

EVALUATION

Water rehabilitation for the tsunami victims of Aceh, Indonesia (Districts Pidie / Bireuen)

Project periode 1st of March 2005 to 30th of June 2006



Evaluation period: 20.05.06 – 3.06.06

**Project
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0 Summary of main results

0.1 Project holder analysis – DWHH / GAA

DWHH / GAA has been working in Indonesia to support the population affected by the crisis in East Timor between 1999 and 2002. Since then, the organisation was no longer active in Indonesia and started its activities in Sumatra only with the tsunami relief intervention in December 2004. As a result, DWHH / GAA did not have an own structure at its disposal and also did not have the necessary expertise concerning water supply in Indonesia when the decision was made to plan and implement this project. Only the technical expert employed in May had the required expertise, but not with respect to the drilling of tube wells.

Parallel to the planning of the project, the structure of DWHH / GAA had to be set up and people had to be employed in Medan and the district offices. This in itself was a challenging task and required considerable resources, which were thus extremely limited. For the tsunami intervention and the planning of new projects in general, it would have been mandatory to have key-sector expertise available.

In summary, it can be said that the rather limited resources available for the project planning and start-up resulted in a considerable working pressure right from the beginning and may have been an additional reason for the delay of the planned work.

0.2 Analysis of situation of the target group

NAD is one of the most underdeveloped provinces in Indonesia despite its potential wealth in natural resources (3rd best of 33 provinces). The main reason for this underdevelopment is the clash between NAD and the central government in Jakarta and the subsequent military conflict (GAM), claiming approximately 12,000 lives so far and 100,000 displaced people. The beneficiaries are in essence a homogeneous group of people belonging to the same ethnicity (Acehnese). Only in towns, a certain percentage of people are of Javanese origin. They were moved to Aceh under the transmigration programmes carried out by the GoI. The project targeted mainly the tsunami-affected population in the rural villages along the east coast of Sumatra in the districts of Bireuen and Pidie (NAD), a strip of roughly 200 km. An exception to this were tsunami-affected parts within the town of Sigli, the district capital of Pidie.

The tsunami had a devastating impact on the rural villages along the coast. The impact was more severe in Pidie than in Bireuen. In Pidie, around 5,000 people lost their lives and in Bireuen approximately 500.

Even before the tsunami, the situation concerning the provision of drinking water had been quite difficult. The tsunami made it much worse and it will take years for the shallow aquifers along the coast to recover.

In addition, the tsunami devastated the livelihood of people, especially the aquaculture, by destroying the fishing ponds located between the villages and the sea. This form of income has been severely affected.

0.3 Analysis and assessment of project preparation

An analysis of the needs of the target population as such was not carried out since in the case of water, the need was obvious. There was no clear reason for selecting the project district besides the fact that DWHH / GAA had distributed NFRI in Bireuen before. The reason why Pidie was included as well could not be recalled by anyone interviewed.

The intervention was to a great extent “donor driven”, starting from the first assessment and submission of the first draft of the proposal¹ (which had quite different sectors and activities and covered more districts requesting two million Euro) and reaching up to the first comments

¹ Actually, this proposal had much more reflected the core expertise of GAA.

of ECHO. This comments stated that DWHH / GAA intends to cover too many sectors² in too many districts, advising them to concentrate mainly on “water.” The next assessment team that was sent into the two selected districts, Pidie and Bireuen, had no knowledge about principles of providing water to the rural population, which would have been of particular importance considering the difficult general conditions even before the tsunami. Subsequently, the plain execution of activities was planned, namely the cleaning of dug wells and the drilling of tube wells. There was no conceptual approach to solve the problems (for example checking the dug wells, which have the potential to produce drinking water, and only cleaning them, investigating promising locations for tube wells and construct distribution systems and finally investigate alternative sources where possible).

0.4 Analysis and assessment of planning / project planning matrix

The proposal as it was submitted to ECHO is strikingly weak and it is almost astonishing that it was accepted³. ECHO’s comments on proposals that were submitted recently⁴, especially referring to the accuracy of objectives and utilisation of practical indicators (SMART), have been quite critical and demanding. It might be a sign that the proposal as such was not subjected to an in-depth examination or that in general weak proposals were submitted by ECHO partners.

