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DEVELOPMENT OF A
PUBLIC PRIVATE PEOPLE
PARTNERSHIP (4P) FOR
CLIMATE COMPATIBLE
DEVELOPMENT IN
MAPUTO, MOZAMBIQUE

**Local Climate Change
Action Plan**

Bairro of Chamanculo 'C' –
Quarteirão 16A

City of Maputo, Mozambique

Climate Planning Committee

Quarteirão 16 A

July 2013

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A. Summary of group discussions on causes and impacts of flooding and suggested solutions

B. Workshop presentations by the CPC, 6 June 2013

Introduction

This Community Plan for Adaptation to Climate Change has been prepared by the “Climate Planning Committee” (CPC) of Quarteirão¹ 16A of the *Bairro* of Chamanculo ‘C’, on behalf of the residents of the *quarteirão*. The members of the CPC, Sara Jaime, Telma Elias, Alves Fumo, Ernesto Inguane and David Nhancale, have dedicated many hours of their time to preparation of the plan in the expectation that it will contribute to improving living conditions in the *bairro*.

The *bairro* of Chamanculo C was chosen for this project because it is particularly vulnerable to the expected effects of climate change. In Southern Africa, climate change is likely to bring increasing intensities of rainfall of shorter duration, decreasing frequency of lower intensity rainfall, and longer dry periods between rainfall events, accompanied by gradual warming. Tropical storms and their associated rainfall are likely to become more intense, with increased risks of flooding².

In the low-lying neighbourhood of Chamanculo C, the community is already feeling the impact of climate change; it was particularly affected by the floods which wreaked havoc on southern Mozambique in 2000 and since then has suffered from frequent localised flooding.

Chamanculo C was also selected because it is the subject of an integrated urban upgrading project being carried out by the Municipality of Maputo in partnership with Italian and Brazilian Cooperation and Cities Alliance, which has produced comprehensive demographic, social and economic data on the *bairro*. The Italian NGO AVSI Foundation has been implementing the socio-economic component of the project and its field team, with extensive knowledge of the *bairro*, was fortunately available to facilitate meetings of the community. Quarteirão 16A was selected because it has a high risk of flooding and a *Chefe de Quarteirão* able to mobilise the community to participate in the planning process.

1.1. Methodology

The plan was developed by the community using the methodology of Participatory Action Plan Development (PAPD), adapted for the Mozambican urban context. As increased flood risk is likely to be the main impact

of climate change in the *bairro*, the issue of flooding was defined by the research team as the main focus for discussions during the participatory process.

In the PAPD process, five social groups which were identified by the Field Staff of AVSI and the *Chefe do Quarteirão*: (i) workers outside the *bairro*; (ii) young people 15-25; (iii) informal traders in the *bairro*; the elderly; and (v) housewives. At an initial meeting of *quarteirão* residents, interested residents constituted five stratified working groups, with 4-8 participants per group. Each group held two facilitated conversations to identify the causes and impacts of flooding, in the past, present and likely future scenario, and to suggest possible solutions reduce the risks or the effects of flooding.

Following the individual group meetings, a plenary meeting of the groups was held in which all the suggested solutions were discussed. Some suggestions were rejected and a short list of 8 solutions was agreed by all the groups as the basis for the Community Plan. At the meeting, one person from each group was selected for the Climate Planning Committee (CPC), which was then tasked with preparing the plan and reporting back to the working groups and the *quarteirão*.

The Climate Planning Committee then gathered further information relating to each of the 8 agreed solutions in order to assess their viability and develop more detailed proposals for the most promising solutions. At this stage, the CPC invited the *Chefe do Quarteirão* to join the committee, as he has extensive experience of development projects and knowledge of local institutions including the municipality and the water company. In June, the CPC presented their findings and a preliminary plan to a workshop convened by FUNAB with the aim of identifying partnerships to assist the CPC in finalisation and eventual implementation of this Community Plan for Adaptation to Climate Change. The CPC's presentations at the are reproduced in Annex B.

