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EMERGENCY RESPONSE TO FLOOD VICTIMS IN MOZAMBIQUE

FINAL REPORT

PROGRAMME FUNDED BY USAID

9TH MARCH – 8TH JUNE 2001

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GENERAL INFORMATION

Name of humanitarian organisation :	***Action contre la Faim***
Contract number :	**Grant n° 656-G-00-01-00024-00**
Country of operation :	**Mozambique**
Disaster :	**Floods**
Title of operation :	**Emergency response to flood victims in Mozambique**
Start-up date :	**March 9th, 2001**
Duration :	**3 months**
Amount requested :	**238.725 US $**

INTRODUCTION

Context of intervention

In the middle of January 2001, heavy rains in the central part of Mozambique lead to the rising of several rivers such as Rios Zambeze, Pungue, Chinde and their tributaries. Further heavy rains in neighbouring countries also lead to important releases of water from the dams, forcing then mozambican authorities to open the Cahora Bassa dam in Tete province.

In these conditions, the rivers, especially Rio Zambeze, quickly burst their banks, destroying farm lands and affecting several thousand of people living along the river, especially in the provinces of Manica, Tete, Zambezia and Sofala. Further water releases from Cahora Bassa dam in February made worse the situation, increasing the flow of the river Zambeze from 3.500 m^3/s to 7.500 m^3/s during the month of February (*cf.* Appendix I).

Close to half a million people in Mozambique were affected by these devastating floods in the basins of the Zambeze, Pungue and Chinde rivers and their tributaries. Approximately 210.000 people were displaced from their houses in about sixty accommodation centres (AC), situated in the upper lands of the districts. Such a situation is explained by the topographical and hydrological situation of the country : indeed, Mozambique is characterised by a large coastal plain where is living most of the population and in which are flowing nine rivers generally springing up in the neighbouring countries.

In Sofala province, these are mainly Chemba, Caia, Marromeu, Ndondo and Nhamatanda districts that have been the most severely affected (*cf.* Appendix II). Thus, the highest water table was registered in Caia district where it reached 8,14 m beginning of March, that is to say 2,14 m more than Caia alert level (*cf.* graph 1). In Caia and Chemba districts, around 22.700 people had left their homes at the end of February.

The scope of population displacement in Caia and Marromeu districts was quite similar, in so far as 30.000 and 35.000 people were respectively registered as displaced in the accommodation centre at the end of March 2001. Although Chemba was affected in a smaller extent in comparison with other districts, the floods lead to the displacement of more than 5.000 people in this district. By the end of March 2001, a total of around 70.000 displaced people were displaced in eighteen accommodation centres in the three northern districts of Sofala province affected by the floods (*cf.* table 1).
At the agricultural level, around 40.000 families were stricken by the floods in Sofala province, leading to the loss of 40.000 hectares of cultivated lands, that is to say 15 % of the total arable land of the province. There is no statistic available regarding animal husbandry, but most of the affected families usually report that they lost their animals either during the flooding, or after the flooding due to disease outbreak.

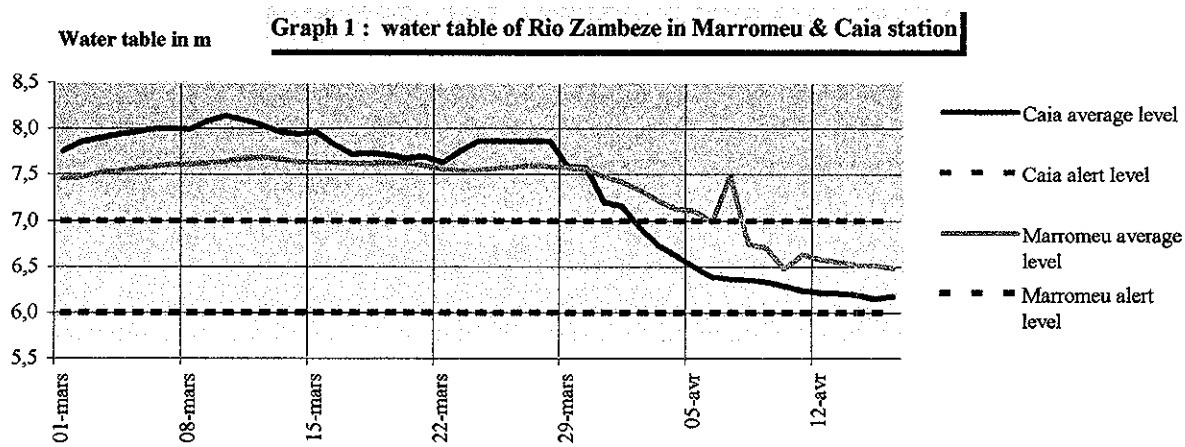

Table 1 : General situation of displaced population in the northern part of Sofala province[1]

