

MALDIVES COMMUNITY SEWERAGE PROJECT EVALUATION

Background

Following the December 2004 Asian earthquake and tsunamis, the International Federation of Red Cross and Red Crescent Societies (the International Federation) undertook construction of houses for approximately 4,700 affected people on the islands of K Guraidhoo, K Maafushi and D. Kudahuvadhoo in the Maldives. This included around 600 Internally Displaced People (IDPs) from neighbouring islands that had suffered severe damage. This was decided following discussion with the Government of the Maldives (GoM) in early 2005.

It was recognised that these new houses would need to have sanitation facilities installed. It was also recognised that the broader island communities currently suffered from poor sanitation facilities which posed threats to their health and living environment. Therefore, it was agreed with the GoM that the International Federation would improve community sanitation systems across the three islands through the installation of a small-bore sewer system. The American Red Cross (AmRC) would provide complementary support through a separate project to install new septic tanks in existing houses and support other community health and sanitation activities.

Over the same period, the French Red Cross (FrRC) agreed with the GoM to construct new houses on the island of L Gan for around 4,000 IDPs who had voluntarily relocated from some other severely damaged islands. The International Federation extended the provision of a sewerage system to the houses being built for the IDPs. In addition, the FrRC would provide community infrastructure (eg school, hospital, electricity, etc) for all of Gan's population.

The objective of the nearly USD 7.3 million project was: to improve the human and environmental health of local communities affected by the tsunami by installing a proper sanitation system. The two key expected results of the project were: 1) access to a community sewer system and 2) development of the knowledge of operation and maintenance of a sewer system and improving the health of the community and minimizing impacts on the environment.¹

Funding for the project was provided by the Hong Kong Red Cross on Gan and by the Irish Red Cross on Guraidhoo, Kudahuvadhoo and Maafushi.

Following an international tender process, a Consultant (CBCL Ltd), was engaged in October 2005 to prepare a design for a suitable sewer system. The Government of the Maldives (GoM) approved the conceptual design for the project in January 2006. An international tender was held to implement the project and a Contractor, Aqua-Tech Engineering and Supplies was engaged in early June. The final project design was approved by the GoM in late June.

The contractor mobilised in July 2006, commencing first on the islands of Maafushi and Gan. This was followed by Guraidhoo and Kudahuvadhoo in January 2007 and May 2007 respectively. The project is expected to be completed in December 2007. This will be followed by installation of the new household septic tanks by the AmRC on Guraidhoo, Maafushi and Kudahuvadhoo.

¹ IFRC Project Proposals, Water and Sanitation Program, Tsunami Operation Maldives, 23 March 2006

Objectives

The International Federation decided to evaluate the appropriateness, efficiency, effectiveness and likely sustainability of its community sewerage project, prior to completion (Annex 1: Terms of Reference). The specific objectives of the evaluation were:

- To identify key lessons in the design and implementation of the project;
- To record successes and challenges of the project to date; and
- To recommend solutions to any identified challenges, with a focus on sustainability.

Methodology

The evaluation was conducted through: reviewing project documents and records, GoM policies and plans, needs assessments and evaluations of the GoM and other donors (Annex 2: resources consulted); conducting semi-structured interviews with key informants; focus groups with project beneficiaries (Annex 3: List of interviews, focus groups); and carrying out structured observation of facilities. Field visits were made to two of the four project islands: Guraidhoo and Maafushi. Gan was not included due to political sensitivities, nor was Kudahuvadhoo, due to distance and time constraints. A debriefing was held with International Federation and Partner National Society (PNS) personnel to validate the findings and explore possible follow-up actions.

The evaluation was carried out by an independent consultant, Ms Cynthia Burton, from 28 October to 8 November 2007. The consultant was supported by a volunteer assistant, Ms Dawna Black. Ms Mariyam Asifa and Mr Safwan Amjad from the International Federation Maldives delegation's recovery area provided interpretation services.

Findings

Appropriateness

Needs: The early decision made by the International Federation and the FrRC to ensure that new houses built were connected to an appropriate sanitation system was sound. It was based on important lessons learned from other disasters that houses which do not include these essential services lead to unhealthy living conditions and/or abandonment by the occupants.

It was well documented, prior to the tsunami, that the Maldives was facing a severe and growing environmental contamination problem.² Poorly designed and constructed sewerage facilities, along with a lack of sewage treatment, were contributing heavily to pollution of the small and fragile freshwater lenses found on the islands. Space constraints and population growth on some islands were also contributing to the problem.

The early 2005 GoM-World Bank-Asian Development Bank (ADB)-UN post-tsunami damage and loss assessment mission found that the wave damage to septic tanks and other sewage systems had resulted in further significant contamination of groundwater sources (pollution and salinisation). The duration and reversibility of the impact was uncertain. Overall damage to sanitation infrastructure

² For example: Falkland T (2000), *Report on Integrated Water Resources Management & Sustainable Sanitation for 4 Islands*, Republic of Maldives, UNICEF/MWSA: Male

was estimated at USD 5.6 million (including latrines, septic tanks, sewage networks and sea outfall damages).³ The UN Environment Programme (UNEP) also found excessively high levels of pathogenic contamination. Similar findings were confirmed on the four project islands during the Environmental Impact Assessments (EIA) carried out by the International Federation through its Consultant.

The aim of the project to improve the sanitation conditions on the islands and protect the groundwater from further contamination combined a rehabilitation activity with the reduction of a substantial medium-term risk to the health and environment of the affected communities. This showed awareness by the operation of the importance of addressing root causes of vulnerability and can be seen as an early example of a post-disaster activity responding to the commitments made by the International Federation to the Hyogo Framework for Action in 2005.⁴

Alignment with GoM strategy: The project was undertaken in full consultation with the GoM and reflects the priorities identified in the GoM's reconstruction and development plans, particularly its commitment to increasing and improving sanitation coverage to meet the Millennium Development Goals. The project is also broadly consistent with the water and sanitation policies and guidelines developed by the GoM over 2005 and 2006.

Alignment with community needs: While the evaluation could not measure the priority given to environmental sanitation in relation to other community needs, due to a lack of baseline data and time constraints, it appears to be a significant concern to the island communities, predominantly from a water quality perspective (refer to Annex 4 for details). UNICEF advised that their investigations on other islands have also come to this conclusion.

Alignment of International Federation and PNS: The decision to use Red Cross/Red Crescent tsunami resources in a complementary way was a positive feature of the project. The potential to achieve better economies of scale by using the same contractors and processes to provide sewerage systems to International Federation and FrRC-built houses was high, particularly in a context of high international competition for a limited number of suppliers.

Likewise, the use of AmRC resources to provide new septic tanks to existing houses on three of the project islands meant that the sewerage system would not leave out a significant portion of households that had poorly built and leaking septic systems. Without repairing or replacing these tanks, the sewerage system would not be able to achieve its objectives of improving environmental health on the islands, and it would be perceived as inequitable and a potential source of tension between communities. Lack of attention to equity issues on the fourth island, Gan, contributed to the serious tensions that developed between the IDPs and the host communities during project implementation.

Strategic and operational partnerships: The main partner identified for the project was the GoM, specifically the Ministry of Environment, Energy and Water (MEEW). In the absence of a host national society (HNS) and in the context of the Maldives, this line Ministry was the most appropriate national level project partner for the International Federation. The signing of a project

³ GoM (2005). *Tsunami: Impact and Recovery: Joint Needs Assessment: World Bank-Asian Development Bank-UN System: Annex 7 Water Supply, Sanitation and Solid Waste Management Sectors*. Male: GoM.

⁴ This is a framework agreed between many governments and organizations for disaster risk reduction globally

Memorandum of Understanding (MOU) helped to formalize the arrangement, and the International Federation has engaged in close consultation with MEEW throughout the project.

