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97/19

KINGDOM OF CAMBODIA

UNITED NATIONS CHILDREN'S FUND

FROM EMERGENCY

TO

COMMUNITY IN ACTION

REPORT ON EVALUATION OF
UNICEF ASSISTED

RURAL WATER SUPPLY AND SANITATION PROGRAMME ACTIVITIES 1992 - 1997

September - October 1997

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REPORT ON EVALUATION OF UNICEF ASSISTED

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ANNEXES:

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LIST OF ABBREVIATIONS

ANS	Action North Sud
CARD	Council for Agriculture and Rural Development
CASD	Community Action for Social Development
CCF	Cash Called Forward
CD	Community Development
CWB	Central Water Base
DDC	District Coordinating Committee
DSA	Daily Subsistence Allowance
ES	Environmental Sanitation
FSEDP	First Socio Economic Development Plan
GDIMH	General Directorate of Irrigation, Meteorology and Hydrology
IO	International Organization
IRC	International Rescue Committee
KRDA	Khmer Rural Development Association
LNGO	Local Non-Governmental Organization
MOE	Ministry of Education
MOH	Ministry of Health
MRD	Ministry of Rural Development
NGO	Non-Governmental Organization
PDRD	Provincial Department of Rural Development
PFD	Partners for Development
PRDC	Provincial Rural Development Committee
PWG	Provincial Working Group
RHC	Rural Health Care
RWS	Rural Water Supply
SCF	Supplies Called Forward
TA	Technical Assessment
TOR	Terms of Reference
TOT	Training of Trainers
VAP	Village Action Plan
VDC	Village Development Committee
VHV	Village Health Volunteer
VLOM	Village Level Operation & Maintenance
WES	Water and Environmental Sanitation
WUHE	Water Use and Hygiene Education

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ACKNOWLEDGMENT

The evaluation team wishes to thank all those who have supported the process of this evaluation. All Royal Government officials in the provinces for the openness with which we were received and the support to produce this report. The national staff from the Ministry of Rural Development who joined the evaluation team and the heads of the departments of Rural Health Care and Rural Water Supply for their time and engagement with many issues involved. All NGO's and International Organizations talked to who gave time to meet and discuss issues, in particular Partners for Development whose project was also visited in the field. Staff from SAWA Cambodia who supported this evaluation in doing an additional field survey. And thanks to all UNICEF CASD-programme staff in supporting this study, helping to find an answer to many questions involved and helping us through the process of finalizing this report. Particular thanks go to Mr. Kim Hor and Ms. Ky Nimol for their support in our field research and Mr. Wan Maung for his untiring support in the general organization of this evaluation.

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EXECUTIVE SUMMARY

INTRODUCTION

This evaluation covers the period of 1992-1997 of the UNICEF assisted Water and Environmental Sanitation (WES) programme and is a follow up to the 1992 UNICEF-OXFAM evaluation. Activities undertaken in this period are the following:

1992 - 1995:
- Rural Water Supply Programme, under MRD/Rural Water Supply (RWS)
- Sanitation Programme, under MRD/Rural Health Care (RHC)
- Support to various NGO's active in WES projects
- School Sanitation Programme, with Ministry of Education (MOE) and some NGO's.

1996 - 1997:
- Community Action for Social Development (CASD) Programme, with a National and Provincial WES component.
  The National component is a continuation of the previous programmes; the Provincial component follows a bottom-up integrated development approach starting at the village level.

METHODOLOGY:

The evaluation was executed by a team of three expatriate consultants, supplemented by three local counterparts from the Ministry of Rural Development (MRD) over a period of five weeks. The methodology followed was desk research and meetings, field visits (to CASD provinces and NGO programmes), additional field surveys (non-random samples for existing WES facilities), draft report, debriefing & comments and final report.

NOTE ON THE EVALUATION SURVEY:

The survey conducted to support the evaluation team's findings is very useful in depicting the impact of the WES Programme. However, because the sampling was limited both geographically and numerically, the figures used should therefore be considered illustrative rather than statistically significant. (UNICEF CAMBODIA)

FINDINGS AND ISSUES:

The following is a description of the major findings and issues for the above programmes:

1. POLICIES AND STRATEGIES

In the Cambodian context of political unrest and civil strife, support by UNICEF for WES activities up to 1996 was geared towards responding to the emergency needs of the general rural population. With the changing socio-political climate, UNICEF redirected its programme towards a more sustainable decentralized development programme (CASD) with a focus on capacity building. This transition is still going on, especially in the area of defining the roles of the Central Government Departments, whereas the responsibility for implementation rests at the provincial level.

Under the emergency programme UNICEF supported a centralized policy institution, mainly in the implementation of activities and not so much in developing Government WES policies. With the new CASD programme, to build a sustainable process which is fully supported by the Cambodian government, policy development is becoming more important. UNICEF can use the experience gained from the Provincial CASD Programme to feed the policy development discussions in the WES sector, especially the Technical Advisory Group.

The growth of the CASD programme has been fast, moving from an initial 55 pilot villages in 1996 to 265 villages in 1997. The 1996 - 2000 Plan of Operations indicates that the whole country should be covered by the year 2000. This could seriously jeopardize the participatory process, which is still in its infancy, and there is the risk that service oriented components will dominate again. Also time should be allowed for the government partners to fully understand and accept the CASD concept.

2. PROGRAMME PERFORMANCE

2.1 Overall Programme Performance

From the 7121 water points drilled between 1992 - 1997 an estimated 73% are in use at this moment; the rest are either dry holes (9%) or broken wells (20%).

From the 9410 latrine slabs provided between 1993 - 1997 an estimated 58% are in use at this moment; the rest were never constructed (28%) or the latrine is not being used (20%). This mainly has to do with a lack of funds on the part of the family receiving the slab.

The direction that UNICEF has taken since 1996 (CASD provincial approach) is clearly a large improvement compared to the previous centrally led emergency approach.

Government partner Ministries, especially at Provincial level, are highly motivated to implement the CASD approach to the best of their abilities.

Coverage of safe water and sanitation facilities for Rural Areas have increased from 26% to 36% (for water supply) and 6% to 10% (for family latrines), between 1994 - 1996. This increase can be partly credited to UNICEF, either through direct implementation or by acting as promoters of constructing and using new facilities.

2.2 Specific Area Programme Performance

2.2.1 Rural Water Supply

Drilling

During the period examined (1992 - 1997) a total of 7121 holes have been drilled in 17 provinces resulting in 6313 successful wells (success rate 89%). A quick survey (sample size: 347 wells in seven provinces) revealed that 80% of the wells are still fully functioning, which is a very good achievement. Drilling rigs have been very efficient comparing the number of holes drilled per rig versus the depreciation costs. However, during drilling no seals are installed to protect the aquifer from contamination by surface water.

Hand pumps & platforms

Different hand pumps have been installed on the wells in accordance with the hand pump standardization guidelines, except for the PAT pumps, which were leftovers from an experiment in the local manufacturing of pumps. However these proved to be unreliable in the field. The records for the other pumps show that ca. 15% of all pumps installed may have been chosen incorrectly looking at the static water levels; this should be looked into by MRD.

Maintenance systems for pumps have not yet been established. A new initiative under investigation is to set up district maintenance teams paid by the users. MRD has shown its commitment to maintain the existing pumps as seen in 1996 during a major exercise in cleaning and repairing 2000 wells which were contaminated by the floods.

Over 50% of the platforms are still in good condition, but the size is too small to allow for proper bathing and washing . More than half of the drainage channels are too short and waste water can flow back and form pools of stagnant water around the well.

Water quality

The water quality of the wells is generally good, except in those areas where people have to keep the water overnight in a jar to get rid of the high iron concentration. In some wells fine sand is encountered from the aquifer; this is a common problem for Cambodia and many organizations are troubled by this. Suggestions are included in the report to reduce this problem. Water quality testing equipment has never been transferred from MOH to MRD: as a result MRD can not measure bacteriological contamination

Monitoring systems

Monitoring systems looking at well locations in villages, groundwater level measurements and stock control of materials provided by UNICEF to MRD are not adequate and should be improved.

Beneficiaries

The average number of users is 20 families (with a range from one - 70) per well, which translates to a total of 700,000 actual beneficiaries of improved water supply facilities. In the dry season the figure is higher, because traditional sources dry up and in many rural villages the UNICEF assisted wells are the only clean water source.

Community Organization and Education

Under MOH/UNICEF, between 1992 - 1994 education linked to the supply of wells with hand pumps was limited to the technical teams passing on some basic messages while on the job. After the transfer of the programme to MRD a Central Water Education Team of four staff was created, which functioned effectively for one year during the period 1995-1996. This team joined the installation teams on their job, providing one water use education session to user groups including a discussion on the care taking and maintenance of the wells. No follow-up took place in the villages.

During 1995 and 1996, under the National WES programme, community organizing for the water supply programme has been the responsibility of local authorities and participation in the process of making requests, cost sharing and site selection appear to have been limited. However many families have shared in the benefits of a safe water supply.

In 1996 it was decided to decentralize Water Use and Hygiene Education (WUHE) activities to the provincial level. Rural Health Care staff in ten provinces received a Training of Trainers (TOT) for Health/Hygiene Education and are now responsible to provide WUHE for the National WES Programme. The qualifications and availability of staff to do WUHE, especially at district level, is still limited. In various provinces a start has been made in establishing community organization and education activities for water supply, to enhance community ownership and proper use and maintenance of facilities.

MRD/RHC is showing commitment in promoting WUHE by chairing various working groups, initiating training and workshop events and among MRD departments to appeal for the integration of water supply, sanitation and education. UNICEF on their part have funded the training of core trainers from MRD/RHC for WUHE and have developed and produced various materials for water and sanitation education over the years..

No information on impact of education activities is available with MRD/UNICEF as no information regarding water use and hygiene practices has been collected in the past or at present for evaluation purposes. Development of baseline indicators regarding knowledge, attitudes as well as water use and hygiene practices will be essential to be able to learn about programme impact in the future.

Since 1996, the CASD integrated approach for WES offers good potential for the sustainability of WES facilities and improved water use and hygiene practices in the long term: 1) villagers are involved in problem identification, decision-making, implementation of the project and monitoring of the use of new facilities; 2) through the CASD structure good co-operation and co-ordination by the different government offices can be ensured and 3) the CASD structure, having a Provincial Working Group and Village Development Committees (VDC's) trained for community organizing and education allows for regular input and support for WUHE activities in the villages which will enhance the sense of ownership of the facilities by rural communities.

Support to NGO programmes

Since 1994 UNICEF has supported 8 NGO's for both specific projects as well as material support (PVC, pumps, etc.). This has benefited UNICEF, MRD and the NGO's greatly and

has increased overall coverage for access to safe water.

Specific projects to be mentioned are: Iron Reduction plants, Iodine Supplementation and the construction of rainwater jars.

2.2.2 Sanitation

Latrine construction

In total 9410 slabs and concrete pipes for poor-flush latrines have been provided between 1993 - 1997. The survey during the evaluation (sample size: 192 latrines) revealed that for 72% of the slabs latrines have actually been constructed. The other 28% were not constructed as families did not have sufficient money to provide the contribution. For the slabs which have not been installed, all were provided in 1996 or 1997. A figure of 80% was established for the actual usage of the latrines; this is based on a combination of three factors: condition of the superstructure, cleanness of slab and availability of water.

The objectives of making latrines visible in rural areas and to promote local manufacturing of slabs and pipes have clearly been met. Pour-flush latrines have been accepted nation wide as a standard.

Beneficiaries

The UNICEF subsidy (slab and pipe) is low compared to other organizations and the majority of the latrines are thus situated with the better-off families, because they can afford the high user contribution, which was found to be within a range of $10 - $100 and an average of US$ 30.

