

Technical WASH Review in Gonaïves



Haiti, 8 - 19 March 2009

**Commissioned by
The Global WASH Cluster Learning Project**



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With thanks to
Paul (Husband? Son? Brother? Dad?) for his input
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my spouse, Gina, who has unselfishly translated the original document
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Cover photograph: Charcoal on the way to the market in Gonaïves

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1. Executive Summary

The Technical WASH Review of Gonaïves took place in March 2009, facilitated by an independent consultant, commissioned by ACF-UK and funded by UNICEF through the Global WASH Cluster. As part of the Global WASH Cluster Technical Learning Project, the review serves to complement a learning workshop on WASH responses to floods in urban environments and to provide feedback to agencies involved in the review and in the Gonaïves WASH response. The review sheds light on weak and strong points of the WASH emergency response following the August and September hurricanes of 2008, identifies gaps and lessons learned and attempts to reflect upon how this learning in Gonaïves may be applied in other contexts.

It is important to underline that no part of this review could have been achieved without the generous support and guidance of Action Against Hunger, UNICEF, Oxfam-GB, OCHA, CARE, SNEP, MSF, The Mayor's office in Gonaïves, all the other institutions involved, and especially the people in Gonaïves for their bravery, courage and resilience.

Many of the factors affecting emergency WASH response in an urban setting are similar to those found in other emergency contexts and include the importance of strong coordination, the appropriate financial, logistic and human resources capacities, and a good understanding of the milieu. Population density, administrative coverage and availability of resources (human, technical) differ from urban to rural settings and have an impact on distribution methodologies, coordination mechanisms and monitoring and evaluation schemes. A series of lessons learned and recommendations are provided in this review. The following provides a summary including major challenges and gaps in the WASH response in Gonaïves.

Major challenges to effective WASH response in Gonaïves include;

- Predictability of flooding events
- Vulnerability of access roads
- Weak state institutions
- Respect and enforcement of existing urbanisation plans for Gonaïves
- Strained water supply and drainage provisions
- Community education and awareness about flooding
- Donor funding

Best practices and lessons learned identified through the review are;

- Coordination through the WASH Cluster has been important for standards and policy setting, monitoring, reinforcing NGO response capacity (including logistics, training, stockpiles, etc.), operational support (including assessments, emergency preparedness, access to technical expertise and resource mobilisation).
- Emergency dumping sites are uninhabited, away from population centers and reinforce to a certain extent the access roads to the city's harbour
- GPS-enabled reconnaissance teams for flood hazard, water supply and sanitary conditions mapping greatly assisted relief efforts
- Coordination is essential – through the WASH cluster or other coordination mechanisms
- Importance of long term promotion of POU technologies
- Importance of flood proofing critical infrastructure
- Water trucking is very expensive and not sustainable

- High population density can be leveraged to facilitate distribution operations (water, food, NFI)

Gaps in the WASH response identified through the review include;

- Assistance to women's groups or organisations
- Exit or transition strategies
- Capacity of state institutions to respond
- NGO/beneficiary relations: transparency, communications, feedback
- Lack of adequate emergency disaster preparedness and education

A number of recommendations have been proposed to address the issues highlighted in the review

Water:

- Continued training, technical assistance and funding to SNEP and/or other state institutions responsible for water supply and the maintenance of drainage structures
- Hardened reservoirs and water distribution points including wells
- Agricultural water points transformable into potable water points with a pump and treatment
- Use of water candles and other water treatment or filtration methods at the household level or POU

Sanitation and Hygiene Promotion:

- Establishment and implementation of short, medium and long term sanitation plans
- Consideration of excreta disposal options during a flood, including considering alternatives to latrines
- Better identification of vulnerable areas and specific targeting of vulnerable populations for appropriate education and preparedness (as concerns sanitation)

Cross-cutting and other issues:

- Improved water management and environmental protection including maintenance of canals and drainage
- Better dumping fields and waste management
- Improvement of NGO/beneficiary relations: transparency, communications, feedback
- Community education and awareness about flooding
- Pre-positioning essential supplies at designated shelters
- Hardened access roads to permit rapid response
- More attention to gender issues and enhanced assistance to women's groups
- Nomination of a National Watsan coordinator for emergency or disaster response
- GPS-enabled reconnaissance teams
- Continued development / reinforcement of coordination mechanisms: WASH cluster and other mechanisms

Further detail on each of these recommendations is contained within the report.

