



Phase 2 Evaluation Report
Supplementary Water Supply System
IFRC, The Maldives

By

Patrick Fox

July 2008

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List of Abbreviations

Australian Red Cross	ARC
Build, Operate, Transfer	BOT
International Federation of Red Cross & Red Crescent Societies	IFRC
Government of Maldives	GoM
Maldives Water & Sanitation Authority	MWSA
Maldivian Red Crescent	MRC
Memorandum of Understanding	MoU
Ministry of Environment, Energy and Water	MEEW
Ministry of Public Health	MPH
National Recovery & Reconstruction Plan	NRRP
National Society	NS
Participating National Society	PNS
Project Cycle Management	PCM
Project Monitoring & Evaluation	PM&E
Reverse Osmosis	RO
Supplementary Water Supply System	SWSS
Terms of Reference	ToR
United Nations	UN
United Nations Children's Fund	UNICEF
United States Dollar	USD
Water & Sanitation	WatSan

Preface and acknowledgements

In response to needs identified following the Tsunami, the government of Maldives (GoM) identified 46 islands in need of a supplementary water supply systems (SWSS) through the provision of desalinated Sea Water, enabling selected communities to have access to safe drinking water throughout the year. IFRC accepted this project.

The purpose of the evaluation process was to create a strong institutional memory of the achievements, challenges and learning that have taken place in the design, implementation and management of the SWSS project. The evaluation process has been executed in two steps:

- 1) A review that was carried out in September, 2007 primarily looking at the processes related to the implementation of the SWSS programme;
- 2) An evaluation focusing on the impact and sustainability of the programme.

This report covers the second of the above described evaluations but should be read as complementary to the review that took place in September 2007. Two factors marked the uniqueness of the SWSS programme:

- I). IFRC interventions are basically designed to be delivered through host national societies but the since the Maldives did not have a Red Crescent Society the situation faced in the Maldives Tsunami response was unprecedented.
- II). The second was related to the fact that IFRC's experience with large budgeted infrastructural projects was relatively limited, including outsourcing both the construction *and* the monitoring functions to contractors and consultants. This approach is nevertheless expected to increase in the future why learning from the review and this evaluation assumed extra significance.

At the time of this evaluation, the programme had ended, and responsible expatriate programme staff left the country. The evaluation team composition included two field officers and undersigned as team leader. The team was further accompanied by the regional tsunami WatSan coordinator. During the 10-day mission, 33% of the targeted islands were visited, a selection judged representative by the team.

The evaluation methodology conformed to those outlined in the ToR, attached to this report. The final version includes the management's response of IFRC Maldives Delegation. Responsibility for views expressed however rests exclusively with me.

I would like to thank the IFRC, Maldives Delegation and Patrick D'Aoust (WatSan Tsunami Coordinator), for providing me with the opportunity to lead this evaluation. I also wish to forward my appreciation to my team: Mariyam Asifa (Recovery officer) and Hassan Ziyad (Field Officer) for excellent logistical arrangements, insightful comments and superb companionship throughout the mission. I also like to thank Per Jensnaes, HoD, and his team for all arrangements that facilitated the execution of this mission. Last

but not least I like to thank members of the project targeted community and officials of the Government of the Maldives at the level of MEEW and local administration, both at the atoll and island levels for the cooperation extended to the evaluation study.

Patrick Fox
Team Leader

Executive Summary

The humanitarian community woke up to a whole new world on the morning of December 26th 2004. The tsunami effect sent shockwaves as it killed in a way never witnessed before and devastated lives, livelihoods etc – and the world, in turn, reached out to help and provide support in a remarkable way. For the first time, assistance programmes were not hampered by inadequate funds, but humanitarian organisation could instead make use of all its accumulated knowledge to design programmes as they should be. In the meantime, the funds generated vastly exceeded the capacity of the organisation to absorb. And even less properly put to use – at least in the short term which was the trade mark of many organisations with disaster response as their main feature. The congestion of organisations following the tsunami in both short and long-term support is today widely recognised.

At the same time, expectations from donors, media, and beneficiaries were high, and organisations were in a haste to produce results to show which also consumed funds. Many projects were thus embarked upon without careful analyses conducted prior to actual interventions and further followed by a spending spree. While the SWSS programme was promoted and initiated by the GoM it is nevertheless also a product of this approach. Similar to other tsunami affected countries' recovery programmes, initial assumptions of programmes were drastically reduced as implementation began and studies were duly conducted indicating higher costs for the interventions than anticipated. The SWSS programme was for instance trimmed down to 75% of its original undertaking, and thus more realistic to the funds available.

This paper is the product of the Phase 2 evaluation carried out in early July, 2008 after the conclusion of the project. This paper should be read as a complement to the Phase 1 review that was carried out in September 2007.

Specific findings:

- 1) The project, although heavy on infrastructural implementation, has been appreciated by both community members and authorities. In particular the latter expressed appreciation to the Movement for considering health programmes so holistically, whereby drinking water projects were coupled with sewerage projects and solid waste management.
- 2) While 14 out of the 15 systems were found to be operational, none of the systems was operating at its designed capacity. In the meantime, community members expressed appreciation to the clean water produced, and it appeared that the water produced was increasingly appreciated as superior to other available water sources.
- 3) It is at this point too early to be able to measure health impact as i) there were no health baseline indicators available from prior to the intervention and ii), the health situation appears to be generally acceptable on the islands from a safe water perspective.

- 4) The GoM through MEEW have guaranteed the sustainability of the systems by providing funds to cover for the running costs of the plants, apart from electricity. The latter issue is found to be differently solved on all islands as ownership of the power plants vary in structure between islands. It is suggested that MEEW consider the operation of the RO system in a dual format:
 - a. Secure the operational capacity of the RO system for emergency use by having a support plan for production costs when an emergency takes place. This plan should be separate, though incorporated into;
 - b. Regularly providing safe supplemental water to the population.

While the RO units require regular usage for its operation (its technical lifespan is reduced drastically if not used regularly), the above two aims are different and the management plan should take both scenarios into consideration. The disaster management mechanism (MEEW?) should for instance carry a greater portion of the operational costs during the latter case, and the island itself should take on a bigger financial burden of running the system during regular provision of safe water to the population. This will increasingly allow for the system to fulfil its aim and at the same time render the system more sustainable. It is the view of the undersigned that MEEW stepped in too quickly to guarantee support of consumables/spare-parts to the systems, and not demanding anything in return from the islanders. This has further reduced the incentive for users to pay for water, and the role of the water committees is undermined.

- 5) While the water treatment technology is advanced, it is found to be appropriate for the Maldives and capable operators can be found and trained locally. Operational support can furthermore be sought from the resort island operating similar water treatment facilities and access to more qualified technicians. The challenge lies in attracting the person to the job as the salary offered appears too small.
- 6) Beneficiaries were generally (not all) found to be reluctant to pay for water – unless it is provided to a tap with a meter in the household. This issue was raised early in the project implementation phase, but discarded as beyond the scope of the project. It is nevertheless thought by undersigned that this issue should have been further looked into in order to better design a system which would suit the uses and ideas of the community. It appeared that community members were willing to pay also for equipment required for such extensions. While the whole system would have to be re-designed, it would vastly have increased the probable duration/sustainability of the project.
- 7) Unlike most IFRC WatSan operations, almost no attention appears to have been given to sanitation and hygiene in the targeted communities. While the project carries a stamp of Disaster Preparedness, failing to incorporate information campaigns on software matters comes through as a lost opportunity. In the meantime, it was noted that the project has generated a discussion and appreciation for improved water quality.