Suggestions are made in the report to combine efforts to reverse this trend and make latrines affordable for poorer families: simplifying the design, increasing UNICEF subsidy and possibly using credit for the poorest families.

Hygiene Education and Training

For the Environmental Sanitation (ES) programme community education on proper excreta disposal, latrine construction and use and maintenance of latrines have been fixed components from the start. A structure for education and training for the latrine programme has been firmly established by MRD in their strategy for Primary Health Care. These days many Cambodians are aware of the benefits of good latrines.

Latrines are promoted during village sessions organized by Rural Health Care staff or (under CASD) the Provincial Working Group. Rural Health Care staff, VDCs and Village Health Volunteers monitor construction of latrines and follow up on their proper use and maintenance.

For those families who cannot afford a latrine the programme offers no alternatives regarding what they can do to improve their situation regarding environmental sanitation. In the report suggestions are given to broaden the scope of the ES programme and include different measures to improve environmental health.

School Sanitation programme

UNICEF has supported MRD to construct water supply and sanitation facilities at a number of schools in Takeo. Furthermore specialized NGO's have been supported successfully in Banteay Meanchey, Battambang and Stung Treng in the construction of 188 latrine units (of 4 latrines each) for a total of around 34,000 school children.

SUMMARY OF RECOMMENDATIONS

1. General:

1.1 Any WES evaluation is best carried out at the end of the dry season, when there is full access to all project areas, the actual water situation and needs are more visible and women have more time to participate in survey's and/or meetings.

2. On Policies and Strategies:

2.1 The role of the central government departments within the Provincial CASD programme should be clarified as soon as possible. Activities for the central level which UNICEF could support are:

- Policy and strategy development
- Co-ordination within government and with other agencies
- Facilitation and resource mobilization (funding and technical assistance)
- Monitoring and evaluation
- Training
- Documentation and data collection
- Technical support

2.2 To avoid confusion and different policies between the National and Provincial CASD components it is recommended that from 1998 onwards all activities from central MRD (waterpoints and latrines) are concentrated within the CASD Provinces and the same procedures should be followed .

2.3 UNICEF to assist MRD in making a realistic master plan for the coming ten years, incorporating activities from donors, IO's, NGO's and estimations for privately constructed facilities. Master plan should include budgets for the following activities:

- facilities construction,
- capacity building, education & training,
- operation & maintenance of facilities
- monitoring & evaluation activities.

2.4 UNICEF should use its influence in the WES sector to request all organizations involved in WES activities to support MRD requests for planning figures.

2.5 UNICEF should continue to be involved in assistance to MRD in policy development for the WES sector; this can be done on the basis of experience gained from the CASD programme, which can be passed on through the Technical Advisory Group to the water Sector Co-ordinating Committee.

2.6 UNICEF needs to re-assess the present situation whereby almost the whole CASD budget is used for the provincial CASD programme, meaning that initiatives taken

previously (like conversion of India Mark III, proper caretaker training for all VLOM pumps, etc.) can not be implemented anymore because of lack of funds.

2.7 With respect to the planned increased Scale of Operation the following steps are recommended:

- not to expand to new provinces at this moment, but to consolidate the programme in the present provinces, making sure that they are able to function on their own, before new provinces are included.
- where possible to increase ties with NGO's and IO's who are willing to work according to the CASD concept in "Non-UNICEF" provinces.
- to assess human resources capacity within UNICEF to optimize efficiency of staff; this includes an assessment of the (dis)advantages of placing National UNICEF staff at provincial level rather than keeping them all at central level.
- to review the position of the CASD programme in Battambang, weighing the confusion within PDRD against the benefits of increased collaboration.

2.8 For the different functional levels of operation within the CASD programme the following recommendations can be made:

- At the village level, roles and responsibilities of the VDC's, especially with regard to WES activities should be clarified more.
- At district level, human resource capacity should be evaluated first, before too many tasks are delegated to this level.
- At provincial level, guidance of the newly formed PWG is required for at least two full project cycles, including monitoring and evaluation activities.
- At central level the role of the MRD Community Development department should become more prominent within CASD. At Central level government ministries, notably MRD and the Secretariat of Women Affairs should slowly take over the mobilizing and facilitating role presently carried out by UNICEF staff.

3. On CASD National WES component

3.1 Rural Water Supply

3.1.1 Use of standardized hand pumps should continue, but with the following remarks:

- The remaining PAT hand pumps should be replaced, because they are not suitable as community pumps.
- The VN6 hand pumps marked by the Evaluation Team as being incorrectly installed, should be examined and if necessary replaced by Tara pumps.
- The best installation height of each pump to make pumping for women and children easiest should be examined and passed on to the MRD installation teams; this applies especially for Tara hand pumps, which need a concrete footstep for children.
- For the Afridev and Tara pumps already installed a proper caretaker training should take place, including handing over of tools; if this does not happen villagers themselves will never be able to maintain the pumps.

3.1.2 More care should be taken when the aquifer consists of fine sand; drilling and installation should follow different standards to avoid infiltration of sand and also the experience from other organizations should be examined.

3.1.3 The platform design should be evaluated with regard to easier construction of the slope, increasing the area for washing and bathing (which is especially appreciated by women) and putting a simple fence to keep animals away. A KAP survey can determine to what extent a larger platform increased the use of water and compare this with the increased costs of construction.

3.1.4 When the PVC casing and screen is placed it should always be surrounded with a sanitary clay seal to prevent surface water entering and polluting the groundwater.

3.1.5 The provision of water quality testing equipment and relevant training should be part of a capacity building programme for the central level to be able to monitor contamination of water; in a later stage kits could be provided to some provinces as well, training to be done by central level staff.

3.1.6 Possibilities should be examined to transfer more drilling rigs to various provinces to further encourage the decentralization process; for the drilling rigs and teams remaining at the Central MRD, it should be clear that they are to support provincial programmes.

3.1.7 For the maintenance system presently under development it is very important to examine how much users are willing to pay for the repair of their pumps by PDRD staff; also a standard set of tariffs (for labor, spares, etc.) is recommended to make the system more transparent and easier to manage. The issue of lack of spare parts on the free market for Afridev and Tara requires top priority, because it jeopardizes the standardization process.

3.1.8 To strengthen monitoring procedures the following is recommended:

- To strengthen administrative procedures of the Central Water Base to make sure for present and new donors that materials are used in a proper way.
- To take appropriate steps for simple, regular measuring of the groundwater level.

3.1.9 To examine for those areas where water levels are always high the option of using the 1½″ suction pipe for the VN6 as a casing pipe, thus reducing the cost of a drilled well by 50%.

3.1.10 To improve communication/co-ordination between center and provinces:

- PDRD offices to be in charge of planning for water supply and making work schedules.
- Central team only works in the province on provincial request and in close co-operation with provincial authorities. This will allow PDRD- staff to do their job of preparation for water supply (water needs assessment and community organizing) in co-operation with local authorities (VDC's if established).

3.1.11 To organize frequent WUHE-sessions over a period of time, starting with raising awareness regarding safe water and hygiene before construction, and discussing water use, hygiene and care taking after the well is completed. This is preferably done by local staff and volunteers who stay close to the people and are able to follow up and monitor water use and hygiene behavior in the village on a regular basis.

3.1.12 For MRD/UNICEF to increase and ensure on-going support to PDRD/RHC and CD -staff in further developing their Community Organizing and Education skills: organizing regular training and workshops, organizing/encouraging exchange visits to other provinces and with NGO's, development of participatory training / education methods and materials.

3.2 Environmental Sanitation

3.2.1 Future programmes should continue using the poor-flush latrine, but simplify the design (without jeopardizing minimal design standards) to make it more affordable for poorer families.

3.2.2 The problem of emptying the pit should be studied carefully and the best options and risks included in future latrine training programmes.

3.2.3 With regard to the user contribution for family latrines the following recommendations can be made:

- UNICEF should examine the possibility to increase the latrine subsidy, as part of a package to reach the poorer families; this may go together with a trial in allowing small credit for latrine construction. Poorer households should be primarily targeted.
- If the subsidy of UNICEF is increased, this should not affect the total number of latrines planned per year. To come more in balance with the expenses for water supply facilities the budget for latrines should be increased to cover for up to 10,000 latrines per year, which may be a realistic demand figure with higher subsidies and cheaper designs.
- Families should be fully aware of the costs involved before making the commitment to build a latrine; the contract between provider and family should stipulate responsibilities of each party and details on a minimum standard for the superstructure, operation and maintenance of the latrine and emptying of the pit.

3.2.4 MRD should continue on the path taken recently to try out a small number of latrines in new villages and only increase the slabs if the demand is genuine; this should go together with a good monitoring system including feedback to Central level for planning and policy purposes.

3.2.5 It is recommended to make latrines part of a package of measures to improve environmental sanitation, thus ensuring that the objective of better sanitation leading to better health can be achieved. These measures should include promotion of safe garbage disposal, the fencing in of animals, protection of ponds and taking proper care of waste water.

3.2.6 To be eligible for receiving a subsidized latrine a household should agree to abide by certain sanitary standards, which should be formulated by the office of RHC and checked before receiving the slab. Also after construction of the latrine the sanitary standard of the household should be monitored at intervals, not to loose the demonstration effect that is intended with the programme.

3.2.7 MRD/UNICEF to further develop the various initiatives to integrate the water supply and sanitation programmes into one approach to make progress towards environmental health.

3.3 Support to NGO's

3.3.1 With regard to NGO support the following points are recommended:

- UNICEF should continue with the support to NGO, both using the direct contracting and the indirect material support, though MRD.
- If the UNICEF resources allow it could expand these activities, especially for those NGO's who follow a process similar to the CASD process or who plan to pilot some other activities, which could be beneficial to the whole WES sector.
- To increase the chance for sustainability and to support the developmental approach adopted by both UNICEF and MRD it is recommended that a set of criteria is agreed upon with the respective NGO. The following criteria could be included:
  - either work with existing VDC or set up a new VDC structure
  - close partnership with MRD/PDRD: field visits, seconded/counterpart staff
  - use of only standardized hand pumps + provide proper caretaker training
  - use Community Participation and Water Use and Hygiene Education approach
  - active participation in Cambodian WES sector meetings & working groups

4. On CASD Provincial component:

4.1 With regard to technical assessments the following recommendations are made:

- To further develop the criteria for the technical assessment to assist the VDCs in determining the need for additional water points. Also to make some adaptations to the technical assessment forms to contain more information regarding water sources other than wells.
- To include a technical assessment for latrines to be carried out simultaneously as the assessment for water supply, thus making the link between requests for water and sanitation and working towards integration of the two projects.
- To co-ordinate with other agencies involved in rural water supply working in the same area prior to engaging in any planning regarding additional water sources.

4.2 With regard to the Village Action Plans the following recommendations are made:

- During the process for Village Action Planning both consider the need for water for household use and for gardening, as two different roads towards better nutrition/health.
- To raise awareness about what is safe water and what are safe water sources prior

to letting the people make any requests for water, and to let the technical assessment precede the actual planning for improved water sources in the village.

- For UNICEF/MRD to formulate clear criteria for the allocation of wells on the basis of the realization that in the future not all requests can be granted.

4.3 With regard to the needs of the poor it is recommended to go for full coverage in terms of water supply in a village, that is to provide access to safe water to all villagers according to a general standard of 250 persons per water point:

- community organizers/VDCs to mobilize all villagers for water supply and include them in the requests so that all will share in the benefits, including the poorest who otherwise do not volunteer to join in meetings/requests out of a fear for contributions or lack of time; the contributions should be shared among all users, meaning that some will be able to contribute more than others but all can feel ownership towards the new facility. Full coverage will prevent overuse and thus the risk of early and frequent damage to pumps and platforms;
- to provide safe water for all means that unsafe sources can and must be abandoned; during the technical assessment of existing water sources, unsafe sources should be marked as inappropriate. Such a strategy will require active promotion of safe sources over traditional ones. If full coverage is not an option for the future (considering the CASD scale of operations versus the available budget) the programme should consider how to target those families who are in most need of assistance for a safe water supply by the programme.

