The presence of ENDA and WASTE Consultants resulted in a short, intensive period of discussion, consultation and exchange of ideas with the PMBB staff. Three instruments were used to gather the necessary information:

1. Some neighbourhoods where PMBB intervenes were visited and interviews with informants were held on the following topics: social organization at neighbourhood level, physical interventions of PMBB, use of public water taps and traditional wells, use of improved latrines, existing waste collection systems and informal employment.
2. Several meetings with inhabitants of the Cupilom de Baixo area and with the PMBB staff were held, structured by the analysis phase of the OOPP methodology (Objective Oriented Project Planning). The participants from Cupilom de Baixo discussed the subjects 'drinking water' and 'waste'. In both groups, problems as well as objectives were formulated; the group on 'waste' also made a start with the identification of activities. The OOPP session on 'drinking water' was held with women only, whereas the group working on 'waste' consisted of both women and men. With the PMBB staff, problems were formulated around the question: why people in low-income areas fail to improve their living conditions themselves.
3. Several meetings with the staff were organized to discuss PMBB's commitment related to urban environmental issues.

2. PMBB interventions

2.1. The history of PMBB

In the beginning of the 1980s, the first studies were carried out aimed at starting a neighbourhood upgrading project in Bissau. During its first years of implementation, the project can be characterized as a typical infrastructure improvement project focusing on the construction of roads, drainage gutters and public water taps. At that time it was placed under the umbrella of the Ministry of Public Works (MOPCU) until 1988 when it came under the authority of the Municipality of Bissau (CMB) who became the official tutor and counterpart organization of SNV.

In 1991 the PMBB approach changed in two directions. In the first place, one came to realize that PMBB was not embedded sufficiently enough in the Guinean society, and that especially the coherence with the governmental structures was lacking. A process of institutionalization was set in motion aiming at the establishment of AMUR (Municipal Agency of Urbanism and Restructuring), meant to be a public-private Guinean institution. Secondly, PMBB decided to change its top-down approach into a more demand-driven approach: the basis for intervention should be the activities identified by the residents themselves aiming at maximum participation and management by the community itself. Consequently, more emphasis was put on community development.

PMBB consists nowadays of five departments (besides management), namely: planning, execution, communication, finances and central services. Following the aforementioned changes, the project seems to be developing itself into a provider of services, which is AMUR, constructing infrastructural works, and a kind of non-governmental organization focusing on community empowerment.

2.2. A short overview of the project's activities

Infrastructural works have been carried out in the unplanned neighbourhoods of Mindará, Belém and Cupilom de Cima and have recently been started in Reino-Gambeafada. To open up the neighbourhoods, roads are being constructed along with drainage gutters regulating the run-off of excess water. Also public water taps are constructed as an alternative to and more reliable (in terms of quality and quantity) source of water than the traditional wells.

Road construction also means that some houses need to be demolished. These houses are either rebuilt in the same neighbourhood or in the resettlement area of Missawah. In order to recover part of the investment funds, PMBB always builds two rooms more than the original house had and rents these rooms. However, collecting the rents is one of the constraints the project is facing.

In a later stage of the project, the construction of double-pit composting latrines was introduced on an individual basis. Some 500 of these latrines have been built up till now in several neighbourhoods, the residents contributing 25% of the costs. In 1993, a second option: an adapted double pit that can be converted into a septic tank, was offered to the residents. Also households outside the PMBB interventions areas can apply for an improved latrine.

A regular waste collection system was introduced in 1990, but this was later abandoned partly due to a lack of community participation. PMBB continued to organize cleansing campaigns at irregular intervals, at the request of the community or just before the start of the rainy season.

Communication has always formed an important part of the PMBB interventions. In the beginning this took mainly place through informing people about the planned activities. In some neighbourhoods, councils of residents were founded by PMBB to strengthen project activities. PMBB is now paying more attention to the priorities of the people and wants to build more on community initiatives. Therefore, the communication department has been strengthened. Physical improvements as requested by the inhabitants, have not yet been carried out (e.g. construction works in terms of neighbourhood centres or health posts).

The most visible example of PMBB responding to community priorities is the case of Luanda, which is a neighbourhood outside the present intervention areas of PMBB. When the community approached the project for assistance in solving their problems with water drainage, PMBB decided to assist. Because a general plan was lacking, the first step was to design a neighbourhood improvement plan as a basis for further improvements.

3. The context of Guinea-Bissau

3.1. Political history

Guinea-Bissau gained its independence in 1974, after several centuries of Portuguese colonization. The Portuguese had not paid much attention to long-term investments. Industry, technology development and social infrastructures had especially been disregarded. Certain sectors, like health and education, were very much neglected and at the country's independence, the majority of the population was illiterate.

During its nearly 20 years of independence, the country has undergone a lot of political and economic changes. Until 1984, when a new constitution was approved, Guinea-Bissau was ruled by a one-party system (with the PAIGC - the African Party for the Independence of Guinea-Bissau and Cape Verde - in charge), characterized by a communist orientation which caused significant centralization.

In 1991, the PAIGC opened the door for the formation of other political parties, the establishment of a multi-party system and for other constitutional reforms (e.g. concerning land tenure) to take place. Democratic elections were planned, but have been postponed several times. Now, registration of voters has started and the elections are supposed to be held some time in 1994. Politically spoken, the country is in a crisis and the forthcoming elections have paralysed government authorities even more. All the Ministries as well as the Municipality of Bissau lack the means, the capabilities and the vision for improving the living conditions in the neighbourhoods.

Independence has not brought about the positive changes that were expected, e.g. illiteracy is still high and health and education facilities for the poor people are virtually absent. The gap between the population and the authorities has increased considerably. Countervailing power needed within a civil society seems to be virtually absent. Governmental bodies, several Ministries and the Municipality of Bissau are hardly functioning and apparently lack any trust from the citizens.

3.2. Economic situation

After independence, the economy was completely regulated by State intervention. Free commerce was abolished and most economic activities were in the hands of the State. After 10 years, Guinea-Bissau was an impoverished country, characterized by a neglected infrastructure, a neglected agricultural sector, loss-making industries and with hardly any products suitable for export.

In 1987, Guinea-Bissau embarked on a medium-term Structural Adjustment Program (SAP) under the auspices of the IMF and World Bank, which included the usual measures: economic liberalization and a stabilization of government expenses. Despite all the changes, the State is practically bankrupt and the country depends mainly on foreign aid. In 1992, the foreign debt of Guinea-Bissau was estimated at \$ 631 million, whereas the country exports for about \$ 20 million, making Guinea-Bissau one of the poorest countries in the world. Fishing, wood extraction and agriculture, the production of rice, peanuts and cashew, are the only sectors gaining income from export.

The economic situation in the city of Bissau is characterized by the existence of a few industries and a large informal sector. As a consequence of the Structural Adjustment Programme, differences between the rich and the poor have increased considerably. Prices of basic needs, such as food, have risen enormously and have especially affected the poor. On the other hand, some have really benefitted, which becomes clear from the various recently appearing restaurants, discos and so on. Small-scale informal activities have boosted as well, but are still characterized by survival strategies.

The Municipality of Bissau receives its main income from market taxation. Other tax systems, such as payment for energy and water and other public services, are virtually absent.

3.3. Social organization

Mainly due to the centralized political system, Guinea-Bissau lacks any strong non-governmental organizations. Most organizations were founded in the early 1990s when politics became more open; they were only legalized in 1992.

The NGOs experience several constraints, of which the most important are:

- * Employees formerly working within governmental bodies have found their way into the NGO world, partly due to diminishing stataal expenditure. They are used to centralized decision-making, while they are now supposed to advocate and represent people's interests.
- * Guinea-Bissau faces many problems and it is difficult to assess where to start intervening. This results in a wide variety of activities. Most NGOs lack a clear vision and strategy, and do not know where they are heading.

Most of the NGOs are working in the rural areas of Guinea-Bissau, but, for example Alternag and AD have initiated some activities in the field of grassroots education and socio-cultural animation, also related to environmental problems such as waste collection in the neighbourhoods.

Although some organizational structures exist in the neighbourhoods of Bissau, they seem not to be very effective. The strongest community-based organizations are probably in the muslim neighbourhoods, which are based on a common religion. Other organizations are neighbourhood committees related to the PAIGC: e.g. UDEMU, which is the women's league of the PAIGC, and youth sports clubs. Some informal groups are organized according to age. Also, savings clubs exist.

Despite all the changes, Guinea-Bissau is still undergoing a political and economic crisis. But the first steps towards democratization have been taken and this process should be strengthened. However, still dominated by foreign institutes and organizations and ruled by foreign money, the question as to how Guinea-Bissau, including the people in the low-income areas, can become more involved and directive in its own development, remains.

4. Urban environment in Bissau

The urban environment of Bissau faces a broad scala of problems. This chapter tries to define the urban environment in Bissau and to highlight inter-linkages between the problems at different levels. For a more elaborate description of the problems, you are referred to the environmental impact assessment report¹.

4.1. Interrelated problems

Water supply

Bissau lacks a well-functioning water supply system. Generally speaking, only the centre and some hotels are served with piped water. However, even this supply is not reliable in terms of a constant availability of water. The residents of the neighbourhoods have hardly any access to piped water and have to rely on traditional sources as well, e.g. the wells near their houses.

Sanitation

A sewage system does not exist in Bissau. Most houses in the centre and the high-income areas have septic tanks, while in the low-income areas traditional latrines are the most used system. In some cases separated latrines, with or without a pit, are used as bathing facilities.

Waste management

A waste collection and treatment system is almost absent in Bissau; only in the city centre, household waste is collected by a private enterprise contracted by the Municipality of Bissau and financed by the World Bank. Consequently, waste is accumulating everywhere and especially in the streets, public places and drainage gutters in the low-income areas.

Surface drainage

The wet season is from June to October with the heaviest rains in August. To prevent flooding during this period and to prevent stagnant water after the rains, drainage gutters are being constructed along the roads.

Land use planning and urban 'greening'

Agriculture is an important activity in Bissau; space is reserved for private vegetable gardens and paddies, also within the low-income areas. There are not many parks, but a lot of trees grow along the main roads.

Due to the low level of industrialization and minimal public and private transport, pollution problems, especially air and surface water pollution, are virtually absent. Most of the environmental issues mentioned are related to public health. Unfortunately, recent useful data on the prevalence of water and faeces related diseases are absent. WHO estimations of 1982 reveal that infant mortality is around 20%, of which 37% is due to diarrhoea.

¹ Por em pratica os objectivos ambientais. TAUW Infra Consult et al. Deventer, Junho 1993.

These problems influence the living conditions in the low-income areas. They cannot be seen as isolated problems, as they enforce each other. The following two examples illustrate this:

- * Although this has not been scientifically proven, one can assume that the bad drinking water quality of the traditional wells is caused by the existence of traditional latrines and the influx of contaminated surface water.
- * Because of the absence of an appropriate waste collection system in the neighbourhoods, the inhabitants throw their waste in the drainage gutters seriously cluttering them.

4.2. Interrelated areas

To clarify how problems interrelate, three different levels (household, neighbourhood and urban) can be distinguished, although the borders between these levels are not always very sharp. Environmental problems can be created at household level, influencing the living conditions at neighbourhood level.

Two examples can be given:

- * Households generate waste, however small the amounts in low-income areas may be. The backyard is swept and kept clean by the women. However, in order to get rid of the waste, it is dumped in public places, like streets and drainage gutters, for which nobody feels responsible, although at the same time it is seen as a disturbing factor by everyone.
- * The traditional bathing facilities without a pit, constructed in the backyard of the houses, cause small streams running of the streets and creating stagnant pools, forming a breeding place for insects, the transmitters of several diseases.

Environmental problems created in one neighbourhood may cause problems in another. The situation in Cupilom de Baixo can illustrate this. In the rainy period, this neighbourhood serves as a catchment area of surface water and accumulated waste from Cupilom de Cima, which is situated at an higher altitude than Cupilom de Baixo. In turn, this causes problems at the urban level. Drainage gutters come together at the edge of the city where they discharge into the rice fields and together with the drainage water, the accumulated waste finally will end there.