District		Accommodation centre	Regulado of origin	Number of people as of 31.03.01
Caia	1	Amilcar Cabral	Njezera, Marra, Chipuazo, Chandimba, Tanga-Tanga	9.953
	2	Nhambalo	Camba	6.256
	3	Somboleiro	Somboleiro	2.694
	4	Sombe	Sombe, Phaza	425
	5	Sachombe[2]	Sachombe	271
	6	Zangua	Zinbawe, Gumasanzi	6.297
	7	Nhamioio	Muanalavu	2.471
	8	25 de Setembro	Muanalavu	962
	9	Magagade	Muanalavu, Murema	2.229
	10	Tchecha	Muanalavu, Murema	3.167
	Total			**34.725**
Chemba	11	Chemba	Chemba sede	100
	12	Macanga	Nsusso	802
	13	Ndango	Ndango	969
	14	Chimbue	Chimbue	1.637
	15	Sinhambuze	Sinhambuze	1.747
	Total			**5.255**
Marromeu	16	Daud	Nhaminaze, Mazungo, Chilolo, Mulico, Massunguza, Khwirine, Chueza, Luabo	6.387
	17	Chupanga	Luabo, Marromeu, Cocorico, Milha 12, Cundue, Nhamula, Bawaze	14.236
	18	Nensa	Bawaze, Nensa, Marromeu	9.385
	Total			**30.008**
Total number of displaced people in the northern Sofala				**69.988**

Facing this situation, the INGC[3], the international NGOs and the United Nations quickly reacted and coordinated their activities, in order to assist the victims of the flooding. In September 2000, the Southern African Regional Climate Outlook was already alerting the INGC and the UN that rainfall would be higher than the normal in the central region of Mozambique. This first warning notably lead to increasing awareness among the population and pre-positioning of food, as well as water and sanitation supplies in the central provinces of the country.

[1] Source : WFP food distribution reports.
[2] People displaced in Sachombe centre moved to Nhambalo in April 2001.
[3] *Instituto Nacional de Gestao de Calamidades* : this is the coordination group devoted to the planification of emergency and rehabilitation activities ; it works under the Ministry of Foreign Affairs and Cooperation.

Action contre la faim response : an integrated approach to face the emergency

When the floods occurred in Chemba, Caia and Marromeu districts, *Action contre la faim*, Cruz Vermelha de Moçambique, World Vision, Food for Hungry International and Oxfam were the main implementing organisations in the field, providing shelters, food aid, water and sanitation facilities to 70.000 people displaced in eighteen accommodation centres.

At the beginning of the emergency, the minimum water and sanitation requirements to serve a high density of population were not fulfilled in the accommodation centres, in so far all the basic water and sanitation infrastructures were missing : insufficient provision of potable water, no latrine, no shower, no disposal pit, *etc.* Waterborne diseases are finding an ideal breeding ground amongst vulnerable families, poor sanitation and precarious hygiene, while the prevalence of diarrhoea is chronically high in the area. Poor sanitation and bad hygienic practices are also responsible for regular outbreaks of cholera which is endemic in the area. As a result, several epidemics of cholera broke out in the areas affected by the floods over the last three years ; the last one broke out at the beginning of June 2001 in the district centre of Chemba and caused the death of 15 people out of 199 cases by the 15th of July 2001, in spite of the coordinated intervention of *Médecins sans frontières* and *Action contre la faim.*

In order to decrease the risk of waterborne diseases and prevent the outbreak of cholera epidemics in accommodation centres, *Action contre la faim* - under the support of USAID - early provided chlorinated water (notably through water trucking) in four accommodation centres of Caia district, and mobilised a team of workers to build the required sanitation facilities (latrines and showers mainly). On the other hand, *Action contre la faim* also laid on educators in the accommodation centres, in charge of increasing awareness of the population about hygiene and water management.

Outside the accommodation centres and along the Zambezi river, the majority of the water points and latrines was submerged by the water during several weeks, then causing important damages to the pump and to the well itself and increasing the contamination of waters. Hence, in order to tackle both issues - that is the provision of potable water and the reduction of waterborne diseases - *Action contre la faim* with the support of ECHO set up a programme of water point rehabilitation in the Zambezi valley, that plans to rehabilitate 80 water points by the end of August 2001.

Besides water and sanitation activities, *Action contre la faim* provided food aid, in collaboration with WFP, to 20.000 people living in four accommodation centres of Caia (Amilcar Cabral, Nhambalo, Somboleiro and Sombe) and to 5.300 people living in the five accommodation centres of Chemba[4]. At the beginning of June, free food assistance was still going on in both districts and is planned to finish by the end of September. It is worth mentioning that food-for-work activities are planned to take over, up to the end of the year.

At last, *Action contre la faim* distributed around 3.000 domestic kits[5] in the accommodation centres, in order to recapitalise the families affected by the floods and ensure their recovery.