4.4 It is recommended to UNICEF/MRD to develop gender training for Provincial Working Groups in co-operation with the Women's Affairs office and develop tools for planning and analysis of programme activities and impact with a gender orientation in mind.

4.5 It should be examined if the use of the standard UNICEF SCF (Supplies Called Forward) system, by which simple construction materials are ordered by the center and then dispatched to the provinces, can be bypassed in case of the CASD programme in order to allow for timely implementation of village action plans and to hand over more responsibility to the provinces.

4.6 A simple, durable retrieval system to take water from combination wells should be included in the design of the new wells planned for 1997, to safeguard hygienic conditions of the well.

4.7 When private drilling contractors are involved in the construction, contracts should be made between them and the VDC covering maintenance warranty and minimum standards for construction and the contractor should be trained to fill the National Drilling log sheet.

4.8 With regard to the village well construction volunteers the following is recommended:

- An assessment of all the village volunteers who constructed the combination wells in 1996; for the ones who require more supervision/training, this should be

included in the 1997 programme implementation.

- For new CASD villages, where only one or two combination wells will be constructed, it may be more economic and easier to manage to work with a qualified volunteer from another village

4.9 Installation teams should be instructed not to put the UNICEF name on the platforms anymore, but to make sure that the unique well number is used for later identification, following the standard numbering system.

4.10 MRD/UNICEF to give on-going support to the trainers and educators for WUHE in the villages by providing them training (on-the-job and in the class room), help with material development, monitoring and evaluation and sharing of ideas and experience with others.

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CHAPTER 1

INTRODUCTION

1.1 OUTLINE OF THE REPORT

The Evaluation Team was asked to produce a report based as much as possible on findings from discussions, documents and field visits rather than a descriptive report on the ongoing activities. Due to lack of time and non-availability of some crucial documents some parts have turned out to be more descriptive than others. Conclusions and Recommendations are incorporated in the text of each Chapter. A list of references is included in Annex 3 .

Report outline:

- **Executive Summary & Summary of Recommendations**
- **Chapter 1**: Presents the introduction to the evaluation, objectives, team composition, methodology and timing of the evaluation.
- **Chapter 2**: Discusses the Programme Background, Country Context, Policies & Strategies of Government and UNICEF and closes with the birth and approach of the Community Action for Social Development (CASD) Programme.
- **Chapter 3**: Discusses all the components which are presently operating under the national component of CASD : Rural Water Supply (in detail), Sanitation (in detail), support to NGO's (briefly) and School sanitation activities (briefly).
- **Chapter 4**: Provides details of the CASD programme, including the differences with the previous programme components with regard to WES

1.2 EVALUATION OBJECTIVES

This evaluation of the UNICEF assisted Rural Water Supply & Sanitation Programme has two main objectives (see for further specific tasks Annex 1):

a) To review and evaluate the UNICEF assisted RWS & Sanitation programme during the transition period (1992 - 1997), where the programme shifted from a focus on emergency and rehabilitation to a participatory community action approach.

b) To make recommendations for future programme strategies and approaches within the framework of CASD and UNICEF strategies in WES and in line with National Social Economic Development Plan (1996 - 2000) and National Plan of Action for Nutrition.

1.3 STAFFING OF EVALUATION TEAM

The core of the Evaluation Team consisted of three persons:

1.	Foort Bustraan	Team leader Water Engineer
2.	Loes Bellaart	Community Organizer Specialist
3.	Mohammed Kumba Kumba	Water Engineer

During the field trips, three national staff members from MRD joined in the team: Dr. Veth Sreng (Rural Health Care), Mr. Sok Sophally (Rural Water Supply) and Mr. Yim Sambo (Community Development). During the first field week Dr. Mao Saray, Director MRD/Rural Water Supply and Dr. Chea Samnang, Director MRD/Rural Health Care also joined, together with two CASD staff from UNICEF. In addition to the above team two SAWA Cambodia national staff contributed to the evaluation, gathering additional data on functioning and utilization of existing wells and latrines for two weeks.

1.4 METHODOLOGY

The first week was spent in Phnom Penh gathering information and meeting UNICEF staff & other resource persons; also check-lists and survey forms were made for the field work. The next two weeks were spent mainly in the field visiting the following provinces:

•	Svay Rieng	4 days	Whole Evaluation Team
•	Prey Veng	1 day	Whole Evaluation Team
•	Kratie	3 days	Foort & Sreng
•	Battambang	3 days	Loes & Sambo; Kumba Kumba & Sophally
•	Kandal	10 days	SAWA Cambodia staff for quick survey
•	Takeo	10 days	SAWA Cambodia staff for quick survey
•	Kampong Cham	2 days	SAWA Cambodia staff for quick survey

The final two weeks were spent on data analysis, developing issues, further meetings with resource persons and drafting the report. The draft report was discussed during two briefing sessions and comments were incorporated in the final version. The Evaluation Team was able

to collect data for over 500 existing facilities, using two quick survey forms for Hand pumps and Latrine construction (see Annexes 9 & 11).

The Evaluation Team witnessed training by UNICEF staff for the Provincial Working Group (PWG) and villages following the new CASD approach. In the field discussions were held with provincial, district, commune and village officials/committee members involved in the provincial CASD programme as well as with users (women) of the various facilities.

1.5 TIMING OF THE EVALUATION

The Evaluation Team experienced some constraints doing the evaluation at this time:

- Many villages could not be reached, because of flooding or bad access
- Most of the women in the villages were busy transplanting rice
- Rice fields, ponds and household jars were full of rainwater and therefore it was difficult to assess the use of water points: a visit during the dry season would have shown a clearer picture of the actual water need.

However the outcome of this evaluation was needed at this time, in order to continue with the planning process in preparation for the Strategic Mid-term Review in 1998.

Recommendation 1.1:

Any WES evaluation is best carried out at the end of the dry season, when there is full access to all project areas, the actual water situation and needs are more visible and women have more time to participate in survey's and/or meetings.

CHAPTER 2

PROGRAMME BACKGROUND

2.1 CONTEXT OF 1992 - 1997

2.1.1 Country Context

The Kingdom of Cambodia covers an area of 181,035 km^2 with a population of 10.7 million people with an annual growth rate of 2.5%. 9 million people live in the rural areas (86%); life expectancy is 51.6 years. The under-five child mortality rate is estimated to be 181 per 1000 living births. The illiteracy rate for men is 24% and for women 45% (Ref 2).

Water resources are in abundance, with the Mekong river covering 2,500 square kilometers and Lake Tonle Sap providing a reliable source for fishing and water supply to the surrounding population. Groundwater resources, which are a reliable source of safe and clean drinking water to the rural communities, are relatively easily accessible in most parts of the country. Annual rainfall is between 1200 - 3000 mm.

Still access to safe drinking water is (presently) limited to 34% of the rural and 65% of the urban population. Access to sanitation facilities is as low as 10.6 % (Ref 3). According to traditional custom many rural families prefer the use of nearby, unprotected water sources (ponds, traditional wells) and defecate in fields or forest.

During the earlier years of this reporting period political unrest forced many agencies, including UNICEF, to concentrate on emergency relief activities. Since 1994 changing conditions in the socio-political context of the country have allowed for a gradual shift towards a development approach. The Ministry of Rural Development, charged with the responsibility for Rural Water Supply, Sanitation and Hygiene Education since December 1993, has increasingly become more confident in policy development and the role of co-ordinating Government, IOs and NGOs activities.

2.1.2 Programme Context

Until 1993 the UNICEF assisted Water and Environmental Sanitation (WES) Programme was implemented by the Ministry of Health (MOH). This responsibility was transferred to the newly formed Ministry of Rural Development (MRD) in December 1993, with its Departments of Rural Water Supply (RWS) and Rural Health Care (RHC). Most of the MOH staff involved in the WES programme transferred to MRD. MRD/RWS kept on operating from the Central Water Base (CWB), the building complex set up by UNICEF in the eighties to facilitate the implementation of a large centralized drilling programme.

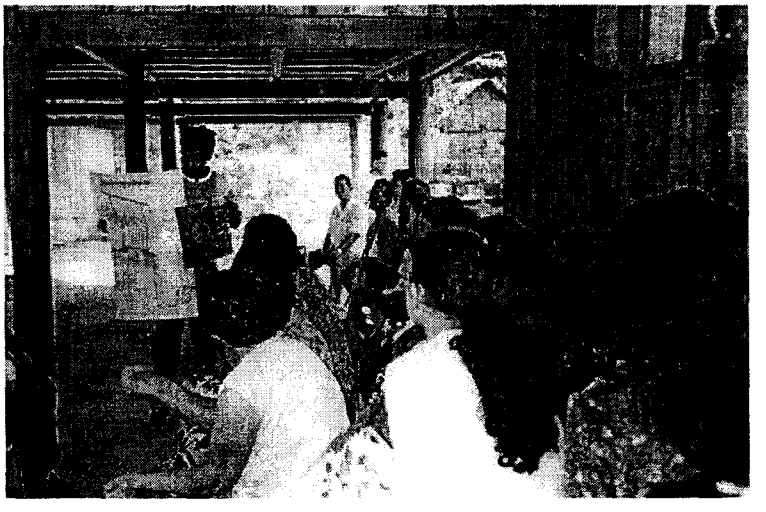
During 1994 - 1995 activities continued as before, with implementation mainly by central teams (drilling, installation and some training), supported by a UNICEF drilling engineer,

sanitation officer, logistician and hydro-geologist. UNICEF initiated monthly WES sector meetings to share information between Government, International Organizations (IO's) and Non Governmental Organizations (NGO's).

In 1995 the plan for a decentralized community based development programme in support of women and children was developed, firstly by UNICEF staff and later with relevant government partners.

In 1996 this evolved into the Community Action for Social Development Programme (CASD) programme, with a National Component for the continuation of the existing programmes and a new Provincial Component based on an integrated approach of all development sectors with a bottom-up structure of planning and decision-making. A description of CASD is provided in Chapter 2.3.

The old UNICEF assisted programmes were supposed to gradually merge into the new CASD process, but this transition in 1995 and 1996 did not manage to involve the central government as much as it should have done. This may have been caused by gaps in between changes of UNICEF core staff, which reduced effective planning at higher levels. The senior staff at the government central level are not fully aware of their roles and responsibilities with regard to the Provincial CASD WES component.



The result at this moment with regard to the WES programme is that the previous programme is still going on almost as before (but now as the National CASD component) alongside a new developed Provincial CASD programme. This is demonstrated by the provision of funds in 1997 for 350 wells to Central MRD, to be constructed over the whole country, without proper guidelines on setting up Village Development Committees, assessing village water needs, full involvement of the future users, proper training, etc. In practice some of these 350 wells may well be constructed inside the CASD communes and/or villages.

Recommendation 2.1:

The role of the central government departments within the Provincial CASD programme should be clarified as soon as possible. Activities for the central level which UNICEF could support are:

- Policy and strategy development
- Co-ordination within government and other agencies
- Facilitation and resource mobilization (funding and technical assistance)
- Monitoring and evaluation
- Training
- Documentation and data collection
- Technical support

Recommendation 2.2:

To avoid confusion and different policies between the National and Provincial CASD components it is recommended that from 1998 onwards all activities from central MRD (water points and latrines) are concentrated within the CASD Provinces.