Problems are thus transferred from one area to the other and ultimately still more problems are created at the urban level. Also, the other way round, activities at the urban or regional level can create problems at neighbourhood level. These interlinkages of problems form the basis for environmental planning at the urban level. Planning and urban management in general can create conditions for better living conditions in the neighbourhoods. This becomes evident in waste collection and waste treatment. The functioning of a primary collection system in the neighbourhoods, depends upon a secondary collection system, usually run by the municipality or a private enterprise contracted by the municipality, and eventually upon an environmentally sound waste disposal system. And thus, everything has come full circle, because uncontrolled waste disposal at the outskirts of Bissau may pollute the ground water and thus affect the quality of the drinking water.

B. PROBLEM ANALYSIS

In this chapter, some specific subjects will be elaborated upon related to community participation, and water supply in connection with sanitation and waste collection. The analyses are based on the OOPP sessions on 'drinking water' and 'waste' with residents of Cupilom de Baixo, the OOPP sessions with the PMBB staff on 'community empowerment' and on the site visits and meetings with residents in Cupilom de Cima, Reino Gambeafada and Missirah (resettlement area). For the 'problem' and 'objective trees' from the various OOPP sessions, you are referred to Appendix 1.

1. People's (lack of) changing power

PMBB is working in several neighbourhoods trying to improve the living conditions of the inhabitants. But why? In other words: why do people in the low-income areas fail to improve their living conditions themselves? What is the view of the PMBB staff?

The few existing organizations in the neighbourhoods do not have power, because residents hardly participate in the organizations. They do not have confidence in themselves and they are not used to meetings as such. Also, leaders are not very strong and, among others due to religious differences, they do not cooperate among each other. Consequently, coordination between the various organizations is lacking.

The residents do not know where they are heading, because they face too many problems to deal with. Also, because responsible institutions, which could assist in solving some of the problems, do not function well, residents have no confidence in the institutions. A related problem is that the improvement of living conditions is conceived as a public problem; residents do not see it as their individual responsibility. From this it becomes clear that a proper community organization and well-functioning institutes and authorities are needed to improve the living conditions in Bissau.

The root problem, which has already been stated several times, is the low level of income in the neighbourhoods. Survival strategies dominate and consequently, residents do not have sufficient time to participate in community affairs. In such a situation, even small expenses to improve living conditions are considered to be too high.

2. The environmental health situation

In this chapter, some issues related to public health, such as drinking water, waste water, sanitation and waste collection services are discussed.

2.1. The complexity of the drinking water problem

The OOPP sessions with residents of the Cupilom de Baixo neighbourhood revealed a thorough insight in the complexity of interrelated problems concerning the availability and the quality of drinking water. The identified problems were:

- The wells lack covers and get contaminated by dirt from the outside.
- An influx of contaminated (by waste) storm water during rain falls.
- The wells get contaminated by (pit) latrines situated nearby.
- Some wells turn salty.
- Some wells dry up by the end of the dry season, resulting in periodical 'water shortages'.
- No public stand posts (= fontenarios) in the area.
- No water supply from the fontenarios.
- The only available alternatives to get clean drinking water, are at a large distance.

The problem analysis clearly shows the interrelations between the extraction of ground water (diminishing stock), the location and density of latrines (increasing the contamination of ground water), the design of the wells (influencing the influx of contaminated storm water), waste disposal (faecal contamination of storm water), the use of wells (contamination by lifting), the maintenance of wells (no covers, discarded litter) and public water supply (poor infrastructure in low-income areas, unreliable supply). The result is classical: a compromise is made between the family health in terms of good drinking water and the availability of time and the usually heavy burden for the women, because it is usually they who have to walk a large distance to collect the water.

It also shows how the urban infrastructure supplied by PMBB relates to the water problems as identified by the residents:

- Public taps are constructed in the PMBB intervention areas substituting the use of contaminated traditional wells. The actual supply of water from the public taps, however, is EAGB's concern, whose unreliability prohibits the residents to substitute well by tap water.
- The double latrine pits for application in the intervention areas, are designed to be converted into septic tanks, which is a (long-term) strategy to decrease the contamination of the ground water by treating the excreta before leaching.
- The promotion and subsidized supply of pit latrines will reduce open defecation, which for one diminishes the contamination of storm water.
- Surface drainage (= valettas) regulates the storm water run-off counter-acting the influx in wells.

2.2. Water quality assessment

Residents appear to be aware of the quality required for drinking water. They know that water from the traditional wells is not suitable for drinking, even some small kids collecting water told us it should not be drunk. At the moment the drinking water is commonly collected from other sources than the traditional wells, such as a public tap (if working), a private tap or the spring near the CMB. People identify the difference in water quality by taste, a contaminated traditional well tastes bad, the spring tastes good.

The tasting of water can, by co-incidence, be considered as a practical means for the people to distinguish 'bad' from 'good' water. The poor (and reportedly worsening) taste of the traditional wells probably indicates nitrification of the ground water stock due to increasing latrine leachate and diminishing infiltration of rain water. Reports of wells turning salty also point in this direction.

Taste, however, cannot be used to identify whether water is really of good quality. The quality of the spring water, as the ultimate source for 'good' drinking water for many residents, should be tested to assess its quality and enable comparisons with the traditional wells and piped water supply.

The habit to collect water for different purposes from different sources, indicates that people have become accustomed to deal with two stocks of water in the household, one for drinking and one for other purposes. It calls for a more extensive (action) research to identify the constraints of separate collection and storage as conditions for the availability of safe drinking water at household level. In-house contamination is a well known danger for the quality of drinking water.

2.3. Waste water disposal in the public domain

Almost all households have and use a 'casa de banho' as toilet and bathroom. In its most elementary form it consists of a circular reed fence around a floor, from which the wash water and with it the excreta drain away openly. One step ahead, the floor of the 'casa de banho' is a squatting slab on top of a single pit: the traditional pit latrine, again for taking a bath and for defecation.

In the areas visited we observed some cases where residents made an outlet through the wall of the latrine to drain off the water, to *prevent* it from entering the pit. One resident, owning an improved double pit latrine with such a separate outlet, explained that without draining off the water separately, the pit fills rapidly. He had the experience with the alternating pits, that the one in use filled up completely while the one in rest was also full. As a result, the latrine could not be used for several months. It can be concluded that some residents use the separate draining of water from the pit latrines as a means to preserve the functioning of the pit latrine as a *dry* pit latrine.

Regarding the disposal of used water, residents as a whole seem to make an important distinction, which has a traditional background. Bathing water for personal hygiene is disposed of in the latrine pit, if there is one. Other waste water, e.g. used for doing the dishes and washing clothes, is disposed of in the open air, around the house and in public spaces, even if the household owns a pit latrine. Thus, latrine pits serve the purpose of excreta disposal, but are not always used for waste water disposal. The separate disposal methods of waste water result in small puddles or streams, which in the dense urban setting constitute a problem being a transmission route of diarrhoeal diseases.

Laundry seems to be nearly always practised by a lot of women together, around a source of continuous water: a private tap with continuous water (observed in the Reino Gambeafada area, reportedly connected to the presidents' mains) or a well in the green zone. The used water originating from that spot consequently is of a considerable volume. In the case of the private tap, the result is a long stream with stagnant water amidst a dense housing area.

Although the used water is not directly contaminated by excreta, it is of a considerable volume resulting in stagnant pools. Because waste water and garbage that are contaminated by excreta can enter the pools of water originating from laundry activities, it constitutes a similar public health problem as the waste water directly originating from the households. Regulating the disposal of laundry water necessitates a neighbourhood facility in the form of a large soak pit, or a channel connected to the surface drainage system. The need for a continuous water supply for washing clothes and for regulated waste water disposal, could be an entry point to mobilize women around the realization of a specific laundry place.

2.4. 'Waste is everywhere'

The problems related to waste in the neighbourhoods are evident. Household waste is thrown everywhere, resulting in heaps of waste in the streets, in the drainage gutters and in other public places. The waste mainly consists of degraded organic material and sand, but also recyclable materials such as plastics and tin cans can be spotted. Probably the only clean places are the backyards of the houses, which are regularly swept by the women. This indicates a certain level of awareness and hygiene behaviour.

During the OOPP sessions, two main reasons were identified for the central problem that 'waste is everywhere'. The first one is the inappropriateness of the actual waste collection system. There are only a few containers at the edge of the neighbourhood or even at the other side of the road (as is the case in the Cupilom de Baixo neighbourhood). The second reason, which is linked to the first one, is related to behaviour. Either, people are not aware of the importance of throwing waste in the designated places or they experience the distance to the containers as too far.

A clear distinction can be made between problems that can be solved by the community and problems that cannot be solved by the community. Problems that are outside the community's scope are e.g. the difficulties collection trucks experience trying to access the neighbourhoods due to the bad condition of the roads and the fact that heavy rainfall may bring the waste from other areas into their neighbourhood. The first problem calls for a solution in the neighbouring community, the second is in fact the responsibility of the municipality.

An appropriate waste collection system responding to the perceived problems of the community along with environmental health education contributes to some ultimate objectives, which were formulated as follows:

- reduced smell
- less flies and mosquitos
- less time needed for the women to clean their backyard

These objectives refer to respectively a clean and healthy living environment and to a work alleviation for the women.

The inhabitants of Cupilom de Baixo are very well aware of the waste problems in their neighbourhood and are coming up with possible solutions. In particular the young have already taken part in waste collection campaigns organized by PMBB in their neighbourhood and would like to give these activities a more sustainable character.

2.5. Appropriate sanitation, a household priority

From both OOPP sessions with the residents, one can conclude that having a 'casa de banho' can be considered as a household priority. People are well aware of the importance of sanitary facilities, for their own personal hygiene as well as for public health. One could conclude from this that residents can also be mobilized around the issue of creating proper household sanitation facilities: a 'casa de banho' including *appropriate* disposal facilities for excreta and waste water. Appropriate in this sense relates to the household hygiene, to the quality of the drinking water originating from traditional wells, and to the prevention of excreta contaminated puddles in the neighbourhood. In the OOPP session on 'waste', some residents even defended the idea to rearrange already built on area in order to create the physical space to construct proper 'casas de banho'. Therefore, household sanitation could become an important entry point for community participation in environmental health improvement.

3. Community participation in improvements

Social organization in the neighbourhoods is weak as has been stated before. This chapter shows the effectiveness of PMBB initiated organizational forms and gives an impression of the ideas of the young, a group who are hardly reached by PMBB at the moment.

3.1. Neighbourhood committees in the PMBB intervention zones

PMBB has set up neighbourhood committees in their intervention zones to have local discussion partners and to involve the population in the improvement of their living conditions. The members of these committees have been designated by the population itself. Generally speaking, they are neighbourhood leaders and/or local dignitaries in whom the population recognizes itself.

The member of the Cupilom de Cima neighbourhood committee we have spoken to, Mr Sanha, is a local representative of PAICG (the political party currently in power), but he has clearly stated that his role as a neighbourhood committee member is not a political but rather a representative one, whereby he is a discussion partner for PMBB and represents the population of his neighbourhood.

After these explications, he argues that this committee has played a very active role in setting up the PMBB activities in the neighbourhood: the construction of roads and the demolition of certain houses. The committee has served as an intermediary in explaining the good intentions of the PMBB activities. Our interviewee thinks positively of the project's actions, and wishes that it can carry out the secondary ones: covering the drainage gutters in particular. However, there seems not to be given particular attention to other problems in the neighbourhood: no drinking water at the water taps, persistent water leachate from the traditional pit latrines, unemployment among the young, etcetera. In brief, the neighbourhood committee has not played an important role in expressing the needs of the population. Nor seems this neighbourhood committee to be very active (the majority of its members being deceased).

Our interviewee thinks it would be useful to install a new neighbourhood committee which should be demanded to be more active in bringing the needs of the population, the young and the women in particular, under the attention of PMBB.