- 8) The absence of a traditional local partner in a National Society was very evident in the project. The creation of a Maldivian RC will greatly benefit from the SWSS project and other infrastructural projects such as sewerage systems and solid waste collection centres to disseminate information on health issues and thus improve the impact of the programme on the life on the islands. The sustainability of the project has much to gain from this as appreciation is generated as information is passed on.

1. Introduction

The Tsunami struck the Maldives on the morning of December 26th, affecting the livelihoods and community basic services of the people on 76 of the 200 inhabited islands.

90 percent of Maldivian households living in the atolls were estimated to be dependent upon rainwater as the principal source of drinking water. Despite this, pre Tsunami data suggested that as much as 30% of the atoll population suffers from drinking water shortages. The project accordingly finds strong congruence with this long term development need.

The Tsunami affected 76 inhabited islands in the Maldives. The GoM, through their National Recovery & Reconstruction Plan (NRRP), invited partnerships for the installation of RO plants in 46 of these islands. It was estimated that a total of 1,000 community rainwater tanks, 6,000 household rainwater tanks and 20,000 m³ of rainwater supplies were lost. The reality was that rainwater harvesting capacities were lost mostly in islands totally destroyed by the Tsunami. The appropriateness of the selection of the 46 islands appears weak following information that minimal damage had been done to these islands' rainwater harvesting infrastructural capacity. Further, the NRRP through another program was seeking to expand rainwater harvesting capacities in these same islands which in the short-term reduces the need for RO water. While this is true, it is suggested that the SWSS project should be observed with a Disaster Response capacity in mind, and the selected islands being focus points for such potential responses.

The GoM soon published a National Recovery & Reconstruction Plan (NRRP) which invited partnerships for installing 46 Sea Water Desalination, Reverse Osmosis plants across 17 Atolls. IFRC immediately submitted a letter of intent to the Maldives Water & Sanitation Authority (MWSA) for installing and commissioning 20 desalination plants. Project implementation of a pilot project at island Thulusdhoo followed a few months later. An attempt to forge an IFRC-GoM SWSS MoU was initiated as early as July 2005 though it was only signed by December 2006. Subsequent re-structuring of GoM's ministries has apparently been a principal cause for this undue delay. A new Ministry called the Ministry of Environment, Energy and Water, (MEEW) was created by the merging of other Ministries and departments within Ministries such as the MWSA. While the latter kept its functions as the licensing authority for new ROs, MEEW now became the relevant line Ministry within whose functional ambit SWSS fell under. However, protocol dictated that the Finance and Treasury Ministry act as the formal signatory to the MoU on behalf of GoM. The finalization of the MoU therefore involved a complicated and lengthy three way communication process that accounted for much of the delay in signing the MoU.

This is the Phase 2 Evaluation of the SWSS project. The purpose of the evaluation is to provide a strong institutional memory of the achievements, challenges and learning that have taken place in the design, implementation and management of the project through an impact and sustainability assessment.

2. Methodology

The methodology pursued included:

- 1) Reading through relevant reference material provided by the WatSan Tsunami Coordinator.
- 2) Visiting 5 of the 15 islands receiving RO units.
- 3) Interviews and discussions with:
 - a. Relevant stakeholders on respective island including (when available):
 - i. The Atoll Chief
 - ii. The Island Chief
 - iii. The Island Development Committee
 - iv. The Women's Committee
 - v. The RO Operator
 - vi. Water users
 - b. Relevant other stakeholders including:
 - i. The IFRC Head of Delegation
 - ii. The WatSan Tsunami coordinator
 - iii. IFRC WatSan delegate and staff (Hassan Ziyad, Mariyam Asifa)
 - iv. IFRC DM Coordinator
 - v. AmRC WatSan delegate
 - vi. BRC Representative
 - vii. UNICEF WatSan coordinator
 - viii. MEEW
 - ix. MWSA
 - x. MPH

Reporting was carried out in two ways:

- 1) Through a team debriefing/open discussion together with the IFRC HoD and the whole evaluation team.
- 2) Through this evaluation report following the format as stipulated in the ToRs (Please see Annex A).

3. Objective

The objectives of the evaluation, as described in the ToRs (Annex A) are:

- 1) To assess the sustainability of the SWSS project and;
- 2) To assess the impact of the SWSS project on the communities in which it was implemented and on the Government of Maldives.
- 3) To identify potential links with Disaster Management activities of the IFRC and future Maldivian Red Crescent.

While these objectives are the focus of this evaluation, I nevertheless aim to enlarge the scope of the evaluation to also include aspects which carry implications on the operations of similar character in which the Red Cross movement is involved on the Maldives.

4. Findings

4.1. Impact

- 1) According to documentation, the GoM suggested that IFRC intervene in the water sector by providing water desalination units to 20 islands (later reduced to 15 primarily due to financial reasons). This was initially accepted without apparent follow-up with baseline assessment. This has made it difficult to generate adequate insight into the actual needs for these systems in particular in regards to alternative water supply systems on the islands. However, as the project progressed, such information was increasingly gathered, and to a degree making up for the lack of information relevant to this analysis.
- 2) The tsunami occurred at the end of the rain season. Many islands affected saw their RWH systems destroyed, and faced going into the dry season with empty cisterns. The selected islands for RO unit distribution were apparently not among the most affected in this regard.
- 3) The 46 islands in the original support plan of the GoM was developed with the idea of being able to support surrounding islands with water should another disaster occur. Thus, mostly capital islands were targeted for RO units, and explains why the IFRC supported islands were not among the worst affected by the tsunami. This is strategically logical, and follows a DP approach. Of the provided systems, two ie. Th Madifushi and R Meedhoo were assigned as an emergency unit, but later installed as a permanent unit.
- 4) This explains why, during interviews with islanders, it became apparent that the demand for the RO units did not originate from them, but rather from the GoM. It would however have been appropriate to include the islanders as early as possible in the development plan in order for island authorities to be included in the DP plan. Other issues related to the type and quality of information gathered by the GoM with impact on the SWSS project following the disaster include:
 - a. The IFRC, as all other agencies, relied on the information provided by the GoM. During visits to the islands, it was found that the GoM assessment was primarily carried out over the phone with island authorities. During discussions with some island chiefs, it emerged that the GoM had not specified for what the information gathered was to be used for. The tsunami resulted in that many left their homes for other islands. When island authorities were asked how many lived on the island, answers were provided relevant to the number currently on the island – excluding those who had temporarily left. Response was hence erroneous in regards to, for instance, the number of RWH kits that should be distributed.
- 5) Of the five islands visited, 4 had operating units, and according to secondary information, the remaining 10 islands part of the project had systems technically functioning as designed. With 93% of the systems operational, this is a very good

result. Tentatively, this can be compared with the operational result of the 15 units donated by UNICEF to GoM of which an estimated (by UNICEF) 20% are in use. The reason is most probably due to the follow-up and implementation strategy by IFRC to see the installation through and not just simply hand-over the equipment without any further implementation assistance provided.