Finally, this integrated response implemented by *Action contre la faim* in collaboration with the other partners limited the impact of the floods and is giving to displaced people the opportunity to come back to their homes, that is to say to move from a relief scheme to a rehabilitation strategy. This report aims at describing the progress of the activities implemented by *Action contre la faim* during the funded period, that is to say from the 9th March up to the 8th June.

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[4] *Action contre la faim* started the distribution in the middle of March in Caia and beginning of April in Chemba. *World Vision* was responsible for food aid in the other camps.

[5] One kit was consisting of one plastic bucket, one cooking set, two jerry cans and one blanket per person.

Objective of the operation

The objective of the operation is to decrease the risk of waterborne plus other diseases and prevent the population against cholera in accommodation centres .

This general goal is broken down into four specific objectives :

- The emergency temporary water supply ;
- The distribution of recipients for water transport and storage ;
- The provision of sanitation facilities ;
- Hygiene awareness.

Obtained results and activities undertaken

a. Emergency temporary water supply

Action contre la faim ensured water supply to 26.000 people (around 5.200 families) displaced in four accommodation centres situated in the south of Caia district, while *World Vision* supplied water in the northern centres of Caia to around 8.800 displaced people.

The water supply was conducted in the camps through three main activities (*cf.* figure 1) :

1. **The water trucking in three centres (Amilcar Cabral, Zangua and Nhambalo)**
   Three trucks were daily pumping 160 to 190 m3 of water in Caia water station and were providing water in the three accommodation centres above mentioned. This technique allowed to cover around 70 % of the water needs in these accommodation centres (*cf.* figure 1).

2. **The diesel pumping in Amilcar Cabral & Somboleiro centres**
   The water was pumped with a motor pump from a colonial well and a lagoon respectively in Amilcar and Somboleiro accommodation centres ; in Amilcar Cabral, the water was brought and chlorinated into a bladder, while the water was first floculated in a water treatment station before being stored in Somboleiro.

3. **The manual pumping in Amilcar Cabral, Nhambalo and Somboleiro accommodation centres**
   Action contre la faim rehabilitated several water pumps situated either in the accommodation centres or outside in proximity to the centres. Indeed, although these pumps were not damaged by the floods, *Action contre la faim* decided to rehabilitate these water points, in order to improve the capacity of potable water supply inside the camps and prevent the population from the higher risks of waterborne diseases due to the concentration of population. The water pumped manually by the displaced population represent around 20 % of the water needs.

Figure 1 : distribution of water supply techniques in Action contre la faim accommodation centres - Caia district

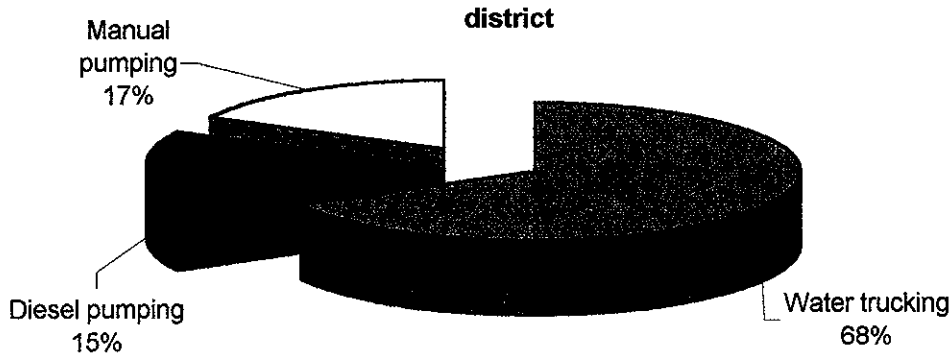
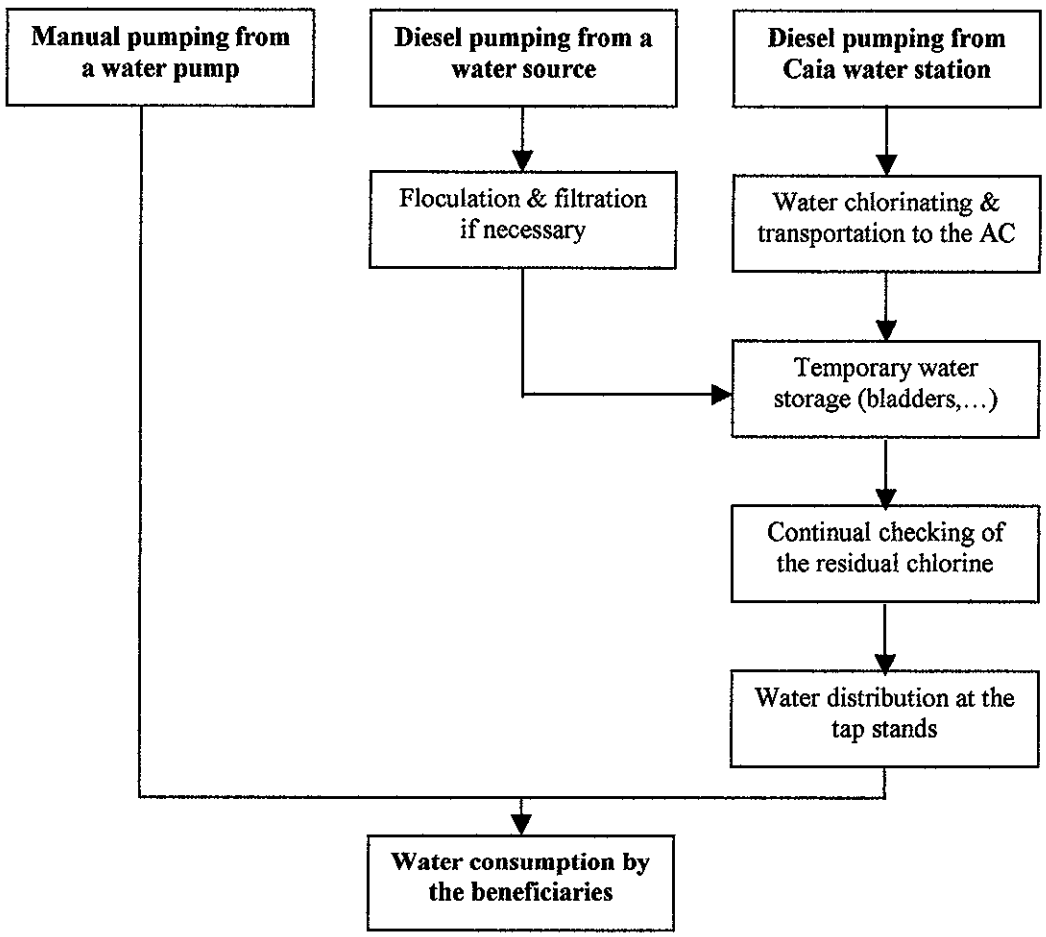