For further information about the Global WASH Cluster Learning Project or if you would like to receive a copy of our lessons learned papers and technical briefings on urban and rural floods, please contact Louise Boughen, ACF-UK (l.boughen@aahuk.org)

2. Background

2.1 The Context

The disastrous floods of mid-September 2004 caused by Tropical Storm Jeanne resulted in over 2,000 deaths and affected an estimated 300,000 people through loss of homes, schools, health facilities, roads, crops, and livelihoods. Although loss of life and property damage was most visible in the city of Gonaïves, the surrounding areas of Ennery, Port-de-Paix and Anse Rouge were also affected

Again in late 2008, the passage of four powerful hurricanes in quick succession resulted in the deaths of hundreds and caused millions of dollars worth of damage to crops and livestock. Homes, buildings, and state infrastructures such as roads and drainage provisions were extensively damaged. These hurricanes were named: Fay (16-17 Aug.), Gustave (27 Aug.), Hanna (3 Sept.) and Ike (7-8 Sept.). Once again, Gonaïves was particularly hard hit with more than half of the city submerged in deep mud and people stranded on their tin roofs. The only hospital was considered destroyed. The city's access roads were cut by massive landslides to the north and south which would greatly hamper relief efforts. Nearly 70,000 people sought relief in temporary shelters according to local Civil Protection. Over 800 people died in Haiti with most of the casualties coming from this destroyed city.

Initial international response the first week of September came from US Coast Guard airlifts of USAID donations of food, water, hygiene kits and shelter items. At the same time, the deployment by the Haitian Ministry of Public Works (TPTC) of heavy bulldozers and trucks started to clear access routes in order to gain entry into the city. Slowly, assistance started to come in. For lack of other alternatives, deliveries of bottled water from Port-au-Prince started to arrive and water bladders, mobile health clinics, food distribution points and emergency shelters were set-up. Hygiene kits and water purification tablets (Aquatabs™) were handed out and portable water filtration kits installed. Relief efforts could now focus on securing Gonaïves' water supply (mostly through well rehabilitation since this constitutes more than 75% of available supply, but also repair of two piped supply networks), clearing mud and debris from streets and repairing drainage structures.

2.2 The Technical Learning Project

The Technical WASH Review in Gonaïves forms part of the Global WASH Cluster's Technical Learning Project, led by ACF-UK. The Project aims to build understanding and consensus about common technical challenges, lessons learned and good practices in WASH emergency response to rural and urban floods (identified as priority areas for technical learning in the sector). Activities include desk research, independent technical reviews and multi-agency learning workshops in Gonaïves, Haiti, and Bihar, India. Outputs of the Project include:

- Context-specific reports from the WASH Technical Reviews
- Lessons learned papers on WASH response to urban and rural floods
- Technical Briefings for WASH response to urban and rural floods

2.3 Purposes of the Review

The review aims to better understand common WASH technical challenges associated with response to floods in urban contexts and to identify good practices and lessons learned.

The purposes of the Review are to:

- Learn about the WASH response to a flooding emergency in Haiti
- Identify both good and bad lessons learned in the WASH technical response in Haiti
- Identify good practices and approaches
- Identify areas requiring further investigation because they were not done, or not done well
- To present the findings of the case study review at a workshop in Port-au-Prince on 16th March 2009.

2.4 Scope of the Review

This review will not attempt to detail the exact status of Gonaïves' water and sanitation provisions. There have been a number of reports on this subject of which one is included in annex III. Rather, this review will present a summary of the flooding that happened in Gonaïves and outline the emergency response in such a way as to achieve its stated purposes. The review comes approximately 6 months after the disaster and the parameters are as follows:

Start: 8th March 2009

End: 19th March 2009 (including a field trip to Gonaïves from the 9th to the 12th slideshow presentation on the 16th and participation in a workshop from the 16th through the 18th)

Location: Haïti (Gonaïves & Port-au-Prince)

Language: The workshop presentation, including response to questions and discussion period, was presented in English. The review, including interviews, was carried out in French and Creole. This report constitutes the Technical WASH Review which is presented in English and French copies.

3. Methodology and Process of the Review

3.1 Interviews and Documentary Review

A substantial number of documents deemed pertinent to this review were consulted, the most important of which are listed in section 7 Annexes and websites.