At the same time, an assessment of the capacity of the GoM to support the project was not undertaken at any stage during the design process. The MEEW was only created in 2005. Within a few months, it became evident that the Ministry was a small and not highly resourced bureaucratic structure and that there was been uncertainty regarding the division of mandates between MEEW and the previously existing Maldives Water and Sanitation Authority (MWSA). MEEW does not have a sanitation engineer and relies on donor-funded technical attachments to provide this expertise, as well as the Maldives Water and Sanitation Company (MWSC). MWSC is a foreign-owned private sector firm in which the GoM has a 40% share. Additionally, all of the GoM had been overwhelmed by the large-scale and generous donor response to the disaster.

Island Development Committees (IDC) and communities: At the operational level, the atoll and island chiefs, together with the Island Development Committees (IDC), have been the key project partners. Atoll and Island chiefs are appointed by the GoM. The IDC members have been a mixture of both nominated and elected representatives from the community, and not fully participatory or representative.⁵ It has been recognised by International Federation staff that it would have been desirable to have also signed an MoU with the IDCs in order to more clearly define their roles and responsibilities, as well as to build their ownership of the project.

The communities themselves have been less active partners. Participation was largely limited to broad community information and “question-and-answer” sessions held prior to the commencement of implementation. The International Federation also met with the IDCs from time-to-time during project implementation to respond to concerns they have raised regarding the work of the project’s Consultant or the Contractor.

Officially, the GoM had cautioned the International Federation and other donors that “interventions such as community consultation must be used carefully and in full discussion with the government,” implying that consultations and engagement with the community had to be mainly through the Atoll or Island offices and IDCs. The International Federation, like other donor agencies, also found that there was not a large supply of experienced community development workers or non-governmental organisations (NGOs) to engage on staff.

At the same time, a number of PNS (eg FrRC, AmRC, British Red Cross) have been able to carry out direct community mobilization programs, including on the islands covered by this project, delivered through combinations of Maldivian and international staff. The rationale for the International Federation operation not also adopting a similar model for the delivery of its assistance programs is unclear. The consequences of not fully and actively including the IDCs and the communities in project decision-making, are discussed below.

Effectiveness

Needs assessment process: The decision by the International Federation and the PNS involved to support the project was not taken on the basis of a needs assessment process in consultation with the

⁵ Until late October 2007 when IDCs became fully elected bodies under a government democratization program.

affected communities but rather on needs assessments conducted by other agencies,⁶ in combination with dialogue with the central government. Given the logistical difficulties of travel in the Maldives and the risks of over-assessment by the large number of humanitarian actors present, the use of secondary information was a sensible approach to initial strategic planning.

There was also tremendous competition between humanitarian actors, including within the Red Cross/Red Crescent family, to identify “good projects” to fund with the large amount of tsunami public donations received. This was further exacerbated by domestic and international media pressure on these agencies to demonstrate the speed and effectiveness of their responses.

Although letters of intent had been signed, a needs assessment could have been carried out with the selected islands *prior* to taking a final decision on whether to proceed with the project or further developing the design concept in order to: confirm whether an improved sanitation system was a priority need of the communities; identify any major risks or impediments to its successful implementation that would need to be taken into account in the design (including political and economic considerations); and obtain community views on the choice and desired features of the sewerage system. Such consultations have proven to be useful in other operations for negotiating with governments and managing pressures to act too quickly.

The consequence of not involving the island communities in project prioritization and decision-making has been a lack of ownership, leading to confusion and concerns within the communities about how and whether the sewerage system will work. It is now difficult to ascertain where this project ranks among the community’s priorities and has led to key gaps in baseline data with which to monitor its performance. There is extensive documentation from the development sector that projects which are not grounded in community priorities and ownership have a much higher likelihood of becoming unsustainable after external support has ended.

Because it was done without consulting, people are not happy. It’s not how they want it [the system] to be...if there was a local person stationed here, it would have been better, instead of a foreigner, because they have problems communicating. – Island chief.

Feasibility studies and inception reporting: On the other hand, a thorough technical feasibility study of alternative models of sewerage systems was carried out that vetted the appropriateness of the technology; capital, operation and maintenance (O&M) costs; likely environmental impact; and sustainability (Annex 5: Comparative analysis of different sewerage system models).

A full cost-benefit analysis of other alternatives could not be carried out during the evaluation, such as the installation of soak-pits instead of a small bore system, due to lack of comparable data. The trade-offs in terms of maintenance costs and difficulties, cultural acceptability, and the environmental risks associated with wastewater disposal in highly permeable soil, are contestable. While there remains considerable debate within the Maldives about the relative merits of different systems (as some have not been used before in communities and are unproven technologies), the small bore system selected by the International Federation has a reasonable chance of being an appropriate and environmentally-friendly system for the islands on which it is being installed, if well managed.

⁶ Eg GoM-World Bank-Asian Development Bank-UN System Joint Needs Assessment

For example, based on this analysis, the brand of pump selected for the project was the only one available in the Maldives at that time, making spare parts and repairs easier to organize locally. The provision of O&M training, along with spare parts, increased the likelihood of sustainability.

The Consultant engaged to design and manage the project was also requested to do a situation analysis on each island of its likely social and environmental impacts, topographic and hydrographic surveys, as well as capital and recurrent costs. The inception report provided an acceptable level and quality of physical and environmental information, but the social and recurrent cost analyses were weak. The social analysis was very limited and appears to have been done in a superficial way. There was virtually no data on vulnerability and capacity within the island communities, or on the local political context. The only disaggregated information in the reporting concerned the number of men, women and youth among the population of each island. The information on cultural waste management attitudes and practice was limited and dated.

Only a very loose and sketchy estimate of recurrent costs was provided, and this did not include calculation of the energy requirements to run the system. While the inception report advises that communities expressed a willingness to pay for the sewerage system, the records of meetings by the International Federation, MEEW and the Consultant show that the communities on at least two of the islands had concerns about the O&M costs that appear not to have been fully addressed prior to commencement of construction.

Design: The original project concept included both the provision of septic tanks for households who were not having new houses built by the International Federation, as well as the construction of the small bore sewer systems. Due to broader programming circumstances, including the high cost of amending the International Federation's existing contracts to incorporate the AmRC's planned activities, a decision was made to split the project into two. The "hardware" component of installation of the small bore system and the training of local operators would be implemented through the International Federation. The "hardware" component of septic tank installation would be carried out through AmRC. The "software" components of community management, plus environmental health and sanitation education, were added into the AmRC project design over time.

While communication and cooperation between the two parties was good, the existence of two projects created an artificial separation between activities. The AmRC and International Federation administrative systems work differently and this led to some disjointedness in the sequencing of building activities. The lack of "software" community mobilisation activities in the International Federation project affected its ability to establish a strong relationship with the island communities and administration before commencing construction work. This also occurred between the International Federation's construction (housing) and watsan programs. The island communities have had to deal with different Red Cross representatives, in addition to contracted personnel, to communicate on what for them is one integrated system.

When I started work, I was surprised about the separation between the housing and sewerage projects. In the private sector, this is part and parcel of housing. It is more efficient and there are several benefits to combining these works. – IFRC construction delegate

Some other design integration questions also have arisen during implementation. It was decided not to include public institutions in the assistance package, as this was seen to be a GoM responsibility. This was written into the MoU with the GoM.

As several beneficiaries noted, if these facilities are not connected to the system, then its environmental sanitation objectives may not be achieved. Some house a considerable number of people (eg prison in Maafushi, rehabilitation centre in Guraidhoo, etc) and will continue to dump their untreated waste into the lagoons. One island's chief has written a letter of complaint to MEEW about the lack of integration of public facilities into the project, but it is doubtful whether the MEEW will have the capacity to address this without support.