- 6) For various reasons, production figures vary greatly between the RO units. Also, the suggested maintenance operation of the units is very irregular. On some islands, the respective operator is still not in place – or receives salary. Some minor issues of the systems requiring attention had been discovered since completion of some systems, but the contractor was quick to respond to needed intervention. There were some minor cases of warranty related issues on malfunctioning gear. Such issues appear to take a long time to settle, and affected operators appeared at a loss with what to do.
- 7) While the desalinated water is of superior quality than other available natural water sources to the islanders, some were still hesitant to make use of the water for drinking purposes. This was gradually changing though, and many interviewed users (in particular the women), were very pleased with the water, and rather upset that it was not producing more..... Also café owners were very keen to make use of the water which was found to be of equally good (if not better) quality than the bottled water (although the elder citizens were hesitant to agree to this...).
- 8) Limited attention seems attributed to the water quality in general beyond taste and odour. The SWSS project appears to have generated a discussion around water quality since the quality is evidently much superior to what people are used to receiving through taps or wells. In the meantime, health aspects and hygiene issues have not been covered in the SWSS project – or were at least not raised as an issue covered by the interviewees. An opportunity was clearly lost here.
- 9) The SWSS project thus had a very hardware approach – focusing heavily on infrastructure. As the project progressed, management aspects were taken on board to improve the probability of success and sustainability. As the islanders respectively sat to design and decide on the cost-recovery of the project (including payment for the water), it appears that MEEW stepped in very early to guarantee the operation of the units by providing salaries for operators, replacing spare-parts and consumables (such as filters and filter chemicals. Also here, an opportunity was lost in trying to promote ownership of the system. However, the GoM did not respond quickly to the promise of salaried positions and as a result some operators left after a couple of months voluntary operation.
- 10) It appears that the Island Development Committees are not very operational, and handing over the SWSS systems to those structures was not an optimal approach to ensure safe operation of the system. As the decision was made by the GoM to support with salaried operator positions, the delay of providing this support further undermined the operation of the RO units. The above two issues together make up for a fundamental shortcoming in the handover strategy of the SWSS system. In the

meantime, GoM support to the islands have followed this structure before, and expectations from the islands indicate that the salaried positions, albeit late to come into effect, helped in ensuring the operation of the systems to date.

- 11) Islands showed different levels of needs related to access to safe water. Some appeared rather indifferent to access of desalinated water whereas others, such as Hdh Dhidhdhoo and Adh Mahibadhoo, turned to vandalism of the systems as production was interrupted.
- 12) While the technology as such is both relevant and appropriate to the island context, it is unclear why the project was embarked upon as an emergency and/or recovery project, and not a DP project. The technical design suggests that it was an emergency project, but the installation and management training process was so long that it took on more of a developmental appearance. While this is not necessarily negative, it would have more of a Red Cross scope had it been coupled with a stronger emphasis on software issues (ie. hygiene and sanitation promotion).
- 13) Even so, while the units indicated a varying degree of operation resulting from differing circumstances (no operator, no need for the water, no payment collected, looted system etc.), the population benefiting from the water supply were very positive on the quality of the water and for what it can be used for (including drinking, cooking, personal hygiene of children, washing down fishing equipment, selling to fishermen etc.). On some islands, the appreciation is such that extensions have been made to schools, hospitals/clinics, water-cooling devices accessible to all down by the harbour, sections of the community not reached, etc. giving clear signs of appreciation attributed to the water supply system.
- 14) On one island, Gahdhoo, the running of the plant without assuring payment had resulted in a very high electricity bill due the GoM as the owners of the power plant. From now on, payment was to be collected for the water, and since no water-meters were available and control was difficult, the distribution network was shut down. To take control, distribution was to be carried out at the plant site only, and thus an increased storage capacity was developed at the RO plant, with a greater distribution capacity applied (more taps). However, some households now had a very long way to go to fetch their water..... It remains to be seen how this operates. In short, this is not a very positive development, since the bill shows that the water is appreciated (which was confirmed by interviewees, and an alternative solution should have been sought rather than enforce such a drastic one. This nevertheless shows the critical need for cost recovery of produced water – a task which will increasingly land on the shoulders of the island authorities (water committees).
- 15) On this island, the management had also taken on the task of installing rain water harvesting capacity on the RO unit building at their own expense and as such giving evidence to the value attributed to clean water. The unit had furthermore, according to the meter, been operating on average 4 hours per day since its installation – a very

high number in comparison to other units with varying hours of operation (less than ½ hour to 2 hours per day on average since their completed installation.

- 16) The reluctance of the population to pay for the water would change over time as the quality of the water is increasingly appreciated. While the information campaign on the value of the water was too short and inadequate, the visit gave indications that the users were warming up to the idea of having increased access to desalinated water – and willing to pay for it. Once these thoughts have settled in, providing water supply systems also to include taps at the households is feasible – as sought after by users.
- 17) The project was installed with limited presence from the Red Cross throughout, as the work was conducted through a contractor, yet regularly visited by the delegate and IFRC staff. Given that the Maldives do not have a NS; many interviewees showed a high level of knowledge of the Movement, indicating that dissemination had nevertheless functioned. In particular the women’s groups were curious of the organisation, and wondered if there were any future opportunities that could be developed. Information on health aspects and sanitation, training in business management, and alternative social activities were raised as issues, but also on how to manage a more effective “clean island” project and generate community participation were brought up as areas of interest. These topics may appear to be an unexpected nature, but useful knowledge to follow-up on once the NS is created.
- 18) With regards to access, clearly the water points are easier to access for some users than others. Even so, the distribution of the water points followed the SPHERE standards and appeared to be accessible by those who made use of the water. Some islands had nevertheless had their system extended by up to 33% increase of water points as a result from sectors deemed too far away. This was done at their own expense, but gives evidence to the appreciation of the water.
- 19) Planned coverage through water points is according to design. Meanwhile, none of the RO units produce according to capacity, resulting in that the average 3 litres per person and day is not reached. Still, the SWSS system has not yet been tested for what it was originally built: to supply emergency water in times of need. Only then will we really know the actual usage and value of the systems. In the meantime, 14 out of the 15 units are technically functioning.
- 20) As health data becomes available, the impact of the water quality on the health situation can be assessed. The value of the RO units will then become more evident, and have bearing on the appreciation and the sustainability of such water producing units.

4.2. Sustainability

Operational:

- 21) The overriding issue which renders the systems sustainable is the presence of the GoM – and more specifically: MEEW. Through deals (apparently separate deals with each supported island, it appears), each island receive funds to cover for the salary of the operator, are provided with spare-parts and consumables, receive subsidised energy and fuel to provide power to run the plant etc. As such, it leaves little reason for the respective island water committee to generate funds for the RO's operation through cost recovery or otherwise. While it falls within the design of the project to focus on emergency supplies during emergencies, the aim was also to improve each targeted island with improved access to safe water. This is artificially achieved, but not with the beneficiaries' active participation.
- 22) A second crucial issue in keeping the systems operable is related to the availability of qualified operators, and for them to stay on. Amongst others, problems encountered affecting the operation of the plant was related to the salary offered. First: in order to be a full-salaried government employee, o-levels had to have been passed. In the case of RO operators, 85% of the salary was provided unless o-levels were passed. Second: since the running of the plant was considered a daily undertaking – at least for some hours – some operators did not find this salary adequate and either quit or refused the position. While this seemed to be a standard approach by the GoM, on the island Gahdhoo, the island authority, dealing directly with MEEW and not the atoll chief was able to secure 100% salary to its operator even though he had not passed his o-levels. While this shows a flexibility of MEEW, it makes ad hoc solutions difficult to deal with, and may potentially backfire as islands realise they have different deals.
- 23) The electrical power-plants on each respective island appear to have a different ownership structure attached to it. There may be a co-ownership of the plant between the island and the government through the electrical company, or fully owned by either party. Each island has different tariffs on electricity, with varying escalating costs faced by high consumers. If the plant could cope with running the RO unit, a generator was not installed – which was the case at, for instance, Gahdhoo. Kolamaafushi was provided with a generator but chose to connect the RO system to the central power system on their own to facilitate distribution pumps and for production if required. In the former case, Gahdhoo, the GoM owned the power plant and in the latter, Kolamaafushi, it was owned by the islanders. Neither island collected payment for water initially, and both had the other running costs covered by MEEW. However, after one year of operation, the former had run up a bill of 28.000 (Maldivian Rufiya or Mrf) due the power-plant which needed settling before continued energy supply was granted. This resulted in drastic action and the shutting down of the system and demand of payments. The latter island could continue to produce water free of charge – as the electricity cost was incorporated into the electricity bills of all islanders (with their knowledge but not realising that the cost incurred on them).