Interviews were conducted with international organizations still on the ground six months after the tragic events of the 2008 hurricane season. Additional interviews were conducted with national representatives of the Gonaïves Mayor's Office, Service national d'eau potable (SNEP), Cellule d'eau potable et assainissement, Ministry of Public Works Transportation and Communication/TPTC, Direction de la protection civile, Ministry of Agriculture, individuals affected by the flood in Gonaïves and individuals not affected by the flood in Port-au-Prince.

Questions used (and detailed in annex VIII) were formulated in such a way as to bring out information concerning:

- a. Information about the flood
- b. Response planning and implementation
- c. Review of response planning
- d. Emergency response operations
- e. Perception of disaster victims
- f. Perception of agency field staff

Table 1 - Interview Schedule

Place	Organization	Representative
Gonaïves	General Cluster Meeting	Meeting attendants
Gonaïves	CARE	Audrée Montpetit, Head of Field Office
Gonaïves	UNICEF	Julien Atchade, CANADEM/WASH UNICEF
Gonaïves	Oxfam GB	Representatives
Gonaïves	OCHA	Jean Marie Duval, Representative
Gonaïves	TPTC	Jacques Thomas, Haitian Civil Protection
Gonaïves	ACF	Representatives
Gonaïves	Gonaïves Mayor's office	Jean Francois Adolph, Deputy Mayor
Gonaïves	SNEP	Rony Gelelus, Administrator Chief technician and others
Gonaïves	Gonaïves WASH Cluster Meeting	Meeting attendants
Gonaïves	Association des Femmes Vaillantes de Gonaïves	Madame Mazeau, Coordinator
Gonaïves	Coordination des femmes unies pour le développement du Haut Artibonite	Marie Nausta Paur, Coordinator
Gonaïves	Ministry of Agriculture	Thomas Jacques, Director Gonaïves Watershed
P-au-P	OCHA	Manuela Gonzales, Director
P-au-P	TPTC Water Cell	Alban Nouvellon, Director

3.2 Field visits and Review Process

Field visits in Gonaïves to selected sites were conducted during routine outings to various NGO offices and Haitian government institutions. Flooding victims were questioned when available and notes taken.

To facilitate the review of emergency response effectiveness to flood-ravaged Gonaïves, overall response was broken-down into seven criteria. Though the choice of criteria may be debatable they are expected to be very helpful in achieving the objectives of this review. These criteria are as follow:

- Initial WASH assessment and early relief
- Local procurement and logistics capacities as concern WASH emergency response
- Decision-making and management structure
- WASH emergency response in urban contexts
- Coordination and collaboration
- Monitoring, on-going review and learning
- Overall performance – Quality and impact

Benchmarks were then established in reference to the status of each criterion immediately before the emergency or other appropriate reference with evaluative columns emphasizing weak and strong points.

“Hardened”, in this document refers to the modifications necessary to make a specified structure resistant to flooding and to hurricane-strength winds and is applied to certain sources of potable water, certain offices and access roads.

The interpretation of these results includes both subjective and objective appreciations and conclusions.

4. Findings of the Review

4.1 Summary of Findings

Coordination and project implementation mechanisms such as the WASH Cluster (UNICEF-led) have proven to be extremely useful and succeed to integrate the efforts of a variety of NGOs to better and more complete levels of emergency response. The WASH cluster does not represent all WASH-related emergency response in Gonaïves and several organizations that responded to the WASH emergency do not attend meetings. Most notable was the absence of Haitian Government or local NGO representatives. The positive impact that the WASH Cluster had on the seven criteria forming the framework of this review is nonetheless manifest. Table 2 examines the overall WASH emergency response whereas table 3 specifically examines the UNICEF-led WASH cluster as a coordination mechanism.