The Maldives operation was not required by the International Federation Secretariat to establish performance indicators for the project, only expected outputs, and M&E was not included in the project's original budget. However, the operation's staff realized the value of having a means to gauge their progress and developed performance indicators. For a project of this scale and complexity, good practice experience indicates that an M&E budget of 1-2% of the total project value would have been desirable, including a mid-term review of progress.

The project logframe has changed three times during the past 20 months, with the most recent update currently in progress (Annex 5: Logframe). This partly reflects a realistic and sensible response to the growth in knowledge of the local context by the operation. For example, the results of baseline studies conducted for the AmRC project and Supplementary Water Supply System (SWSS) projects in 2007 showed that the morbidity and mortality from diarrheal diseases may be lower than anticipated but that environmental impacts may be higher from the perspective of the beneficiary communities (Annex 4: Analysis of potential health vs environmental impacts of project). At the same time, the changes are also indicative of the lack of quality baseline information available during the early stages of the project.

In the end, the monthly reporting system established has not been measuring the project's performance against the expected results and indicators but has followed more closely the Consultant's/Contractor's progress in carrying out the construction under the terms of their contract.

Based on the information currently available, some observations on the progress of the project in relation to the logframe are made in Annex 6. The watsan delegate will provide more detailed reporting of progress against the logframe in his December 2007 end-of-mission report. A full assessment of whether either of the two expected results have been achieved cannot be made until the system is fully operational and, in the case of expected result 2, until the system has been functioning for 2-5 years. An end-of-project evaluation has been tentatively planned towards the end of 2009 following completion of the new system's defects liability period.

Implementation: The community members and IDCs met in Guraidhoo and Maafushi felt they had not been consulted sufficiently about the project, nor their views adequately considered. Following some meetings during the early stages of the project, communication by International Federation staff was described by the IDCs as infrequent and largely reactive, usually in response to problems that they raised with the Consultant during implementation.

Most of the women and youth met had little knowledge about the project and had not received information from the International Federation, the Consultant or Contractor – in spite of constituting

a large part of the beneficiary population. Many reviews and evaluations have demonstrated that when communication with women, or other groups not well represented in formal decision-making bodies relies on indirect methods, it often does not reach them or reaches them in a distorted manner. The lack of attention to gender dynamics in the project has left the women varyingly confused, frustrated, anxious and/or indifferent to the value of the project.

The Red Cross can have separate meetings for men and women. If they have mixed meetings, women are reluctant to talk and their issues are not raised. – woman, Guraidhoo

The IDCs and many community members felt that there should have been more visits, meetings and sharing of information by project staff. They have many fears and concerns about the new system and there is a lot of misinformation circulating about: who will be connected to the new system, who will receive the new septic tanks, the quality of cement vs fiberglass tanks, the size of the pipes, how running costs will be financed, etc. In Maafushi, the IDC reported that some households do not want to be connected to the new system due to fear of high electricity costs or that the new sewerage system will get blocked and the waste flow back into their homes.



Frustration was also expressed in both IDCs about having to go through the Consultant to raise their concerns about the Contractor with the International Federation. Some members expressed the view that the Consultant seemed to have little control over the Contractor's actions. The delays and disruptions caused by the construction, with little regard to the community's wishes (according to them), added to the sense of frustration. The Maafushi IDC reported the situation improved considerably after the current watsan delegate took up his position.

There were differences of opinion among the International Federation staff regarding who was responsible for the management of community relations.

Some referred to it as the Consultant's role, yet this was not *explicitly* stated in the Consultant's contract. Others referred to this in terms of the GoM's responsibilities under the MoU, while acknowledging its lack of capacity to fulfill this role. Regardless of who was formally responsible for community relations, it is good practice for a funding agency to build and maintain strong trust relationships with the core project client (the beneficiaries) and to regularly check on their satisfaction with the progress and quality of activities. This is a key element of a robust quality assurance system, as the client usually has the strongest vested interest in monitoring performance and ensuring that they are getting "value for money."

Presumably, the International Federation also would have interests in monitoring contractor performance to ensure that the activities it is supporting are conforming to its values, principles and the *Code of Conduct for International NGOs and the Red Cross/Red Crescent Movement*. For example, a report prepared by the South Asia regional delegation raised issues about the vulnerability and conditions of migrant workers under International Federation-funded construction

THE CASE OF L GAN ISLAND

Cooperation has been good between the International Federation and the FrRC, in spite of the strain caused by the problems which arose on Gan Island during project implementation. Important lessons were learned by all.

The broader program of the FrRC comprised a range of assistance targeted at all island residents, including some activities to encourage community integration, while the International Federation's sewerage project was only directed towards the new housing settlements being built for the IDPs. The host communities had suffered from severe water pollution for many years and had previously requested GoM support to build a municipal sewerage system. Tensions emerged between the host communities and the IDPs, as the host communities had concerns about the resettlement process. The sewerage project became symbolic of the frustrations felt by the host communities and perceptions of an inequitable distribution of aid resources.

Vandalism, theft, threats, demonstrations and stoppages of the contractor's work (eg September 2007) occurred on project sites. Several attempts were made by the International Federation, the FrRC and the GoM to resolve the situation, with some progress. Ultimately, the final stages of the works were blocked by a minority from the island's host communities and the International Federation was forced to withdraw from the island.

While the project cannot be held responsible for the root causes of the conflict that arose in Gan, the project did contribute to increasing tensions by distributing aid inequitably between tsunami-affected communities on the island. A commitment was made by the International Federation and the FrRC to support IDP housing and sewerage systems without adequate consultation with either the host or IDP communities. A preliminary needs assessment would have revealed the historic context and potential political issues for the program.

Additionally, most of the personnel involved had either not heard of the International Federation's Better Programming Initiative (BPI) or, if they were aware of it, they had not received information or training on its use. The BPI is based on well documented "do no harm" principles and practices that demonstrate the high risks of treating IDPs and host communities differently during aid programs.

While there is debate among the stakeholders regarding the impact of specific actions and the timing of the decisions taken by the parties involved in the unfolding crisis, it is clear that considerable effort was put into trying to find an acceptable solution, as much as could have been expected. The ultimate decision to withdraw was appropriate, as the situation had become a serious security issue.

At this point in time, some houses for the IDPs are complete (80) and they have been provided with a usable but environmentally unsound temporary sanitation system. Another 160 houses will be completed by the FrRC contractors in 2008.

The International Federation has agreed to provide the project funds allocated for completion of the remaining sewerage works to the GoM. This work will be organized by them through a local contractor. The FrRC has also effectively brokered an agreement for a loan of Euros 20 million from the Government of France to the GoM to build sewerage systems for the three host communities on Gan by 2010.

However, the host communities say they will allow completion of the IDP sewerage system only once their systems are complete and there is real pressure for the IDPs to be able to leave their temporary accommodation and settle into their new homes. There is a risk that the GoM may use methods to complete the works which may not be compatible with the International Federation's values and principles. Such methods could lead to security risks for the IDPs and the FrRC, as well as reputational risks for the Red Cross Red Crescent Movement as a whole. Systematic and thorough risk management planning is required in the near future to protect both the investment and the people involved.

contracts and sub-contracts in the Maldives.⁷ There does not appear to have been much further follow up by the International Federation, apart from a few PNS actions. At the same time, such situations raise tricky ethical and practical questions regarding what kind of working relationship and monitoring regime would work best when implementing RC/RC projects through the private sector. At the national level, MEEW considers that the International Federation has largely been a responsive project partner. MEEW would have liked to have more regular meetings about project progress and issues that brought together the International Federation, the Consultant and the Contractor but acknowledged that small staff numbers and workload pressures prevented them from taking this initiative themselves.