Figure 2 aims at describing the water supply itinerary, from the water source to the beneficiary consumer. All these activities were implemented by five *Action contre la faim* water and sanitation teams who were responsible for the installation and the upkeep of all the basic infrastructures (motor pumps, bladders, tank, pipes, tap stands, chlorinating, *etc.*). Two hydrologists expatriates ensured the general coordination of the activities.

Each team was consisting of four to five workers and were under the supervision of five foremen. All the foremen have a long experience of work, either with *Action contre la faim*, or with private companies. From the middle of May, once the water provision system run in properly, the five teams were affected to the rehabilitation of water points in Caia district, while one foreman was appointed to ensure the supervision of the daily provision in the accommodation centres.

Figure 2 : itinerary of the water provision from the water source to the consumer



According to the specificities of the accommodation centres, *Action contre la faim* teams implemented water supply techniques adapted to the environment of the accommodation centre. In the case of Zangua centre for instance, the water supply was ensured through a gravity system with one Oxfam tank of 45 m^3 capacity (installed on the summit place of the centre and supplied though water trucking) and 800 m of pipes conducting water to seven tap stands situated below. In Amilcar Cabral, *Action contre la faim* teams took advantage of the flooding water to install an Upflow Clarifier Oxfam : thus, from April to mid-May, the water was pumped at a rate of 10 m^3 / h in the river in spate and treated directly in the Upflow Clarifier with alumina sulphate, then allowing to cover all the water needs of the population ; however, due to the receding of waters, *Action contre la faim* had to take down this installation in the middle of May.

Finally, the quantities of water daily provided through water trucking, together with the water provided from the neighbouring water pumps, were able to cover the water needs of the displaced population. Indeed, taking into account the minimum standards for daily water needs (8 litres / person / day in emergency period), *Action contre la faim* covered 115 to 130 % of the daily water needs (*cf.* table 2).

Table 2 : Water coverage in the accommodations centres

Accommodation centre (AC)	Minimum daily water needs m^3	Daily water supply			Water coverage in %
		Water trucking m^3	Diesel pumping m^3	Manual pumping m^3	
Amilcar Cabral (10.300)	85	70 to 80	20	10	120 to 130 %
Zangua (6.300)	50	60 to 70	0	0	120 to 140 %
Nhambalo (5.100)	41	30 to 40	0	20	120 to 145 %
Somboleiro (4.400)	35	0	20	15	140 to 170 %
Four AC (25.800)	**211**	**160 to 190**	**40**	**45**	**115 to 130 %**