3.2. The public tap management committees or the risks of community participation

PMBB has set up local public tap management committees in its intervention zones, in order to favour the involvement and participation of the population to improve their own environment. These water tap management committees are exclusively made up of women. These are the people responsible, designated as such by the neighbourhood inhabitants.

Each committee is composed of three women charged with maintaining and cleaning the water taps. One of them occupies herself with collecting fees in all the neighbourhood areas to cover the maintenance of the water taps. The residents we encountered in Misserah (resettlement area) and in Reino Gambeafada are very dynamic people and wish to use their role of water tap responsible primarily to make other women aware of the problems existing in the fields of hygiene and cleanliness.

In the resettlement zone where there is still a need for more equipment and facilities, Mrs Muge is of the opinion that the women could organize themselves and set up a little market or one or two neighbourhood shops. Unfortunately, this willingness to stimulate community mobilization and participation is hindered by the fact that sometimes the water taps remain without water for days on end, or in other cases can only be used at very late hours.

Mrs Ndiaye of Reino Gambeafada suggests to hold a collection (of 5000 G pesos per family) to finance the reparation of the water pipes. Actually, the absence of water from the taps is not caused by faulty water pipes but sooner by an overall inappropriateness of the water supply system, operated by EAGB. The fact that the water taps are hardly ever functioning limits the credibility and capacity of these women to intervene. And also the credibility of PMBB is endangered as the neighbourhood does not realize that the water supply to the taps is EAGB's and not PMBB's responsibility. The initiative of the water tap management committees does therefore not succeed in giving form to and crystallizing the participation of the neighbourhood inhabitants in improving their own environment.

3.3. The engagement of young people

The young constitute a very important population group of Bissau. Besides those that still go to school, an important proportion of young people are employed in small businesses in the informal sector or are simply unemployed.

One of their representatives we have met in Cupilom de Baixo, is Mr Antonio A. Rodriguez, one of the most fervent advocates of a more sustained involvement of the young in waste collecting in the neighbourhoods. He confirms that he and his friends are ready for it, but that they lack the adequate material to provide the service. They would

particularly need brooms, shovels and small motorized machines to transport the waste materials to containers or trucks at the outskirts of the neighbourhoods.

He is convinced, for his part, that the inhabitants would gladly pay a fee for a waste collecting system provided that the system would be effective and function correctly. Our interviewee also endorses the setting up of a socio-cultural centre in the neighbourhood to organize and motivate the young to participate more actively in the assessment of the problems existing in the neighbourhoods.

This engagement of Mr Rodriguez is remarkable in the context of Guinea-Bissau, and his ideas on the involvement of young people in a waste collecting service represent a local view point that should be taken into consideration, although he fails in elaborating his ideas on a primary collection system to be set up in the neighbourhoods.

The actual willingness of the neighbourhood households to pay a fee for a waste collecting system, as mentioned by our interviewee, is to be doubted however. And it is likewise doubtful whether motorized machines are the most suitable solution for a waste collecting system in the Bissau context. It is true however, that PMBB could find reliable partners among the young people of Cupilom de Baixo for setting up a pilot project of sustainable waste collecting and management.

4. PMBB's commitment and its role within the society

In the situation of Guinea-Bissau one is tempted to move into many different activities, since hardly any public services or advocating bodies are functioning well. This chapter shows the various governmental and non-governmental roles PMBB is playing and some of the consequences.

4.1. PMBB actions, as seen by the young

In the Bissau neighbourhoods one can encounter groups of young people sitting under a tree playing a game of draughts, listening to music or simply chatting to each other as most of them have no regular activities to attend to. When they are asked about the PMBB activities in their neighbourhood (Reino Gambeafada), the young first mention road construction and house demolitions. The tone they use is sometimes polemic and they challenge the way in which certain houses were chosen to be demolished to make space for new routes through their neighbourhood. The other PMBB activities (construction of pit latrines, drainage gutters, setting up of neighbourhood committees, etcetera) are apparently less known among the young. One thing is certain: these young people have not been influenced by the mobilization meetings of the PMBB project.

What are their expectations of PMBB? Could PMBB undertake any specific actions in favour of the young? Here again, the answers are not very specific. The people we have been speaking to, seem not to know about the project's activities in the field of community development. A young man began to mention the need for a leisure centre and playing fields in the neighbourhood. Another spoke about the unemployment among the young, but nobody believed that PMBB could do anything to solve this problem.

At the end of the interview the young promised to organize themselves, to discuss their problems among themselves before asking for help from PMBB. But they would really do this, if PMBB would undertake actions especially aimed at the young to mobilize and help them to develop their activities.

4.2. Three roles creating confusion

As described in A.2.2 PMBB has a broad scala of project activities. Three roles can be distilled, of which the first two are most clear:

1. PMBB/AMUR as a public agency which is involved in planning, invests in and constructs infrastructural works, and which thus provides services to the public in return for tax paid by the inhabitants. These are the technical works in which PMBB has gained a lot of experience. Informing the public about the planned interventions also forms part of this agency. This role is the most well-known by the public, including the young (see B.4.1).
2. PMBB as a facilitator for community organization and activities within the neighbourhood defined by the inhabitants themselves. PMBB has put more emphasis on this role recently.
3. PMBB as an intermediate body between the various actors, advocating community interests to the municipality and other institutions (NGO role) as well as lobbying for the provision of other public services, such as schools and health posts (which is done from the viewpoint of defending community interests as well as from the viewpoint of the public agency that calls for other public services).

PMBB is certainly doing a lot of work in the intervention areas and benefits from these different roles within the project. It is probably from this combination of roles that the project has gained the trust of the inhabitants. PMBB is aware of these different roles and is seeking ways to make these roles more effective. In fact, PMBB should use its strong position and influence within Bissau to a larger extent.

PMBB's strategy in the type of interventions and the various responsibilities it takes for these activities, is not very clear and coherent. PMBB seems not to be very certain where it is heading, and to what kinds of activities it will commit itself. This can be illustrated with some examples:

- * With some interventions, PMBB is acting as a kind of shadow-authority, e.g. in the construction of roads and drainage gutters. On the other hand, PMBB builds public water taps without guaranteeing the reliability of these taps, which is seen as the responsibility of EAGB (Water and Energy Company).
- * PMBB is heading towards a demand-driven approach. The project wants to work more in line with people's priorities. But up till now, PMBB has not reacted positively on requests coming from the community, such as, requests for light posts and neighbourhood centres.

These various roles create confusion, not only among PMBB staff, but also the community lacks a clear perception about the role of PMBB. If there is no water coming out of the public taps, PMBB is blamed for it, because the residents see it as PMBB's responsibility. They identify PMBB with the Municipality of Bissau or another public

agency. In the first place, it is important to have internal agreement about the kind of interventions and secondly, it should be made clear to the public.

Although PMBB has gained the confidence of the inhabitants because of its infrastructural interventions, these also create a distance between the inhabitants and the project, probably even more so in the future, when people are supposed to pay for the delivered services. The role as public agency can even conflict with PMBB's role of community organizer and mobilizer, as is also shown in the case of the water tap management committees.

C. PMBB'S STRATEGY

1. General approach

1.1. The importance of community empowerment

In the African cities where technical and financial pressures are extremely severe, the participation of the population to improve their environment is an absolute necessity as it largely determines the success rate of urban environmental management programmes. As anywhere else in Africa, the population in Bissau can be mobilized around environmental matters and problems, and participate financially in activities developed by public or semi-public institutions.

But contrary to what is often believed, the participation of the population to improve their quality of life should not be limited to paying taxes or contributions, or carrying out public service jobs at the request of the authorities. Genuine community participation is a process of communication and reciprocal interaction between the population and other institutional actors. Genuine community participation gives the population a possibility to participate effectively in the decision making process and to influence the decisions that have direct influence on their lives. But the neighbourhood and user groups often lack the necessary know-how on environmental mechanisms and relations; their participation in the decision making process should be viewed as a learning process in which they will gradually understand the value of the local potentials. The process should allow for regular adjustment according to the experience and knowledge gained during the implementation phase. It is also important to act with great flexibility and to adapt to and to interpret certain customs of the population.

Special attention should be given to all forms of activities, realignments and self organization of the population in view of their mobilization and their effective involvement in setting up activities to improve the environment. This social mobilization should take place gradually, departing from activities currently undertaken by neighbourhood groups or from daily and immediate preoccupations of the inhabitants, especially of the young and the women, such as the provision of drinking water in the houses, tree planting or waste collection at neighbourhood level.

It is absolutely necessary to involve the community more and to develop new activities according to the priorities of the people, also when these do not relate to environmental issues. Requests put forward by the community should be taken very seriously and be responded to, such as the call for neighbourhood centres which play an important role within community mobilization.

It is of prime importance though that PMBB is able to sensibly modify its functioning and planning system in order to fully consider the wishes, priorities and forms of organization specific to the inhabitants of the neighbourhoods concerned. This is elaborated upon in C.2.4.

The policy document of the Communication Section explicitly opts for community organization and mobilization. Several methodologies are mentioned as to how to achieve this. A few are concretized for urban environmental issues.

- * Action research on urban environmental problems, as much as possible carried out by inhabitants of the neighbourhood themselves, is needed with the prime objectives of awareness raising, mobilization and confidence building. A second objective is to obtain information. A lot has been said about what people think about garbage, the cutting of trees, animal (pork) keeping, erosion, stagnant water pools and so on. But the main question is how people themselves perceive their environment. The inhabitants undertake some activities to improve their living conditions (e.g. they sweep their courtyard, protect young trees and plants and use car tyres against erosion). Why do they do this? What are their motives and what are their limitations? What possibilities do people have themselves to improve their living conditions? How can social control mechanisms be strengthened? Action-research is most effective if people's demands and priorities can result in actual improvements. In this report, two subjects are specifically mentioned: family health sanitation (see C.2.1) and garbage collection (see C.2.2).
- * The OOPP methodology, and especially the analysis phase, proves to be a valuable instrument in getting people's views on clearly defined problems. Similar to the OOPP sessions on 'waste' and 'drinking water', other problems like access, waste water disposal and 'casas de banho' could be tackled.
- * To stimulate community organization, committees can be set up around certain activities. The water tap management committees are an example, but attention should be paid to the credibility of these committees. A committee on primary household waste collection could facilitate and manage activities in this field.

1.2. Cultural issues, gender and young people

Guinea-Bissau has a heterogenous society. Different ethnic groups, like the Balanta, Fula, Manjaco, Mandinga and Papel live in peace together. Most people are animist (60%), 35% is muslim (being the Fula and Mandinga); only a few are christian (5%). Cultural and religious differences should be taken into account in follow-up activities, as they influence community organization and environmental behaviour. Animists and muslims have different customs, e.g. related to hygiene. Inhabitants are often organized along religious lines, which may facilitate as well as inhibit community mobilization.

Due to a traditional division of responsibilities and tasks within the household, women and men have different priorities and interests in improving their living conditions. This was clearly shown in both OOPP sessions on 'waste' and 'drinking water'. The women are primarily responsible for the household chores, such as cleaning the house, cooking and fetching drinking water. Although they are sometimes assisted by children, these tasks lay a heavy burden on them and any improvement to their situation is welcomed. The men hardly participate in these household activities. Discussing this gender based division of labour remains a sensitive issue. From both OOPP sessions, the interests of and benefits for the women became very clear. Activities to improve the living environment saves

much needed time and energy. Women also benefit most from an improved health situation, since they are the ones who are primarily responsible for the sick.

The young people (male and female) play an important role. Full of ideas and enthusiastic to venture upon new activities, they are the ones who could play a vital role in for example the daily running of a waste collection service. It will give them status within the community and probably, after some time, they will receive some income from this business. To reach the young more effectively, PMBB could direct its activities more directly towards them, thereby also paying attention to socio-cultural events.

1.3. Urban poverty and its impact

The current context of Bissau is clearly marked by poverty. This is manifested by the insufficiency of the urban infrastructure and the low household incomes, but also by the near lack of resources and investment capacity of the public institutions (the municipality, EAGB and others) that are responsible for urban development.