MEEW noted that they were not always kept well informed of the agreements reached between the different partners in the International Federation regarding the scope and coverage of the different but inter-related projects. For example, MEEW felt that the allocation of different role and responsibilities between the AmRC and the International Federation for the project activities was not always clear, making it harder to identify potential gaps. They suggested that the International Federation and PNS share copies of such agreements with the GoM in future.

Efficiency

The overall efficiency of the project was adversely impacted by the financial difficulties experienced by all of the International Federation's tsunami operations over 2006. The budgetary shortfall and spending rationalization process which followed squeezed the Maldives operation's human and material resources, putting added workload pressures on a staff that was already stretched to meet the demands of such a large-scale program.

Human resources: The early recognition that the management of this project would be beyond the capacity of the delegation alone, and the related decision to hire a Consultant to help fulfill this role, demonstrated sound judgment by the Maldives operation and the Geneva Secretariat.

In spite of this, the human resourcing was not adequate for the oversight of a large and complex project and in an area where the International Federation's experience was limited (municipal sewerage systems have not been a focus of watsan programming in the past). This comprised one watsan delegate and one field officer to cover four geographically dispersed islands. When Consultant and Contractor performance problems emerged, combined with the deteriorating security situation in Gan, this took up most of the staff's time, including the heads of Watsan and the Delegation. Gaps in the sanitation delegate position added further strain to an already overloaded team, including at a critical stage during the escalating tensions on Gan island. Other areas of the project suffered from less attention as a result, including community relations and follow-up on the stalling O&M capacity-building component.

The watsan team was not well balanced between engineering, contract management and community participation skills. Given the emerging context and small human resource contingent, the delegation had to prioritise contract management and engineering skills in the recruitment process for replacement delegates. Even so, the delegation found that the Secretariat's recruitment processes

⁷ Elizabeth Loeber (2006), *An Analysis of Migrant Workers Health, Safety and Living Conditions on Red Cross Red Crescent Funded Construction Sites in the Maldives*. Delhi: IFRC South Asia Regional Delegation.

...

were slow and not well suited to identifying appropriate individuals to fill these roles. This contributed to the extended staffing gaps.

Contract and financial management: The project has experienced significant cost and time over-runs (Annex 7: summary). There have been a number of contributing factors to this situation.

The restricted domestic and international markets with suitable construction skills and experience meant that the competitive field for the Consultant and Contractor contracts was small. In the case of the Contractor, this led to the selection of a company that was highly experienced in water supply in the Maldives, but had little direct experience in the construction of municipal sewerage systems. The capacity of the Contractor was already heavily extended as they were implementing two other International Federation construction contracts in the Maldives at the same time. The problems experienced by the Contractor with managing its sub-contractors, managing its cash flow and making appropriate equipment choices indicate that the company and the International Federation may have over-rated its capacity to deliver on the contract.

The project timeframe was unrealistic, without sufficient recognition of the inputs required to implement the important ‘non-construction’ elements of this type of project, ie social preparation, community relations and O&M capacity building. The 4.5 months allocated for the completion of the physical construction works itself was unrealistic, given the transportation and logistical realities of the Maldives. Risk management and contingency plans do not appear to have been prepared, in the (fairly predictable) event of delays.

The majority of the International Federation staff involved in the project did not have substantial experience and training in designing and managing complex infrastructure contracts. This is acknowledged by many staff themselves.

The scope of services for the Consultant’s contract did not fully specify the level and quality of supervision performance expected. A general quality assurance clause incorporated into the contract did not provide enough clarity to hold the Consultant to account when they interpreted the scope of their role differently to the International Federation (eg reporting but not acting on weaknesses identified in the Contractor’s performance and rejecting advice from its client). An expectation that the company would “go beyond their TOR” and support the Contractor in areas where their skills proved to be inadequate was unrealistic. Unless this is explicitly built into the scope of services, a company will not usually go beyond its contractual obligations, as it has implications for the profit margins on which it bases its tender proposal.

Contractors are not charitable organizations. This is a commercial arrangement and the contracts must be managed in a professional manner – IFRC finance Delegate

The creation of a largely inputs-driven Consultant contract (ie monthly payments for supervision services) did not provide an incentive for the Consultant to ensure that the Contractor carried out the works in a timely manner. Many private sector contracts of this nature have payments based on a fixed percentage of the project’s value to avoid this situation. The need for an in-country project manager to oversee the works could have been anticipated by the Consultant and the International Federation when finalizing the design and tender specifications, given the Maldives context. The

lack of specificity of the liquidated damages clauses is also seen by those managing the contracts as contributing to difficulties in resolving disputes.

There has been some speculation about whether it would have been preferable to use the GoM's tender system, as was done with the construction projects. As the GoM tender board was overwhelmed at the time and the MEEW specifically requested the International Federation to run the tender itself – due to its own administrative considerations - this was not an option.

At various points in time, all parties have not respected the terms and the spirit of the two contracts, which has weakened their effectiveness as performance accountability instruments. Some examples include: the Contractor's request for an increase in its advance, which could be interpreted as changing the conditions under which it won the bid; processing of incorrect contract expenditures and invoices by delegation personnel; bypassing of agreed communication lines with the Consultant by delegation personnel; and the Consultant sometimes ignoring the client's instructions.

The International Federation found itself in a difficult position, fearing that if it terminated the Contracts, it would be hard to find other suppliers and further delay project implementation. This perceived weakness of position may have contributed to the blurring and weakening of lines of reporting and accountability between the parties over time. Both the Consultant and some delegation personnel felt that the Contractor may have stopped respecting the contractual relationship, due to the ways in which the contract had already been compromised by the different parties.

The advisory services of a construction contract specialist during the project could have reduced, although not eliminated, the number of problems encountered. The incorporation of regular formal stakeholder progress meetings and stronger quality assurance indicators into the contracts also would have helped to reduce some of the management challenges faced. Several International Federation personnel have suggested that more training and guidance is needed for staff in contract management, especially construction contracts.

It is understood that the Federation Secretariat is currently revising its contract pro formas, based on the experiences from a number of operations. If not already included, it would be useful to review contractor quality assurance standards and performance indicators, with a view to strengthening them. The review could be based on ISO 9001 industry standards, combined with the values and principles of the Red Cross/Red Crescent Movement.

Viewed in the context of the project's human resource constraints and contract management challenges, a great deal has been accomplished by project staff in ensuring that the construction is being implemented to an acceptable standard of quality.

Role of Maldives Red Crescent Society (MRCS): Would the presence of a MRCS as a key partner have made a difference to this project? A NS likely would have contributed to earlier awareness by the ex-patriat Red Cross Red Crescent personnel of the socio-political context, the capacity limitations of in-country stakeholders and the reactions of island communities to project activities. In terms of influencing the choices of programming, this would have depended on the size, strengths and experiences of the NS. Not all NS have strong community development skills or extensive outreach to remote areas and vulnerable or marginalized client groups.

The new MRCS is going to inherit a legacy of mixed views of the Red Cross/Red Crescent, as well as domestic public views regarding the performance of this and other tsunami projects. This NS may need support to deal with the unusual context surrounding its formation, including some involvement with the handover and exit strategies for this project and the overall operation.

Sustainability

PNS: The International Federation is currently developing transition plans for the project with the AmRC. Most importantly, this includes a strong focus on the identification of activities in the AmRC project to develop community management and financing systems, including the role of the island water and sanitation committees. These committees were not very active during the sewerage project but have become more so, as the AmRC environmental sanitation and related activities have moved into full implementation. The transitional planning is a strength of the project and the partnership with the AmRC will be key to achieving sustainable outcomes.