What this shows is that each island has different means in securing their availability of energy/electricity and thus water production – a fact that does not appear to have been taken into consideration in the planning of handover of the systems. This would of course have been difficult to know before hand, but since no diversification was made at ensuring a differentiated management structure per island, this was difficult to avoid. Undersigned believe that this was equally a lesson learned for all major stakeholders: the islanders, MEEW as well as IFRC.

- 24) The GoM is the guaranteed sustainability factor of this type of infrastructural intervention in the Maldives. It was said on every visit that the MEEW will provide spare-parts and consumables to the RO system and salary to the operator. Further, the electricity required to run the plant is subsidised by the GoM, and those plants which have generators installed receive subsidised fuel. Also, all islands appear to charge the government much more for the electricity that their buildings use. Under such circumstances, there is no need to charge anything for the water as costs are covered.
- 25) The RO project - similar to the waste collection centre project – was introduced to the donor community by the government. As has been shown in many documents, these projects were too hastily accepted without a complementary justification assessment carried out. The result being that no tailored solution was made possible, as the spending spree induced by the donor community demanded hasty action and results.
- 26) The upcoming new constitution has for aim to allow for greater self-governance of the islands – i.e. decentralised structures. While the islands appear to welcome this move, the full implication of this seems to elude the population. Increasingly, each island will have to fend for itself to raise funds for the operation of its public services, which will culminate with the introduction of taxes on salaries amongst other. During the mission, the first demonstration of GoM employees ever took place, where the teachers demanded a 100% increase in salaries. This is a mere first example of what will probably become the norm – where the population take active action/participation in their own future.
- 27) Of the visited islands, only one was found not to be operable. On Maamendhoo, the RO unit was completely destroyed and parts looted. At the time of handover of the system, crucial parts were found to be stolen, and thus the test run could not take place. The location of the plant was far away from the inhabited part of the island, and thus not regularly surveyed. The island chief informed us that a group of drug-addicts and thieves were responsible for this, but was ultimately the result of the plant being located too far away for regular supervision. The location was found to provide access to the cleanest water on the island, why the delegate had insisted on this location, even though the island authorities had asked for the plant to be installed elsewhere. While this is difficult to verify, the result is nevertheless that a unit is out of operation and beyond repair. The island chief claimed that MEEW had already promised to replace this unit, and have it installed close to the harbour. This at least

indicates a certain interest for the system as such. (Dealing with the drug problem appears to still be an issue though...)

28) With increased rainfall variability, inadequate access to water from the Mosque wells (centrally located wells traditionally producing water used for drinking and cooking) and groundwater increasingly said to be salty and contaminated, the RO systems can play a central role in providing safe water to the islanders as is the case on the resort islands. This evaluation shows that the technique is both sound and appropriate for the islands. In the meantime, it is with surprise that undersigned notes that there were limited alternative technologies (apart from RWH kits) attempted although, for instance, the high humidity and abundance of sunshine is ideal for solar condensates to be used. (Every Km³ of air holds approximately 8500 m³ of water....).

Technical:

29) The project has overall been successful in its technical aim: to install functioning RO units on 15 islands. According to information, one of the 15 was found not to be in working order and one not to be used at all. (The latter unit, the pilot project at Thulusdhoo, have requested that the installed system be removed and relocated to a community with higher needs. In replacement, a sewerage system is asked for).

30) The RO systems are technically relatively advanced in producing drinking water, while also quite robust in their structure and simple to operate, including maintenance and replacement of spare-parts when required. The technology is furthermore such that it coincides with models most common used on the resort islands, ensuring secured availability of spare-parts. Also, deals can be struck with technicians on the resort islands to help out should the RO units require more input than what the operators are trained for.

31) To implement the 15 sites at the same time would have been more cost-effective. Meanwhile, by implementing in cluster-sets, the learning process was such that is increased the sustainability of the projects, and inevitably has an important role to play in the high level of operating units at the end of the final cluster.

32) Some specific challenges faced by the contractor, and still remain, are:

- a. Logistics and access to material have been serious challenges in the implementation process, and will continue to be so in the operation of the units.
- b. Local understanding of the importance of water quality.
- c. HR is a crucial issue – finding qualified people with interest to operate the units and conduct work on distribution systems.

33) MEEW, in collaboration with UNICEF, have meanwhile taken on the task of ensuring availability of highly trained operators on the islands. A one-year college level education programme has been embarked upon. The question remain is whether

something will be done parallel to this effort and increase the salaries of operators to make the position sufficiently attractive.

- 34) Currently, one operator is assigned to run the RO plants. In some cases, such as Madduvari, being available every day is not an option since the operator can generate higher revenues from other ad hoc work on resort islands etc. This makes water production uncertain and supply irregular. It was suggested that the position could be shared between more than one operator who could run the system on rotational basis, with one being over-all responsible.
- 35) The contractor appears to have fulfilled its obligations very well, with regular check-ups on the islands, and swift handling of emerging issues of faulty equipment and/or cases where the construction was at fault. All in all, the working relationship between all parties appeared professional, amicable and effective. While this case is very positive and serves as a good example, there are other cases where IFRC has to become more professional in dealing with private contractors with more solid documentation, follow-up on actual work performed by the contractor and establish formats for sequential payments for performed services. The current sewerage management project is one such case which will generate many lessons to which the legal department will do well to look into and learn from.
- 36) Technically, some issues on the plants appear to be a common problem relevant to the type of system. Some noted aspects were:
 - d. Rusting gear within one year of operation (in particular the mounting frames, bolts and nuts, clamps etc).
 - e. The suction pipe attached through the wall of the concrete ring in the beach/sea well was at times not fixed, but moved freely in the water. As waves would move it back and forth, it is only a matter of time before it breaks – which also happened on Mahibadhoo.
 - f. Flushing of the system does not include allowing for fresh water to run through the intake pump. Such a regular cleaning would extend the lifespan of the pump considerably.
 - g. The sedimentation tank is very small – not allowing for sufficient sedimentation time. This results in more solids in the crude water, and will have a negative impact on the equipment.
 - h. As the RO system shuts down due to power failure, the electrical solenoid valve apparently continues to receive power resulting in its breaking. This seems to be a serious technical flaw as at least one of the two valves per unit had been changed on 3 of the 5 visited RO units. According to the contractor, this is due to inadequate maintenance. But since the problem seems to be quite extensive, this is an issue that should be brought to the attention of MEEW.
 - i. There is no drainage area at the tap-stands.
- 37) To ensure electrical supply optimisation of the RO unit, a closer evaluation of each island's capacity to manage power supply should have been looked into. As it is now,

those islands partly or fully owning their power plants face an easier task of maintaining operation of the units.