This near lack of individual and collective resources is aggravated by the inhibiting effects of a prolonged period of one-party system and centralized government: strong social fragmentation and a certain 'demobilization' of a population that is preoccupied primarily with its own survival. The democratization process of political and social life, and the economic and institutional reforms that are under way have so far not produced the desired effects.

In such a context, the internal capacities to improve the urban environment in a sustainable way seem to be extremely limited. External support is therefore indispensable to alleviate the financial pressures and to stimulate a local dynamic in favour of the environment, while supporting the application of simple solutions, not very sophisticated and primarily based in the mobilization among the local population and institutions of energies and capacities already there.

Payment of delivered services forms a problem in any low-income area and especially in Guinea-Bissau where residents, even the higher-income groups, have lost the habit of paying taxes. Although payment is important in terms of financial sustainability in the long term, one should be aware of creating the odd situation in Bissau that poor people are paying for the services and rich people are not. Therefore, payment for public services, such as the primary waste collection system could and should not be more than a small amount of money or goods. Introducing a payment system in the neighbourhoods of Bissau should be related to the ability to pay and not to economic sustainability. Considerations for introducing tax payment are:

- People get used to the idea of paying for reliable services.
- Payment allows for a control system at community level.
- Payment stimulates the circulation of money in the poor neighbourhoods, provided it is spent in the neighbourhood, which is the case with services executed by neighbourhood residents.

Within the difficult economic situation, the low-income groups are always looking for ways to make a bit of money. With every possibility they have to improve their living conditions, they are willing to discuss their contributions and probably also their meagre resources. The project also has to pay attention to the socio-economic worries of the people, which is very important in gaining their confidence and learning with them to organize themselves around collective problems, in order to come up with solutions for these problems. This will have a positive effect on the environmental awareness of the people, and certain activities (in the field of drinking water, traditional latrines and so on) will be carried out more effectively.

1.4. Dynamization of other actors

To realize sustainable improvements of living conditions in the neighbourhoods and the urban environment in general, even in a small city as Bissau, is a complex task which needs the intervention and cooperation of several governmental bodies, institutions, non-governmental organizations and private enterprises.

This policy document on urban environment has primarily been drafted for the benefit of PMBB. Although the analysis of the environmental problems in Bissau clearly indicates that the phenomena at all levels, from household to neighbourhood and finally to the level of the city as a whole, are becoming increasingly interrelated.

It is in the current context of Bissau that the population can and should change their behaviour in matters of environmental preservation and should participate in activities to improve the environmental quality of their own neighbourhood. PMBB can and should support local initiatives and facilitate the use of solutions that have been adapted for neighbourhood application.

However, local initiatives can only be effective if at the same time, interventions take place and equipment is provided for at city level. The role and the actions taken by the municipality of Bissau are therefore decisive for a sustainable improvement of the urban environment, as certain public services, such as collection and treatment of household waste, fall under direct responsibility of the municipality, even if this lacks the sufficient resources and necessary means to provide these services. Apparently there is no other institution able to replace the municipality in the actual context of Bissau. All current initiatives taken in this field can only be looked upon as supporting the municipality's actions.

Moreover, the CMB is the decision making body and the most appropriate institute to ensure coherence between local neighbourhood initiatives, and to find a solution for the environmental problems that are apparent everywhere in the agglomeration.

It is therefore necessary, parallel to the actions taken at the basis involving the population, to help strengthening the municipality's capacities so it will be able to assume its responsibilities in the field of urban environment, while supported by other institutions in Bissau.

Besides local authorities, non-governmental organizations play an important role in supporting community-based activities and advocating people's interests. Within the civil society, they play a key-role in lobbying towards the municipality and other (semi) governmental institutions. Together with like-minded organizations like Alternag and AD, PMBB could form a stronger forum. Therefore, PMBB should consider the possibility of organizing a seminar with all the parties involved about environmental problems in Bissau to come to an agreement about collective action. The following chapter may give some ideas about the agenda of such a seminar, like forming a water coalition, a waste collection service, environmental health education and so on. Also, PMBB could discuss concrete possibilities to organize (in collaboration with other NGOs) cultural, socio-economic and sports events with the inhabitants of the neighbourhoods.

2. Possible specific activities

2.1. Environmental health

In the PMBB intervention areas, many elements of environmental health degradation come together: household latrines contaminating wells, household waste water creating disease transmitting puddles, household garbage transmitting diseases and blocking the drainage system, all kinds of disposed waste materials being washed away by storm water and contaminating wells. This means that it is imperative to look into the integral application of environmental health improvements: a range of different options that should be applied structurally, not incidentally.

Environmental health conditions must be improved at household as well as at neighbourhood level. At household level, it is necessary to maintain the quality of the stock of drinking water and properly dispose of disease transmitters: excreta, waste water and garbage. The beneficiaries of the improved hygiene are the individual households, who are also the partners for the implementation of these individual improvements. At neighbourhood level, one should have access to a convenient source of safe drinking water, of which the quality is not affected by the disposal of excreta, waste water and garbage. Waste water and garbage are 'traditionally' disposed of in the public domain which needs to be facilitated. The beneficiary of improved public health is the community as a whole, the partners for the implementation of these public improvements are all the households in the community.

To a certain extent, PMBB is already active in improving environmental health conditions, both at household and neighbourhood level. These activities are:

- Provision of water mains and public taps to substitute the use of traditional wells in the intervention areas. PMBB invests in the water infrastructure and takes care of engineering and construction.
- Provision of toilets/bathrooms to improve household hygiene, with on-site treatment of excreta and waste water in leaching pits or (in future) septic tanks. PMBB subsidizes the house owner's investment with 75% and takes care of engineering and construction.

- Execution of waste removal campaigns to eliminate disease transmission pockets and to restore the surface drainage function of the valettas. PMBB organizes the campaigns and finances its own contribution.

It can be concluded that PMBB applies two strategies towards drinking water in the neighbourhoods of Bissau: on the one hand, the replacement of ground water from traditional wells by piped water from public taps, on the other hand, applying pit latrines that reduce the contamination of ground water. The public tap strategy, applied in the regular intervention areas, should seem clear. An increasing contamination of ground water due to ongoing application of pit latrines is a given fact in these areas. From an environmental point of view, this is acceptable provided a reliable supply of drinking water is ensured, enabling the residents to stop using the traditional wells.

This public tap strategy can be made more coherent if the provision of an appropriate water infrastructure is extended with an effort to secure the supply of water. On the other hand, it would allow the application of unlined leaching pits. At present, the lined double pit (which can be converted into a septic tank) has been chosen as the standard for the intervention areas, while acceptance of ground water contamination does not necessitate the application of septic tanks. The investment in sub-surface lining of the pits could be used for other purposes.

Outside the intervention areas, where traditional wells are still the only available source of drinking water, PMBB could adapt a different strategy. The consequences of pit latrine construction on the drinking water situation should be taken into account. At present unlined pits are applied, whereas septic tanks would be more appropriate from the point of view of protecting the ground water quality. The subsidy instrument would allow the application of criteria, e.g. the distance between pits and wells.

In order to increase the coherence of the PMBB interventions in drinking water and sanitation, some additional activities are recommended:

- * To seek cooperation with other organizations to form a 'water-coalition'. Such a water-coalition can put pressure and initiate solutions to effectuate a reliable supply of water in the low-income neighbourhoods. The activities could range from representing the interests of low-income neighbourhoods in the long-term rehabilitation of the piped water infrastructure, to hiring the fire brigade for the delivery of drinking water as an ad-hoc solution to a temporary crisis.
- * To develop a more appropriate pit latrine for application in the PMBB intervention areas where public taps are used. This pit latrine should combine the improved hygiene of a water-sealed squatting pan with a low-cost leaching pit for excreta disposal, minimizing the investment in sub-surface lining. According to demands from residents, the savings could be invested in a wider superstructure (demand from Muslims for the traditional washing of a deceased person) or an optional soak-pit for the separate discharge of washing water. Appropriate solutions are to be assessed in communicating with the residents, for example, as part of an action research into family health and sanitation.

- * To review the subsidized provision of latrines outside the intervention areas, recognizing the importance to protect the ground water quality from traditional wells as principal source of drinking water in those areas. Assessment of the drinking water situation should be included in the procedure to acquire the subsidy for a latrine. Criteria should be developed for the type of on-site treatment and the location of a leaching pit. Septic tanks should be applied in danger zones. For this the subsidy instrument can be applied variably, the highest subsidy for the most appropriate solution.

Transport to and storage of drinking water within the household are well known dangers for in-house contamination of drinking water from safe sources. This should become an area of consideration, after PMBB has been able to effectuate a reliable supply of safe drinking water to the neighbourhoods. In order to assess the necessity and feasibility to intervene in household water storage, it is recommended:

- * To perform a preliminary investigation into household water storage, causes and extent of quality degradation, options for improvement and opportunities to mobilize households to introduce these improvements.

Such an investigation could become part of a wider action research into family health and sanitation, which can be executed in connection with actual improvements on excreta, waste water and garbage disposal. Such an action research aims at appropriate and sustainable improvements of household sanitation. For this, it is recommended:

- * To seek cooperation with organizations in the field of public health to initiate an action research to develop a community based strategy for the improvement of excreta, waste water and garbage disposal. The results can also be used in developing educational materials concerning environmental health in cooperation with other NGOs and the Ministry of Education. Along with the physical interventions, attention should be paid to hygiene behaviour and concepts of the users. Environmental health education should also form part of the curriculum at schools. The education as well as the health system have been neglected in Guinea-Bissau, but are essential elements in improving the living conditions in Bissau. PMBB should lobby for activities in this field.

Concerning waste water, one can conclude that latrine pits only provide a partial solution for the disposal of household water. For this, it is recommended:

- * To develop, promote and if necessary invest in specific solutions for waste water disposal, e.g. in the form of soak-pits. The appropriate application could be at household level, but not necessarily (traditionally used water is disposed in the public domain). Appropriate solutions are to be assessed in communicating with the community, for example, as part of an action research into family health and sanitation.

Laundry is another activity which may cause waste water streams and pools. Besides the environmental health problems inadequate facilities may cause, washing clothes also forms an important social meeting point for the women. Therefore, it is recommended:

- * To organize an OOPP session on 'laundry' with a group of women and to develop in cooperation with the target group, if possible, linked to a public water tap, a specific laundry place.

Assessing the drinking water situation, one of the starting points for the application of pits for excreta and waste water disposal, it is necessary to collect a set of base-line data on the drinking water situation. For this, it is recommended:

- * To seek cooperation with other organizations dealing with public health, water supply or hydrology, in order to acquire:
 - Topographical data: location of wells and latrine pits (as has been done in Luanda)
 - Hydrological data: surface topography and water-logged pockets as indicators for ground water flows
 - Water quality data: biological (e-coli) and chemical contamination (nitrates) of the ground water and, as a reference, alternative sources used by the residents

2.2. A waste collection experiment in Cupilom de Baixo

Although the waste collection campaigns have a direct effect on the neighbourhoods becoming cleaner, and maintaining the surface drainage system, they do not solve the problems on a structural basis. Moreover, although the campaigns take place at the request of the community, it is unclear in what way they actually participate when PMBB is providing equipment and manpower. Less emphasis could be put on these campaigns. They should only be organized when the community has organized itself to carry out the work with the aid of PMBB and/or when the campaign is part of a coherent strategy on PMBB intervention in the field of waste collection (e.g. before introducing primary waste collection).

The need for an appropriate waste collection system in Bissau, in terms of its physical appearance and neighbourhood organization along with awareness raising and environmental health education, is obvious. PMBB has also acknowledged this and has planned to start an experiment on primary waste collection in Cupilom de Baixo. There, residents have expressed an interest in setting up a primary waste collection system and they have some ideas as how to organize this.

The OOPP meetings held with the inhabitants form an excellent starting point and follow-up steps should be taken. To set up such a waste collection system will be a slow and difficult process, which needs constant monitoring from the side of PMBB in order to develop and adjust the system in terms of neighbourhood management, payment, equipment and so on.