Central government's role: Different funding agencies have all adopted different models for community sewerage systems within the Maldives, including the International Federation and PNS. More broadly, at least 10 donor agencies are involved in the redevelopment of the water supply and wastewater infrastructure. This has put considerable demands on both MEEW and MWSA, as well as providing infrastructure that the islands are not yet equipped to operate and manage. MWSA also has to monitor compliance on up to 70 new systems.

The national capacity to deliver ... is badly stretched and its ability to sustain it is perhaps debatable.
- Five Year Activity Plan 2006-2010 for MWSA, May 2006.

Several donors will soon be reaching the stage, like the International Federation of following up with MEEW on its role in supporting the island communities to help them operate and maintain these systems. The MEEW has established a maintenance fund, but it is unclear whether this will be sufficient to cover all needs. The MEEW has a small staff and they fear that they will be flooded with requests for assistance from the islands once the donors leave. Not all of this work can be handed over to the MWSC, especially as the GoM must pay for their services.

The World Bank has noted weaknesses in longer-term planning and recurrent cost budgeting by the GoM. The Bank is planning to provide loan funds to the GoM to build the capacity of MEEW in environmental management, but this does not include sanitation.

Some central government support will be needed by the island communities to run their sewerage (and water supply) systems. It is evident that coordinated action will be needed by the donor community, including the International Federation, to influence and support the GoM to tackle these challenges. There may also be opportunities to rationalize scarce resources. For example, the MEEW has stated that it will pay the salaries of local operators for the reverse osmosis plants, as well as for the sewerage systems. Could these skills be combined?

Community management: The new small bore system should be robust and require less maintenance than some other sanitation systems, from an engineering perspective. Nevertheless, the island communities receiving the project assistance have never used this type of system and have no experience of operating and maintaining it. Deferred maintenance of sanitation systems is common

in the Maldives. There will also be a significant adjustment to managing a municipal sewerage system, compared to the individual household systems used up to now.

Both operators and other community members see a main area of concern as being blockages at the junction point where the household septic system connects to the sewerage system. If blockages occurred, people would likely remove the filter. If the septic tank then backed up and flooded their houses, the possibility that households would disconnect and revert to old sanitation practices exists, as occurred on another island during an ADB pilot project. One person said that if the pump failed and community members knew there was a back up system available, they might delay lifting the pump out of the casing to repair it.

There are many other factors that could also affect the successful operation of the system, such as: theft of the generators used to run the pumps or lack of maintenance of the AmRC supplied desludging truck. For example, it was observed during the field visit that the Maldives electricity service providers were visiting the islands to fix some mis-wiring previously done on Maafushi and Guraidhoo. If the sewerage system had been operating, this electrical failure would have stopped the pumps from working. If a back-up service generator was then required, it is unclear whether the fuel would be available to run it while waiting for the electrical system to be repaired (in this case, it was approximately one week from when the company was advised of the wiring problem to the time they arrived to fix it). The potential for such problems to arise should be factored into the development of management systems and ongoing O&M training.



Community financing: Some consultations about community contributions to running costs of the system were held at the beginning of the project. Each island has a different capacity and will to contribute, but all appear to expect at least some support from the GoM. Two islands raised concerns about their ability to pay, but these issues were not resolved at that time.

Consultations have recently recommenced on the islands to investigate the affordability and methods of management of the system through the AmRC project. In Maafushi, the IDC expressed concern that the community may find it difficult to afford the electricity costs of running the system. Combined with the apparent lack of confidence in the reliability of the system, at least in Guraidhoo and Maafushi, this poses the most serious risk to the successful operation and sustainability of the community sewerage system.

While the system selected has been modeled on existing and available technology in the Maldives, some of the features aimed to reduce the risk of environmental contamination to groundwater and lagoons are new to the islands. Their benefits in relation to improving water quality are not immediately evident and “the proof” of these benefits will not be seen for some time. On both islands, there were concerns, doubts and misinformation regarding how the system would operate and whether the technology was appropriate for the context of their islands.

Those who have received International Federation housing are concerned that the septic tanks will be of lower quality than the fiberglass tanks being provided by AmRC to other houses. Some women in Guraidhoo were concerned about the size of the tanks and whether they would be able to fit them

into the limited space available to them, as they were also asked to make space for rainwater harvesting kits. Some misinformation has been circulated to communities about the viability of pipe sizes for local political purposes. There are concerns about the loss of greywater into the ocean, and how this will affect the recharging of the groundwater supply.

These issues will need to be addressed by the International Federation and AmRC, through well targeted information and communication campaigns *designed in full cooperation with the communities themselves*, if communities are to be convinced of the value of contributing funds to the running of the system. There is prior International Federation experience in the Maldives that donor-designed communication materials, without full community input, have not been effective.

In some cases, a few compromises should be explored with the two island communities visited regarding features of the system they simply do not like, where possible, as there is a feeling among at least some that the International Federation has not really listened to their views or taken local knowledge and preferences adequately into account.

Training of local operators: The original intent was that the island communities would identify individuals to be trained as system operators early in the project. The trainees would receive around one week of formal training, plus a half day each week learning about the system onsite during its installation. The uncertainty about GoM salary support for operators (promised for a total of 24 positions across all islands), combined with the delays in project implementation acted as a disincentive to the island communities. The trainee operators only recently commenced formal training, just as the works are nearing completion.



The first stage of operator training was completed one week prior to the evaluation, so it is too early to assess its effectiveness. In interviews on Guraidhoo and Maafushi, the trainees reported that the two-three day training course was effective, as it focused on “building practical hands-on skills, rather than theory.” However, these skills cannot be tested until the system is actually running and the operators have to face real needs and problems. Concern has been expressed by some parties regarding the selection criteria used by the island chiefs for the operators and their aptitude for the operator role.

The trainees will need on-the-job coaching and support, in addition to formal training. It is also likely that more operators will need to be identified to ensure there are enough trained people available to account for natural attrition. Several community and IDC members in Guraidhoo and Maafushi said that they would like education too on “how to properly manage the system.”

Conclusions

The Community Sewerage Project meets a genuine need in the Maldives. It is using technology that has been carefully selected and appears appropriate to the unique environmental context found on the

participating islands. The quality of the engineering works also appears to be acceptable to high. At the same time, the island communities have not yet developed a strong sense of ownership of the system. The willingness and ability of the communities and the GoM to pay for ongoing running costs, and to operate and maintain the new small bore sewerage system, currently constitute high risks to project sustainability.

The major obstacles to completion of the sewerage system on the island of Gan also remain a cause for concern, as this carries potential implications for the security of IDPs and FrRC staff, as well as for the considerable related investments by the FrRC in housing.

Recommendations

Maldives delegation:

1. Share the evaluation findings with the GoM and participating islands. Undertake systematic follow-up consultations with the GoM and island communities to respond to information and clarification requests (International Federation and AmRC).
2. Extend the operation and maintenance training component of the project by 6-12 months, in coordination with AmRC, to provide local operators with on-the-job coaching support. Extend a simplified form of training or briefing to other interested community members.
3. Provide input and support to AmRC in the development of a robust two-way communication strategy, designed together with the island authorities and communities that provides user-friendly information about the key features of the system, as well as appropriate time and space for community dialogue, including with women and youth as separate groups.
4. Work closely with the FrRC to identify risk management and contingency plans for Gan island, as part of project consolidation and exit strategy planning.
5. Undertake advocacy with other donors to develop influencing/support strategies with the GoM regarding recurrent cost planning and budgeting for the ongoing operation of watsan systems.
6. Investigate the feasibility of and options for extending the sanitation services (septic tanks plus connections, if required) with the GoM and others (for example, AusAID apparently is currently supporting works on the Maafushi prison).