At last, due to difficulty in access[6], *Action contre la faim* was not able to implement water provision at the beginning of the emergency to the 5.300 people displaced in Chemba district. According to the information collected, displaced population managed to fetch water from the water pumps situated in the surroundings of the accommodation centres. It is worth mentioning that the majority of the displaced population already returned to their homes in Chemba district at the beginning of June.

b. Distribution of recipients for water transport and water storage

Most of the families affected by the floods lost all or part of their assets during the flooding ; sometimes, the families voluntarily sold their own assets to buy some food or cover their basic needs. Moreover, the majority of the population does not have any proper container to transport and store water, what constitutes an ideal breeding ground for waterborne diseases. Therefore, in the double objective of preventing the outbreak of waterborne diseases on the one hand and recapitalising the families affected by the floods on the other hand, *Action contre la faim* proposed to distribute 3.000 domestic kits in Caia and Chemba districts. Each kit was consisted of the following articles :

- 1 plastic bucket with lid and wire handle (20 L capacity) ;
- 1 cooking set (including 2 enamel pots with handles 20 & 22 cm, 5 enamel mugs, 5 enamel plates 22 cm, 5 stainless steel spoons and 1 kitchen knife) ;
- 2 jerry cans (one of 15 L capacity ; the second one of 20 L capacity) ;
- 1 blanket per person, in the limit of 10 blankets per family.

The jerry cans were bought in France with USAID funds, while the other items were bought with ECHO funds. Table 3 gives an overview of this operation. Regarding the targeting of the centres, *Action contre la faim* tried to coordinate its distribution with *World Vision* (its main partner in the district of Caia), in order to avoid to distribute twice to the same beneficiaries.

Table 3 : Quantities of domestic kits distributed in Caia, Chemba, Marromeu and Cheringoma districts

District	Accommodation centre	Regulado of origin	Nb of beneficiary families	Date of distribution
Caia	Nhambalo	Camba	1.031	01 & 02 of June
Chemba	Sinhambuza	Sinhambuza	395	11 of April
	Chimbue	Chimbue	328	11 of April
	Ndango	Ndango	179	06 of June
	Chemba	Chemba sede	29	09 of June
Marromeu		Nponda	475	31 of May
Cheringoma		Nangue	317	30 of May
Total number of beneficiary families			**2.754**	

[6] The roads were cut by the floods ; the helicopter was the only mean of transportation to Chemba accommodation centres during March and April.

It is worth underlining that 792 kits were distributed in the *regulados* of Nponda and Nangue, that is to say that 25 % of the kits were distributed outside Caia and Chemba districts. Indeed, both regulados of Nponda and Nangue have been affected by flooding and are bordering Caia district. In the case of Nponda, people were not displaced in accommodation centres[7], so that they did not benefit from any humanitarian assistance. In the case of Nangue regulado, they received only a food distribution in March from WFP, but did not receive any other kind of assistance later on. In these conditions, *Action contre la faim* decided to distribute them domestic kits, in order to prevent the outbreak of waterborne diseases and improve their food economy.

A stock inventory done at the end of this distribution proved that only 123 kits were remaining, so that 123 kitchen kits were missing : this deficit is mainly due to the first distributions conducted in April, in so far as these operations were achieved by helicopter and no *Action contre la faim* logistician was able to monitor the distribution. A new round of field assessments will allow to identify the beneficiary population who will receive the 123 remaining kits.

c. Provision of sanitation facilities

The priority activity in terms of sanitation was the construction of latrines in order to avoid the contamination of the water sources and the outbreak of waterborne diseases. By the 31st of May, 225 latrines were running in the accommodation centres of Amilcar Cabral, Nhambalo, Tchecha and Sombe (*cf.* table 4). This figure translates into a ratio of one latrine for 85 people, what is matching with the usual standards (1 latrine for 100 to 150 people in emergency phase).

Once again, the good coordination with other partners (especially World Vision for the construction and Unicef for the provision of plastic slabs and plastic sheeting) allowed to quickly cover the sanitation needs in all the centres of the district.

Table 4 : sanitation facilities constructed by Action contre la faim teams

AC	Population	Number of latrines	Population / latrine	Number of showers	Population / shower
A. Cabral	10.300	110	95	31	330
Nhambalo	5.100	83	60	15	340
Tchecha	3.200	22	145	-	-
Sombe	425	10	40	-	-
Total	**19.025**	**225**	**85**	-	-

In Chemba, the difficulties in access prevented *Action contre la faim* teams to supervise the digging of latrines in the accommodation centres. However, a Kulima educator, early affected in the district, was asked to supervise the construction of 45 latrines provided by UNICEF in the five accommodation centres.

The main difficulty met in the construction of the latrines was the low depth of the ground water which lead *Action contre la faim* to build a higher number of latrines with low depth trenches.

Once, the latrines were built, then *Action contre la faim* started the construction of showers in Amilcar Cabral and Nhambalo centres only. Other partners dealt with the construction of showers in the remaining accommodation centres.