2.2 GOVERNMENT WES SECTOR POLICIES & STRATEGIES

Coverage:
In the First Social-Economic Development Plan 1996 - 2000 (FSEDP), it has been stated that two of the strategic policies of the government are (I) to widen access to social services, especially among women and vulnerable groups and (ii) to ensure sustainable utilization of the natural resources base by strengthening the enforcement of environmental legislation, monitoring and supervising conservation management and developing resource use strategies. The plan is translated in the Public Investment Plan as a working document. Targets have been set as follows:

	Estd. Coverage		Facilities constructed in 5 years	Investment (US$)	
	1996	2000		Total	Per facility
Rural Water Supply	26%	65%	39,000 water points	30.9m	$790
Sanitation	6%	22%	135,000 latrines	7.5m	$56

Table 1.1: Target figures and investments from FSEDP 1996 - 2000

MRD developed a master plan for universal coverage of water supply, which requires 77,300 water points for a total cost of US$ 34.2 million (which converts to US$ 445 per facility). The difference between the figure of US$ 790 used in the FSEDP and US$ 445 used by MRD lies in the fact that in the FSEDP also costs are included for capacity building, institutional strengthening and social mobilization. This is therefore a more realistic figure. The figure of US$ 56 per latrine seems high, but again this includes all mobilization and capacity building costs.

If the above figures are extrapolated for 100% coverage, this means for Rural Water Supply an additional 5 years is required (completed in 2005) and for Sanitation facilities an additional

25 years (completed in 2025). But this calculation does not take the following points into consideration:

- Population growth of presently 2.5% per annum, which can be converted in ca. 1,000 additional water points and 30,000 additional latrines.

- Construction of facilities by private families. This applies both to water points and latrines, but especially has a big impact on planning figures for latrines:
  - public wells are used in general by 20 families, which means that 20 private wells are required to reduce the need for one public well.
  - each family latrine which is constructed privately reduces the need for one latrine constructed with a (government) subsidy.

- Annual targets in FSEDP of 7,800 water points and 27,000 latrines are much higher than the present rate of construction of public facilities (estimated figures for 1997 are 3,000 water points and 6,000 family latrines).

Recommendation 2.3:

UNICEF to assist MRD in making a realistic master plan for the coming ten years, incorporating activities from donors, IO's, NGO's and estimations for privately constructed facilities. The master plan should include separate budgets for the following activities:

- facilities construction,
- capacity building & training
- operation & maintenance of facilities
- monitoring & evaluation of activities.

Co-ordination of other WES players:

A number of IO's, NGO's and bilateral donors (see Annex 7) are implementing WES projects and exploit water as a natural resource to the benefit of rural communities. The Ministry of Rural Development has become more and more involved in planning and co-ordinating these activities and is presently chairing various sector and working groups for the sharing of information and policy development. But up to this date the majority of players involved in WES activities do not respond to requests from MRD to share their programme achievements and planned activities with them. This makes it very difficult for MRD to know exactly what is happening where and what activities are planned for the coming years.

Recommendation 2.4:

UNICEF should use its influence in the WES sector more to request all organizations involved in WES activities to support MRD requests for planning figures.

Policy Development:
A formal policy on Rural Water Supply and Sanitation is still under development, but some clear steps in this direction have been taken with the formulation of guidelines for the sector, the adoption of standard hand pumps and the acknowledgment of the importance of Water Use and Hygiene Education for any future programme. A Technical Advisory Group (TAG) is in place since late 1996, where main players meet and exchange information with regard to this policy discussion.

Urban water supply is under the responsibility of the Phnom Penh Water Supply Authority (PPWSA) for Phnom Penh and the Ministry of Industry Mines and Energy (MIME) for the Provincial towns. The World Bank has requested the Cambodian Government to form a nation-wide Water Sector Co-ordinating Committee (WSCC), to co-ordinate, monitor and issue policy guidelines for the whole water sector. Recent political unrest has slowed down the process of establishing this committee, but it is expected to be operational before the end of this year.

One task for the government is to clarify the relations between the WES sector group, the TAG working group and the Water Sector Co-ordinating Committee and work out how the outcome of the discussions from the TAG can be fed into the WSCC.

Recommendation 2.5:

UNICEF should continue to be involved in assistance to MRD in policy development for the WES sector; this can be done on the basis of experience gained from the CASD programme, which can be passed on through the Technical Advisory Group to the water Sector Co-ordinating Committee.

2.3 UNICEF WES POLICIES AND STRATEGIES

General policy:
UNICEF WES policy in Cambodia is based on the global policy for universal access to safe water and sanitation and guided by the following principles (ref 6):

- provide some for all rather than all for some
- empower communities
- provide sustainable services
- achieve health and socio-economic benefits

To achieve this, UNICEF forged a strong partnership with the Royal Cambodian Government, in this case the Ministry of Rural Development and assisted with the planning, development and implementation of rural water and sanitation activities. Some examples of this involvement are:

- UNICEF (with OXFAM) initiated in 1991 the regular WES sector meeting, where all agencies involved in WES activities come and participate in the discussions.

- UNICEF consultants have been very active in the preparation of the FSEDP and the Public Investment Programme, which translates objectives and strategies of the

FSEDP into action plans.

- The National Plan of Nutrition was developed from a UNICEF supported study.
- UNICEF contributed with funds and advice for National Workshops on Hand Pump Standardization, Village Level Operation & Maintenance (VLOM) and Water Use and Hygiene Education (WUHE).
- Introduction of the Community Action for Social Development (CASD) concept for a decentralized, integrated programme approach to reach women and children.

Target Groups

The target group for UNICEF assisted programmes is the poorer part of the population (both rural and urban), with a special focus on women and children. In Cambodia in the early days of UNICEF support water points were mostly constructed for public institutions: schools, clinics, prisons, orphanages, etc. Under the emergency approach (early nineties) the main target groups were displaced and returnee families. Presently the WES programme targets poor rural areas in general.

Responsibilities

From the time UNICEF started in Cambodia they have advocated that the Government should be responsible for the co-ordination and implementation of WES activities: the Central Water Base was set up as the focal point for these activities and is still nowadays supported by UNICEF with a rehabilitation of the buildings underway. UNICEF however concentrated mainly on service provision and did relatively little on capacity building for government staff nor push towards decentralization. In 1992 transfer of some light drilling rigs to the provinces proved to be an important step towards capacity building at the provincial level.

Central Level and decentralization

With the start of the CASD approach UNICEF changed its policy of channeling all support through the Central level and started working with provincial departments (see Chapter 2.3). This created tension with the Central level and in September 1997 UNICEF sponsored a co-ordination meeting where Central and Provincial CASD co-ordinators convened to set up strategies to establish roles and responsibilities of MRD in the programme. It was agreed to formulate guidelines where provincial and central roles will be clearly defined. The meeting demonstrated UNICEF's intention to build a sustainable programme within the existing government structure.

Village Development Committees

UNICEF fully supports the introduction of the democratically elected Village Development Committees (VDCs) who facilitate, co-ordinate and monitor all development activities at the village level. This new government structure is seen as a prerequisite for the implementation of sustainable village projects and as such VDCs play a key role in the CASD process.

Maintenance of facilities:

UNICEF has always supported MRD in the maintenance of existing WES facilities: provision of spare parts, training courses for maintenance teams, logistical support, funding for the rehabilitation of wells damaged by floods, etc. (see further under Chapter 3.1). At this

moment there is still no good government policy on maintenance of facilities and UNICEF is one of the leading partners for MRD to work on this.

Co-ordination with other agencies

Co-operation with other agencies has always been a priority for UNICEF, especially with agencies carrying out WES activities in different geographical areas where UNICEF is not working. Co-operation with UNDP/CARERE, Partners for Development (PFD, previous AICF/USA), GRET, CARE and CONCERN are typical examples. The main objective has been to increase WES coverage in a sustainable way.

Many international organizations are involved in the implementation of WES activities in Cambodia but for a long time without co-ordination in approach. Considering the country situation, differences in approach were eminent because long term sustainability and capacity building were not a high priority. This donor driven approach, which is still visible in some programmes, has a negative impact on the standardization of WES policies. UNICEF could use its position to influence donors and bilateral partners to assist in the formulation of sustainable policies.

Close collaboration with UNDP/CARERE, which is also working closely with Provincial Departments of Rural Development through the SEILA-2 programme, is another example where UNICEF benefits from increased sharing of experiences and policy development, especially in the light of the development of the CASD concept.

2.4 CASD PROGRAMME DESCRIPTION

The CASD concept was developed in 1995 by UNICEF as central strategy for the Plan of Operations 1996 - 2000 of the UNICEF - Government of Cambodia partnership. The other two UNICEF assisted programmes of Basic Education and Health Care are meant to support this community based, multi-sectoral programme (see Annex 8)

The Prime objective is:

"To assure the survival, protection and development of all the children of Cambodia, as well as gender equity in the development process, through community mobilization, involvement and initiative".

2.4.1 CASD Planning and Process Development

The CASD concept was developed by UNICEF internally in the beginning of 1995, based on its successful application in Africa. From mid 1995 the Ministry of Planning and line ministries got involved in further developing the concept, formulating strategies and finally actions by means of attending various workshops. In reality this participation was fragmented, because government departments did not always send the same staff to the workshops, making it difficult to become completely involved.

During 1996 this lack of involvement by the central level was not yet noticed, because all efforts were concentrated on starting up the CASD process in the province. Also recruiting

and filling new CASD staff positions, within UNICEF in 1996, took much longer than anticipated and left gaps in the supervision of the programme; the shampered clear policy development regarding the merging of the Central and Provincial components. Only this year it became clear that the Central level does not feel much part of CASD and is not clear about their roles and responsibilities. This issue has now been taken up by both Government staff and UNICEF.

A total of US$ 20 million (see Annex 7) is budgeted for the five year programme. These funds are not readily available, because UNICEF own resources cover only US$ 2.5 million; the remainder (US$ 17.5 million) has to come each year from donors. The recent political developments changed the attitude of some donor countries towards Cambodia and this may affect the smooth implementation of the CASD programme. As such this can result in frustrations if donors do not respond favorably in time. Already in this year some activities could not be implemented, because of funding shortages:

- conversion of India Mark II by India Mark III,
- caretaker training for already installed Afridev and Tara handpumps
- water points requested in Village Action Plans had to be reduced.

Recommendation 2.6:

UNICEF needs to re-assess the present situation whereby almost the whole CASD budget is used for the provincial CASD programme, meaning that initiatives taken previously (like conversion of India Mark III, proper caretaker training for all VLOM pumps, etc.) can not be implemented anymore because of lack of funds.

2.4.2 WES activities within CASD:

CASD is an integrated community-based programme, which uses the nutritional status of children as the outcome indicator. There are six programme components namely:

1) building capacity with a focus on women and youth
2) community education and child care
3) food, water and environment
4) health, hygiene and caring practice
5) protection and care of vulnerable children and women
6) credit, employment and income

This evaluation dealt with WES activities which can be found under the third and fourth component. Some of the specific strategies for the Water and Hygiene components are:

- Community management of the water environment, including water conservation, protection, insect control, solid and liquid waste management closely linked to health, hygiene and safe environment.

- Community cost-sharing, taking into account willingness to pay, but ensuring that the programme effectively supports low-income groups.

- Use of high cost drilling technology only where improved shallow wells are not possible; also other technologies like rainwater catchment and infiltration galleries will be supported.

- Management support for Rural Water Supply will be decentralized to the Provincial level and the Central Water Base will be reorganized and partly decentralized.

- Gender-balanced approaches recognizing women as key players and agents of change.

- Decade goals of universal safe water require accelerated progress.

- Provide schools and clinics with safe water and sanitation facilities.

- Improve hygiene practices in villages based on KAP surveys, e.g.: hand washing, defecation sites, etc.

In principle WES can be seen as a small component of CASD. However the budget allocation for the WES programme is 40% of the total project cost for the period 1996-2000. This has implications for the UNICEF staff involved in the preparation, facilitation and follow-up of the WES activities within CASD.