- 38) The availability of potential (qualified) staffs on islands is not found to be a problem. This makes the technology adequate and appropriate for its purpose.
- 39) The SWSS system is as it states a supplementary system. On Mahibadhoo, though the unit was used, amongst other things, to hose down the boats and fishing gear. This regularly results in a continuous use of the same booster pump (there are two designed to work alternatively as pressure level differentiate) for a long period, making it shut down due to over-heating after some time. The system was not designed for this, and it is doubtful whether such expensive water should be used for this purpose in the first place. An issue for the management, priorities of water usage and information spreading....
- 40) It was early stated that the water produced is complementary to other water sources, an issue which could not have been over-emphasised. Frequently, those who used the water complained of insufficient amounts available and not enough distribution time.
- 41) Interestingly, it appears that there is limited exchange between island communities globally. In the Pacific, with similar water situations to that of the Maldives, there are many more techniques in use ensuring access to safe water for multiple purposes through complementary systems. For instance, while many of the Maldivian islands suffer from lack of land space to install, amongst other, rainwater tanks, undersigned heard of very few underground cisterns (commonly built under the houses) although this is a much practiced technique under similar circumstances.

Country priorities:

- 42) Since the project as designed was handed down from the GoM, the provision of RO units follows the development plan of the GoM, making the intervention in-line with development and DP goals. At hindsight, the plan would nevertheless have done well to have been revised with complementary studies conducted to ensure that the approach was adequate and responded to the defined needs and capacities as expressed by the users. While most systems are in use, its more effective use could have been better guaranteed with such an approach.
- 43) The 46 islands in the original support plan of the GoM was developed with the idea of being able to support surrounding islands with water should another disaster occur. Thus, mostly capital islands are targeted for RO units, and explains why the IFRC supported islands were not among the worst affected by the tsunami.
- 44) The islands are however looking for more permanent solutions rather than supplementary ones. In this respect, the strategy to be endorsed should be that water

is not to be viewed as free, thus making users more willing to pay for a more permanent solution.

- 45) Future strategy includes ensuring increased autonomy by each island – which is translated into more expected self-reliance shown by each island. It is thus unrealistic for the islands to expect to receive a replacement RO unit when the installed ones falter. Each island hence have to take a more active role in providing for itself, including ensuring services such as water supply, sewerage systems and solid waste management. It will be a touch reality to wake up to.....
- 46) To ensure adequate technical capacity at island level, the GoM is, with support from UNICEF, training 15 staff per year for this purpose. The deal is that students are financed all the way through their education, but a contract is established with a commitment expected from the trained technician.
- 47) The MEEW expressed high appreciation of the IFRC approach to conduct holistic project approaches, which include housing, water supply systems (RO) and sewerage systems on the Green islands project.

Ownership:

- 48) It appears that the political stability of the GoM has generated high expectation from its citizens on the islands. This takes the appearance in a low level of ownership of infrastructure and operational management of services on the islands, and when something breaks down, it is expected that the government steps in to fix the problem. This is probably further emphasised through the appointment of the staff in leadership positions rather persons accessing office through election processes. Much of the responsibility is thus taken out of the hands of the residents, which has serious implications on the sustainability of projects such as the SWSS project. The sustainability of water systems in general, and production of the relatively expensive RO water specifically demands that users have an invested interest in such water being provided. As the GoM operates as the benefactor in the project, there is little room for creating an ownership of the systems on the islands. It should however be noted that while this is a structural problem, it is by no means insurmountable. As was noted on the Kommandhoo island example, each island can take an active stand in reducing its dependency on external sources for operational guarantee of service systems. The Kommandhoo island have, for instance, themselves collected funds to purchase an RO unit, and maintains it through cost recovery payments from users. The Kommandhoo Island was early on into the project implementation used as a site of study and training of particularly presumed operators and management staff of the SWSS project targeted islands.
- 49) While it was a good approach to make use of a successful example as training site for the project, it is the belief of the undersigned that a more in-depth study should have been carried out on the Kommandhoo island example to identify indicators that made

it a success story and see how this could be duplicated on/transferred to the other islands. Following the visits to other islands, it became clear that the Kommandhoo example was not followed, although aspects of key lessons were drawn on. There is further a danger that even the Kommandhoo Island might take a negative turn. Since MEEW acts a guarantee for spare-parts of the RO units, Kommandhoo island residents may start to demand the same service and stop paying for the water.

- 50) The women in particular had been consulted during the tap-stand location process. However, on all islands, visited, the women had asked for household taps, but been informed that this was not part of the project. Perhaps it would have been wise at this point to reconsider the type of project and its aim since it is clearly beyond emergency water supply (since the water unit can not be put on hold once it has been used, but need regular usage to remain functional).

Financial aspects:

- 51) Since 20 sites were suggested by the GoM, equally many RO units were purchased. Later, the figure was reduced to 15 projects. One RO unit has been donated to the one-year training programme of future operators, leaving 4 units still not installed or used. While the tendering process is tedious, it would nevertheless have been wise to conduct the purchases in smaller batches and learn from the implementation process since the approach was rather new to the IFRC.
- 52) During the training sessions related to the management of the RO units, much time had been dwelt on to promote cost recovery of the produced water. This appears to have been difficult to introduce since only two out of the five visited islands actually secured some funds from the users. In one of these cases, funds were secured through the electricity bill and the users were not informed that their bill had been topped up with water production costs.
- 53) The cost recovery schemes varied greatly in their appearance. In most cases, access to water is simply seen as a right, and should thus not be paid for. Those who were willing to pay asked that a taps be installed in the houses together with meters in order for payment to be reflected in the consumption.
- 54) On Maduvaari Island, the women's group was asked to control payment of water by being present at all water points two hours daily during production hours. A fixed price was set per jerry can (approx 20 litres) for which 2 Mrf was charged. This was the only encountered example when payment was conducted up front, and it appeared to work.
- 55) Each island enjoys a high degree of autonomy when it comes to managing their resources and operating the services provided to its citizens. The GoM is meanwhile quite accepting in allowing for calculated subsidies to be harvested by the island administration for the electricity and water provided to the governmental institutions.

All island, for instance, have varying payment scales for electricity, but what they do have in common is that the governmental institutions pay up to 4 times more for the electricity consumed than private consumers. With the desalinated water, a similar approach was envisaged by some islands, but in these cases, MEEW argued that you can not have both: high water prices to the government institutions AND receive spare-parts free of charge. Agreements were reached with a higher electricity price – as is the normal case – and free spare-parts. Since the operator’s salary is covered by MEEW, there is no reason for asking users to pay for water.

- 56) Increasingly though, the water produced is appreciated by users to the extent that they want more of it. With payment of water introduced, funds can be generated to expand the system and invest in more/larger RO units. Under such conditions, there is scope for rendering the units operable similar to the level of Kommandhoo island, which purchased their own RO unit, and operate it without involvement of the GoM. (This latter case was also used as a demonstration in the introduction of RO units and to develop a management plan for each island).
- 57) It was frequently stated that payment of water would not have been a problem if water reached taps installed in the houses. Further, if the plant is only operating some hours per day, these hours need to coincide with when water is required – preferably early morning, and not late afternoon when few are home.

Exit strategy:

- 58) The exit strategy as stipulated in the “Maldives Exit Planning Groups – summary of meetings in May 2008” generated by American Red Cross and IFRC, outlines the procedures and papers that need to be produced and guarantees secured from MEEW. While the paper is good and both directly and indirectly points out the weaknesses of the current management system as operated by the GoM, it does little to take into consideration MEEW’s capacity to actually deliver upon these expectations. The governmental institutions are generally of course very natural institutions to which the management of infrastructures should be handed over to. But can really only apply if the institutions possess the capacity to take on the management as expected. From discussions, it appears that MEEW does at this point not have the managerial means to take over, so even with good operational papers produced to guide MEEW in the management of Movement handed-over programmes (such as the SWSS projects, waste collection centres, sewage system projects etc.), this is insufficient for an institution not yet ready to take on such a job. Hence, under given circumstances (particularly referring to MEEW’s need to develop a middle level to high level management capacity to take over the management of the projects), the exit strategy as designed fails to present the ingredients of a valid exit strategy. Unless MEEW is strengthened at the level of middle to high level managers in its structure – with the ability to take on the operational management service systems as currently designed – the exit strategy as designed need to be further developed in order to secure the operationalisation of the RO units through its technical lifespan.