With the sanitation subject, it is worth pointing out that *Action contre la faim* implemented activities aiming at curing any outbreak of cholera in the area. First, further to seven suspicion cases of cholera in Sena city, *Action contre la faim* set up a new centre for treatment of cholera (CTC) with all the basic facilities such as pediluves, latrines, showers, bladders, common grave, surrounding fences, *etc.* Moreover, in the already existing Caia CTC, *Action contre la faim* preventively installed a bladder of $15m^3$ capacity and supplied this centre with potable water. However, it turned out that none of these CTC was used during the emergency period, in so far as there was no cholera epidemic. Both CTC are currently under the supervision of the health district staff, who is from then on ready to face any cholera outbreak in the area.

[7] Indeed, it seems that displaced people from Amilcar Cabral (the nearest accommodation centre) refused to Nponda population to settle in the camp, because they were coming from another district.

d. Hygiene awareness

The provision of potable water and sanitation facilities in the camps are necessary conditions to decrease the risk of waterborne diseases but might be insufficient without a work of consciousness-raising and education among the displaced population. This is the reason why *Action contre la faim* decided to have recourse to *Kulima* organisation which is a national-scale grassroots organisation. Both organisation have been collaborating since 1994, especially in Caia and Chemba districts in water and health programmes. Over the years, Kulima staff was trained by *Action contre la faim* teams, so that it is nowadays autonomous in its work. As a result, Kulima took the responsibility of promoting health and hygiene education in Caia and Chemba accommodations centres in April, May and June 2001.

A total of fourteen educators was working in the accommodation centres, under the supervision of two coordinators (one per district) ; five of them were affected to Chemba district (one per centre), while nine were affected to Caia accommodation centres (Amilcar Cabral, Somboleiro, Zangua, Nhambalo, Magagade, Tchecha and Nhamioio).

Education activities are aiming at modifying the population behaviours linked to hygiene, that is to say :

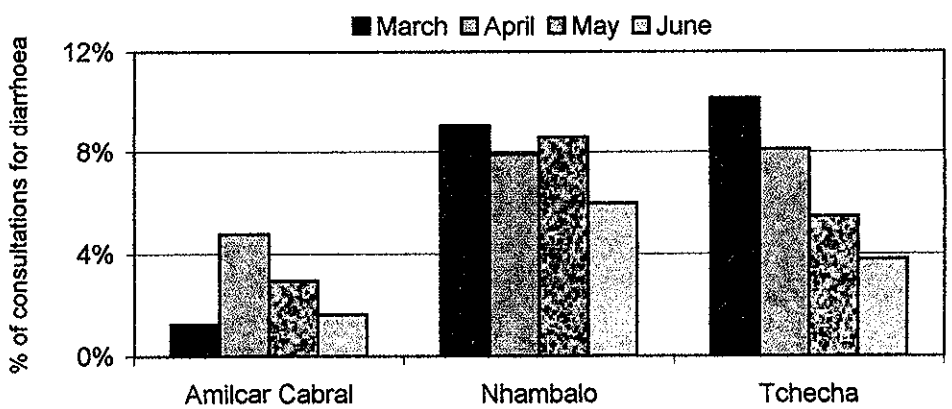
- To guarantee the cleanliness of water (cleanliness of the water point, conservation of water,...) ;
- To improve the cleanliness of the body (hand wash, body wash,...) ;
- To ensure the cleanliness of the environment (use of latrines, conservation of food,...)

All these messages were treated inside the accommodation centres, through four specific themes (diarrhœal diseases, potable water, cholera and hygiene).

Besides these education activities, *Kulima* teams were also in charge of monitoring the use of the chlorofloc[8], as well as ensuring the smooth running of the water points inside the accommodation centres.

As a result of these combined efforts to tackle the sanitation concern, none degradation of the sanitary situation was observed in the accommodation centres. As such, graph 2 shows the evolution of the number of children consultations for diarrhoea from March to June in three accommodation centres where *Action contre la faim* ensured the sanitation : the cases of diarrhoea did not stop going down over the period, except in Nhambalo where the consultations are high and stable. In June 2001, the consultations for diarrhoea was representing less than 6 % of the total number of consultations in the three centres.

Graph 2 : rate of children less than 5 years old consultations for diarrhoea in the accommodation centres



[8] Chlorofloc is a powder product, aiming at the chlorinating and floculating of water.

CONCLUSION

The lessons learned from the 2000 emergency in Mozambique allowed the national authorities and international organisations to answer with efficiency to this humanitarian crisis. As a result, by the end of May 2001, the humanitarian situation was under control, so that rehabilitation activities were already taking over.

However, given that the rio Zambeze remained with high water tables until April (that is to say much longer than during the 2000 floods), displaced people massively stayed in the accommodation centres, especially in Caia and Marromeu districts where figures of accommodated people did not go down at the beginning of June.