The Communication Section of PMBB has written a draft document with some solid ideas about the experiment. Some considerations for setting up an experimental waste collection system are given below.

Some action research is needed, preferably carried out by selected residents/young people of Cupilom de Baixo with the assistance from PMBB. The research does not need to be highly structured, but should enlighten the following issues: people's behaviour on waste removal, the extent of reuse and recycling, including composting (price and use in vegetable gardens), ability and willingness to pay, organizational and management structure. It is important that the collection system builds upon experiences and customs people already have concerning the removal of waste.

Trying to solve things as much as possible at neighbourhood level, has several advantages. Since municipal services are not reliable in Bissau, the more that can be done independently from the municipality, the more sustainable the system will be. Another important reason for primary collection at neighbourhood level is that it allows for community organization. A third positive effect has to do with an environmentally-sound approach:

- Aiming at solving problems where they arise
- Avoiding transfer of problems
- Reusing and recycling waste materials as much as possible

Any reduction of the volume of waste materials to be transported to the waste dump saves costs. Separation at source is already practised to a certain extent and some waste fractions are directly reused, which should be encouraged. Also, future collectors can be made aware (but probably they already are) to select certain types of waste materials, like bottles, for reuse. Although some micro-enterprises recycling e.g. aluminium have been observed, other options for resource recovery (e.g. plastics) seem to be limited in comparison with some Asian countries, partly because of the low level of industrialization in Bissau. At the moment, compost making offers the best opportunity, since the waste in the neighbourhoods mainly consists of organic material (including sand!) and because it can be carried out with simple means and technology. In fact, the waste heaps lying everywhere are already biologically degraded and only a sieve is necessary (e.g. the same sieve as is used in construction works) to make compost of it. But before starting a composting experiment, some research should be carried out about the actual application and price of chemical fertilizers and compost in urban agriculture, e.g. in vegetable gardens. The Ministry of Agriculture could be contacted to cooperate in this field. Links could also be sought in urban 'greening', such as the planting of trees.

Equipment should be made locally, as much as possible. An opportunity for collection means, is provided by the various equipment materials used around the Bandim market. Animal traction does not seem to offer a possibility in the context of Bissau, since residents are not used to this type of transport, but this should be checked. It is important that the method of collection chosen, also allows for transport of other goods. Since waste collection probably will not be a full-time job, the use for other purposes is an economic must. Either the same activity could be carried out in areas with paying power (e.g. high-income areas), or other economic activities have to be looked for, such as transport of goods to the market.

Managing the primary collection system should take place at neighbourhood level, as much as possible. This could be done by a kind of 'Cleansing Committee' (preferably headed by a woman), which is also responsible for the storage of the equipment. The

OOPP meetings that were held, clearly showed some persons with leadership capacities, especially among the women and the young men. They could play an important role either in the Cleansing Committee or as collectors. Probably the Committee can rent the equipment to the waste collectors for a fixed price per day/hour. There are different systems for payment possible (see also C.1.3). Maintenance of the equipment is also an important matter to make agreements upon. Learning by doing is the best advice in this. To illustrate several possibilities, some examples are given from Dakar, Bamako and Dar es Salaam (see Appendix 2).

It is advisable to have regular meetings with the collectors and the Cleansing Committee, and to write down carefully which meetings were held at what time with whom, the conclusions drawn and the decisions taken, the next steps and actions/discussions needed in the community, the adjustments that have been made, etcetera. One person of PMBB should take the responsibility for this.

Secondary waste collection and safe disposal is in principal a municipal responsibility and should thus be taken care of by the municipality. Therefore, although it will be difficult, PMBB should aim in the first place at an agreement between the community and the municipality. PMBB should make clear to the community that waste collection and treatment is not PMBB's responsibility; it only acts as a facilitator.

However, at the same time, PMBB should realize that starting a primary collection experiment also implies some commitment for problems out of the direct scope of the community. If successful, the experiment in Cupilom de Baixo calls for similar activities in other neighbourhoods (e.g. Cupilom de Cima) and for adequate secondary collection and treatment. During the experiment, a guarantee should be given that the waste materials dumped in the containers is taken away and brought to the dump site. It should be realized that the residents of low-income areas cannot pay the costs for the total waste collection system and that subsidies are indispensable (see also C.1.3). To present alternatives for the conventional waste management plans (in which the number and type of large vehicles are more important than a sustainable and integrated system), PMBB could decide to elaborate a policy plan for waste collection and treatment for the city of Bissau.

2.3. Improvement of soil and surface conditions

Inundation and erosion of the top soil in the low-income neighbourhoods of Bissau are serious problems during the rainy season, affecting the access to the homes and the use of public space in the neighbourhood. A storm-water drainage system is necessary for a regulated run-off of excess water that otherwise cannot be directly absorbed in the soil. During the dry season, the storm water drainage system in Bissau also serves a secondary function: it is a convenient facility for households to dispose of their garbage and waste water, for which there are no other alternatives available.

The PMBB interventions to improve the situation in its intervention areas consist of:

- Provision of neighbourhood drainage gutters in conjunction with road construction. PMBB takes care of investment, engineering and construction.

- Waste removal campaigns removing waste blocking the valettas and restoring the drainage function before the rainy season. PMBB organizes the campaigns and finances its own contribution.

Storm water does not only affect the neighbourhood (inundation, erosion) but it is also related to ground water and surface water management at an urban scale.

In areas where ground water is the only source for drinking water, the stock has to be maintained and 'flushed' by penetrating rain water. Originating from latrines and leaching pits, nitrates accumulate in the ground water, which can reach dangerous levels if used as drinking water. The nitrification of ground water is caused by a combination of four factors:

- A densification of the population intensifying the soil storage of excreta and waste water as well as the extraction of ground water by traditional wells
- 'Impermeabilisation' of the soil surface reducing the natural infiltration of rain water, caused by an increase of roofed surface, clogging the remaining public space
- The regulation of surface water drainage, leading away a considerable volume that does not penetrate in the area any longer
- A low annual rain fall, concentrated in a seasonal peak

Increased rain water infiltration could be an essential part of a strategy protecting the ground water quality in areas which are depending on it. But nitrates can also travel over a distance, far more than biological contamination. As such, a public tap area where ground water contamination is accepted, could still affect the quality of the ground water in other areas.

Even in the strategy that ground water improvement is not an objective, the facilitation of increased infiltration of storm water is relevant with respect to the surface drainage situation at an urban level. The increasing volume of storm water from neighbourhoods leads to volumes and velocities in the collector channels which exceed the design dimensions, resulting in damage to the drainage infrastructure. The increasing volume of eroded soil and waste clogs the outlets of the drainage system. So, an increase of the infiltration at neighbourhood level is beneficiary to the management of surface drainage at an urban level. The urban scale will especially become a PMBB issue when Cupilom de Baixo becomes a new intervention area. Cupilom de Baixo is a catchment area for storm water and washed-away waste from other parts of Bissau, and the area comprises collector channels and main outlets. For this, it is recommendable:

- * To seek cooperation in the field of hydrology and to commission a more detailed investigation assessing the feasibility of an increased infiltration of storm water in the neighbourhoods, and of ground water improvement by increased infiltration.

The problem of eroded soil being carried away by storm water in the valettas, has already been recognized by PMBB: in one instance, sand traps have been applied to reduce the volume of soil being carried away by the water. Regarding this development, the mission recommends the following:

- * To seek cooperation with the Camara, the Ministry of Works and relevant agencies to commission a comprehensive drainage engineering plan aiming at:
 - An identification of drainage problem pockets by the communities
 - The development of infiltration pits and sand traps as regular modules of the surface drainage system
 - A rationalization of the collector and outlet infrastructure at the side of Cupilom de Baixo

2.4. Neighbourhood planning

The PMBB objectives for neighbourhood improvement in Bissau are often referred to in their physical dimension, the intervention and the product delivered: roads, surface drainage canals to go along the roads, housing to substitute demolition for roads, public water taps. The neighbourhood planning process is a necessary precondition for interventions aiming at improvement, the physical interventions are the back-bone of the planning framework.

In order to conclude on whether mobilization of households or the community and/or other actors is at stake, it is useful to express the PMBB objectives more in terms of improvements for the benefit of the population. This will enable to assess the appropriateness of means and participants in order to reach these objectives. Basically every objective for neighbourhood upgrading relates to an improvement of living conditions, in particular, health (drainage, water, sanitation, waste) and access (roads and substitute housing, drainage).

Opening up the neighbourhoods by planning, financing and constructing roads and substitute housing is the back-bone of the urban upgrading process as well as PMBB's existence in Bissau. As such, it forms the means by which the urban environmental objectives are realized. The necessity for roads is very much determined by the definition of access, and the problems related to access as conceived by the residents in the neighbourhood. However, problem analysis and objective formulation by the community, could be a crystallisation point for community mobilization and organization (a pre-requisite for all other improvement initiatives) as well as the basis for community based neighbourhood upgrading.

Currently the neighbourhood residents come in the planning process *after* the identification of the best road routing option, decided on by engineering criteria. The PMBB communication capabilities are applied to inform the public while diminishing resistance, rather than mobilizing the community as a driving force behind the upgrading process. The example of Luanda shows that initiatives and organization by the community *before* the planning and engineering stage are feasible in Bissau. PMBB already has recognised this as a sensible approach by responding positively to the residents' demand for assistance, even though Luanda was not foreseen as an intervention area.

The experience of the OOPP meetings on 'drinking water' and 'waste' shows that specific entities can act as a concrete 'door' to starting points for an intervention and subsequent commitment of residents. This could also be applicable to the entity *access* as well. Access is often defined in terms of the (emergency and public) services' need to enter

from outside: fire brigade, ambulance, waste collection, and for heavy goods delivery (sand, cement, blocks, construction materials in general). This is a definition for heavy motor vehicle access, which requires a specific type of road in terms of width, curbs and strength, and consequent demolition to create space.

Access can also be defined in terms of residents' needs for employing activities, social as well as economic. In the context of low-income neighbourhoods in Bissau, it can be expected that an analysis of the problems encountered by the residents will also identify the demand for an improved access for walking, for hand carts and small vehicles delivering goods, at a fine grid.

Problem and objective definition of the access needs of the residents might result in applying a wider range of engineering concepts, of which a few examples are given:

- Small paths, facilitating walking and push cart transport also during the dry and wet season, which can be applied flexibly in the existing lay out.
- Separate drainage gutters (not necessarily in conjunction with roads), to relief erosion and inundation at problem spots identified by the residents.
- 'Tangential' roads for service access, enabling emergency services to enter within the required radius (to roll out water-hose pipes, to carry a stretcher), but not in the form of through roads, which in terms of demolition may be more flexible.

The well known and appreciated (case of Luanda!) opening up of a neighbourhood is a sensible and effective starting point for community mobilization and organization. Using this momentum would also create the precondition of community involvement and organization developing initiatives and realizing objectives in the field of urban environmental improvement. It is therefore recommended:

- * To start the neighbourhood planning process in a new intervention area with a problem and objective analysis carried out by the residents on a concrete entity, such as access. Residents' participation in such an analysis also forms a practical basis for commitment in activities and the forming of committees.

Discussions with residents during the OOPP session on 'waste' also indicated that rationalizing space used by a group of residents, as a precondition to create and improve 'casas de banho', could be an appropriate entry point for community participation in the physical planning process. In order to build up experience with a planning module on a smaller scale, it is recommended:

- * To execute an experiment with 'mini' neighbourhood planning, at the scale of a group of households sharing the same space or facility, such as a traditional well. Such an experiment should include all relevant improvements at household and neighbourhood level:
 - 'Casas de banho' at, if relevant, proper distance to the well
 - Pits for excreta and waste water disposal
 - Regulated garbage disposal
 - Regulated storm water run-off and, if relevant, infiltration facilities to increase 'flushing' the ground water.