Maldivian Red Crescent:

- 59) It is indeed an unusual territory of operation for the Movement as a whole – and IFRC in particular – to operate in a context without the traditional partner of a national society to work through and support. Without any formal or informal links in existence with the government, this collaboration has left many loose ends since there is yet no National Society in existence to pick up the reins. The MNS is hopefully in the making within a reasonable future, but unless this takes place, many efforts conducted to date may very well fail to deliver as intended – and MEEW will lose out on qualified support aiding the islanders in improving their life conditions.
- 60) In the meantime, during this evaluation, a number of potential areas have been observed through which Maldivians could benefit from the creation of a National Society:
- 61) The GoM would have a neutral auxiliary partner through which it may conduct a number of health programmes making such campaigns less politicised. This can include:
- a. Community based first aid programmes.
 - b. HIV/AIDS information.
 - c. Blood donor recruitment.
 - d. Senior citizen programmes.
 - e. Road safety.
 - f. Hygiene and sanitation promotion.
 - g. Water quality issues as preventive health care.
 - h. Information on livelihood programmes and micro-credit schemes.
 - i. Risk mapping and disaster risk preparedness.
 - j. To be part of the global disaster response system operated through the IFRC.
 - k. Humanitarian values information
 - l. Anti drugs counselling or rehabilitation
- 62) Currently, the established women’s committee on all islands visited are engaged in various activities including teaching, social activities, cleaning-up activities, income-generation activities etc. By formalising these loosely created groups into a more defined structure/network with access to above mentioned information and support systems, the impact of such groups would be much more effective and in turn more rewarding for the women who are currently not necessarily members in the committee of their own accord. During meetings with these groups, requests were often made to undersigned for information and knowledge on various topics included in the list above, which frequently appear as standard component of a NS activity portfolio.

5. Lessons learnt

- 63) The humanitarian community woke up to a whole new world on the morning of December 26th 2004. The tsunami effect sent shockwaves as it killed in a way never witnessed before and devastated lives, livelihoods etc – and the world, in turn, reached out to help and provide support in a remarkable way. For the first time, assistance programmes were not hampered by inadequate funds, but humanitarian organisation could instead make use of all its accumulated knowledge to design programmes as they should be. In the meantime, the funds generated vastly exceeded the capacity of the organisation to absorb. And even less properly put to use – at least in the short term which was the trade mark of many organisations with disaster response as their main feature. The congestion of organisations following the tsunami in both short and long-term support is today widely recognised.
- 64) At the same time, expectations from donors, media, and beneficiaries were high, and organisations were in a haste to produce results to show which also consumed funds. Many projects were thus embarked upon without careful analyses conducted prior to actual interventions and further followed by a spending spree. While the SWSS programme was promoted and initiated by the GoM it is nevertheless also a product of this approach. Similar to other tsunami affected countries' recovery programmes, initial assumptions of programmes were drastically reduced as implementation began and studies were duly conducted indicating higher costs for the interventions than anticipated. The SWSS programme was for instance trimmed down to 75% of its original undertaking, and thus more realistic to the funds available.

5.1. Impact:

- 65) No baseline study was conducted prior to the intervention. This should always be the case in order to be able to measure the impact of the intervention, and to facilitate the identification of the most relevant approach in achieving a specific goal. In the meantime, it is safe to assume that the intervention will not have a negative impact on the health situation. However, since the health situation on the islands was not too severe to start with, it was not possible to evaluate the health impact of the provision of desalinated water following such a short time of operation of the RO systems.
- 66) Even so, islanders complained that the ground water resources were increasingly contaminated. Some suggested that septic tanks were destroyed during the tsunami giving cause to this effect. This is unlikely to have happened, and the more plausible reason is probably a combination of i) densely populated islands, ii) increased use of water closet toilets since the 1980's and, iii) inadequate treatment and handling of waste water (both grey and black). Some Movement partners have engaged in installing sewerage systems on some islands, and it is expected that this intervention will possibly be one of the single most important interventions on those targeted islands with impact on the health situation and environmental situation.

67) Further training and information diffusion on water quality aspects should always be linked to water project interventions. The rather heavy focus on the hardware side of this project should have been better coupled with a strong soft-ware component – both to ensure understanding of the importance of safe water to the health but also to validate the investment into the project to the users by demonstrating impact. The water is increasingly appreciated for its quality by the users, which in turn increase the interest of users to pay for the water and thus encourage cost recovery and sustainability of the system.

5.2. Sustainability:

68) The technology was both relevant and appropriate to the capacity of the islands to generate a complementary water source. Out of the 15 approached islands in the project, 13 were found to be operational, a very good result.

69) The tsunami demanded intervention on a new scale than what the Movement have to date engaged itself in. While a heavy challenge, if the tools developed are followed, the probability for a positive outcome is improved. Learning from this project, the sustainability of the project would have been enhanced if participatory processes such as VCA, PHAST, CHAST, etc. were followed in line with what is generally common practice in long-term interventions.

70) While it is clearly understood that much time was spent on training sessions to manage the RO systems, it is equally clear that more emphasis should have been put on the management of the system. Technically, the units have a life span of 20 odd years according to the manufacturer. With irregular usage, as is the case with many of the installed units, it is currently unclear how long the life span will be since only some islands appear to have a regular operational plan of the units ensuring their long term operability.

71) It needs to be ensured that all parties follow the developed and agreed manuscript for an intervention to become sustainable. For SWSS to be sustainable, the provided service needs to pay for itself. As management plans were to be developed with each respective island-authority to decide on the payment structure, MEEW stepped in very early in the discussion and agreed to take assume all running costs rendering the project artificially sustainable, and the desalinated water considered a free commodity by users – apart from the energy required.

72) It is suggested that MEEW consider the operation of the RO system in a dual format:

- a. Secure the operational capacity of the RO system for emergency use by having a support plan for production costs when an emergency takes place. This plan should be separate, though incorporated into;
- b. Regularly providing safe supplemental water to the population.

While the RO units require regular usage for its operation (its technical lifespan is reduced drastically if not used regularly), the above two aims are different and the management plan should take both scenarios into consideration. The disaster management mechanism (MEEW?) should for instance carry a greater portion of the operational costs during the latter case, and the island itself should take on a bigger financial burden of running the system during regular provision of safe water to the population. This will increasingly allow for the system to fulfil its aim and at the same time render the system more sustainable. It is the view of the undersigned that MEEW stepped in too quickly to guarantee support of spare-parts to the systems, and not demanding anything in return from the islanders.

- 73) Since MEEW does not envisage replacing the systems once they have out-run their life span, cost-recovery approaches need to be emphasised in order for potential impact of project to prevail.
- 74) It is suggested that management training be further emphasised also on the higher levels in the ministries. Through interviews, it has become apparent that there are different understandings related to management, planning, and execution of plans. This middle and higher levels in the ministries require further strengthening. The failing of this capacity is observed in the management of social services such as water supply, solid waste management and sewage management amongst other.
- 75) During the visits, it became clear that each island enjoys a high degree of autonomy and thus operational systems and service systems require an island-specific infrastructural solution as well as a tailored management plans. The training provided in the later clusters allowed for a higher degree of flexibility for each island authority group to produce these plans, and hence increasing the operational stability of the systems.
- 76) The developed training package for operators is a crucial component in ensuring that the system becomes sustainable. It is however noted that technical capacity varies greatly between individual operators, and most of those encountered would need an enhanced training on technical matters on maintenance. The MEEW approach to train staff on a one-year basis is seen as a very positive initiative, although one year training in itself is not required for operating the RO units.
- 77) Since it appears difficult to engage a full-time operator purely engaged to run the RO system, it is suggested that constructive ways of sharing the workload of a position be considered. A job can be operated by 2-3 persons, with one in charge and all staff taking turns in running the system. Another version was encountered on Gahdhoo where the operator selected also ran a shop, allowing him to complement his required limited input as operator with other activities, and further top-up his salary.
- 78) Many of the thoughts here presented also apply to other services such as the waste collection centres and sewage systems. In these two cases, their proper functioning is

even more imperative since their impact on health is generally much higher than the provision of safe water.