Preparation of the plan is an ongoing process which is not yet complete but is clearly producing results and has the momentum to be continued. Detailed proposals have been drawn up by the CPC and partners for the most important solutions of building environmental awareness in the community; cleaning and maintenance

of the drainage channel; and solid waste management (separation, recycling and improved collection).

The planning process has been carried out mainly in the local language, Shangaan, with documentation produced in Portuguese. There is no single document which makes

up the plan, as it is an evolving process. In compiling this document, the outputs of the working groups in the *quarteirão* and the documents produced by the CPC have been summarised and translated into English. This summary document will be translated back into Portuguese for the CPC and FUNAB.

NOTES

1. A *quarteirão* is the smallest administrative unit in the urban areas of Mozambique and has in theory contains approximately 50 houses. *Quarteirão* 16A has a population of approximately 350 people living in 82 households in 54 yards, with an average of 4.3 persons per household and 6.5

persons per yard (data from the *Chefe do Quarteirão*, 2013).

2. Midgely, S; Dejene, A e Mattick, A (2012), *Adaptation to Climate Change in Semi-Arid Environments - Experience and Lessons From Mozambique*; FAO, Rome.

Figure 2. Location of Quarteirão 16A (shown in red)
Quarteirão 16A is in the centre of the bairro. It lies 50-100m to the east of the only drainage channel which runs from south to north, draining into a swampy vacant site in the north of the bairro.



3. Analysis of causes and impacts of flooding by the Working Groups (see Annex A for summary of findings of each group).

3.1. Causes of flooding

The working groups informed that in colonial times there were no flooding problems. Today, when just a little rain falls, there is flooding in the *bairro*.

In their facilitated conversations, the working groups identified the following causes of flooding in the *bairro* and the *quarteirão*:

1. Since independence in 1975, the density of people and buildings has increased, and unplanned buildings have closed the natural drainage routes. Formerly yards were enclosed by thorn hedges so that the water flowed through them; now they are enclosed by walls, the yards have become “tanks”; water flows neither in nor out.
2. The soil does not absorb water as it used to. Since the floods of 2000 the situation seems to be getting worse; maybe the soil is saturated. Burial of domestic waste in plastic bags has also contributed to loss of permeability.
3. There is no drainage system. There is only one drain serving the whole *bairro*, built after the floods of 2000 (see Fig.3).
 - The drain does not function because it has insufficient gradient and no outlet for the water (poor design and construction).
 - The drain doesn't function because it is full of rubbish and it is not cleaned regularly. Residents contribute because they throw everything in the drainage channel: garbage, rocks, waste water, etc.
 - People living in front of the drain (Q 15, Q17, Q 18, Q 19) purposely block it with sandbags, so that the dirty water does not flow past their house.
4. People throw dirty water (from bathrooms and washing clothes and dishes) and rainwater in the streets, including trash from sweeping the yards.
5. Leaking and broken water supply mains and household connection pipes (illegal and legal). “This is worse than the rain, because it happens every day”.
6. Waste collection in the *bairro* is deficient: containers overflow, so people dump rubbish in the drain.
7. The movement of cars on the unsurfaced roads creates depressions, where the water collects and stagnates.
8. People block the passage of water with sandbags; in particular they place sandbags at yard entrances to prevent water from the streets and alleys flooding their yards.
9. Lack of understanding / collaboration between neighbours.

3.2. Impacts of flooding

The worst period for flooding is during the rainy season, which lasts approximately from November/December to March. In the low areas the water lies stagnant for months. However, there is some stagnant water all year due mainly to leaking water pipes. This water does not dry out unless the pipes are repaired. Household waste water thrown on the ground dries out in a short time in the dry season, but contributes considerably to stagnant water in the rainy season.