Trees, and 'greening' in general, form an integral part of the urban scene in Bissau. The residents in the low-income areas know the importance and the various functions of trees. Some trees are protected because of religious reasons. Also, residents protect young trees (e.g. by rubber tyres) and grow all kinds of plants, such as herbs (medicines, spices). On the other hand, people express a strong aversion against certain types of trees. Although PMBB even adapts its planning process in order to save trees, the residents cut them. Cutting trees is unavoidable in a fast expanding city of Bissau. A solution might be, also in this case, to discuss saving trees *before* the planning stage and include tree planting as a clear project activity in the intervention strategy.

2.5. International networking

PMBB could benefit from practical experiences and knowledge gained in other parts of the world, specifically from countries in West-Africa and other Portuguese speaking countries such as Brazil.

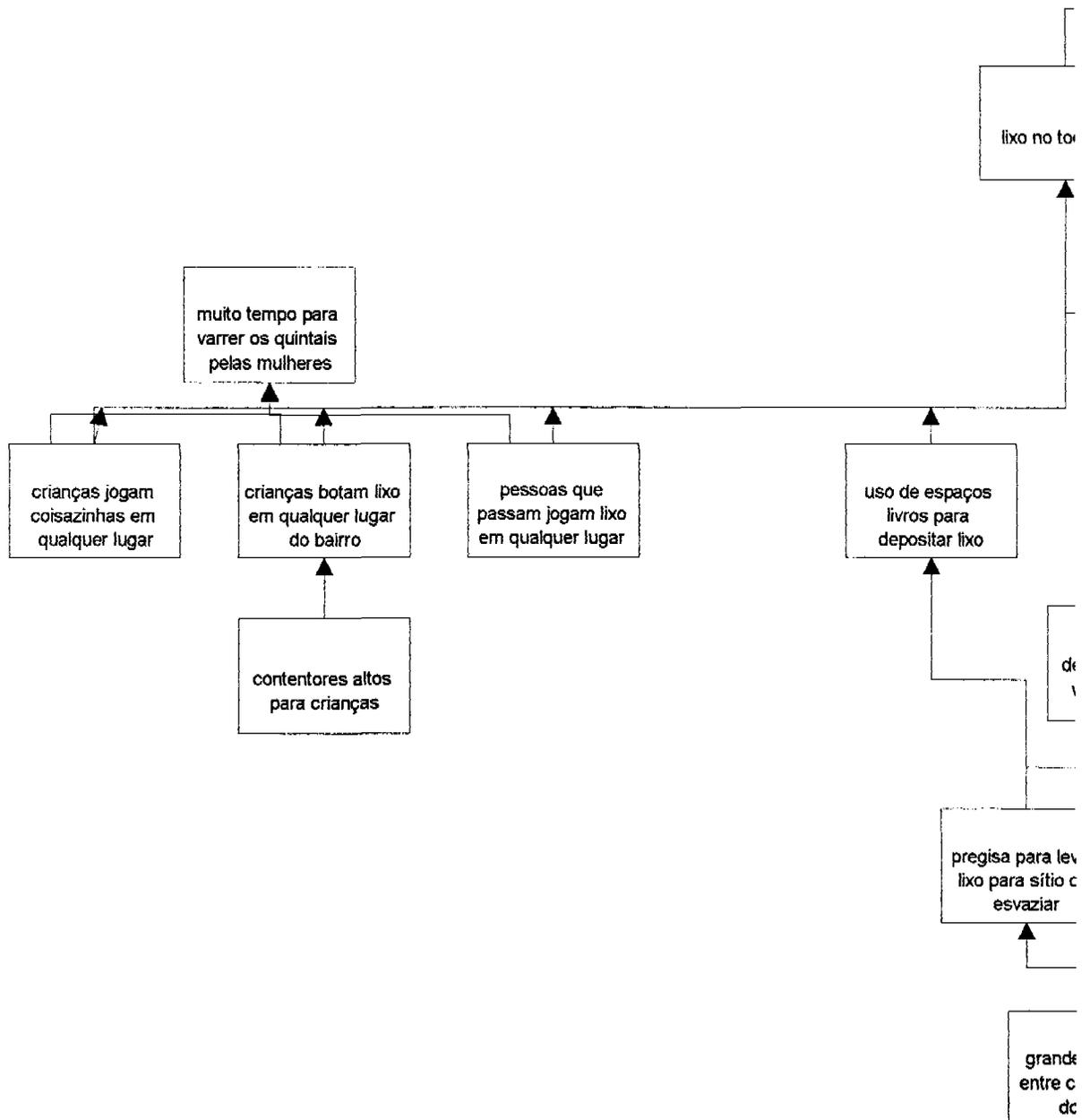
- * PMBB should strengthen its collaboration with other NGOs and other neighbourhood improvement projects that exist within the region of West-Africa. One possibility is to participate in the network on urban environment set up by Enda TM in Senegal.
- * A specific possibility for an exchange of experiences is related to the waste collection experiment. PMBB is advised to visit the various waste collection and composting organizations/enterprises (called GIE = Groupe d'Intérêt Economique) in Bamako, Mali. PMBB can learn from the experience gained there and adapt it to a certain extent to the situation in Bissau. Other useful examples in the field of waste collection can be found in Senegal (ENDA) and the Ivory Coast.
- * It is worthwhile to look at experiences in Dakar, where soak pits have been introduced in low-income areas as a basic sanitary facility for waste water disposal at household level, additional to the latrine pits for excreta disposal. Also, in Diakhoul, Dakar, public taps have been equipped with sub-surface tanks for run-off water, which is available for other purposes.
- * Relevant information on (environmental and health) education, community empowerment, waste collection, composting systems and urban environmental planning could be obtained from Brazilian NGOs and municipalities. Although the educational material, and the various policies and activities need to be adapted to the reality of Bissau, advantages are the language and the wealth of readily available experience.

Other organizations can also benefit from the knowledge and experience PMBB has gained. Internationally, there is an enormous need for information about the approach and possible solutions of environmental problems in low-income neighbourhoods. Bissau could become an interesting case. However, the used methodologies, the constraints, the successes, and the solutions found should be written down carefully.

APPENDICES

APPENDIX 1: RESULTS FROM THE OOPP SESSIONS (in Portuguese)

Figure 1
'Problem tree' of the OOPP session on 'waste'
(with residents of Cupilom de Baixo)



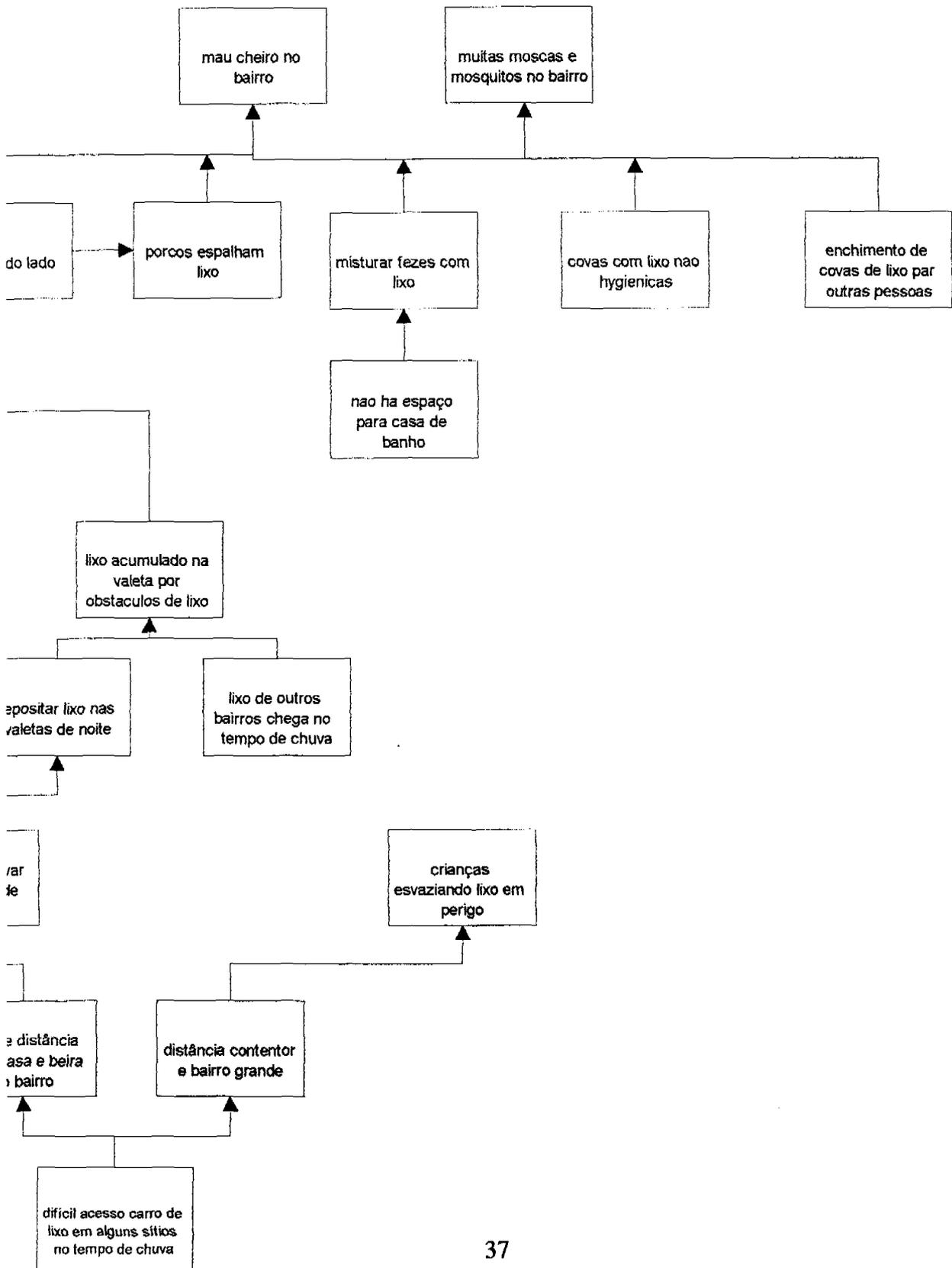
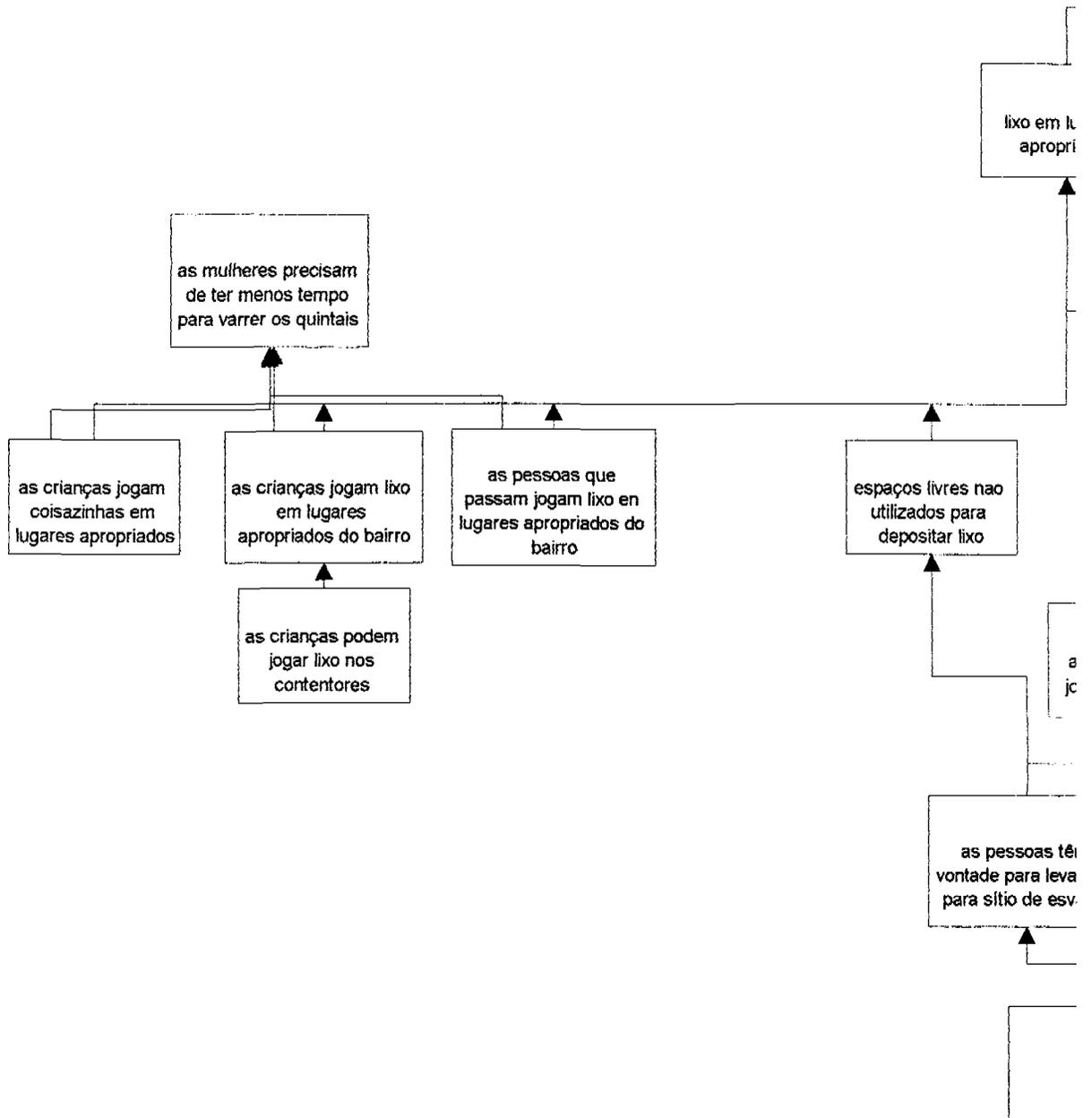