Moreover, the authorities are putting forward their wiliness to implement a process of resettlement in the areas prone to the floods, in order to protect the populations against new flooding. However, for lack of means, there is a risk that this process takes more time and, consequently, that the displaced population stay longer in the accommodation centres. It is difficult to estimate how many and how long time displaced people will stay in the accommodation centres within the next months ; only one can remind that the majority of the population displaced last year already left the camps before the end of May 2000[9] and that nobody foresaw that people would stay such a long time this year.

Finally, owing to the later retreat of waters on the one hand and this on-going process of resettlement on the other hand, the impact of the 2001 floods is lasting beyond the emergency phase itself, exposing in the next months the displaced population to a reduced access to potable water and making it more vulnerable to waterborne diseases. In these conditions, *Action contre la faim* has to go on its water and sanitation activities in Caia accommodation centres.

[9] It is impossible to give accurate figures, in so far as Caia administration does not carry out any census and that the situation is quite different from one district to another and from one camp to another ; it is however probable that an average of 20 to 30 % of the displaced population already came back home.

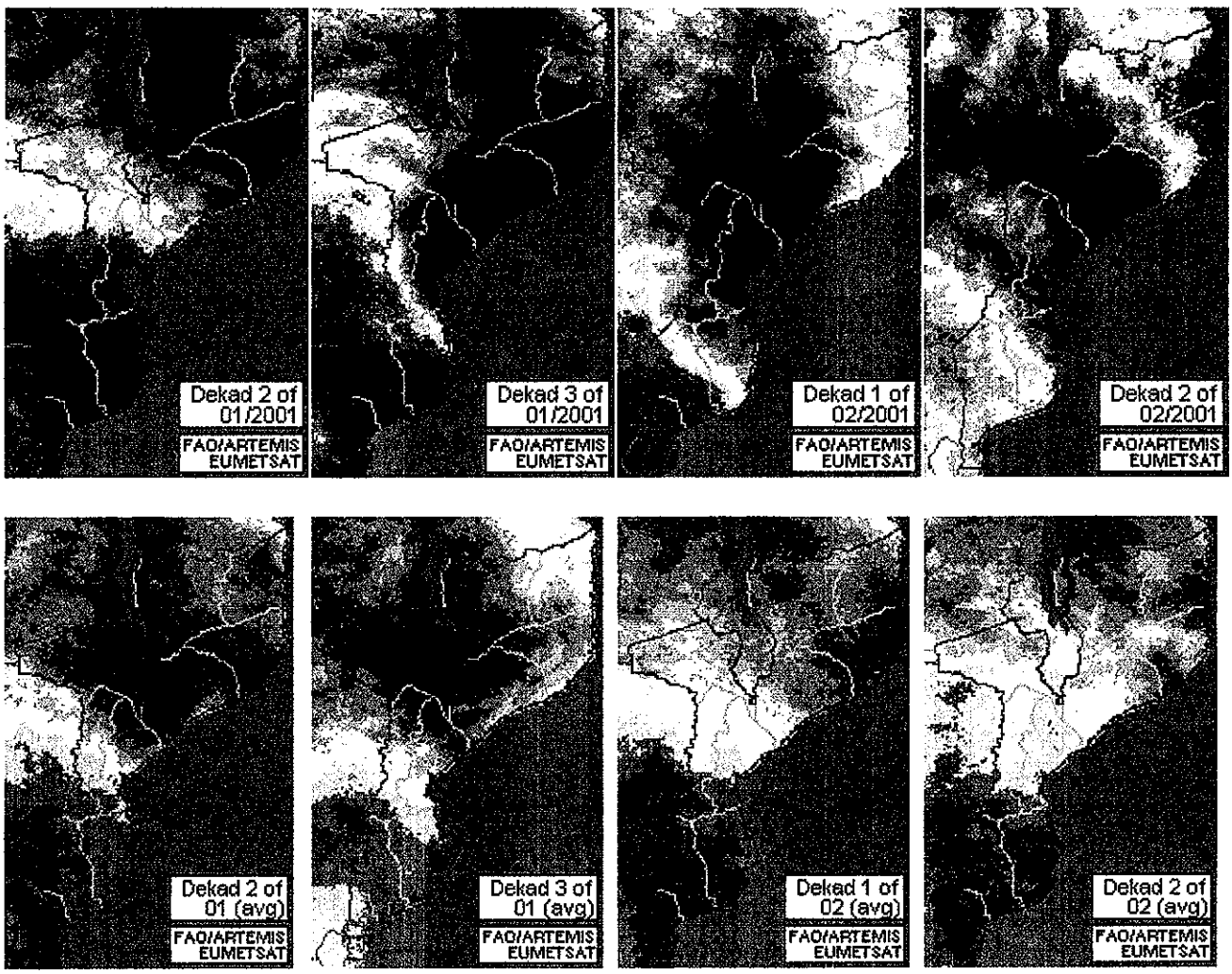
APPENDIX LIST

Appendix I : Cold cloud duration in January & February in Mozambique - Comparison between 2001 and 1989 to 1998 average