Table 2 - Gonaïves' Flooding Emergency WASH Response Review Framework

Evaluation Criteria	Benchmark reference	Challenges	Weak Points	Strong Points	Good Practices	Lessons Learned	Ideas for improving the effectiveness	Summary of Findings
1. Initial WASH assessment and early relief	Minimum response time for initial assessment and early relief: <u>ASAP or 72 hours</u>	<ul style="list-style-type: none"> • Difficult access to site • Difficult logistics • Poor state of preparedness 	<ul style="list-style-type: none"> • Insufficient immediate assessment and relief capacity • 3-4 days before first sustained response • Delay in launching international appeals 	<ul style="list-style-type: none"> • Water trucking to provide emergency supply • US Coast guard airlifts of USAID donations of food, water, hygiene kits and shelter items (4 days after the storms) • Deployment of heavy bulldozers D9-D10, and trucks to help in removing mud and gaining access to the city 	GPS use in early assessments	Water trucking is very expensive and not sustainable	<ul style="list-style-type: none"> • Water trucking may eventually be replaced by hardened minimum distribution network or strategically located wells • Mandatory use of GPS 	<p>Initial assessment and early relief was slow.</p> <p>Very limited early relief, consisting mainly of water trucking.</p>
2. Local procurement and logistics capacities as concern WASH emergency response	Status at onset of emergency as concern: <ul style="list-style-type: none"> • Communications • Transportation • Local availability of relief supplies • Human resources 	On-site storage of emergency supplies when access limited	<ul style="list-style-type: none"> • Severed land access, weather-hampered air access • All local transportation halted by up to 2.25 m. of water and/or mud • Distant source of primary relief supplies/ potable water, 152 km. away 	<ul style="list-style-type: none"> • Cell phone usage possible • Accessible by port entry • Rapid mobilization of heavy machinery (D9 and D-10 bulldozers) 	Sharing of logistic experience through WASH Cluster	Logistics is a major challenge (especially if access is blocked)	<ul style="list-style-type: none"> • Back-up plan to gain rapid access to the site in case of blocked roads. • Improve port facilities • Identification of land access vulnerabilities and appropriate hardening • Pre-position essential emergency supplies 	<p>Logistics management is a major challenge.</p> <p>The response relied on road access, which was blocked.</p>
3. Decision-making and management structure	Status at onset of emergency	Pertinent staff based in P-au-P rather than Gonaïves	Decision-making and management structure highly centralized in P-au-P	Launching of various international appeals for emergency assistance	Frequent participatory decision making for WASH NGOs	Decision making authority must be clear, transparent and rapid	More decentralization of management structures. More WASH staff should be based in Gonaïves instead of P-au-P	Centralised decision-making.

4. WASH emergency response in urban contexts	Differences between urban WASH emergency response and rural WASH emergency response	<ul style="list-style-type: none"> • Accurate mapping of resources • Coordination 	<ul style="list-style-type: none"> • Proximity or overlap of different organizations' operational area, working groups and identification of existing potable water supply • Some taps overlooked. 	<ul style="list-style-type: none"> • Urban pop. densities permit the use of more efficient water distribution schemes • UNICEF WASH Cluster assisted logistics 	Installation of two km. flexible pipeline, supplied by truck at one end and equipped with 15 tap stands	<p>High population density can be leveraged to facilitate distribution operations (water, food, NFI)</p> <p>Support for women's groups / organisations was lacking.</p>	More study/research into appropriate technologies for use in high pop. density areas	The advantages of high population density for distribution of water and other essentials may be offset by difficult sanitation and possible increased risk of epidemics
5. Coordination and collaboration	Existence of coordination mechanisms, frequency of meetings and attendance	Increased participation in WASH Cluster	Several agencies/NGOs do not attend WASH Cluster (list of participants available at UNICEF offices)	NGO WASH Cluster coordination substantially increases quality and efficiency of NGO, UN and local emergency response operations	WASH Cluster meets weekly or more frequently, as necessary	It may be difficult to have all operational partners present	Investigate ways to increase participation	Poor participation of WASH actors in the Cluster. Positive impact of WASH Cluster activities.
6. Monitoring, on-going review and learning	Existence of monitoring mechanisms that permit review and learning	Increase national capacity to monitor and provide input	Too little national monitoring of activities	Strong WASH Cluster operational presence at site	WASH Cluster used as a forum for the study of different alternatives to solve WASH-related problems	Most effective tool for on-site monitoring, review and learning	Study ways to strengthen the WASH Cluster mechanism to increase attendance	Few WASH Cluster alternatives exist for at-site monitoring, review and learning
7. Overall performance - quality and impact to date	Satisfaction level of flooding victims with assistance provided	<p>Faster operational response</p> <p>Sustainable response</p>	<ul style="list-style-type: none"> • Transparency of operations • Persistent funding problems 	<ul style="list-style-type: none"> • Direct and visible life saving operations • Rapid mobilization of qualified personnel 	<ul style="list-style-type: none"> • Distribution of POU filtering kits • Flexibility in the design of appropriate POU technologies for water purification 	Overall performance - quality and impact will be dictated by speed of: <ul style="list-style-type: none"> - Appeals launched - Initial assessments accomplished - Coordination mechanism set-up 	Nomination of a national water & sanitation coordinator for emergency or disaster response	<p>Evidence of duplication and gaps in response.</p> <p>Though delayed, response was deemed high impact.</p>