Figure 2
'Objective tree' of the OOPP session on 'waste'
(with residents of Cupilom de Baixo)



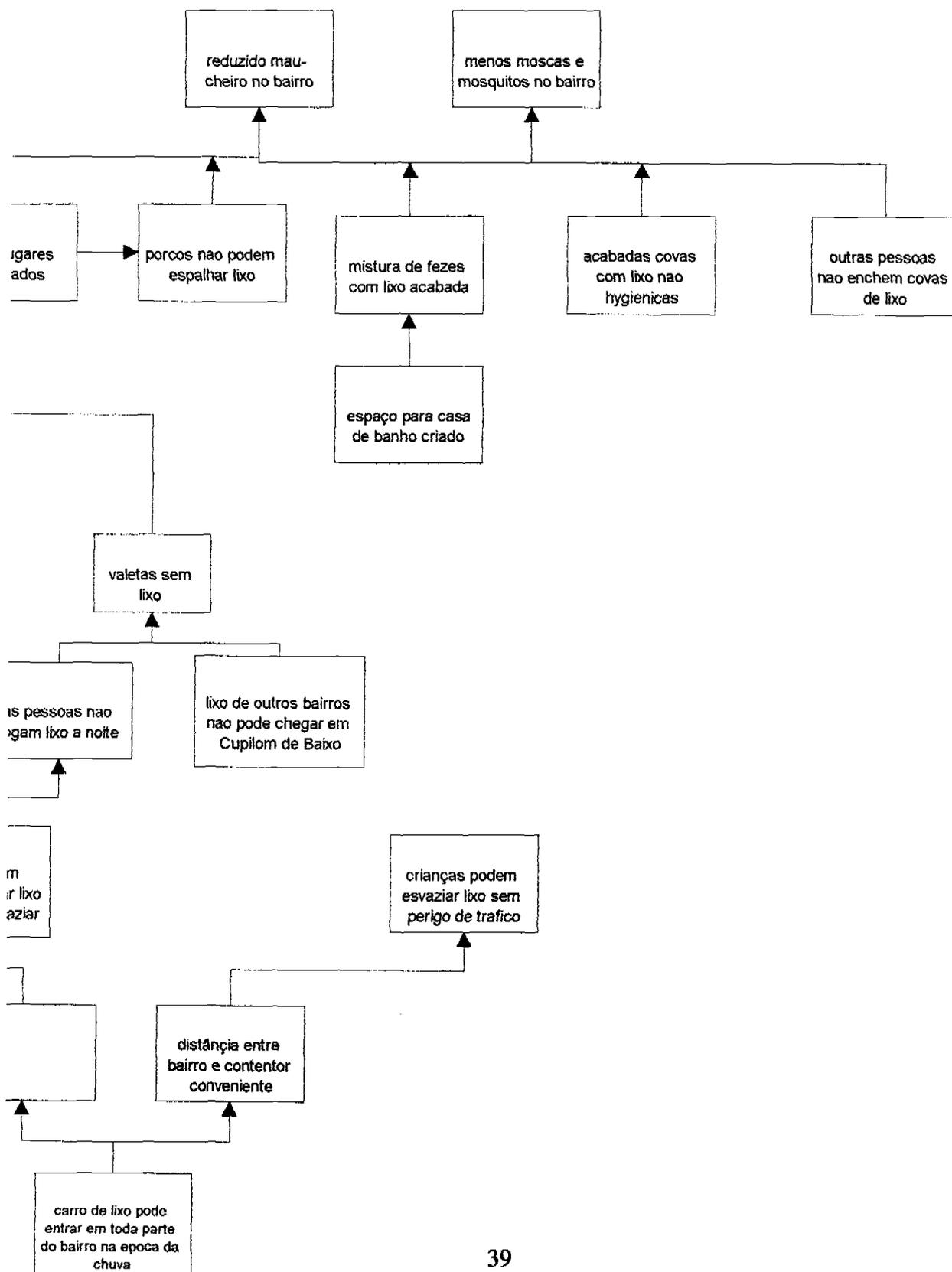
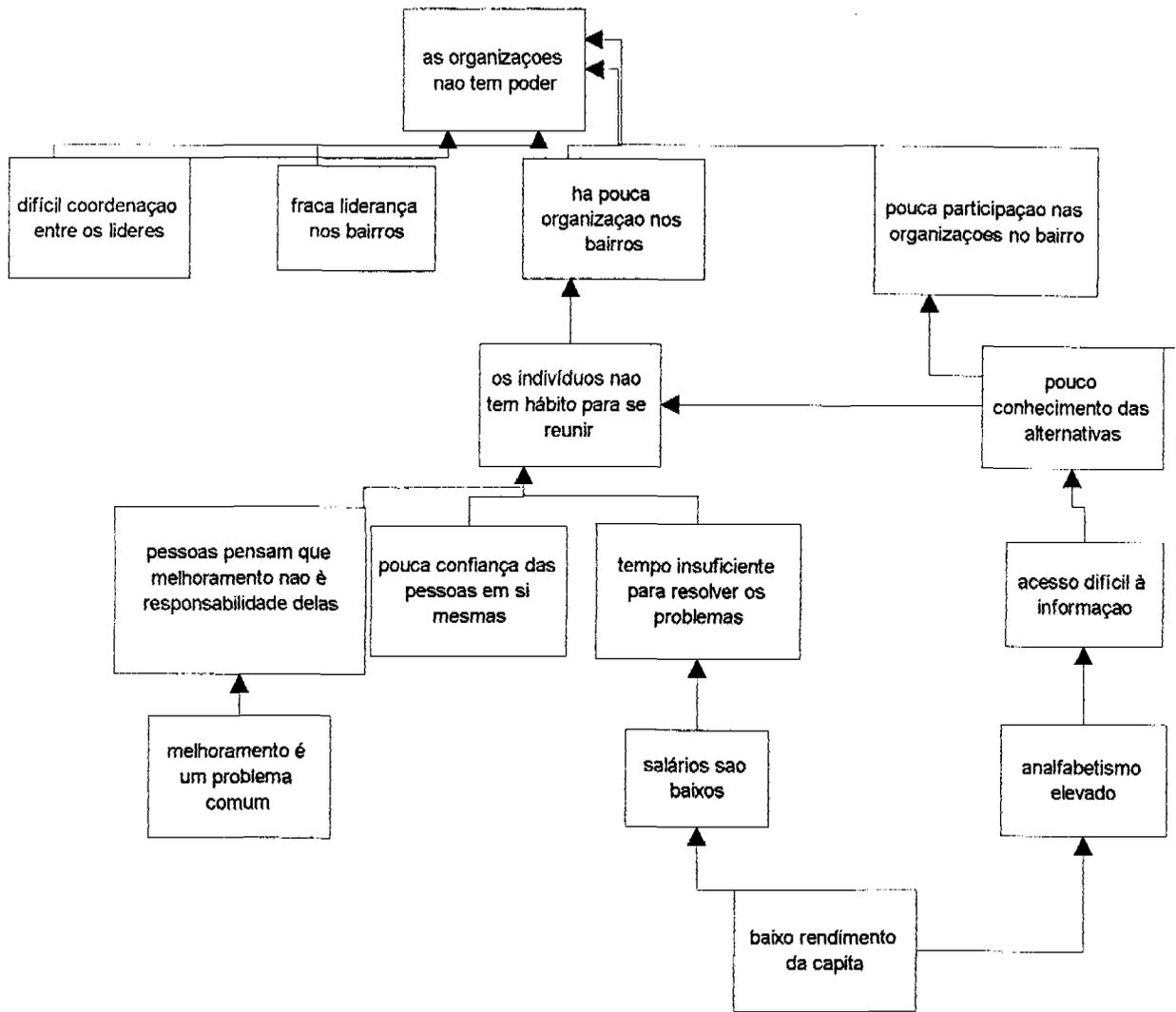


Figure 3

**'Problem tree' of the OOPP session on 'community empowerment'
(with the PMBB staff)**



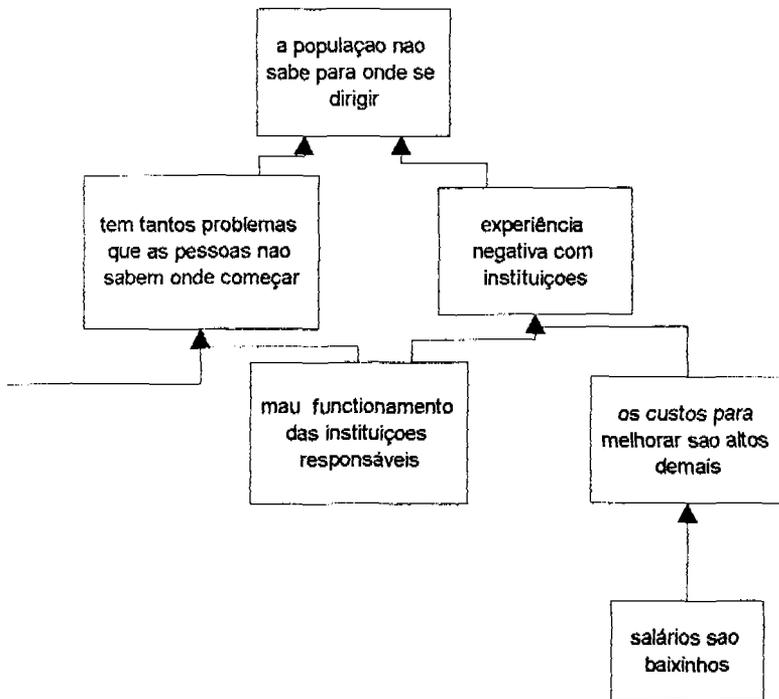


Figure 4
'Problem tree' of the OOPP session on 'drinking water'
(with residents of Cupilom de Baico)