- 79) While RO units reduce the dependence on rain water availability and storage, the need for energy is such that it is advised that complementary systems should be considered simultaneously.
- 80) To ensure cost recovery of investments and thus secure operational sustainability, it is advised that more attractive services are drawn on to cover the costs of the less attractive but potentially more important services. For instance, there is general acceptance to pay for energy and, increasingly so, also for safe water. A water project should to be viewed as a “water in-water out” project. With that, it is self-explanatory that payment for sewerage management is to be included. Solid waste management is however not so easy, and it is thus suggested that a combined bill be forwarded to the household for all four issues, and based on energy and water consumption. This could be done under a “clean island management plan”.
- 81) If water users were to pay for their water and adequate interest by the users indicated an interest in maintaining the RO system in more regular operation, funds could be used to top-up the salary of the operator making the position more attractive. In return, the paying users would be able to make more and direct demands on water provision.

5.3. Links to Disaster Management aspects

(With specific reference to IFRC and future Maldivian RCNS)

- 82) Given the nature of the project – a heavy infrastructural water project located on islands less vulnerable to disasters – it follows that the prospect for providing safe water to islands subject to disasters has a great potential. The fact that the GoM is guaranteeing the availability of spare-parts, consumables and salary of the operator is further ensuring the operational capacity of the system when it will be required.
- 83) From a health perspective, a more imperative need at this point is to ensure the complete package of water and sanitation. This should thus be seen as a first step in improving the health situation on the islands, with increased emphasis given to hygiene promotion and improved sanitation. The sewerage systems should thus go hand-in-hand with these systems, which in turn will create safer islands.
- 84) To further increase the operational probability of the RO systems, each unit should have been fitted with both a generator as well as an electric cable to increase options of power source.
- 85) The islands in the SWSS project were selected by the GoM without apparent consultation with the islands. During interviews, the island chiefs were unaware of the fact that the systems are expected to support other islands with water should the

need arise. In the meantime, most visited islands displayed a very open mind to supporting other islands, so this should probably not come to be a problem.

- 86) For future preparation, water provision amongst other issues should be part of the disaster mapping and support strategy that is being developed. Should the MRCS develop a traditional structure, it would be a natural situation for it to be part of such a group. With tensions running high on some islands as a result of political affiliations, the MRCS could come to play an important role as a neutral active agent to provide active support to DM plans in general, and conduct trainings. Within this, a neutral agent such as a traditional RCS can function as a dissemination of information on various topics, not the least road safety.
- 87) During discussions primarily with women groups/committees, trainings and information on various topics including health aspects and sanitation, business management, and alternative social activities were raised as issues, but also on how to manage more effective “clean island” projects and generate community participation were brought up as areas of interest. The interest displayed by community members was over-all very enthusiastic, but if conducted by a neutral organisation would be better since a governmental institution is seen as an expected provider and not a partner. These topics may appear to be an unexpected nature, but useful knowledge to follow-up on once the NS is created.
- 88) Classic Red Cross/Crescent approaches involving VCA analysis would be a very good approach for a community interaction and develop risk plans and identifying issues that the community would want to focus on and invest in. As such, activities developed in each community bear a much greater chance of being assumed by the community. This could be a unifying force when increased autonomy is given to each island as decentralisation is enforced, with expectations on each island rising.

Annexes

A. Terms of Reference

Terms of Reference ***Review and Evaluation of Supplementary Water Supply System (SWSS)*** ***IFRC – Maldives***

Background

The primary source of drinking water for the people in the Maldives is rainwater. All islands in the Maldives rely on a regular rainwater supply to provide an adequate supply of drinking water. Many islands, however, do not receive adequate rainfall throughout the entire year in order for them to have enough drinking water to sustain them throughout the dry season (typically January-April). In addition to this, many island communities currently do not have adequate storage capacity for their drinking water supply.

After the tsunami on the 26th December 2004, the government of Maldives (GoM) identified 46 islands in need of a supplementary water supply system (SWSS). The GoM requested that the supplementary water supply systems were provided in the form of reverse osmosis (desalination) treated water, distributed to community taps located throughout the island, with particular attention given to equitable access. The International Federation agreed to support this project, to enable the selected communities to have access to safe drinking water at all times of the year.

The International Federation originally intended to implement the supplementary water supply programme on 20 selected islands (as allocated by GoM) but this number was later reduced to 15 islands. The project will improve the access to safe drinking water for an estimated 24000 beneficiaries. Implementation on the pilot island of K.Thulusdhoo began in July 2005, where a contractor was engaged to supply and install the reverse osmosis unit. The construction of the plant house utilised community labour and local Maldivian contractors. Based on the outcomes of the pilot island programme, the programme was redesigned to include installation of a plant house, distribution system and associated infrastructure in addition to the reverse osmosis unit to make up the supplementary water supply system. A contractor was engaged to undertake all these works on the remaining 14 islands in January 2006.

The phase one review of this project was conducted in September of 2007 and focused on the appropriateness, effectiveness and efficiency of the project. The phase two evaluation, which is also the final project evaluation, will focus on the impact and sustainability of the project.

Phase 2 Evaluation

Purpose

To create strong institutional memory of the achievements, challenges and learning that have taken place in the design, implementation and management of the SWSS project and to assess the impact and sustainability of the project.

Phase 2 Evaluation

Objectives

- To determine the success of the actions taken and the management response to the phase one review
- To assess the sustainability of the SWSS project
- To assess the impact of the SWSS project on the communities in which it was implemented and on the Government of Maldives
- To identify potential links with Disaster Management activities of the IFRC and future Maldivian Red Crescent

Focus

Impact

- What is the scope of access to safe drinking water against the planned coverage?
- How have the RO units been used in the communities and what impact has that had on the water management practices in the communities?
- How has the implementation of this project affected the availability of fresh water in the community (experience of water shortages etc.)?
- What are the long term resource demands on the community and the government to keep the RO Unit running?
- What changes in people's behavior and/or attitudes related to water were expected from this project?
- How has the implementation of the project changed people's opinions about water?
- How do beneficiaries feel about having access to an RO Unit?
- How do beneficiaries feel about paying for water?
- Is the government satisfied with the results of the project?

Sustainability

- To what extent has safe drinking water continued to be available after the project handover?
- Has the community been able to manage the SWSS system successfully without IFRC support?
- Are the water management committees still operating? How successfully are they managing the RO Units?
- If the water management committees aren't operating then who is managing the RO Units? Why did the management of the RO Units change?
- Has the community and the government been able to meet the resource demands created by the installation of the RO Unit?
- What ongoing technical support will be available for managing the RO Units once the warranty period and maintenance service agreements end?
- How well did the capacity building element of the project, (training, coaching, assessments), contribute towards increased sustainability of the project?

- Are the current operators the original operators? If not then what training have the new operators received? Why did the operator change? What salary do the operators receive and from where?
- What else could have been done to sustain capacity that was built?
- 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?