Table 3 - WASH Cluster Review Framework

Evaluation Criteria	Good Practices	Lessons Learned	Ideas for improving the effectiveness	Recommendation
1. Initial WASH Assessment and Early Relief	Rapidity in setup to become operational Joint assessment using standard formats	On site presence essential for effective coordination	Qualified assessment technicians need to be available on short notice	More rapid set-up is beneficial
2. Local procurement and logistics capacities as concern WASH emergency response	Sharing of information concerning procurement and logistics	Shared information permits more rational use of limited logistics capabilities	On-site storage of emergency supplies	Life saving drugs and other emergency items that are released upon the declaration of a national emergency could help reduce initial logistic burdens
3. Decision-making and Management structure	Some decentralized authority present at site	These structures remain highly centralized in P-au-P	More decentralization of authority and more field visits form P-au-P	Clear attribution of responsibilities reinforces reliability and quality of response
4. WASH emergency response in Urban Contexts	Effective coordination mechanism Technical working groups established	Non-participation of certain NGOs in the WASH Cluster	Meeting summary reports sent to participating <u>and</u> non-participating agencies	Seek new ways to increase participation
5. Coordination and collaboration	Effective coordination mechanism and information management	WASH cluster activities have a positive effect on the response.	More interface with project beneficiaries	Investigate ways to broaden/disseminate positive impacts
6. Monitoring, ongoing review and learning	Systematic monitoring, review and analysis of emergency response operations	Use of lessons learned permit better programmatic adjustments	Establishment and use of common performance indicators	Potential gaps in response may be identified and corrected
7. Overall performance, quality and impact	Strong & effective coordination mechanism	Wash Cluster meetings raise the overall quality of emergency response	More encouragement of NGO participation	Though delayed, performance was deemed solid and high impact

4.2 Challenges

4.2.1 Predictability of flooding events

All the characteristics of an environmental catastrophe are present in Gonaïves and its population continues to be very vulnerable to, and at risk of, flash floods. Certain areas seem almost lunar because of the absence/washing away of topsoil that torrential rains transform into rivers of mud threatening urban areas. The potential for devastation is further enhanced periodically by the hurricane season. It was commonly understood by all the respondents interviewed during this review that, at any time, this environmental catastrophe combined with climatic risks may take the form of an acute humanitarian catastrophe as was the case after the passage of Hurricane Jeanne in 2004.

4.2.2 Vulnerability of access roads

Access roads, into and out of Gonaïves, are presently under repair and remain very vulnerable to flash flooding. It is to be presumed that access to the city will be severed at the onset of seasonal/hurricane-induced flash flooding.

4.2.3 There is no institutional responsibility for sanitation in Haiti

Though the Ministry of Public Health and Population (MSPP) has provided some assistance in this sector, the only visible sanitary interventions in Gonaïves were generated by NGOs or private citizens.

4.2.4 Weak state institutions

Gonaïves' systems of solid waste collection and water distribution, already borderline before the flooding are evidently failing with a resulting increased reliance on external donors/organisations for help. It is clear that present state institutions will require substantial amounts of reinforcement if ever Gonaïves is to break free of its dependence on outside aid. It is also clear that without this outside assistance, a tragic situation would have been inestimably worse. Most emergency WASH assistance is provided by NGOs and UNICEF with state institutions remaining for the large part, very weak and lacking the resources to effectively respond to major flooding emergencies including WASH emergency response.

4.2.5 Respect and enforcement of existing urbanisation plans for Gonaïves

Gonaïves' urbanisation plan is not respected. There seems to be little the city is able to accomplish to control clandestine construction on the steep slopes surrounding Gonaïves. Continued construction in these areas will tax drainage provisions even more with time and the unavailability of water at these locations greatly complicate water supply strategies. In the event of a hurricane-induced emergency, landslides may/will cause additional casualties.

4.2.6 Strained water supply and drainage provisions

Water supply was inadequate (below Sphere standards) before the flood emergency. A number of newly built/rehabilitated wells were surveyed, most equipped with adapted hand pumps, easily repairable with cheap and locally available supplies. Long lines at these potable water supply points attested to the fact that overall water supply provisions continue to be insufficient or

minimal. Portable water purification kits and water bladders still in use six months after the initial flooding also attest to the continued shortage of potable water provisions.