DWHH / GAA planned and implemented a project for which they had neither the capacity nor the know-how, at least with respect to the drilling of 120 tube wells (even considering the close cooperation with BGR). The excessive number of tube wells reveals a certain misunderstanding of the principles of water supply and the amount of work than can be accomplished within 12 months. A better approach would have been to plan 40 tube wells only, drilled at carefully selected spots and closely supervised (maybe 25 to 30 would have been successful) by an experienced drilling master, including the installation of piped distribution networks.

The concept of the proposal reflected the existing needs right after the tsunami. Nevertheless, with respect to the cleaning of dug wells, these needs were no longer relevant once the project gained momentum in October 05. After the first assessments in May/June, they should have been readjusted to address the water problems of a reduced number of villages in a more comprehensive way (provision of potable water for a dedicated area through selected dug wells, tube wells, connection to the PDAM network, reticulation system and if possible gravity schemes).

0.5 Analysis and assessment of the implementation

The project area selected was by far too extensive and the resources available were too limited (to few personnel, missing sector expertise, transport) to allow quality work.

The decision to tender the dug well rehabilitation to a large contractor resulted in an unacceptably high unit price and DWHH / GAA missed the opportunity to provide an additional income for the target group, which would have been important. One might assume that DWHH / GAA did not consult with other actors, as they were the only ones using this approach. An increased participation of the target group would also have been important. The implementation method used for dug well rehabilitation was not appropriate.

An experienced hydro-geologist and drilling master should have been regarded as indispensable for the drilling component of the project⁵. The fact that this was neglected shows that the planners of the project did not have the technical expertise to realise this and/or that they were under too much pressure to submit the proposal. This lack of technical

² The first proposal specified rehabilitation of wells, latrines, agricultural support and trauma support.

³ This opinion is based on experiences regarding comments received by ECHO on recently submitted proposals.

⁴ The evaluator has written 2 project proposals to ECHO for interventions in India and Pakistan.

⁵ Other organisations hired drilling masters as consultants.

knowledge also resulted in the decision to rehabilitate 780 dug wells and to drill too many 120 tube wells.

The problems encountered in tube well drilling (difficult geological conditions, aquifer deeper than expected) is “normal” in drilling projects, especially when the geological and hydro-geological conditions are not known (no geological maps, influence of tsunami, no survey existing). This should have been reflected in the tender (moving the risk to the contractor). Carrying out the measures concerning small-scale water supply systems was the right approach to tackle water problems. It should have been included in the activities from the beginning.

Concerning costs and efficiency, the different activities have to be rated differently. The average cost of dug well cleaning paid to the contractor is around 230 Euro and considering the costs of 80 Euro for a new dug well it would have been better to construct new dug wells, introducing an improved design at the same time.

The successful tube wells were drilled at high costs (14,600 Euro / successful tube well) however, developing them further into water distribution systems would justify the investment. Small-scale water supply systems were a good and efficient activity, as already mentioned.

0.6 Impact with regard to development objectives

The impact of dug well rehabilitation is limited⁶ and has resulted in the provision of water fit for human consumption supplied from 227 dug wells, which represent 29 % of the total dug wells rehabilitated. Based on the first water tests roughly 57 will provide water of drinking water quality.

In some villages, people thought that DWHH / GAA would use some kind of “medicine” to clean the water so they might be able to drink it once the dug well was rehabilitated.

Nevertheless, looking at the rehabilitation logs it became obvious that for most of the areas, the cleaning of dug wells was not the decisive action that made the difference. Many of the dug wells that were regarded as fit for human consumption already had a reasonable water quality before the cleaning. Only in some places, the cleaning resulted in a considerable reduction of salinity (below 2,500 microsiemens⁷).

The project had an impressive impact wherever the drilling of tube wells was successful. Without exaggeration, this has the potential to change people’s life in a village.

Important unintended impact is the provision of geological and hydro-geological data to other actors in the water sector, which was greatly appreciated (see statements from NRC and BGR). In addition, the data provided through the rather exhaustive water testing yielded important data for water quality monitoring in the future. It has to be ensured, however, that both sets of data are now handed over to a government authority for future use.