2.4.3 Scale of Operation

The CASD programme started in 1996 with 55 villages in two provinces (Svay Rieng and Kompong Thom). In 1997 activities are ongoing in 265 villages in these first two provinces and four new provinces have been added (Battambang, Prey Veng, Takeo, Kompong Speu). The Plan of Operations mentions as a goal that by the year 2000 the CASD programme should be operating in the whole country (12,000 villages).

WES activities appear prominently on all village requests, meaning that the number of WES activities this year have increased by a factor of five compared with 1996 and with the whole country in mind should increase with a factor of five each year between now and the year 2000.This pace seems too fast in view of the community mobilization strategy required and the need to develop the process with the working groups and committees at all government levels. Nation-wide coverage by the year 2000 does not seem a realistic assumption, even if intensive collaboration with NGO's is sought.

UNICEF staff availability

The UNICEF staff responsible for the whole process (mobilization, facilitation, training, technical support, follow-up, evaluation, etc.) are already at this moment overloaded with in general responsibilities for both the CASD process in a province as well as being specialist of a specific component (water or health/hygiene). This has resulted sometimes in insufficient time:

- to incorporate the WES process within the CASD process,
- to plan, implement and follow-up on WES training,
- to incorporate Central MRD staff in Provincial WES activities
- to monitor and evaluate (impact of) WES activities and recommend changes

- to share experience with other organizations involved in WES activities

It is understood that UNICEF is in the process of hiring additional National staff as Trainer of Trainers to strengthen the training needs for Central MRD staff and Provincial Working Groups. This will relieve the CASD staff in these aspects.

The question whether some UNICEF CASD National staff should be based in the Province or only operate from Phnom Penh, is not easy to answer. As long as they have a mix of duties (see Table 2-1), whereby they spend 75% of their time outside their target province, it is not useful to have the province as base. But in the light of supporting a new process at provincial level it would be very beneficial to have qualified staff close by the newly formed Provincial Working Group, at least during the first year, to guide and advise. This may mean that more national staff are required, with special emphasis on Community Development skills and background. The additional cost will not upset the total CASD budget, but will guarantee much better communication with the new provincial and district committees and also streamline the integration of the National CASD component in the provincial CASD programme.

CASD consolidation in existing provinces

In light of the above, expansion of CASD to new provinces does not yet seem warranted. It is therefore recommended to concentrate on the existing provinces (except possibly Battambang, see below) to build a stronger understanding of the process, so that the service delivery component will not overshadow the most important part: concept and process implementation. Moreover, the central level requires time to mobilize resources for further expansion, to be able to perform their responsibilities. At this moment the central level is not in a position to cope with further expansion when participation in the process is still weak.

Position of Battambang:

The rationale of starting a CASD programme in Battambang in late 1996 was to increase collaboration with UNDP/CARERE. During the evaluation visit to Battambang it was found that the overlap within PDRD may have caused more confusion than benefits. UNDP/CARERE has been strongly represented in Battambang for five years and has been involved with PDRD since the start. This creates a complete different scenario compared to the other CASD provinces, where CARERE is not present. Even though both programmes follow a bottom-up approach through the government structure, the actual strategies and activities are quite different. This causes confusion with senior PDRD staff, who now need to work with two different concepts in the same province.

The collaboration has been beneficial to both parties with regard to the exchange of training material, participation in meetings/seminars at provincial level and exchange visits to different provinces. But for this type of collaboration to continue or even to intensify it is not necessary to work in the same province. As long as there is good dialogue and communication, facilitated by senior UNICEF and UNDP/CARERE staff, increased collaboration can take place working in different provinces.

Recommendation 2.7:

With respect to the planned increased Scale of Operation the following steps are recommended:

- not to expand to new provinces at this moment, but to consolidate in the present provinces, making sure that they are able to function on their own, before new provinces are included.
- where possible to increase ties with NGO's and IO's who are willing to work according to the CASD concept in "non -UNICEF" provinces.
- to assess human resources capacity within UNICEF to optimize efficiency of staff; this includes an assessment of the (dis)advantages of placing National UNICEF staff at provincial level rather than keeping them all at central level.
- to review the position of the CASD programme in Battambang, weighing the confusion within PDRD against the benefits of increased collaboration.

2.4.4 Functional Levels for CASD

There are four levels in the project process and implementation for CASD:

Village Level (Village Development Committee)
Two years ago the government has introduced a new structure at the village level for planning and management of all village development activities called the Village Development Committee (VDC). Within the CASD process the formation of new VDCs is facilitated where they are not yet existing. Further guidelines regarding the roles and responsibilities of VDCs are being developed.

District Level (District Co-ordinating Committee)
At the district level CASD has formed a District Co-ordinating Committee (DCOCOM) for each operational district with staff from each of the seven key departments. At this level lack of qualified staff is a main issue for CASD to take into account.

Provincial Level (Provincial Co-ordinating Committee)
The CASD programme has introduced the Provincial Co-ordination Committee (PCoCom) for co-ordination of CASD activities, formed by representatives of the seven key departments at provincial level. In addition there is the Provincial Working Group (PWG) which is formed by the PCoCom plus two additional staff from each department who have been assigned training tasks plus two members from each district where CASD is operating. Chairmanship of the PWG lies either with the Director of PDRD or Women Affairs, being the most important Departments for CASD.

The PWG has to provide the trust to the Provincial CASD programme and it seems to work fairly well, considering that only Svay Rieng and Kompong Thom have completed one full annual cycle of mobilization, training and implementation. However it will take time for a new PWG to operate (almost) completely by themselves, without backup support from

UNICEF staff.

Central Level (Council for Development of Cambodia)
At Central level the Ministry of Planning is responsible for the co-ordination of inter-ministerial activities for the complete UNICEF country programme, under the guidance of the Council for Development of Cambodia (CDC). The main responsibility for CASD rests with MRD, in co-operation with other participating ministries (like Ministry of Agriculture, Fisheries and Forestry, Secretariat for Women Affairs, Ministry of Health and Ministry of Education).

UNICEF requested each Ministry to nominate a focal person at the start of CASD, but up to now this has not happened for all Ministries involved. For MRD the director of Rural Health Care is at present the focal point, because of his strong involvement already with the ongoing UNICEF assisted programmes and his active role in promoting the CASD concept and process within MRD. Because of the strong community development component within CASD, a more prominent role of the Community Development section within MRD may be advisable for the future.

Recommendation 2.8:

For the different functional levels of operation within the CASD programme the following recommendations can be made:

- At the village level, roles and responsibilities of the VDC's, especially with regard to WES activities should be clarified.
- At district level, human resource capacity should be evaluated first, before too many tasks are delegated to this level.
- At provincial level, guidance of the newly formed PWG is required for at least two full project cycles, including monitoring and evaluation activities.
- At central level the role of the MRD Community Development Department should become more prominent within CASD. At Central level government ministries, notably MRD and the Secretariat of Women Affairs should slowly take over the mobilizing and facilitating role presently carried out by UNICEF staff.

CHAPTER 3

CASD NATIONAL WES COMPONENT

Since the start of the CASD approach in 1996 all WES components which were previously covered by the WES section are now incorporated in the CASD process. The Water Supply, Sanitation, NGO support and School Sanitation programmes are all covered under the National component of CASD.

3.1 MRD/RWS RURAL WATER SUPPLY COMPONENT

3.1.1 General Introduction/Objective

The RWS Programme started in 1983 as an emergency programme and slowly expanded from provision of water for institutions only to a nation-wide RWS programme. In January 1994 a complete transfer was made from MOH to MRD. Most water points are wells drilled with a manual, small portable mechanical or large truck mounted drilling rigs. Work was/is implemented by MRD/RWS teams and/or PDRD technical teams. UNICEF has also provided support to urban water supply for several institutions, based on request.

Objective of the RWS Component:

"To provide year-round clean and safe water for ... beneficiaries (number of beneficiaries varies each year)".

During the period examined for this evaluation (1992 - 1997) a total number of 6313 successful wells have been drilled by both Central MRD teams (67%) as well as Provincial drilling teams (33%, mainly in Prey Veng, Siem Reap, Pursat and Kampot). Drilling activities were divided over 17 Provinces. Most wells were drilled in Prey Veng (976), Kandal (873), Kompong Cham (710) and Takeo (698), which accounts for 52% of all the successful wells. For more details please see Annex 12.

In the beginning only VN6 suction pumps (2243 pieces) and India deep well pumps (2343 pieces) were installed, but since the standardization of hand pumps in Cambodia (1994), which had UNICEF staff participating in the steering committee, MRD also installed Tara (200) and Afridev (575) pumps. In 1992/93 around 200 locally manufactured PAT pumps were installed as a trial, but it was clear very soon that these were too weak to be used as community pumps.

3.1.2 Survey Results

A field survey of 347 of the 6241 wells (= 5.6 %) was done in seven Provinces during this evaluation to establish the functioning and utilization of these wells. The survey forms and

a summary table with results can be found in Annex 9. Even though the forms were tried out in Kandal Province it was found during the analysis that some of the questions could not be used, because of unclear answers; this was due to the lack of preparation time, since this survey was not originally included in this evaluation.

PROVINCE	No.	%
Svay Rieng	46	13
Prey Veng	6	2
Battambang	44	13
Kratie	25	7
Kandal	100	29
Takeo	104	30
Kg Cham	22	6

TYPE	No.	%
Combination well	4	1
Afridev	42	12
India I/II/III	211	62
Tara (old type)	9	2
VN6	81	23

YEAR	No.	%
1983 - 91	53	16
1992	45	12
1993	69	20
1994	73	21
1995	53	16
1996	14	4
1997	38	11

Table 3.1 : Division of 347 surveyed wells by Province, Type and Year.

The following is a summary of the outcome with % based on the original 347 wells:

80% of the **pumps** are fully functioning, which is a very good achievement:
Further division according to pump type or year:
- Combination well: 100%; Afridev : 90%; VN6: 83%; India: 74% ; Tara (old type): 66%
- 1992: 87%; 1993: 59%; 1994: 76%; 1995: 88%; 1996: 71%; 1997: 95%

The average **number of users** per well is 20 families (around 110 persons):
Further division per category :
- 1-2 fam: 6%; 3-10 fam: 18%; 11-20 fam: 34%; 21-30 fam: 26%; >30 fam: 16%

57% of all the **platforms** are in good condition.
Further division per year:
- 1992: 36%; 1993: 37%; 1994: 64%; 1995: 68%; 1996: 64%; 1997: 95%

47% of all **drainage channels**, letting the waste water flow from the well site, are long enough so that no stagnant water collects around the platform.

The water quality (based on the opinion of the users) of 77% of the wells surveyed is good enough for drinking and cooking as well as other purposes.

Only 8% of all the water points has a fence

The contribution in cash differed widely for all the wells (from $ 0 - $ 500):
- < $25: 32%; $25 - $50: 34% ; $50 - $300: 26% ; > $300: 8%.
- The last category are pure private wells where one rich family paid everything and does not allow others to use .

The breakdown rate was very low (based on the memory of the users): 55% of all the wells never experienced a breakdown; 33% had between 1 - 3 breakdowns and only 12% had experienced more than 3 breakdowns.