Drainage provisions including open canals, subsurface storm water catchments, subsurface canals, storm sewer piping, river course dredging, etc, were all at different states of curing, maintenance or repair. Due to considerable permanent damage to various parts of Gonaïves' drainage provisions much will have to be rebuilt. Additionally, Gonaïves' population, estimated at 56,000 inhabitants in 1990 is today estimated to be nearly 300,000. This huge and rapid increase in population puts considerable strain on Gonaïves' already weak water supply provisions and drainage structures.

4.2.7 Community education and awareness about flooding

Flood victims interviewed recognised that their present state of readiness to respond to another similar flood, where it to happen, is fairly nil.

No flood victim interviewed could confirm exposure to education or awareness campaigns specifically related to flooding emergencies. Though all WASH Cluster NGOs have active education components in their general WASH emergency response programs, without a doubt more emphasis needs to be placed on appropriate disaster preparedness and training.

4.2.8 Donor funding

Several representatives of NGOs stated that adequate funding of the emergency response was and still is a constraint. By October 23, 2008, only 23 % of the flash appeal had been financed.

4.3 Good Practices and Lessons Learned

4.3.1 Attendance at the general cluster meeting and the WASH cluster meeting in Gonaïves

Attendance at these cluster meetings demonstrated coordination and implementation of different UNICEF and NGO initiatives. The WASH Cluster's capacity, at a local level, to recommend goals for standards and policy setting, to reinforce NGO response capacity (including logistics, training, stockpiles, etc.) and to provide operational support (including assessments, emergency preparedness, access to technical expertise and resource mobilisation) was deemed invaluable.

4.3.2 Emergency dumping sites

Emergency dumping sites for material excavated from Gonaïves were visited. These sites are uninhabited, away from population centers and reinforce to a certain extent the access roads to the city's harbour.

4.3.3 Importance of GPS for mapping

GPS-enabled reconnaissance teams for flood hazard, water supply and sanitary conditions mapping greatly assisted relief efforts

4.3.4 Importance of effective coordination mechanisms: WASH cluster and other mechanisms

The record of lessons learned and experience gained from on-site operations has proven very helpful in providing support and direction to various NGOs in the accomplishment of their missions.

4.3.5 Importance of long term promotion of POU technologies

The equipping of a 400 m flexible pipeline, attached to a bladder or truck, with multiple taps every 50 m greatly helped to alleviate overcrowding and to increase water supply rates.

4.3.6 Water trucking

No hesitation was made in the initial stages of humanitarian response to truck water in from afar. This clearly proved to be one of the most important life saving activities undertaken by the response teams. Water trucking is however very expensive, non sustainable and should be suspended as soon as other potable water supply methodologies are quickly established

4.3.7 High population density can be leveraged to facilitate distribution operations

It was noted that given Gonaïves high population density, relatively large numbers of victims could be reached very rapidly with essential food, water and NFIs. A very high degree of coordination remained essential however for the success of the various distributions.

4.4 Gaps

4.4.1 Weak assistance to women's groups or organizations

Interviews with two women's organizations ('Association des femmes vigilantes de Gonaïves' and 'Coordination des femmes pour le développement du Haut Artibonite') indicated that support to women's groups or organizations was either lacking or very weak.

4.4.2 Weak exit or transition strategies

In some cases, access to potable water before the flooding emergency was below applicable Sphere standards and the need for longer-term assistance is highlighted upon termination of emergency operations.

4.4.3 Capacity of state institutions

No direct and systematic assistance to flood victims is provided by the state. State institutions need to be reinforced by providing appropriately targeted assistance. Most emergency WASH assistance is provided by NGOs and UNICEF with state institutions remaining for the large part, very weak and lacking the resources to effectively respond to major flooding emergencies including WASH emergency response.

4.4.4 NGO/beneficiary relations: transparency, communications, feedback

Nearly all respondent interviewed noted a lack of understanding specifically concerning international assistance.

4.4.5 Lack of adequate emergency disaster preparedness and education

No flood victim respondent was able to confirm knowledge of an emergency disaster preparedness plan or specific education about emergencies, including flooding, in any form. A

national disaster plan exists and has been sent to all pertinent heads of national and international agencies/organizations presently in-country. This plan is presently being revised. It is interesting to note that this plan was not readily available in Gonaïves and was found only in Port-au-Prince.