In terms of coverage, the project activities resulted in a quite uneven distribution of project benefits over the project area (14 of the 19 successful tube wells in Bireuen, five of the successful tube wells in Pidie , tube well cleaning in 33 villages did not produce water fit for human consumption).

Sustainability of project measures (tube wells and small-scale water supply systems) is limited because of the low construction quality and the fact that no accompanying measures had been included in the project.

Socio-economic impact

⁶ During the interview, it was rather obvious that people did not see it as a necessity, however they appreciated the effort because it was for free.

⁷ Microsiemens is the unit for measuring salinity of the water. 2,500 is the maximum value according to EU drinking water norms.

There is no visible socio-economic impact through the activities at the moment. This might change if the successful tube wells are developed further into proper water distribution systems, which will provide potable water to the population in a sustainable way.

Environment

No major environmental damage was caused according to the opinion of the evaluator.

0.7 Analysis of the project management

The project management and the team have reacted positively and tried their utmost to produce quality work (involvement of BGR experts for tube well drilling and sending water tests to Germany). This was especially difficult considering the insufficient personnel and resources provided for the project (according to the project management, this problem had been communicated to the head office). The commitment and the amount of work carried out especially by the technical expert (he acted as the project manager from November 2005 onwards) deserves the highest credit. All activities are very well documented, filed and in good order.

The fact that there were too many activities for the amount of time available put an enormous pressure on implementation and naturally on the management. In addition, the tendering process delayed implementation. As a result, the management system reflects the attempt of trying to solve occurring problems and focusing on implementing the required numbers of wells rather than actively steering the project, ensuring quality and impact, or monitoring relevance.

The management put its main focus on the utilisation of forms and checklists. As the project manager had the enormous task of implementing the activities in no more than 4 months, he could not go to the field as much as he presumably would have preferred.

In summary, the management methods used were a good response to the circumstance that there were not enough supervisors, and thus deserves credit. However, quality assurance is carried out through direct and close site supervision of experienced personnel, especially in the case of private contractors. Both methods used allowed mainly monitoring of activities and progress of work but not quality control. The evaluator regards it as a shortcoming not to demand an increase in personnel and short-term expertise in well drilling through a hydro-geologist and drilling master.

0.8 Recommendations

Recommendations for the project

The official end of the project (after a request for extension) is the 30th of June 2006. This does not allow for sufficient time to implement the recommendation described below.

Consequently, the evaluator recommends implementing a follow-up component in order to maximise the benefit for the population (additional 10 - 12 months) and increase the sustainability of the systems constructed.

Water user groups have to be set up and trained in operation, maintenance and basics of water supply systems. Wherever possible, the tube wells could alternatively be handed over to future integrated village programmes of other organisations (GTZ, Oxfam etc.).

If further work on the dug wells is carried out, aspects of good practice and standard workmanship for dug wells should be considered, such as a sanitary seal at the top, gravel filter at the bottom, cover for protection against sunlight, proper drainage of excess water etc (see chapter 6.5.4).

It is highly recommended to further develop the successful boreholes, establish their safe yield and construct water towers (made from brick work or reinforced concrete) including distribution systems to maximise the benefit for the population and justify the investment costs for the tube wells (of course depending on the safe yield measured). These systems have to consider aspects of sustainability and must be designed to provide water over the next 20

years (other points to consider are population growth, leakage etc.). They cannot be regarded as emergency work.

The following list is far from complete because of the limited time available for the technical analysis⁸ (see chapter 6.6):

- The overflow at the artesian wells should be stopped immediately and proper drainage should be provided.
- The wellhead design should be changed and only GI material or steel should be used (flanged and/or screwed connections).
- The design of the reservoirs and the service points should be revised and the wellheads built so far should be rehabilitated to be carried out in GI only.
- The support structure of the reservoirs should be re-designed with a bigger platform and proper drainage of the excess water.
- The water reservoirs should be made from brick masonry. Proper drainage systems have to be provided at the filling points.
- The installation of water pumps along the new small-scale systems should be reconsidered and gravity feeding should be chosen. The booster pumps, which are conveying the water to the distribution tower, could be used for flushing by rearranging the pipe work and shutting off valves accordingly.
- The pipeline should be carried out in HDPE, not in PVC, and butt-welded and/or fixed by compression couplings⁹.
- The trenches have to be at least 80 cm deep with a sand bed and, if the soil is unsuitable, wrapped in sand. The trenches have to be level.
- Hydraulic calculations should be done with EPANET, a freeware from the internet (Excel sheet calculation should not be used for this purpose).