67% of the users interviewed had never received any Water Use or Hygiene Education, 28% remembered they had received a general talk one time and only 5% said they had taken part in more then one session.
- Never HE: 1992: 47% ; 1993: 80% ; 1994 70% ; 1995: 49% ; 1996: 71% ; 1997: 54%
- one time HE: 1992: 53% ; 1993: 16% ; 1994 25% ; 1995: 47% ; 1996: 29% ; 1997: 31%
- more time HE: 1992: 0% ; 1993: 4% ; 1994 5% ; 1995: 4% ; 1996: 0% ; 1997: 15%

Table 3.2: Summary survey results of 347 wells

3.1.3 Technical Issues

The following chapter describes a variety of technical issues, with regard to rural water supply, which are based on field findings during this evaluation and previous experience by the Evaluation Team. They are grouped in 5 sections:

A) Appropriateness of Design
B) Implementation
C) Operation and Maintenance
D) Monitoring systems
E) Cost effectiveness

A) Appropriateness of Design:

A1: Use of properly installed, standardized hand pumps

UNICEF has been active in the promotion of standard hand pumps for Cambodia since 1993, supporting a nation-wide workshop. This was followed by a VLOM workshop which was adopted as the standard approach for Cambodia. Since then MRD/UNICEF has installed more then 200 Tara's and almost 600 Afridev hand pumps and also provided Afridev pumps to NGO's involved in WES activities (see under Chapter 3.3).

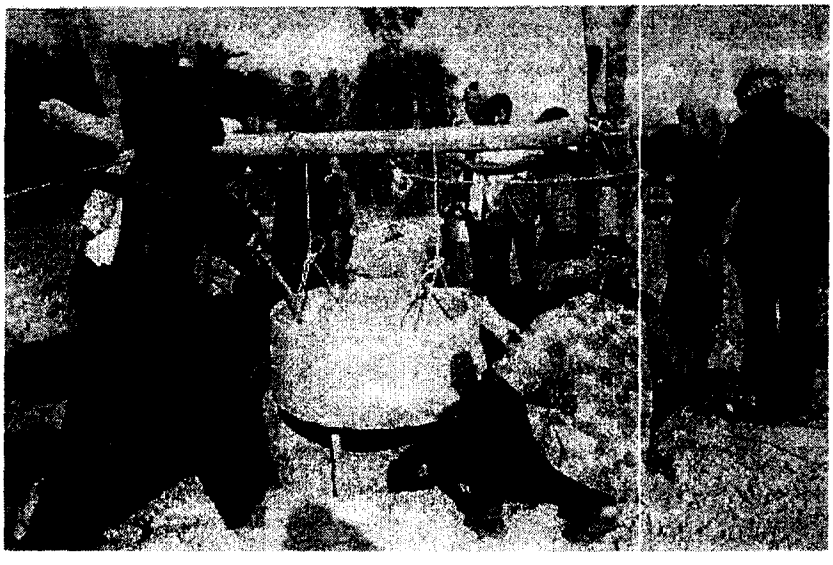
In 1991 the UNICEF drilling master (together with a water engineer from OXFAM) developed a local pump, which is now known as PAT hand pump. Between 1992 - 1993 UNICEF (MOH) installed 234 of these pumps in six Provinces around Phnom Penh. OXFAM installed 32 pumps in Battambang and Banteay Meanchey. Very soon after installation it became clear that these pumps are not suitable as communal hand pumps: handles broke, cup seals got stuck and foot valves could not be retrieved. The UNICEF hand pump maintenance officer advised MRD to replace all the PAT pumps with more appropriate pumps. According to recent records from MRD there are still 181 PAT pumps in place, but probably the actual figure is much lower as records are not yet updated. It is advisable that all remaining ones will be replaced with either VN6 or Tara hand pumps.

Another matter which became clear after studying the MRD records is that a significant number of pumps (15% of all successful wells, excl. PAT) are probably installed incorrectly, meaning that the water level at those bore holes requires a different pump from the one which was installed at the time. The following rough guidelines were used in determining if a pump was correctly installed or not:

Hand pump type	Wrong if static water level =	Alternative
VN6	≥ 6 meter	Tara
Tara	< 5 meter or ≥ 10 meter	VN6 or Afridev
Afridev	< 5 meter or < 7 meter	VN6 or Tara
India I/II/III	< 5 meter or < 7 meter	VN6 or Tara
PAT	needs replacement, because of incorrect design.	VN6 or Tara

Table 3.3: Criteria for incorrect hand pump selection

The result of installing the wrong pump is that either the pump will not operate in the dry season (for VN6 and Tara) or that the pump is over-dimensioned (Afridev, India): much more expensive and requiring more maintenance. The main reason for these incorrect choices seems that a drilling/installation team would make an assumption regarding which pump is required before going to the field and only that one was taken and installed, regardless the actual depth of the water table. Annex 12 shows a detailed list of incorrect choices of pumps per province and the Evaluation Team marked all these on the drilling records of MRD (these records will be returned to MRD).



For the Afridev & Tara hand pumps installed at present no real maintenance training is taking place; only during the installation users are shown how to install the pump. No tools have been handed over to the caretakers and no real caretaker training has taken place for these pumps, although both are part of the original planning. If users do not get the training nor tools to be able to do the maintenance by themselves, the installation of (expensive) VLOM pumps is a wasted effort. It was witnessed in the field that sometimes the pump was installed too high or too low, in which case pumping becomes difficult especially for women and children.

Recommendation 3.1:

Use of standardized hand pumps should continue, but with the following remarks:

- The remaining PAT hand pumps should be replaced, because they are not suitable as community pumps.
- The VN6 hand pumps marked by the Evaluation Team as being incorrectly installed, should be examined and if necessary replaced by Tara pumps.
- The best installation height of each pump to make pumping for women and children easiest should be examined and passed on to the MRD installation teams; this applies specially for Tara hand pumps, which need a concrete footstep for children.
- For the Afridev and Tara pumps already installed a proper caretaker training should take place, including handing over of tools; if this does not happen villagers themselves will never be able to maintain the pumps.

A2: Alternative designs for areas with fine sand aquifers

Drilling and installation has been going very well, especially looking at the number of functioning wells (80%) and number of dry holes (11%) from a total of 7030 holes drilled between 1992 - 1997.

There is however a tendency to stick to one way of operation regardless the condition of the aquifer. This can go well for a long time until aquifers with very fine sand are met. What becomes a problem then is that the fine sand infiltrates past the thin gravel pack which is placed around the screen, and will easily go through the screen with openings ("slots") too big for this type of aquifer. The result is a well which is pumping water mixed with fine sand, which is undesirable for the users, but also causes blockages for the piston of the hand pump and eventually regular breakdown of the pump.

The situation indicated above is not an easy one and many other organizations are battling with this problem. There are however a couple of easy adjustments which will immediately reduce the problem of pumping sand in fine sand aquifers:

- drilling a larger diameter hole (8" hole for a 4" PVC screen)
  - this will double the thickness of the gravel pack to stop the sand from entering.
- use of river sand or other round coarse sand as a smaller size gravel pack
  - this will also reduce fine sand from coming in.
- use of screen with smaller "slot sizes", replacing the standard 1 mm slot size
  - if not available in the market a slotting machine can be bought (< US $ 1,000) to cut the appropriate slot size.

Some IO's and NGO's are experimenting with other alternatives such as double screens or screen socks and this experience should be shared with the whole WES sector.

Recommendation 3.2:

More care should be taken when the aquifer consists of fine sand; drilling and installation should follow different standards to avoid infiltration of sand and also the experience from other organizations should be examined.

A3: Design of platform

The platform design used by MRD/UNICEF has hardly changed during the past 10 years and uses less materials compared to the designs of most other organizations (up to 50%). There are however certain flaws in the design and also lessons learned from others indicate that larger platforms are more appreciated. The Evaluation Team would like to mention the following points:

- Having a round platform and a pump (or combination well) centrally placed, the slope to divert the water to the drainage channel is difficult to construct properly.
  - Having a square platform with the pump placed on the opposite side of the drainage channel, the construction of the slope is much easier and it also leaves more room to people to have a bath or wash their clothes.

"During one field visit in Svay Chrum district, Svay Rieng province, the Evaluation Team visited one recently completed combination well; the slope of the round platform was badly done and the surface was slippery; during the short interviews which were held with some users we saw four children falling on the platform and when we asked some mothers they giggled and said that this was happening continuously....."

- A long drainage channel to make sure that the waste water can not return to the well.
  - Waste water should be utilized for a small vegetable garden or fruit trees.

- The size of the platform should be large enough to encourage bathing and washing
  - When bathing and washing takes places on the platform, more water will be used especially by families living further away from the well (usually the poorer people); it reduces the burden of carrying water home for washing and bathing.

- A fence should be put around the well to stop animals contaminating the well site.
  - locally available materials like bamboo or bush can be used as long as it keeps the animals out.

Recommendation 3.3:

The platform design should be evaluated with regard to easier construction of the slope, increasing the area for washing and bathing (which is especially appreciated by women) and putting a simple fence to keep animals away. A Knowledge - Attitude - Practice (KAP) survey can determine to what extent a larger platform increased the use of water and compare this with the increased costs of construction.

B) Implementation:

B1: Quality of Construction

The quality of drilling and installation in general is very satisfactory, which is further shown by the fact that most facilities are still working and producing clear water.

One aspect which needs mentioning here is a sanitary seal (of clay or cement) around the top part of the PVC casing pipe to prevent surface water from entering through the hole into the aquifer. The MRD drilling team has the habit of placing a gravel pack all the way to the top of the casing, because this works much easier. If there is no possibility for surface contamination nothing serious happens, but if there is something highly contaminating close by (latrine, cesspool, waste water) it can have serious consequences.

"During the same field visit in Svay Rieng province one well was found right next to a big, dirty pool of water. The caretaker of the well complained that there were strange things in the water and on closer examination we found mosquito larvae coming out of the VN6 hand pump..."

"During another visit to PFD in Kratie one story was told by people complaining that their well, after a few months without problems, suddenly started to produce "smelly water". On closer inspection it was found that the drainage channel was broken and there was black stagnant water all around the platform. After all this was rectified and cleaned up the problem disappeared..."

To guarantee that the aquifer is always protected from these types of contamination at least the top 10 meter around the PVC casing pipe should be filled with clay and then compacted. This is not a complicated or expensive exercise, but requires dedication to construct a high quality well.

Recommendation 3.4:

When the PVC casing and screen is placed it should always be surrounded with a sanitary clay seal to prevent surface water entering and polluting the groundwater.

B2: Water Testing

As a standard measure MRD drilling teams always measure Conductivity and pH of the water from a new bore hole, but no other tests are done for bacteriological or chemical analysis. Further water quality testing training and equipment was promised to MRD by UNICEF early 1995, but probably overlooked when the planning for CASD started.

For Central MRD monitoring of water quality is an essential part of their duties, to determine the extent of chemical contamination (Iron, Fluor, Calcium) as well as bacteriological contamination from uncovered combination wells and water stored at household level. Later country maps can be developed, including all information of MRD, NGO's and IO's showing the extent of a variety of harmful minerals in groundwater.

Experience from other projects in Cambodia (OXFAM, PRASAC-1) has clearly shown that water from drilled wells is normally clean (if the well is drilled and sealed properly), but gets contaminated during transport and storage at home. At the household level hygiene intervention is important and bacteriological measurements can assist in determining the extent of the contamination and serve as indicator to measure the impact of hygiene messages.

Recommendation 3.5:

The provision of water quality testing equipment and relevant training should be part of a capacity building programme for the central level to be able to monitor contamination of water; in a later stage kits could be provided to some provinces as well, training to be done by central level staff.

C) Operation and Maintenance:

C1: Actual number of beneficiaries

From the 347 wells surveyed it was found that these are used by on average 20 families, especially in the dry season. This is an indicator that water from the MRD/UNICEF wells is used by many people all over the country, even though it is 50% of the figure of 250 persons per water point which is used by UNICEF when calculating coverage for safe water. If the initial Iron content of the water is high people leave it overnight in an (uncovered) jar and use it the next day for all purposes.