5. Recommendations

5.1 Water Supply

5.1.1 Continued training, technical assistance and funding to SNEP and/or other state institutions responsible for water supply and the maintenance of drainage structures

The National Potable Water Service (SNEP) in Gonaïves, already heavily financed by external donors, is evidently overwhelmed by the task of rebuilding Gonaïves' potable water network and is barely able to maintain the city's public taps. It will remain a priority to build up the state institutions that are responsible for water supply and the maintenance of the city's drainage provisions. Gonaïves water supply plan will have to be redesigned to take into account Gonaïves growing population and the ever-present threat of flash flooding.

5.1.2 Hardened reservoirs and water distribution points including wells

Hardened identified water supply sources may prevent the need for trucking water in an emergency. This may be accomplished by raising a strategically selected number of these structures above projected (possible) flooding levels.

5.1.3 Agricultural water points transformable into potable water points with a pump and treatment

It was noted that many agricultural water points surrounding the city were transformable into potable water sources by appropriate cleansing/reconditioning, capping and equipping with a pump. In the future, the ability to rapidly transform these agricultural water points into temporary sources of potable water may serve to lessen the need for trucking water from afar in an emergency.

5.1.4 Use of water candles and other water treatment or filtration methods at the household level or POU.

The promotion of water candles and other water treatment or filtration methods at the household level has proven its ability to provide improved drinking water by removing pathogens. It must be noted however that during floods or hurricanes, water quality may change dramatically and affect the effectiveness of the filtration device.

5.2 Sanitation and Hygiene Promotion

5.2.1 Establishment and implementation of short, medium and long term sanitation plans

Today is estimated that only 34% of Haitians use satisfactory sanitation facilities. In the aftermath of the hurricanes this statistic is presumably worse for Gonaïves. The establishment of appropriate sanitation plans should include a comprehensive assessment of existing sanitation systems, survey and designing, environmental monitoring, project coordination, overall supervision and especially the training that should form the basis of the construction and reconstruction efforts in this sector.

5.2.2 Consideration of excreta disposal options during a flood, including considering alternatives to latrines

During a flood, urgent needs such as life saving drugs, potable water and food become the priorities often leaving public sanitation lagging behind. It is important to recognize the great impact that appropriate sanitation may have on public health and the avoidance of disease and epidemics. During a flood, latrines will probably become useless or dangerous to use. Alternatives do exist such as flying toilets (bio-degradable plastic bags specifically made for this purpose such as Peepoo™), paper bags, pails, raised or dry latrines, etc. This is especially important in an urban context and the population should be well educated on the existing possibilities and the threat to public health posed by promiscuous defecation problems.

5.2.3 Better identification of vulnerable areas and specific targeting of vulnerable populations for appropriate education and preparedness (as concerns sanitation)

5.3 Crosscutting and Other Issues

5.3.1 Improved water management and environmental protection

- Importance of environmental protection and enforcement of urban planning and environmental statutes. Efforts currently under way to terrace Gonaïves' surrounding slopes should be encouraged and reinforced.
- Importance of reforestation and alternatives to charcoal.
- Dikes, water diversion and drainage structures sufficient to ensure the protection of the city of Gonaïves must consider a doubling of population within 20 years, continued environmental degradation and deforestation as well as an unfavourable geographic location. Several of these projects are currently under review.
- Maintenance of existing canals and drainage provisions. These were severely damaged during the hurricanes and are presently being repaired but will require systematic maintenance. State institutions responsible for their maintenance (TPTC) need to have the appropriate means to enable them to do their work.

5.3.2 Better dumping fields and waste management

Dumping sites for the phenomenal amounts of mud and debris removed from Gonaïves must be better managed to reduce toxicity. It will be important to assure that the location of these sites don't aggravate the potential for flooding in Gonaïves.

5.3.3 Improved NGO/beneficiary relations: transparency, communications, feedback

It will be important for NGOs and international aid groups present in Gonaïves to make a more concerted effort to educate the population as to their response plans, capacities, challenges and progress in achieving their goals. Nearly all respondent interviewed noted a lack of understanding specifically concerning international assistance.

5.3.4 Community education and awareness about flooding

Though all WASH Cluster NGOs have active education components in their general WASH emergency response programs, clearly more emphasis needs to be placed on appropriate disaster preparedness and training aimed at surviving flooding. More specifically, the production of locally relevant educational materials in natural disaster prevention, recognition and preparedness, that is adaptable to different sectors and stakeholders. This should include specific education campaigns targeting children, women, and the elderly. To be of any use, national

emergency preparedness plans should be more broadly distributed and exist in a vulgarized or public format.