⁸ The evaluator was informed that the majority of deficiencies were taken care of after the evaluation.

⁹ PE pipes are available in Medan.

Recommendations for DWHH / GAA - Indonesia

Before DWHH / GAA approaches a particular donor, the suitability of his mandate with respect to the project type and sector should be taken into consideration (especially the short project cycles of ECHO) (see chapter 6.1).

Activities that have lost their relevance after conception and acceptance of a project proposal should not be implemented and the project team should go through the effort of re-planning. This is the responsibility of a humanitarian organisation to a donor and/or the public (see chapter 7.2).

In a fast changing working environment like the tsunami interventions, the country office of DWHH / GAA in Indonesia might consider introducing a monitoring unit in order to monitor the general conditions and the project impact and most of all assessing whether goals and objectives are still relevant¹⁰ (chapter 7.2).

Sector experts for infrastructure (water supply, sewage disposal, drainage, roads) and housing as a permanent back-up of the country office would help to increase the quality of work (chapter 7.5).

A clear-cut differentiation between the emergency / relief phase and development oriented activities should have been made through a physical stop of activities and the combined elaboration (with the country team) of a strategy (where are our strength and capacities?). In case of the underlying project, the main focus was mainly put on the “production” of new proposal and assuring co-financing, and only then on working on a general tsunami strategy (see chapter 5).

Recommendations for DWHH / GAA – head office

Sector experts for the core activities of DWHH / GAA, i.e. infrastructure (water supply, sewage disposal, drainage, roads), agriculture, income generation etc., should be made available to assess projects of a complex technical nature (see chapter 7.5).

Whenever interventions include activities of a certain technical complexity, it should be mandatory to consult a sector expert for all stages, planning, design and implementation. In the selection of such an expert, practical experience should have priority (see chapter 1.5, 5.3). DWHH / GAA head office should give sufficient back-up for the field offices to support their staff in carrying out a more critical analysis of offers from donors and thus avoid “donor driven” interventions (see chapter 1.5 and 6.1).

Recommendations specific to the sector

Water projects are complex and have to consider various aspects of technical and socio-cultural nature. It is therefore not advisable to plan water projects without the necessary input from sector experts (see chapter 10.1, 7.5, 4.3).

New projects should be planned based on a realistic estimation on the resources, capacity and expertise of DWHH / GAA in Indonesia and the head office. Care should be taken not to be tempted by available and possible co-financing and thus overstretch existing abilities (chapter 6.4).

0.9 General conclusions

The project staff should be made aware of the nature and type of the project planned and especially the level of sustainability that is to be expected. Is it a pure relief project or already a reconstruction project, and if so, to what extent must elements of sustainability be considered? A project should be more than a mere chain and series of activities (chapter 7.5, 4.3).

Care should be taken to avoid being guided by the availability of funding and donor preferences alone. In general, DWHH / GAA is advised to make a proper and comprehensive

¹⁰ This would, for example, have resulted in a reduction or omission of the well cleaning and the employment of a drilling master.

assessment as a first step after the relief phase in order to get a reliable picture of the problems and priorities of beneficiaries. Once reliable data are available and a comprehensive concept for addressing these problems is developed, potential donors could be screened and approached unless own funds are used anyway (chapter 6). This should be seen as mandatory and as a prerequisite to maintain the necessary independence from donor politics and preferences.

In-depth interviews and discussions with the beneficiaries have shown an interesting aspect. When asked about priorities, “reconstruction works on the meunasah and/or mosque” were mentioned in many of the villages. According to the opinion of the evaluator, this indicates that the unity of a community as such was one of the key priorities in the villages. At times, it may be even more important than the construction of the necessary infrastructure¹¹ (chapter 7.1).

¹¹ This conclusion is very much doubted by the team who established the first contact with the villages.