In the experience of members of the working groups, the flooding in the *bairro* has the following impacts:

- Flooding of roads and alleyways hinders circulation of pedestrians and vehicles. In some places the water habitually rises to knee level.
- In low-lying areas, yards and houses fill with water, which residents bail out into the alleyways and streets, adding to the water there.
- Floodwater consists of rainwater mixed with waste water from bathrooms etc. and domestic waste. As it cannot drain, it stagnates, leading to proliferation of mosquitoes and flies which in turn cause diseases including malaria, cholera, allergies and ‘strange diseases’. People have to tread in the water and wounds to the feet and filariasis are very common. Children play in the stagnant water and are very prone to catching diseases.
- Latrines can overflow or even collapse
- Conflicts between neighbours are common in the rainy season because of disputes about floodwater.



All social groups suffer, especially those living in low-lying areas. When pressed, the working groups identified the worst-

affected groups as: children going to school, the elderly, workers and students, and traders with stalls in the street.



Fig 3: Quarteirão 16A and the drainage channel

Legend:

-  Limit of Quarteirão 16A
-  Drainage channel

4. Proposed solutions for the problems of flooding, and present and in a scenario of climate change

The working groups put forward ideas for solving the problems caused by flooding, taking into account the current situation and the prospects of more intensive rainfall in future as climate change becomes more pronounced. Lists of the solutions proposed by each group are shown in Annex A. The full list of solutions suggested by the five working groups was discussed at a plenary meeting of the groups, with a view to agreeing a basket of proposals to be developed further as the core of the Local Climate Change Action Plan.

The full list of solutions suggested by the groups was:

1. Rehabilitation of the drainage channel.
2. Regular cleaning of the drainage channels by the residents, and better organization of the residents to deal with this, including collaboration between *quarteirões*.
3. Construction of new, larger, drainage channels and levelling of streets – even if some families have to move out.
4. Placing of sandbags, rocks and cement blocks at yard entrances (**not agreed**).
5. Improved waste collection.
6. Education, awareness building, and eventually control, of residents regarding littering and dumping rubbish in the drainage channels and streets.
7. Filling low areas with rubble and localised earth-moving to enable water to drain (**agreed subject to specific analysis of each situation/location**).
8. Dig holes in yards so that rainwater and waste water can drain (**not agreed, as many people**

felt that this was impractical as a general recommendation. However, those who have space may continue to do so).

9. Improved organisation of residents (**this was withdrawn, as it is covered by item 2**).
10. Construction of sanitary blocks.
11. Relocate the population outside Chamanculo (G3) (**not agreed**).
12. Resettle the families living in low-lying areas (**not agreed**).

Following the discussion in plenary, the agreed 'basket of proposals' was as follows:

1. Rehabilitation of the drainage channel.
2. Regular cleaning of the drainage channels by the residents, and better organization of the residents to deal with this, including collaboration between *quarteirões*.
3. Construction of new, larger, drainage channels and levelling of streets – even if some families have to move out.
4. Improved waste collection.
5. Education, awareness building, and eventually control, of residents regarding littering and dumping rubbish in the drainage channels and streets.
6. Filling low areas with rubble and localised earth-moving to enable water to drain Construction of sanitary blocks.
7. Establish a dialogue with *Águas da Região de Maputo* (the water supply company) regarding the leaks from water pipes (**New proposal from the plenary meeting**).

5. Development of detailed proposals

Following the agreement on the basket of proposals, the Climate Planning Committee collected information, directly or indirectly, from the actors responsible for the issues raised in each proposal. Proposals which were found to be promising are now being developed further by the CPC or by other organisations interested in forming partnerships with the community.

The CPC has found that all the issues raised are inter-related, and their solution requires concerted action at all levels – between neighbours, the *quarteirão*, the *bairro*, district and municipality – and by a variety of organisations in the community and in the public and private sectors.

5.1. Project for community environmental education (including climate change, correct use of water and correct treatment of domestic waste) and community mobilisation for cleaning the drain

A project of environmental education and community mobilisation is being designed by the CPC for presentation to FUNAB and other potential partners during July 2013.