Geneva Secretariat:

1. Develop staff guidelines and procedures and investigate the need and options for training in contract management, including the pros and cons of developing expertise within the International Federation or making provisions to contract in this expertise during major infrastructure projects, as some PNS do.
2. Make it a policy requirement to undertake needs assessments prior to making final decisions and preparing designs for recovery activities. Enforce existing requirements of the International Federation's watsan policies, such as the inclusion of monitoring and evaluation activities and budgets in major programs and projects.
3. Consider carefully the capacity requirements for the International Federation and Host National Societies to undertake large-scale post-disaster infrastructure projects, whether implemented directly or through other partners, particularly in areas where there is limited prior experience.
4. Ensure that Better Programming Initiative awareness and training is adequately incorporated into disaster preparedness and response training.

ANNEXES

ANNEX 1: TERMS OF REFERENCE

Evaluation of Community Sewer Systems Project IFRC – Maldives

Background

The International Federation of Red Cross and Red Crescent Societies is constructing houses for people affected by the 2004 tsunami on K. Guraidhoo, K. Maafushi, D. Kudahuvadhoo. In addition French Red Cross is constructing houses on L. Gan for an estimated 8,300 beneficiaries. To improve the health of the IDP community and the environment on these four islands, IFRC agreed to implement sewerage collection and disposal systems in association with these houses. More than 1,000 buildings will be connected to the sewerage system and around 8,300 people will directly benefit from this project.

The consultant CBCL Limited was engaged in October 2005, following an international tender process, to complete a design of a suitable sewer system. The Government of Maldives approved the conceptual design of the system on the 5th of January 2006 and the final design on the 18th June 2006.

The project was tendered internationally between the 20th of March and 26th of April 2006 and the contractor Aqua-Tech Engineering and Supplies (Singapore) was engaged on the 11th June 2006 to complete the work.

Following mobilisation, construction of the collection and disposal system commenced first on Maafushi and L. Gan and will be followed by Guraidhoo and Kudahuvadhoo. Construction on the sewer systems has run overtime and now the final island Kudahuvadhoo, is expected to be completed in December 2007.

Purpose

To create strong institutional memory of the achievements, challenges and learning that have taken place in the design, implementation and management of the Community Sewer Systems Project and to assess the current and potential sustainability of the project.

Objectives

- § To identify key lessons in the design and implementation of the project
- § To record successes and challenges of the project to date
- § To recommend solutions to any identified challenges with a focus on sustainability

Focus

Appropriateness

- § Was the project in line with local needs both at the outset, during the design phase and did it respond to needs that changed during implementation?
- § How were the appropriate strategic and operational partnerships developed and maintained during the project?
- § Is the project in line with government strategy?

Effectiveness

- § How clear were the objectives identified in the beginning of the project
- § How has the project met its objectives?
- § What are the strengths and weaknesses in design and implementation?
- § What is the quality of project work plans and budgets?
- § How developed and functional are partnerships with key stakeholders?
- § What alternatives to the project design and implementation have been considered?
- § What factors would have contributed to a more effective project?

Efficiency

- § How have management, logistic, legal and financial arrangements been facilitated to meet the project objectives?

- § What would have been the added value of running an integrated sewer project with the Watsan and Construction teams?
- § How did the resources (human and financial), allocated to the project enable the expected outcomes to be achieved?
- § What factors would have contributed towards greater efficiency in achieving objectives?

Sustainability

- § To what extent is the sewer system likely to continue operation after the project handover?
- § What steps are in place to ensure the communities are able to manage the sewer systems successfully without IFRC support?
- § Has the community and the government been able to meet the resource demands created by the installation of the sewer systems?
- § How well did the capacity building element of the project, (training, coaching, assessments), contribute towards increased sustainability of the project?
- § What else can be done to build the capacity built by the project and ensure the sewerage systems are sustainable?
- § What would have been the added value of a Maldivian Red Crescent operating involved in the project?
- § What is the likelihood that program interventions will be sustained?
- § What role do other stakeholders have in the sustainability of the project?

Methodology

- § Review of key documents and records
- § Interviews with key informants including:
 - IFRC Secretariat Watsan Coordinator
 - Tsunami Watsan Coordinator
 - IFRC Maldives Head of Delegation
 - IFRC Special Representative - Tsunami
 - IFRC Legal Delegate
 - IFRC Finance, Admin and Logistics Team
 - IFRC Watsan Delegate (sewer)
 - IFRC Watsan Coordinator
 - IFRC Construction Delegate
 - Program staff
 - Sewer Committee members
 - Beneficiaries and/or potential beneficiaries
 - Government and community partners and stakeholders
 - External organizations
 - UNICEF
 - American RC Watsan Delegate
 - British RC Watsan Delegate
 - French RC Construction Coordinator/Head of Mission
 - MWSC
- § Field Visit to 3 Project Islands
- § Joint meeting with Construction and Watsan teams re: project integration

Outputs

- § An evaluation report of no more than 12 pages including an executive summary highlighting key conclusions and recommendations. The evaluation team should produce the report in the format provided. See appendix 1.
- § A Dhivehi translation of the report's executive summary that can be shared with communities and the government, (responsibility of IFRC Secretariat)
- § A feedback session outlining the evaluation findings and proposed recommendations with the Federation secretariat in Maldives
- § A feedback session to key stakeholders
- § A management response with arrangements for implementing and monitoring the response, (responsibility of IFRC Secretariat Watsan Team)
- § A full copy of the report will be available to everyone interviewed

Timeframe

The evaluation will be carried out over 15 days and will take place between the 28th October and 15th November 2007

Roles and Responsibilities

The Evaluation Team will consist of one Team Leader and one National Program Officer. Please appendices 2 and 3 for role descriptions and responsibilities. Additional roles and responsibilities are outlined below.

Recovery Coordinator

- § To recruit a Team Leader
- § To ensure evaluation time lines are adhered to
- § To ensure the evaluation team deliver the required outputs
- § To arrange translation of the final report into Dhivehi
- § To arrange distribution of the report

Maldives IFRC Watsan Coordinator

- § To identify a suitable Program Officer
- § To coordinate a management response to the evaluation recommendations

Maldives IFRC Watsan Delegate (sewer)

- § To provide relevant documentation and records to the Evaluation Team
- § To facilitate the logistics of the evaluation
- § To provide introductions to key informants

Contracting

A daily rate will be agreed with the Team Leader and will be paid for 15 days. In addition to the daily rate accommodation and international travel expenses will be paid. A daily per diem will be provided to cover local travel, food and miscellaneous costs. Costs incurred by the Team Leader outside of this remit will be at his/her expense and will not be covered by the International Federation.

Appendix 1

Report Format for Evaluation

§ Executive Summary

The report should contain an executive summary which can be utilized separately and translated into the local language.

§ Report Body

The main body of the report should be clearly set out against the terms of reference. Where possible practical examples and quotations should be used to illustrate findings. Where learning has occurred and in particular where a response to that learning has been made, it should be highlighted in the report.

If there are recommendations for consideration or proposed solutions to challenges then these should be set out separately and highlighted clearly within the report.

§ Other

The report should include a table of contents, introduction and footnotes, references or appendices where relevant.