The Evaluation Team found 20 wells (6%) drilled as private wells for which amounts between US$200 and US$400 had been paid to the drilling teams using UNICEF materials. Whilst this should never happen, it is understandable that with government salaries for drilling staff of US$20 per month the temptation to sell to the highest bidder is sometimes too much. It is not possible to estimate how many wells in the whole country can be labeled "private wells". This practice seems to have occurred only in those areas of the country where private contractors can not work with their small rigs because geology requires deep wells in rock aquifers. Wells are therefore expensive.

C2: Utilization of Drilling rigs

MRD has been working during the past five years with 25 drilling rigs, divided as follows:

- Provincial drilling teams: 10 x PAT 201 drilling rigs;
- Central teams: 4 x PAT 201 rigs; 1 Manual rig; 2 x PAT 301 and 8 truck mounted rigs.

From all the holes drilled the Provincial teams drilled 33% and Central MRD 67% (24% with PAT 201). Since most of the present donors for water supply concentrate on the Provincial level, it seems logical that MRD tries to decentralize more drilling rigs and staff to those provinces mostly in demand. For the smaller PAT 201 and manual rigs this is easy enough, but for the larger ones it is more difficult and possibly some system of sharing between two provinces could be developed. If it is not feasible to transfer the rigs to the province, they may still operate from the Central level, as long as it is clear that they support provincial programmes.

Recommendation 3.6:

Possibilities should be examined to transfer more drilling rigs to various provinces to further encourage the decentralization process; for the drilling rigs and teams remaining at the Central MRD, it should be clear that they are to support provincial programmes.

C3: Maintenance of hand pumps

During the field visits and the meetings with MRD senior staff it became clear that MRD feels responsible to maintain all the pumps which were installed during the UNICEF programme. A large scale operation whereby more than 2300 wells were cleaned after they had been contaminated during the 1996 floods is also a good sign of this commitment. For the VN6 pumps it will not be a problem, as these are already maintained by the people themselves, without having received any training or tools. For the India Mark I & II pumps this is not possible and people rely on a government maintenance system. It is well known that these

type of systems are very difficult to organize and pay for, but with so many India Mark I and II pumps already installed in Cambodia there is no way out.

UNICEF has recently started a discussion with MRD on the start of district maintenance teams to look after the pumps. For minor repairs users should pay themselves to the mechanic, but for major repairs like redevelopment or replacement of riser pipes, MRD is required to first write a proposal to UNICEF before anything can be done. UNICEF already provided many spare parts for all VLOM pumps to MRD which also other organizations can request for. At the moment of this evaluation however it was not possible to obtain up to date stock records from MRD.

UNICEF also purchased 1000 sets of conversion kits to change India Mark II for India Mark III. The difference between the two is that the India Mark III is easier to maintain by the users. But UNICEF, at this moment, has no funds to implement this conversion, meaning that users themselves will have to pay for it. If the conversion is not combined with a maintenance and repair training it will still have no effect.

What is required is the development of a clear maintenance system for these pumps, which is affordable for the people and manageable by the government. This should include a transparent system of standards for a maximum charge for repair to be paid by the users.

For the Afridev and Tara the main problem is the lack of spares on the private market. A pump supplier from India finally was persuaded to open a shop here to sell pumps and spares, but because he could not get a duty free licence from the Cambodian government, it became impossible for him to compete against all duty free purchases from humanitarian organizations. Once a strong retailer is available in Phnom Penh UNICEF should assist MRD in developing a good distribution system.

Recommendation 3.7:

For the maintenance system presently under development it is very important to examine how much users are willing to pay for the repair of their pumps by PDRD staff; also a standard set of tariffs (for labor, spares, etc.) is recommended to make the system more transparent and easier to manage. The issue of lack of spare parts on the free market for Afridev and Tara requires top priority, because it jeopardizes the standardization process.

D) Monitoring systems

D1: Monitoring activities

In 1992 MRD started a database for drilled wells with UNICEF assistance, indicating locations, drilling details and hand pumps installed. This database is still kept up to date, which is a good achievement. It is easy to see what has been installed where and gives an overview regarding the coverage per province and district for MRD drilled wells. What is not available, at least not at the Central level, are monitoring systems or records showing actual field information on operation and breakdowns of all hand pumps. The Central level has thus no data on pump performance, about the actual use of hand pumps and on how many have been abandoned because of breakdowns or for other reasons.

Because of the lack of a system, repair is done by either Central or Provincial level, only after information is received from the field that something is broken. The result is repair which is slow in responding to the need and expensive in manpower and transport.

D2: Monitoring of materials

UNICEF has over the past years provided many materials to MRD to be kept in the CWB in Phnom Penh. Main items are: PVC casing & screens, bentonite (drilling fluid), hand pumps & spares and spares for drilling rigs & vehicles. These items are normally bought in large quantities, because procurement procedures within UNICEF always take a long time (up to one year). Therefore materials procured are not specifically designated for a particular province or year, but added to the materials already in stock. In this way MRD has managed to drill so many wells and install over 6000 pumps in the past five years.

Up to December 1996 UNICEF had a logistics officer based at the CWB, to control the in- and outflow of materials (at present his replacement is under process). This officer developed a system and trained staff in stock control. Stock records were regularly sent to UNICEF and the logistician signed for materials going out. The system proved not to be sufficient, as a major stock check in 1996 found that large quantities of PVC and pumps were missing from the stores. The explanation given was that the discrepancy in figures was already there from the time the CWB was handed over from MOH to MRD.

The question of responsibility for stock keeping is not easily answered, but the best solution is when both parties (donor and Government) try to follow the system in place. Eventually the responsibility for applying the system lies with MRD, not UNICEF. Also for the sake of record keeping by UNICEF they should be informed by MRD if their materials are given out to other NGO's. When more activities fall under the Provincial CASD programme in the future, with clear ownership of facilities by the people themselves, this problem will automatically be reduced.

D3: Monitoring of Groundwater levels

This is a very important part of the MRD responsibilities, because water level fluctuations affect the operation of all water points in the country. At this moment almost nothing is done on monitoring; only during the installation of the hand pump the static water level is measured one time. For the VN6 handpumps it is very easy to adapt the design slightly so that regular measuring can take place without removing the pump (this was successfully tried out in the PRASAC-3 programme (Svay Rieng & Prey Veng) in 1996 for 50 wells. For the Tara and Afridev pumps a ¾" PVC pipe can be inserted inside the 4" casing pipe. This should not be done for all new pumps, but for those which will allow regular measurements in the future.

Recommendation 3.8:

To strengthen monitoring procedures the following is recommended:

- To strengthen administrative procedures of the Central Water Base to make sure for present and new donors that materials are used in a proper way.
- To take appropriate steps for simple, regular measuring of the groundwater level.

E) Cost Effectiveness

In general present activities undertaken by MRD are cost effective, especially looking at the number of successful wells and realizing that the overhead costs of expatriate and local staff, office cost, transport, etc. per well are relatively low. Drilling is done to the required depth and platforms are cheaper then those made by other organizations.

E1: Possible cheaper drilling

In some parts of Cambodia (most of Svay Rieng and parts of Prey Veng, Takeo, Kompong Thom, Kandal and probably other provinces) water levels are always high, even in the dry season, and suction pumps are the pumps to be used here. In most of these areas this is known before the drilling starts. Therefore it is not necessary to install first an (expensive) PVC 4" casing & screen and then later a 1½" PVC casing attached to the suction pump. It is much cheaper to install the 1½" PVC casing & screen directly into the ground. This also ties in with an issue mentioned earlier on the pumping of fine sand (A2) because a 1½" casing in a 6" bore hole provides much more space for a gravel pack. The saving when omitting the PVC 4" casing and screen is roughly 50% of the total construction cost.

This practice is common with private contractors in these areas who can thus drill a hole for US $100, where MRD/UNICEF budgets US $400 for one hole. The only problem with this practice is that if for any reason the water table drops, these wells will run dry and new wells need to be drilled. In the standard system of 4" PVC casing only the pump has to be replaced. But such a drop of the water table would be catastrophic for Cambodia anyway, as all private and irrigation tube wells will run dry as well, together accounting for much higher figures than the existing public wells.

Recommendation 3.9:

To examine for those areas where water levels are always high the option of using the 1½" suction pipe for the VN6 as a casing pipe, thus reducing the cost of a drilled well by 50%.

E2: Efficiency of drilling rigs

During this evaluation it was not possible to collect and analyze all cost figures, especially because of all the overlaps of programmes, budgets, various donors, various user contributions, etc. The only part examined more closely has been the efficiency of the drilling rigs and this proved to be very high. The number of holes drilled by some drilling rigs is very impressive and can be found in more detail in Annex 12.

By only looking at the capital or depreciation cost and not the running costs, the PAT 201 small mechanical rigs have a unit cost of less than US $16 per hole, considering that they have drilled more than 500 holes for a purchase value of US $8,000. For the truck mounted rigs depreciation costs are higher, but with a track record of over 1000 holes drilled by some of them the figure will be in the order of US $200 per hole, which is very reasonable for these types of drilling rigs.

3.1.4 Community Organization and Education

1992-1994: Ministry of Health

Under the Ministry of Health Community Organization and Education (COE) as part of the water supply programme remained a minor issue, despite strong recommendations in the 1992 OXFAM/UNICEF evaluation report to develop an integrated package of technical, social and hygiene education inputs to make improvement of water supply sustainable and leading to health benefits.

This had to do with both difficulties within the organizational structure of the Ministry of Health, being responsible for Water Supply and Hygiene Education and within UNICEF where under the emergency approach there was no attention for the concept of COE and no guidelines were developed for an integrated approach for water supply. In the provincial health offices there was yet little initiative for COE as all directives were coming from the center. Staff in the provinces did not receive any directions or training to set up their own COE activities.

If improvement in Water Supply and Sanitation is to be sustainable and leading to health benefits an integrated package is required of:

- ***Social education***: community organization and mobilization to bring about a sense of ownership and responsibility of new facilities, that is management at the community level;
- ***Technical education***: training in construction, maintenance and repair of facilities;
- ***Water use and hygiene education***: to promote proper use of new facilities and make people understand about their health benefits.

Community Organizing

Community organizing, the process of assessing the need for water supply in the village, mobilizing the people to generate requests, organizing contributions, site selection and the planning and monitoring of the construction of water points, was left up to the local authorities. The drilling teams from the center would either go to the province and ask provincial authorities where to go, or they would go straight to the villages and ask commune and village chiefs about the need for water wells.

From the discussions it seems that community participation under the programme has varied greatly. The people going to share the well did share the contributions and came together to select the site, but in practice this could have been as few as one or as many as 30 families. As an illustration: in one commune visited in Battambang province the evaluation team visited four wells, which were found within the private compounds of the houses of the commune chief, the first vice-commune chief, the second vice-commune chief and the village chief. These chiefs told the Evaluation Team they had paid the contribution on their own or with a few families around their compound. This means traditionally others were allowed to use the water but the well was considered private.

The general programme strategy was to distribute its resources widely, providing on average two wells per village, regardless the size of the population and without assessing the real need for water supply (taking the total population and existing water sources into account). One well is on average used by 20 families. This means theoretically the programme provided for the water need of about 40 families in one village. In practice the number of users varies, also according to the season. The evaluation found cases where the MRD/UNICEF well was the only water point in a village and in the dry season was used by all villagers, as many as 100 families. But as the average village size in Cambodia is 113 families (ref-7) and the general policy among aid agencies involved in water supply has been to divide working areas (so no other agencies were active in the same village), it can be assumed that in most cases MRD/UNICEF did not cover the need for water supply in a village.

The question should be raised who benefited from the programme. There are indications that among the beneficiaries the poorest villagers may not have been well represented:

- It were local authorities generating requests for wells and/or groups of families in the village putting a request to the village chief. In either case participation of the poorest was not made sure. It is generally not the poor in the village who organize themselves and put a request forward; but it should be said that in general more families benefit from a well than those who actually participated in the community organizing process.