The project is intended to provide a foundation for the development of a community organisation eligible to provide local environmental services for the municipality or other relevant institutions (e.g. the water company, the city health directorate). This community organisation could eventually become an association, a cooperative or a micro-enterprise, depending on the legal and other advantages of each of these forms of organisation.

The project consists of the following activities:

- Training of the CPC members and volunteer activists from other *quarteirões* as trainers in environmental awareness. Training services could be provided by the National Directorate of Environmental Promotion (MICOA) or the Department of Environmental Management of Maputo Municipality.
- Regular talks (to be given by the CPC and the other trained activists) on environmental topics

at local schools, public meeting places, local associations, etc. Subjects to be covered include: climate change, environmental health, domestic waste management, and domestic water management.

- Showing of videos on environmental topics in schools, public meeting places etc.
- Capacity building of local theatre groups, development and performance of plays on environmental topics in schools and public meeting places.
- Following some awareness-building, mobilisation of community members in various *quarteirões* for regular cleaning of the drainage channel; provision of cleaning materials and protective clothing and equipment, and food (milk and a snack) for community members involved.

The duration and cost of the project have not yet been determined.

The CPC will undertake a STEPS analysis of this proposal prior to submitting it to FUNAB and other potential partners.

5.2. Project for separation and recycling of domestic waste

The two existing skips in the *bairro* for deposit of domestic waste are quite inadequate for a population of 26.179. The skips cause numerous environmental problems and complaints from surrounding residents and there are no suitable locations for additional containers.

When the skips are full, the primary waste collection service (run by a micro-enterprise from a neighbouring *bairro*) does not collect household waste as there is nowhere to deposit it. In this situation, there is a great risk of wilful dumping of waste in the streets and the drains, increasing the risk of flooding. It is therefore essential to reduce the amount of waste that has to go into the skips.

In response to this, the CPC held a meeting with AMOR– the Mozambican Recycling Association. As a result, a pilot project for separation and recycling of

domestic waste is being prepared by RIXO – Riqueza do Lixo - a group of young people linked to AMOR

waste would be made into compost at the ecopoint. Studies will be carried out into the viability of making brickettes as cooking fuel from waste paper and remnants of charcoal, and of making cement blocks using broken glass as aggregate.

In brief, the project consists of establishing a centre ('ecopoint') within the *bairro* for separation of waste and recycling of certain types of waste. (composting and making charcoal brickettes). The ecopoint would be run by local residents and would purchase recyclable waste from residents at a symbolic price. Metal and plastic waste would be sold on to appropriate purchasers, of which there are several in Maputo. Organic

Money raised from the sale of plastic and metal waste would be used to create an environmental fund for the *bairro*, to be managed by a community association and used to finance environmental management activities such as cleaning of drains.

SOCIAL	<ul style="list-style-type: none"> • All social groups will benefit from a clean bairro • Those who survive now by waste picking and selling for recycling will gain because they will be able to sell locally and will not have to pay for transport, but they may suffer as their market share will be reduced. • The project will create employment at the ecopoint and the composting plant • The success of the project will depend on awareness building and education of the community (who will do this? See politico-institutional below)
TECHNICAL -FINANCIAL	<ul style="list-style-type: none"> • The CPC has already started looking for a site for the ecopoint and composting plant. The best option would be the vacant land in the hands of SASNIC (S African). Advantages: <ul style="list-style-type: none"> √ close to families in the bairro (but not too close) √ large enough to accommodate the composting plant √ good security (against possible theft of valuable waste) √ close to Amandla's "office" √ good access for vehicles It is also becoming a dumping ground for waste, and this must be stopped. There are good prospects of successful negotiations with the owner/title holder. • The RIXO project will fund all the equipment, materials and other investments needed to start the project (they are looking for funding) • RIXO will provide training for workers • RIXO will assist in finding suitable buyers and negotiating contracts for sale of recyclable waste.
ENVIRONMENTAL	<ul style="list-style-type: none"> • The aim of the project is to substantially improve the environment of the bairro. • Beyond the bairro, it will help reduce the amount of waste in the city which has to go to the dump/future landfill.
POLITICO- INSTITUTIONAL	<ul style="list-style-type: none"> • The project is in line with municipal policies to promote recycling. However, current practice of the municipality is to pay both primary and secondary waste collection contractor according to volume of waste collected, which goes against waste separation at household/local level . This project should significantly reduce the volume of waste that has to be collected by municipal contractors and may therefore be opposed by these contractors. It is therefore imperative that the municipality is involved in detailed design of the project. One outcome could be a change in the basis of contractors' payments. • CPC/Associação AMANDLA will manage ecopoints and composting plant