Appendix 2

Role Description – Team Leader

Purpose

To lead and implement the evaluation of the IFRC Community Sewer Systems project

Key Tasks and Responsibilities

- To provide leadership to the evaluation team
- To manage the Program Officer within the evaluation process
- To manage the schedule so that it meets the needs of the evaluation

To carry out a secondary data evaluation prior to arriving in country
Design key informant and focus group guides
Conduct interview and focus group sessions
To report back to the Watsan Coordinator and Recovery Coordinator regularly throughout the evaluation
To present the findings and recommendations of the evaluation to stakeholders prior to producing the final report
To provide a final, fully edited, written report in English
To ensure the evaluation is aligned with the terms of reference
To ensure the evaluation outputs are delivered to agreed timescales

Person Specification

Proven evaluation skills and experience in writing evaluation reports
Experience carrying out reviews and evaluations in post disaster context
Leadership skills
Proven experience in carrying out impact and/or sustainability assessments
Knowledge of water and sanitation issues would be an advantage
Good writing and documentation skills in English
Excellent communication skills
Results focused and accountable
Strong initiative and ability to work with minimal support

Appendix 3

Role Description – National Program Officer

Purpose

To support the Team Leader in implementing a evaluation of the Community Sewer Systems project

Key Tasks and Responsibilities

To ensure the evaluation is implemented within the cultural norms of the Maldives
To provide verbal and written translation for the evaluation
To act as liaison between expatriates and Maldivians
To provide local knowledge of the context and the project
To facilitate meetings with key stakeholders
To participate in evaluation meetings and interviews
To lead and facilitate focus groups when conducted in Dhivehi

Person Specification

Experience of being part of a review or evaluation team
Good understanding of IFRC operations in the Maldives
Existing positive relationships with key stakeholders
Ability to provide objective translation from Divehi – English – Divehi
Already employed or has been employed within the Federation (Secretariat or PNS)

ANNEX 2: DOCUMENTS CONSULTED

- Betts-Symonds G (2006), 'Notes from VCA on Meedhu and Meedhuvaree Islands' (2006).
- CBCL (Nov 2005), *Consultancy Services for the Design and Supervision of Sewer Systems in Republic of Maldives: Inception Report*. Male: CBCL.
- CBCL? (June 2006), *Environmental Impact Assessment for the Proposed Development of Sewerage Systems on Kudahuvadho, Dhaalu Atoll, Republic of Maldives*. Male: CBCL?
- D'Aoust P, *Mission Report, 6 April-3 May, 2005*. Bangkok: IFRC.
- GOM (2005), *National recovery and reconstruction plan*. Male: National Disaster Management Centre.
- 'GOM/IFRC (2006), 'Memorandum of Understanding Between the Government of the Republic of the Maldives And The International Federation of Red Cross and Red Crescent Societies Regarding The Construction and Implementation of the Sewer Infrastructure Projects Kaafu, Guraidhoo Kaafu Maafushi Dhaalu, Kudahuvadho Laamu, Gan: 27 February 2006.'
- GoM (2005). *Tsunami: Impact and Recovery: Joint Needs Assessment: World Bank-Asian Development Bank-UN System: Annex 7 Water Supply, Sanitation and Solid Waste Management Sectors*. Male: GoM.
- Hutton G and Haller L (2004), *Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level*. Geneva: WHO.
- Kløvtveit R (1998?), 'Case study of small bore sewerage systems in the Maldives.'
- IFRC, Project concept papers, watsan programme monthly reports and records of meetings. Male: IFRC.
- IFRC (2006), *Responding to the Asia earthquake and tsunamis: regional strategy 2: 2006-2010*. Geneva: IFRC.
- IFRC (200?), 'Report on the Baseline Surveys Conducted on SWSS Islands.' Male: IFRC.
- IFRC (March 2006), *Sanitation Implementation Projects: Tsunami Related Project Proposal: Republic of Maldives: L Gan*. Male: IFRC Tsunami Operation Maldives.
- IFRC (March 2006), *Sanitation Implementation Projects: Tsunami Related Project Proposal: Republic of Maldives: K Guraidhoo, K Maafushi and D Kudahuvaadu*. Male: IFRC Tsunami Operation Maldives.
- IFRC (2006), *Maldives Red Cross and Red Crescent Tsunami Operation In-Country Strategy 2006-2008*. Male: IFRC.
- Loeber E (2006), 'An Analysis of Migrant Workers Health, safety and Living Conditions on Red Cross Red Crescent Funded Construction Sites in the Maldives'. Delhi: IFRC South Asia Regional Delegation.
- Ministry of Environment, Energy and Water, Government of Maldives (Feb 2007), *Provision of Conventional Sewerage Facilities for Hdh Kulhudhuffushi: An assessment prepared by MEEW for the ADB*. Male: MEEW..
- MEEW (April 2006). *Water and Sanitation Policy Statement*. Male: MEEW.
- Maldives Water and Sanitation Authority (May 2006). *Five Year Activity Plan 2006-2010 for MWSA*. Male: MWSA
- MWSA (January 2006). *MWSA minimum requirements for sanitation in the Maldives*. Male: MWSA
- The Sphere Project (2004), *Humanitarian Charter and Minimum Standards in Disaster Response*. Geneva: The Sphere Project.
- UNEP (2005), environmental assessment
- *Vulnerability and socio-cultural considerations for PHE in emergencies* (draft – no date). London: Oxfam GB
- WHO/UNICEF (June 2006), *Joint Monitoring Programme for Water Supply and Sanitation: Coverage Estimates: Improved Sanitation: Maldives*. Male: WHO/UNICEF.
- Supplementary Water Supply System: Project Evaluation.

ANNEX 3: KEY INFORMANT INTERVIEWS AND FOCUS GROUPS

International Federation, Maldives Delegation

Ms Mariyam Asifa, Recovery Officer
Ms Kathryn Clarkson, Acting Head of Delegation and Watsan Coordinator
Mr Adam Hashim, Watsan Field Officer
Mr Michael Hodges, Watsan Delegate
Mr Patrick D'Aoust, Tsunami Watsan Coordinator, South East Asia Regional Delegation
Mr Surendra Regmi, Finance/Administration Delegate
Mr Michael Wardick, Construction Delegate
Ms Donna Williams, Recovery Coordinator

International Federation, Secretariat

Ms Elyse Mosquini, Senior Legal Officer
Mr Jerry Talbot, Special Representative for the Tsunami Operation (former Maldives HoD)

Partner National Societies

Ms Murushida Abdul Mannan, Coordinator, Community Mobilisation, Water and Sanitation Program, American Red Cross
Mr Tom McAloon, WATSAN Delegate, Water and Sanitation Program, American Red Cross
Mr Prasad Rasal, Watsan Delegate, British Red Cross
Mr Emmanuel Vivien, Head of Delegation, French Red Cross

Government of Maldives

Mr Ali Mishal, Project Officer, Ministry of Environment, Energy and Water (MEEW)
Ms Shaheeda Adam Ibrahim, Director General, MEEW
Mr Abdul Razzak, Deputy Minister, MEEW

Consultant/Contractor

Mr Afzal Ali, Assistant Project Manager (Maafushi), CBCL
Mr Rob Jenkins, Project Manager, CBCL
Aqua-tech representative (not available)

Other Donors

Mr David Proudfoot, UNICEF
Mr Richard Scurfield, Special Representative, Maldives Country Office, World Bank

Beneficiary focus groups

Island Development Committees, Guraidhoo and Maafushi
Women, Guraidhoo and Maafushi
Youth (including one sewerage system trainee operator), Maafushi
Businessmen and fisherman, Guraidhoo
Sewerage system trainee operators, Guraidhoo

ANNEX 4: ANALYSIS OF POTENTIAL HEALTH VIS ENVIRONMENTAL IMPACTS OF PROJECT

While it is clear that the project meets a key environmental need to protect and improve the quality of water, it is less clear whether the development of the sewerage system will have a significant impact on improving health, as was originally expected when the project was designed. A baseline study carried out in 2007 on ten islands for the SWSS project found a high degree of good hygiene awareness and practice. Additionally, a Public Health and Sanitation Training (PHAST) program carried out by AmRC on three of the project islands - as part of its sewerage project - found that the communities' priorities focused on vector-borne diseases, erosion and solid waste management.