Appendix II : Location of the operation – Chemba & Caia districts along the rio Zambeze in Sofala province

Appendix III : Financial report

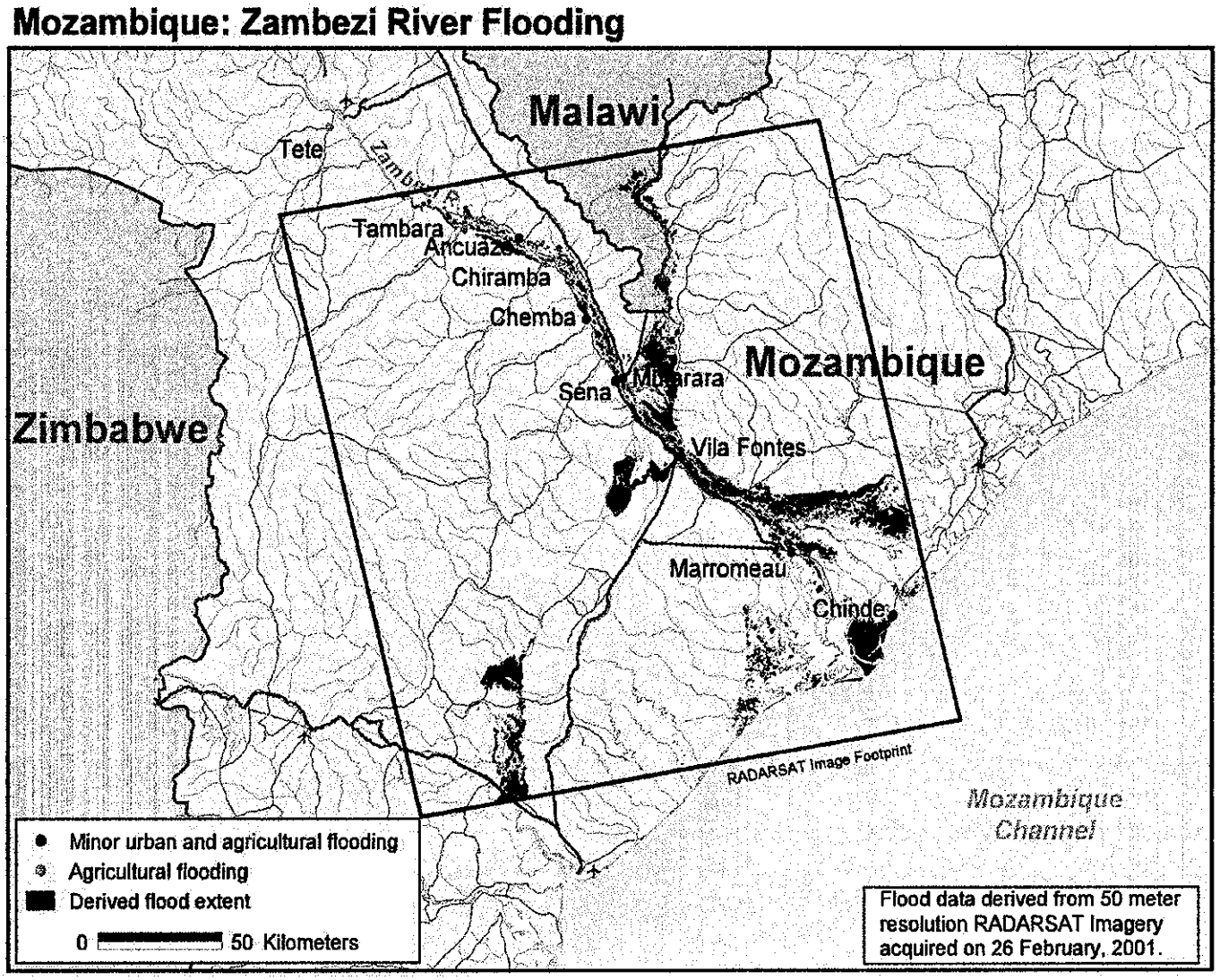
Appendix I : Cold cloud duration in January & February in Mozambique
Comparison between 2001 and 1989 to 1998 average



Cold cloud duration in Mozambique in January and February 2001 (at the top) and comparison with the average cold cloud duration between 1989 and 1998 (at the bottom)

Source : FAO / Artemis Eumetsat

Appendix II : Location of the operation – Chemba & Caia districts along the rio Zambeze in Sofala province



Source *: US Agency for International Development*