Methodology

- Review of key documents and records – to be completed by the evaluation team before arriving in country
- Field visits to six islands to include:
 - key stakeholder interviews
 - practical demonstration of RO unit operation
 - review of management practices
 - identification of scope of access to safe drinking water
 - review of capacity building impact
- The field visits will cover the following islands
 - Thulusdhoo
 - Ghadhoo
 - Mamendhoo
 - Kolamaafushi
 - Maduvvari
 - Nilandhoo
- Interviews with key stakeholders in Male' including:
 - IFRC Head of Delegation
 - WatSan delegate
 - WatSan team members
 - Government of Maldives including MEEW, MWSA and local atoll and island officials
 - UNICEF
 - Aquatech - contractor on the project

Outputs

- An evaluation report of no more than 30 pages including two page executive summary. The review team should produce the report in the format provided. See appendix 1.
- A Divehi translation of the report's executive summary that can be shared with communities and the government, (responsibility of IFRC Secretariat).
- A two hour feedback session outlining the review findings and proposed recommendations with key International Federation Secretariat stakeholders.
- A management response (if appropriate) with arrangements for implementing and monitoring the response, (responsibility of IFRC Secretariat WatSan Team).

Timeframe

The evaluation will be carried out in May/June 2008 so that it coincides with the end of the next dry season. Specific time frame is to be agreed closer to the date. Note that not all members of the WatSan team will be available to participate in the review.

Roles and Responsibilities

The evaluation team will consist of a Team Leader, WatSan Specialist, and a Translator/Interpreter. The team will also be supported by a Field Officer from the IFRC WatSan team but he will not be part of the evaluation team. Please see appendices 2, 3 and 4 for role descriptions and responsibilities. Additional roles and responsibilities are outlined below.

Tsunami WatSan Coordinator - Bangkok

- To recruit a Team Leader, WatSan Specialist and a translator
- To ensure evaluation time lines are adhered to
- To ensure the evaluation team delivers the required outputs
- To ensure the terms of reference are met
- To finalize the evaluation schedule
- To ensure the evaluation team has all the necessary documentation prior to arrival in country
- To provide introductions and set up appointments with key stakeholders for the evaluation team

Maldives WatSan Delegate

- To ensure a Field Officer from the team is available
- To provide support to the evaluation team to finalize the evaluation schedule
- To facilitate the logistics of the review

Maldives Recovery Officer

- To support the Tsunami WatSan Coordinator to set up required appointments for the evaluation team
- To support the evaluation team to finalize the evaluation schedule

Contracting

Contracts with consultant(s) will include provision for a daily rate, travel and accommodations costs and a per diem. A set number of days for the work will be agreed by the International Federation and the consultant(s). Work related to the evaluation which falls outside this agreed timeframe will be the responsibility of the consultant and no additional costs will be incurred by the International Federation.

Appendix 1

Report Format for Review

- The report should be in 12 point, Times New Roman font
- Font should be single spaced
- There should be a table of contents, an introduction and summary
- The report should contain footnotes, references and appendices where applicable
- The report should clearly reflect the terms of reference in its lay out
- The report should contain an executive summary which can be utilized separately and translated into the local language.
- The Exec Summary should be no more than two pages
- The main body of the report should be clearly set out against the terms of reference
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
There should be a separate section for specific, practical recommendations

Reports that do not meet these requirements may be required to be re-written at the cost of the consultant(s). This may delay the final payment to the consultant(s).

Appendix 2

Role Description – Team Leader

Purpose

To lead and implement the impact and sustainability evaluation of the IFRC SWSS project

Key Tasks and Responsibilities

To provide leadership to the review team

To manage the WatSan Specialist and the Translator within the evaluation process

To carry out a document and record data review prior to arriving in country

To propose and finalize the project schedule prior to arriving in country

To provide the IFRC with suggested methodology for the evaluation including key informant and focus group guides

Conduct interview and focus group sessions

To present the findings and recommendations of the evaluation in verbal form to stakeholders prior to producing the final report

To provide a final, fully edited, written report in English, meeting the required report guidelines

To ensure the evaluation fully meets 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 evaluation skills and experience in writing evaluation reports

Proven experience in carrying out impact and/or sustainability assessments

Knowledge of OEC/DEC evaluation criteria

Ability to design appropriate tools to support evaluations

Experience working with South Asian governments and communities

Knowledge of water and sanitation issues would be an advantage

Excellent writing and documentation skills in English

Excellent communication skills

Results focused and accountable

Appendix 3

Role Description – Water and Sanitation Specialist

Purpose

To provide technical advice, support and input to the evaluation of the SWSS project

Key Tasks and Responsibilities

To identify areas of the evaluation requiring technical input

To make all necessary preparations for the evaluation prior to arriving in country

To facilitate the evaluation by providing technical explanations and input

To contribute to the writing of the evaluation report

Person Specification

Proven technical expertise and experience
Experience as part of a technical WatSan evaluation
Experience carrying out evaluations in post disaster context
Excellent communication skills in English, Dhivehi would be advantageous
Results focused and accountable

Appendix 4

Role Description – Translator

Purpose

To support the Evaluation Team in implementing a evaluation of the SWSS project by providing interpretation and translation skills

Key Tasks and Responsibilities

To act as liaison between the evaluation team and key stakeholders
To provide translation and interpretation from Dhivehi - English - Divehi

Person Specification

Experience as an interpreter, preferably in an official capacity
Ability to speak fluent English and Dhivehi
Ability to translate documents from Dhivehi-English-Divehi
An understanding of the Red Cross Red Crescent Movement and a willingness to uphold its principles and values
Experience working as part of a team

Trips Schedule in details

28th June	Trip to R.Madduvari	
	Time	Details
	7.30 am	Leaving Male' to R.Madduvvary
	10.30 am	arrive at Madduvvary
	11.00 am	Meeting with Island Chief
	11.30 am	Meeting with Water Committee
	12.30 am	Site Visit to Plant house
	1.30 pm	Lunch
	2.00 pm	Meeting with Women's Committee
	3.00 pm	Leave for Male'
30th June	Trip to GDh. and GA.	
	Time	Details
	7.30 am	Flight to Kadehdhoo
	8.10 am	Arrival to Kadedhdhoo Breakfast
	9.00 am	Launch trip to GDh. Kolamaafushi
	9.45 am	Arrival to Kolamaafushi
	10.30 am	Meeting with Island Chief and Water Committee
	1.00 pm	Lunch
	1.30 pm	Travel to GDh. Maamendhoo
	2.05 pm	Arrival
	2.15 pm	Meeting with Island Chief
	3.00 pm	Site visit to Plant house
	4.00 pm	Travel to GA.Gahdhoo
	5.30 pm	Arrival
	7.00 pm	Dinner
	9.00 pm	Meeting with Island Chief & IDC
1st July	8.30 am	Breakfast
	9.00 am	Meeting with Island Chief & IDC
	10.00 am	Site visit to Plant house
	10.30 pm	Meeting with some community members (stakeholders)
	12.00 pm	Depart to Kadedhdhoo Lunch
	4.00 pm	Flight to Male'
3rd July	Trip to Mahibadhoo	
	Time	Details
	8.30 am	Leaving Male' to ADh.Mahibadhoo
	10.30 am	Arrive at Mahibadhoo
	11.00 am	Meeting with Atoll Chief
	11.30 am	Meeting with IDC and Water Committee
	12.30 pm	Lunch
	1.30 pm	Site Visit to Plant house
	2.00 pm	Meeting with Women's Committee
	3.30 pm	Leave for Male'