Observation of household compounds and focus group discussions on Guraidhoo and Maafushi, appears to also indicate reasonably good hygiene knowledge and practice within the communities. Of those interviewed on the islands, only one woman mentioned that her children had developed diarrhoea after swallowing bathing water and the youth group in Maafushi mentioned that some children had become ill when they swallowed water while swimming in the lagoon. A community health worker at the Maafushi Health Clinic advised that there was a high incidence of diarrhoeal diseases on the island but could not provide statistics on this.

The main concerns identified by the island communities related to the impact of contamination by waste on water quality. All focus groups reported bad odours and skin problems (rashes, itchiness) from bathing or swimming in water affected by human and other waste. The problem was considered bad enough on Guraidhoo that several men and women advised they now bathed at the homes of friends and neighbours or rinsed themselves with rainwater after showering with the groundwater. Women and men on both islands, particularly Guraidhoo, were concerned about the impact of swimming or bathing with contaminated water on the health of their children.

The presence of a large amount of garbage at the island's Australian and Canadian Red Cross-funded waste management centre on Guraidhoo was also mentioned as a concern in terms of creation of mosquito breeding sites that could spread dengue fever and the seepage of waste into the groundwater that could not be burned off. The islanders did not have the funds or means to remove this large amount of waste from the island, but the World Bank has advised that it will be supporting the MEEW to do follow up work on the centres through a planned five year environmental management capacity-building project.

While the evaluation could not measure the priority given to environmental sanitation in relation to other community needs, it appears to be a significant concern to the island communities, predominantly from a water quality perspective. UNICEF advised that their investigations on other islands have also come to this conclusion.

**ANNEX 5: COMPARATIVE ANALYSIS OF
DIFFERENT SEWERAGE SYSTEM MODELS**

ANNEX 6: PROJECT LOGFRAME

INSTALLATION OF COMMUNITY SEWER SYSTEMS

Result	Output	Programme Activities
<p>Expected result 1 Access to a community sewer system</p>	<ul style="list-style-type: none"> • Every household able to be connected to the new sewer system • Wastewater collected and disposed in accordance with GoM requirements and SPHERE standards 	<ul style="list-style-type: none"> • Confirm the allocation of 4 islands from the GoM for the IFRC sewerage program. • Sign an Agreement with the GoM to reflect the commitment of IFRC to the project • Engage a consultant to undertake the design and site supervision of the 4 sewer systems • Evaluate and approve an appropriate sewerage system design for all 4 islands in accordance with SPHERE standards • Confirm approval from the GoM of the design • Engage a contractor for the construction of the sewer systems • Construct the sewer systems on all 4 islands. • Monitor and supervise the construction of sewer systems on all 4 islands • Commission and handover the sewer system to the beneficiaries.
<p>Expected result 2 Development of the knowledge of operation and maintenance of a sewer system and improving the health of the community and minimising impacts on the environment</p>	<ul style="list-style-type: none"> • Improved impact on the environment (especially in the lagoons) and the quality of the groundwater • Reduction in water related health risks • Formation of a community sewer management committee • Operators assigned with adequate knowledge to operate and maintain the sewer system 	<ul style="list-style-type: none"> • Undertake environmental and social surveys as well as topographical surveys of both land, lagoon and reef areas • Conduct community information and awareness meetings on the project islands • Facilitate the selection of three persons on each project island to be trained in maintenance and operation of the sewerage system. • Facilitate the formation of a sewer management committee on each project island • Conduct operation and maintenance training for the sewer system operators

ANNEX 7: PROJECT PROGRESS AGAINST THE LOGFRAME

Based on the information currently available, the following observations on the progress of the project in relation to the logframe are made.

Expected result 1: The achievement of the performance indicators for expected result 1 will be partly dependent on the successful installation of the household septic tanks through the AmRC projects, as these have been linked to GoM and Sphere standards (which is a strength of the project). To date, the project appears on track to meet most of the GoM and sanitation-specific Sphere standards and performance indicators for sanitation – *if combined with the complementary AmRC project's activities* - with the exception of the following:

SPHERE:

- Excreta disposal: Users (especially women) have been consulted and approve of the siting and design of the toilet [system].
- Vector control: on Maafushi, where dengue and some other vector-borne diseases are prevalent, rainwater was pooling on some of the pump station covers. This was observed during the site visit and can be rectified fairly easily, according to the sanitation delegate.
- Minimum standards common to all sectors: common standards 1 (participation), 2 (initial assessment) and 5 (monitoring) have been partially met.

MWSA MINIMUM REQUIREMENTS FOR SANITATION (JANUARY 2006):

- Wastewater collection systems #1: All households *and public buildings* shall have an appropriately designed wastewater collection system (this should include connection to the system).
- Wastewater collection systems #10: Grey water shall be discharged to the ground or reused for non-potable purposes after appropriate treatment to a standard acceptable to MWSA.

These were the most recent standards available to the evaluation team. The MWSA standards have continued to further develop and evolve and it is possible that these standards have been or will be superseded by more recent GoM standards and guidelines.



Expected result 2 is actually comprised of three different expected results, two of which are very broadly defined and will be difficult to measure due to the absence of good baseline data from the project sites and the large number of factors external to the project that may influence the expected results (for example, seepage of contamination into the groundwater from solid waste management centres on the islands).

A full assessment of whether either of the two expected results have been achieved cannot be made until the system is fully operational and, in the case of expected result 2, until the system has been functioning for 2-5 years. An end-of-project evaluation has been tentatively planned towards the end of 2009 when the

AmRC tsunami operation is nearing completion.

This evaluation will need to include an assessment of changes to water quality. It will be important to measure the water quality prior to commencement of usage of the system and then at regular intervals afterwards to ascertain if the system has contributed to improved water quality. The Maldives delegation and the AmRC are currently investigating methods to collect this information. While GoM documentation indicates that local health centres will be responsible for regular testing, monitored through MWSA, the Maafushi health clinic indicated it did not have the equipment nor the training to do this. Apparently, the WHO is working with MWSA on improving its water quality testing capacity, as has UNICEF previously. The project will need to ascertain how this data will continue to be collected after 2009. It may be worth investigating whether community members could be involved in this work.

ANNEX 8 CONTRACT ADDENDUMS

CBCL

Number	Subject	Cost (USD)
1	Extend sewerage system survey to Gaafu Atoll (American Red Cross)	12,150
2	Rapid assessment for replacement of existing septic tanks on Guraidhoo, Maafushi and Kudahuvadhoo (American Red Cross)	27,900
3	EIA report for the sewerage project (MEEW EIA requirements not previously met by project)	3,500
4	Design and construction supervision for replacement of existing septic tanks on Guraidhoo, Maafushi and Kudahuvadhoo (American Red Cross)	329,110
5	Time extension of six months	0
6	Additional design works for Kudahuvadhoo and Gan (support to house construction, ph 2 & changed land use Plan on Gann)	8,500
7	Budget reallocation from quantity surveyor to construction supervisor	0
8	Time extension of three months	140,988
9	Time extension of four months + methodology changes	205,112
		727,260 ⁸

Aqua-tech

There have been two contract adjustments (construction design changes). Cost has been absorbed under existing total value for contract and could not be broken down from available documentation.

Notes: CBCL Contract Addendums 1 and 2 have justification, in terms of cost savings. Addendum 4, which was an AmRC decision, may be justified but the price appears to reflect a sole supplier context. Addendums 5-9 reflect the emergence of project management issues for both the CBCL and Aqua-tech contracts.

⁸ Original contract value was USD 582, 291