5.3.5 Difficult or no access in an emergency implies the need to:

- Pre-position essential supplies at designated shelters (water purification tablets, portable water purification kits, life saving drugs, water testing kits, etc.). This may be accomplished by the establishment of at least one stockpile located in Gonaïves proper or at an identified strategic position, under UN or National surveillance.
- Hardened access roads to permit rapid response. Upgrade access roads so that they may remain safe from mudslides (hardened) and permit access and rapid response in the event of an emergency. This may be accomplished by better identification of vulnerable areas and the appropriate shaping/surfacing of vulnerable embankments. If ever access roads are severed, Gonaïves' small unprotected harbour may be used for essential equipment and supplies.

5.3.6 More attention to gender issues and enhanced assistance to women's groups

As women and children bear the brunt of flood effects, more can and should be done for pertinent response activities that meet their special needs. Several NGOs interviewed have strong gender mainstreaming components in their emergency response on paper. However, apart from employment opportunities offered, this was difficult to detect in most cases indicating that an important and useful resource might be better exploited, especially in urban contexts. Possible solutions might be to target women's groups for awareness campaigns about surviving floods for transmission to their family members. Two women's groups interviewed suggested that if provided with the appropriate tools (brooms, shovels, wheelbarrows); they would contribute their labor with the goal of improving their environment and lives

5.5.8 Nomination of a National Watsan coordinator for emergency or disaster response

The primary task of this coordinator should be to facilitate the flow of information between international emergency respondents, the general population and the Ministry of Public Works to assure transparency in emergency operations. Such a nomination will greatly help all those involved in an emergency to better understand operations and strengthen the general population's confidence in the work of the different organizations and institutions responding to an emergency or disaster.

5.5.9 GPS-enabled reconnaissance teams

GPS-enabled reconnaissance teams permit the establishment of accurate maps depicting various points of interest such as public water supply, sanitation facilities, health services, zones vulnerable to floods, drainage structures, etc. and allows for a more rational coordination of preparedness and emergency relief operations. GPS-enabled reconnaissance teams should be mandatory.

5.5.10 Effective coordination mechanisms: WASH cluster and other mechanisms

The WASH Cluster mechanism, having proven its effectiveness, should be maintained and if possible, reinforced to become operational even more quickly at the onset of a WASH emergency.

6. Conclusion

The Gonaïves tragedy may serve to awaken the entire country to the need for national level strategies for disaster recognition and preparedness. It is important to underline the inherent vulnerability of Gonaïves to environmental disasters and to create stronger mitigating measures. The ability to survive this type of flooding disaster will remain more sensitive to preparedness than to response capacity.

Plainly the most important priorities are to plan for a flash flood and to educate Gonaïves' population on how to survive flash flooding scenarios.

Emergency response in Gonaïves' urban setting must take into account the very predictable nature of future WASH crises in the Gonaïves area. It is deemed vital that lessons learned from past experiences in Gonaïves, and from similar catastrophes elsewhere, serve as the basis for establishing appropriate preparedness plans. In this context, the importance of appropriate disaster preparedness planning cannot be emphasized enough as this is the single most urgent measure that will save lives.

For further information about the Global WASH Cluster Learning Project or if you would like to receive a copy of our lessons learned papers and technical briefings on urban and rural floods, please contact Louise Boughen, ACF-UK (l.boughen@aahuk.org)

7. Annexes & Websites Consulted

Annexes

- I. Sample sanitation Indicators
- II. Sample Emergency WASH Cluster Response Plan
- III. Evaluation ACF WATSAN Gonaïves
- IV. Plan de réponse – exemple
- V. Plan inter organisations préparation réponses désastres naturels 2008
- VI. AAH Well Rehabilitation Protocol (French)
- VII. Example of POU filtration device
- VIII. Survey Questions 27 Feb.
- IX. Gonaïves Photographs
- X. Tech WASH Review Power Point Presentation

Websites consulted

- www.clustercoordination.org
- www.globalseminar.org
- www.haitiaction.net
- www.haitiinnovation.org
- www.news.bbc.co.uk
- www.ocha.unog.ch
- www.osac.gov
- www.sustainable-sanitation-alliance.org
- www.ugandaclusters.ug
- www.us.oneworld.net

And many more