<p>POLITICO- INSTITUTIONAL</p>	<ul style="list-style-type: none"> • (CPC/ Associação AMANDLA will also manage cleaning of drainage channel(s)) • Other institutions/actors involved: <ul style="list-style-type: none"> √ Municipality – Directorate of Hygiene (must approve project?) √ RIXO –AMOR √ FUNAB (support and possible funding?) √ Micro-enterprise which collects waste in the bairro √ Waste buyers √ SASNIC (land and maybe other support) √ Other firms based in the bairro (ProCampo, Gazebra, Padaria, etc. – possible support) √ DNPA-MICOA (could provide training in awareness-building). • Who will represent the community in managing the Environmental Fund to be set up using part of receipts from sale of waste? • CPC foresees possible blocking of project by the current Bairro Secretary. They will try to create good relations with him, but think that he is coming to the end of his mandate at the end of 2013.
<p>SUSTAINABILITY</p>	<ul style="list-style-type: none"> • After a pilot in 3 quarteirões, it is intended that the RIXO Projecto will become a permanent activity of the CPC/Associação AMANDLA • The aim is to achieve financial self-sufficiency in order to guarantee sustainability (further analysis is needed, first by Judieta and then through the pilot experience) • Community awareness-building and education are key to sustainability.

Figure 1. Chamanculo 15Q



Figure 2. Chamanculo 15Q



The CPC has carried out a STEPS analysis of this project, with the following results:

The CPC has identified appropriate land for the ecopoint and associated activities and the land concessionary has agreed in principle to making it available. RIXO has requested start-up funding from FUNAB and discussions are in progress regarding the institutional arrangements for the project and the budget for a pilot project covering 100 volunteer households in Quarteirão 16A and adjoining *quarteirões*.

5.3. Rehabilitation of the existing drainage channel and construction of new, larger drainage channels.

These two proposals are the responsibility of the municipality. The CPC understands from the Chamanculo C integrated Urban Upgrading Project team that one new drainage channel will be built as part of this project. The CPC will seek to consolidate its relationship with the Upgrading Project team with a view to ensuring wide community participation in the planning of the new drainage channel.

5.4. Levelling of streets and alleyways so that the water can drain away

The elimination of holes and undulations in the streets and alleyways will assist the drainage of water. It is pro-

posed to mobilize residents to work together to redistribute the soil and fill in holes as necessary in minor roads and alleyways. This work can be done by the community using mainly local resources. However, some equipment and materials will be needed and the CPC will prepare a budget and identify local sources of funding.

5.5. Establishment of a dialogue with the water company regarding leaking pipes

The CPC has contacted the District office of Águas da Região de Maputo with a view to establishing a permanent dialogue on maintenance of the water supply network and leaks in the network and in private connections.

5.6. Construction of toilet blocks and improved latrines

The CPC (via Associação AMANDLA) has contacted the 'Water and Sanitation for the Urban Poor' Project (WSUP) being implemented by Care. WSUP includes the construction of toilet blocks for some households who live in yards shared by many houses. It is understood that none of the households/ yards in Quarteirão 16A meets the criteria for construction of a toilet block, but some houses/ yards may be eligible for construction of improved latrines by WSUP. The CPC will seek further information on the criteria and terms and conditions for building improved latrines.

Figure 3. Chamanculo 16A



Figure 4. Chamanculo 16A





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