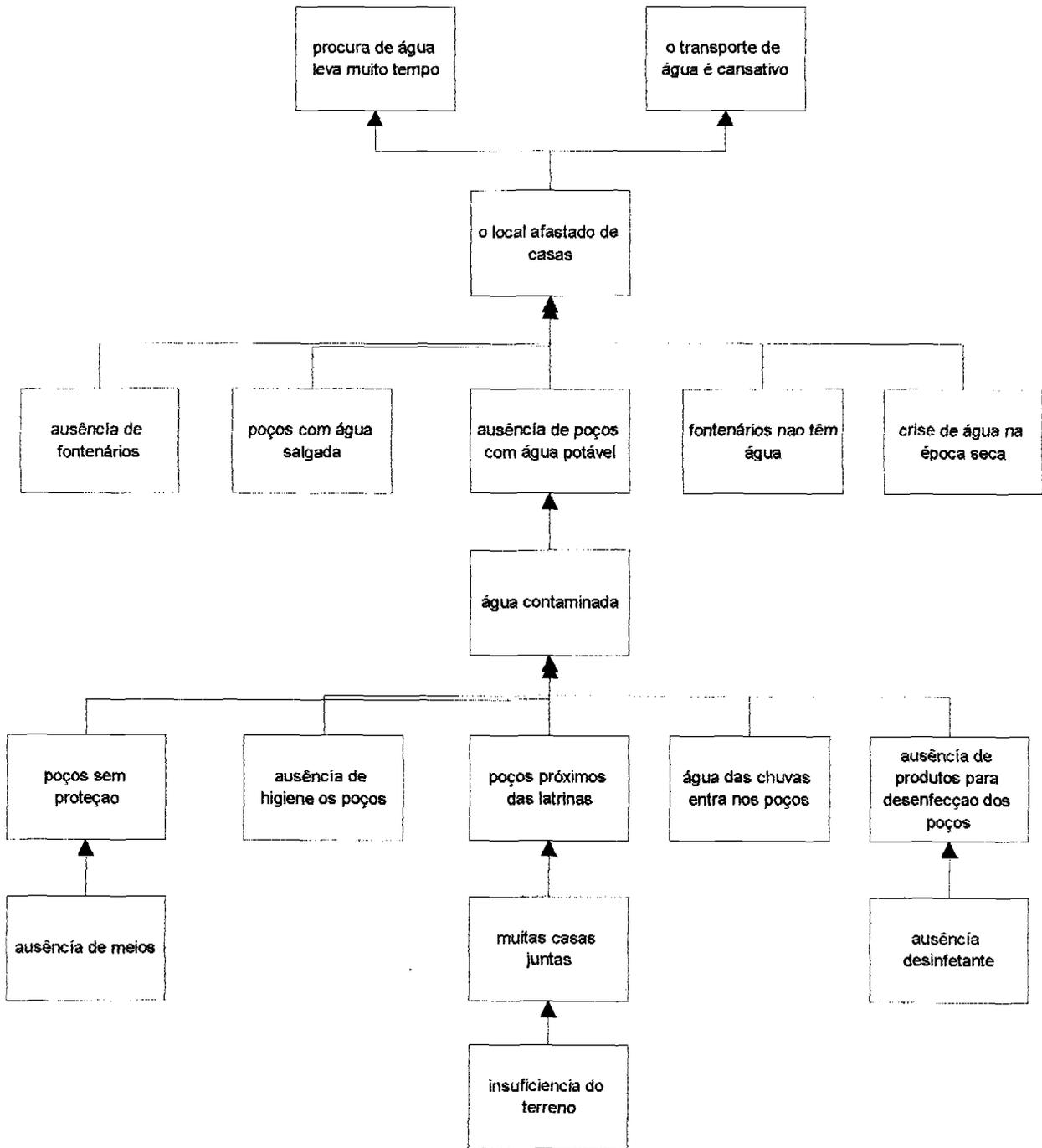
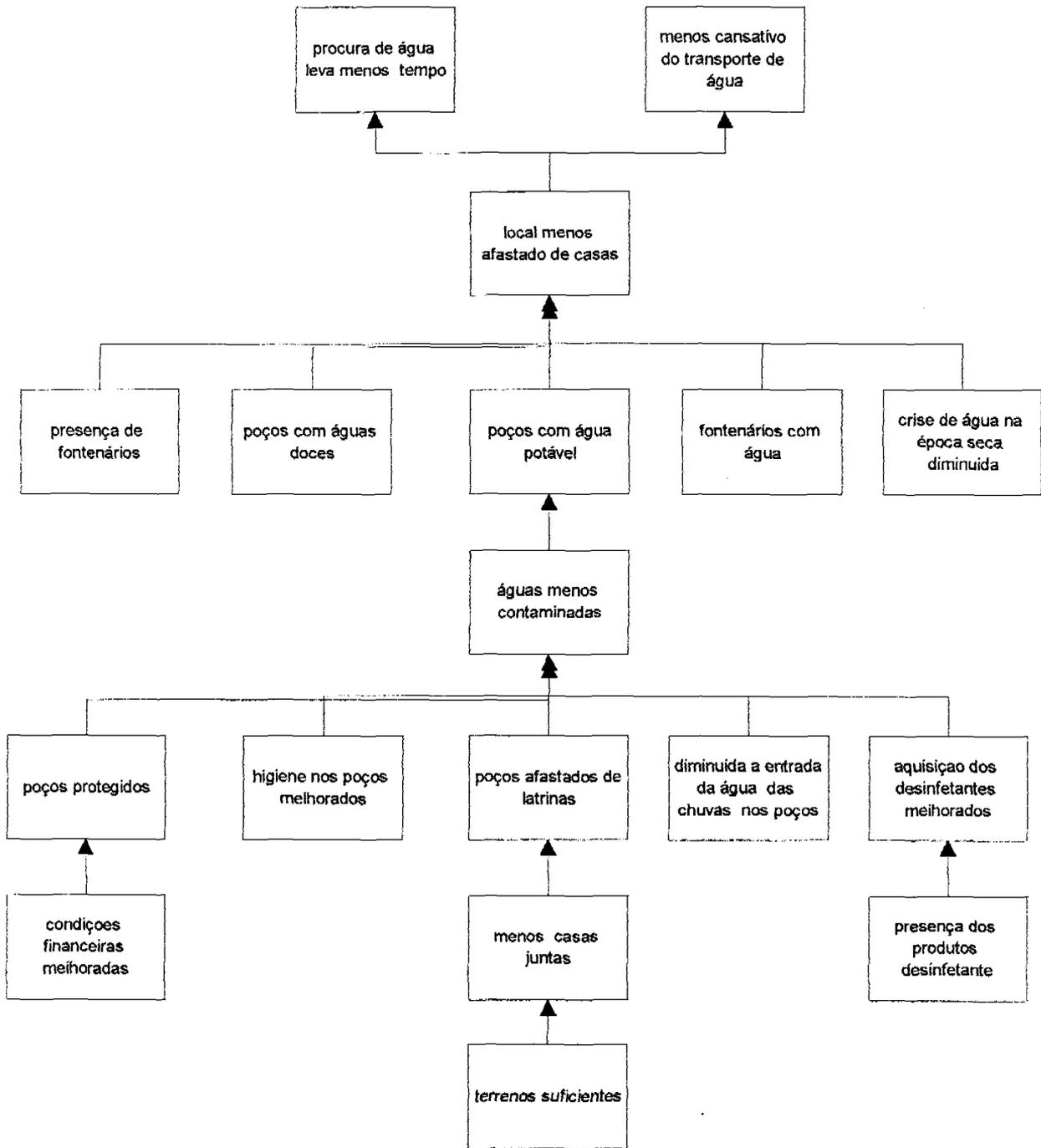


Figure 5
'Objective tree' of the OOPP session on 'drinking water'
(with residents of Cupilom de Baico)



APPENDIX 2: EXAMPLES OF NEIGHBOURHOOD-BASED COLLECTION SERVICES

The PADE system in Dakar

The PADE system in Dakar entails a neighbourhood-based collection system of household garbage, organized under the responsibility of a neighbourhood health committee. This committee is a legal requirement connected with the functioning of the neighbourhood dispensary. The garbage is dumped on a vacant piece of land in the vicinity of the neighbourhood.

The committee owns the garbage collection technology, consisting of a horse, a standard cart and a customized garbage container that can be fitted on the cart. The committee recruits an operator, working under an agreement with the following arrangements:

- The operator collects garbage from different streets on alternating days, according to a schedule drawn up by the committee. The collection takes place during a fixed time period in the morning.
- The households pay a token fee per garbage bin to the operator. The fee is adjusted to the affordability of low-income households. The garbage collection cannot be operated on the basis of this token fee.
- In order to establish an economic basis, the operator is free to use the equipment for income generation during the rest of the day, for regular transport jobs or the collection of garbage from residents in higher income areas paying commercial fees.
- The operator pays a flat rate per day to the health committee for the use of the equipment, the excess earnings out of garbage collection and other jobs are his income.
- The operator takes care of any operating costs (mainly horse fodder) and small maintenance jobs. The health committee is responsible for replacement and overhaul.

Waste collection by young people in Bamako

The democratization process in Mali has led to many private activities, either enterprises such as GIE BESEYA or non-governmental organizations like COFESFA, initiated mostly by young, unemployed graduates. In the late 1980s, it was difficult to find employment for these young people. In accordance with the structural adjustment programme, the government had slashed down public sector jobs. Several waste collection initiatives, sometimes combined with health education (as is the case with COFESFA) and compost making, have been started in several neighbourhoods. GIE BESEYA for example, works in Hamdallaye. They have been given a license by the municipality, but the municipality does not pay them for their services. Hamdallaye is divided into concessions, a group of households, who pay a certain amount per month. Elderly people are responsible for the fee collection from the households. To encourage the participation of the residents, meetings to discuss any problems and progress are held on a weekly basis. The household waste is transported on carts and donkeys to the transfer station near the office, where the recyclable items are sorted out by waste pickers. The waste is placed in pits, which are covered with soil, and is left to decompose for several months. The compost is sieved and the non-organic items are separated, and is then sold. GIE BESEYA has also set up a tree

nursery, where the compost is used and the plants are sold. As a side-effect of this, a micro-enterprise has set up a maintenance service for the carts.

COFESFA and GIE BESEYA are just two examples of waste collection initiatives in Bamako. The problem at the moment is the coordination of all these activities at municipal level. Some neighbourhoods still lack a collection service. GIE BESEYA only transports the waste materials to the transfer station; the transport from there to the final dump place is the responsibility of the municipality. However, this task is only carried out at an irregular basis.

The MAPET system in Dar es Salaam

MAPET, an acronym for Manual Pit Emptying Technology, is a pit emptying service in low-income neighbourhoods of Dar es Salaam. Sludge out of the latrine pits is sucked into a small tank (200 litres) by means of a hand pump. The sludge is buried in a hole dug on the customers' compound. The technology is manufactured locally. One MAPET team consists of three pit emptiers who are self-employed casual workers coming from the low-income neighbourhoods themselves.

The service delivered to the customers in low-income areas has an informal commercial basis: it caters for the full income of the emptiers and for small maintenance jobs needed on the equipment. Pit emptiers themselves canvass for customers, who negotiate the number of tank loads to be taken out and the sum to be paid. Reducing the number of tank loads (three being the minimum) is a practical way for customers to adjust the costs of emptying to the limitations of the household budget.

The informal commercial basis has several consequences:

- It is necessary to **promote** the service in order to create a continuity of customers from the same neighbourhood.
- The team has to **criss-cross** the neighbourhood to serve those customers (on average one per day) that actually have payment at hand. These rarely live next door to each other.
- The service needs an **operating basis** within the neighbourhood: to safeguard the equipment at night and as a communication point between customers and emptiers.
- The minimum **continuity** is 250 paying customers per year. If the demand from one neighbourhood is less, the team has to shift to other neighbourhoods.

The informal neighbourhood service (currently seven MAPET teams) is linked with urban sanitation management by means of a partnership with the City Sanitation Department. The Sanitation Department owns the MAPET equipments. A team of emptiers acquires the right to use the equipment, after being trained and licensed by the Sanitation Department. The team is responsible for any small maintenance jobs on the equipment, the Sanitation Department for serious repairs and overhaul. The latter is the weak spot in the sustainability of the system.