- The poorest often do not participate in village development activities as they fear the contributions involved and lack the time to join in meetings and such.

- The families who benefit from a well are usually those families living relatively close to the water point. Many of these water points are found along the main road. This is in general not where the poorest people live.

- Many wells can be found on the private compounds of the better-off houses.

The fact that most wells are located at a private compound is because there is often no public land available. Villagers feel that in this way care taking is ensured by the owner of the house next to the well, who more often has paid a more than average share of the contributions and is thus entitled to this location. It is usually this person who initiates repair and collects contributions for maintenance and repair. Where a well is located on a private compound, other members of the group of users will have access during the day; at night often gates and dogs will prohibit access to the well (but since each family has one or more storage jars at their own compound, this is not really necessary). The more a well is considered private others will make less use of it for other purposes than drinking.

In case a well is found on public land a feeling of community ownership may be better ensured, but at the same time it is likely the well is less taken care as nobody in particular is monitoring its use. Children and animals will have free play on the platform. Therefore in most cases groups of users prefer a site on private land next to somebody's house, which provides the best guarantee for the care taking and maintenance of their well.

Technical and Water Use and Hygiene Education

From 1992-1995 technical teams did not give any special maintenance and repair training to the caretakers, but encouraged users to witness the installation of the pumps and left a booklet behind on pump maintenance. In the case of the VN6 pumps people have been able to manage repair without further training; in case of the other pumps further training was clearly required as these pumps are too complex for villagers to manage without further instruction and tools. However according to the survey 55% never had a breakdown, and in other cases local authorities have been able to organize repair.

Further the technical teams were involved in disseminating basic messages regarding water use and hygiene to users on-the-job, telling users 1) water from the tube well is safe water and 2) how they should take care of the well. The installation teams would leave some leaflets and booklets behind on safe water. No other health staff in the provinces were involved to do follow-up on water use and hygiene for the new facilities.

Conclusion:

The UNICEF/MOH Water Supply Programme from 1992 to 1994 can be characterized as a hardware programme focused on high output of wells and maximum coverage, with little attention or input for the so called software aspects: community organizing and education. An emergency approach was sustained during a time when others (international and local NGO's) started to develop more community development oriented programmes.

The UNICEF strategy of "some for all", distributing the number of wells to be provided widely, did not make sure that in one village the poorest were included in the benefits. To let local authorities reside over the process for upkeep and maintenance of the wells of this period has guaranteed that 74% is still functioning, meaning that some kind of ownership has been ensured.

1994-1997: Ministry of Rural Development:
Rural Water Supply and Rural Health Care Office

With the establishment of the Ministry of Rural Development in December 1993 the Ministry of Health (MOH) transferred the WES programme: Water Supply moved to the Rural Water Supply office of MRD in 1994 but made no physical move as it stayed at the so called Central Water Base.

Under MRD since 1994 the process of Community Organizing and Education (COE) for water supply has developed step-by-step, especially in provinces where PDRD-staff have become involved in community development programmes and/or training supported by IO's and NGO's as in the case of Prey Veng and Svay Rieng. In the water sector new experience in the field of COE is continuously generated by on-going and new programmes, who also more and more are sharing their experience with others.

The evaluation team has not been able to assess for what is now called the National CASD WES Programme, to what extent PDRD offices in the country are able to take on the role of community organizing and education. This differs per province and very much depends on

the qualifications of available staff as knowledge on COE is growing but not yet firmly established in all provinces. Especially at the district level more staff and training is required. For the three provinces visited by the CD-specialist of the evaluation team (Prey Veng, Svay Rieng and Battambang) some findings are presented for discussion. For the COE-process for water supply under Provincial CASD Programme see Chapter 4.

Community Organizing

Since 1994/1995 the offices of PDRD have started to do their own planning for water supply, based on criteria that they have formulated for water supply assistance, such as the following list by PDRD Prey Veng. A village should have:

- 100 to 150 people for one well
- a high incidence of water related diseases
- many women and children
- insufficient water sources
- commitment towards community participation

Based on these criteria the province is doing an assessment, talking with district and commune chiefs to identify those areas which are most in need. At the commune level, commune officials discuss with village chiefs, and a list of villages is drafted. This list is handed over to the PDRD-office, which will send staff to the village to assess the situation.

In the village it is still the local authorities being in charge of the CO-process, but now the process is facilitated by PDRD staff. Where Village Development Committees (VDC's) have been established, these have become the focal point for organizing the people for water supply. RWS/RHC-staff together with the village assess the need for water and in various meetings discuss and communally decide on the need, the beneficiaries, site selection and plan for construction. Well committees are elected by all users, which have a role in daily care taking, maintenance and dissemination of messages regarding proper use of the well. For each well caretakers are trained by RWS-staff in maintenance and repair of pumps and platforms.

In Prey Veng it was mentioned that community participation for well construction is never a problem: staff explain what MRD/UNICEF will provide and what villagers should contribute: labor, food for drilling team, money, brick, stone, gravel. An agreement between PDRD and the village is signed and during construction village authorities monitor the process.

It should be mentioned that this more participatory process has not always been followed. In 10 out of 17 provinces provincial drilling rigs have been operating, as in the case of Prey Veng where the provincial team can drill 150 wells annually. For the CO-process of these wells, the province is in charge. If the province had more requests for wells the national drilling team was asked to come and drill an additional number. In all these 10 provinces also the central rigs have operated and both drilling operations (from province and center) could happen simultaneously in one province. From the discussions held by the Evaluation Team it appears that for the wells drilled by the center at times the province was not informed, or not involved in the planning. This posed a problem to them as they could not ensure a proper process as mentioned by RWS Prey Veng: no training was involved, and checking on the quality they found wells which are not kept clean and have no fence.

Recommendation 3.10:

To improve communication/co-ordination between center and provinces:

- PDRD offices to be in charge of planning for water supply and making work schedules.
- Central team only to work in a province on provincial request and in close co-operation with provincial authorities,
- This will allow PDRD- staff to do their job of preparation for water supply (water needs assessment and community organizing) in co-operation with local authorities (VDC's if established).

Pilot programme Kamchay Mear district, Prey Veng Province

In the middle of 1995 another initiative was taken by UNICEF for sustainable water supply. A Pilot Programme for community based hand pump maintenance and repair was initiated in Kamchay Mear district, Prey Veng, with the objective to build capacity for hand pump maintenance and repair and enhance community ownership of hand pumps through community organizing for water points and water education.

Activities took place from August - September 1995 and supervision and on-going monitoring for three following months. During the time of the project all the pumps in the district (6 communes, 40 villages, 75 wells) were visited, repaired (when required) and committees were formed and trained. It was planned to duplicate this project in more districts but with the start of CASD this project was not further continued.

Water Use and Hygiene Education

At the beginning of 1995 MRD made the decision to transfer responsibility for Sanitation and Water Use Education from the Rural Water Supply office to the office of Rural Health Care. In practice this meant that the technical teams no longer felt responsible to pass on any message regarding water use or care taking to the users. UNICEF/MRD had to consider how to fill this gap, seeing a clear need to provide basic information on safe water and hygiene, having carried out several studies/surveys revealing the lack of proper water use and hygiene behaviors in Cambodian rural areas and a high incidence of water-related diseases.

The Central Water Education Team

With a focus remaining on high output in terms of the number of wells and still a lack of trained MRD staff in the provinces, it was decided to form a team of 4 WUHE educators at central level to work alongside the installation teams, being staff from RWS (3) and RHC (1). Their operation cost (DSA, materials) was covered by UNICEF as they were not sharing in the money collected in the village by the installation teams and also because they are women and could not sleep outside in hammock as men do. Six provinces were targeted for this approach: Prey Veng, Svay Rieng, Takeo, Kompong Cham, Kampong Chhnang and Kandal. In the other provinces where water supply activities took place from 1995-1996 (Kompong Som, Siem Reap and Kampot) installation was done by provincial teams. It is assumed in these provinces no WUHE was carried out during this period.

Each of the four educators would accompany one of the four installation teams when going to the province and all would rotate between the teams. Sessions were planned for one hour per well with two steps: meeting with users to talk about WUHE and discussing pump maintenance and repair with elders/groups of users.

Steps	Key Points	Methods
1. Meeting with communities to educate them about water use and hygiene	Provide knowledge about: - water use and hygiene - use and maintenance of wells - how to protect the well - advantages of safe water	- Presentation of pictures - Distribution of booklets on water use and hygiene/ sanitation
2. Discussion with village elders/groups of users.	Provide knowledge about: - the different types of pump wells - how to repair and take care of pump wells - how to report on well issues	- Talk - Distribution of booklets on how to repair the pump

Table 3.4: Session plan for WUHE by Central Water Education Team

The education team would start meeting the chief, asking him to gather the people at the site of the new well. In general it was said not to be difficult to gather the people, they were very interested when the pump was installed, but the timing was not always right. Village people are very busy and mainly have time when they come back from the field. Their available time also depends on the season. The installation team would not let the village know beforehand when they were coming; sometimes they would send word to the next well site (1-2 hours before installation). It were mostly women joining in the sessions. Education materials used were a latrine poster, leaflets on safe water and booklets about pump maintenance. For the actual installation of the pump the people were invited to come and watch, so that they would be able to repair the pump when required.

In doing their education sessions the Central Team were meant to be the trainers for WUHE for provincial and district RHC staff who would join them on the job. This was confirmed by staff in Prey Veng and Svay Rieng. However communication problems between the center and provinces have been many and at times the installation teams would go directly to the district/village without informing the province, in which case the Central WUHE-team did work in isolation.

The start of CASD in 1996 meant a break in water supply and thus education activities for eight months (January to September), lacking direction where to go with the WES programme. Both drilling and education were resumed in September 1996.

CONSTRAINTS

- RWS-staff made a work plan only considering their own job. This could mean up to five installations a day, leaving the WUE-team sometimes as little as 15 minutes to do their job. As they were sharing one car there was no option to work more independently. Also the WUE team was not always invited by the installation team.

- Lack of transportation; from 92-95 the ES programme and Central WUE team shared one vehicle. Some motorcycles had been given to MOH at the time but these were never transferred to MRD. UNICEF requested MRD for the reallocation of a vehicle

for water education. This was approved but the vehicle was not made available to the WUE team. Although the RWS-office had vehicles they did not assist.

- Lack of follow-up: without transport and other support the WUE-team was not able to follow-up their work and the state of the wells and pumps, whereas they did not consider one session enough. This also meant a lack of job satisfaction on their part.

- Lack of more participatory education materials to get communities involved in education. The team felt they did not have enough materials to do good education but they worked with whatever UNICEF was prepared to give. It is not clear why they did not use other materials available with other organizations or did not have other materials developed.

- Lack of communication between the various offices within MRD: Water Supply, Health Care and Community Development; lack of consensus on the role of WUHE in Rural Water Supply and lack of supervisory support that is needed in the field to help teams develop an integrated approach.

1996: Decentralization of Water Use and Hygiene Education to the Provincial Level

In 1996 MRD made the decision to decentralize WUHE-activities to the provincial Rural Health Care offices, who are now in charge of village level education for water supply. In six provinces the Central WUHE-team had already given some on-the-job training to provincial RHC-staff. To further build provincial capacity UNICEF supported the training of Rural Health Care staff from 10 provinces in TOT for health/hygiene education in Phnom Penh in 1996, which was facilitated by MRD/UNICEF.

With the transfer of responsibility for WUHE to the RHC-office and the start of WES activities under the Provincial CASD Programme, UNICEF decided to stop support to the Central Water Education Team. In the beginning of 1997 their work was discontinued. However not all provinces could yet take on the role of COE for the 500 wells that were allocated under the National CASD Programme in 1997. To fill the gap in terms of education the Rural Water Supply office agreed to enhance proper water use and care taking of wells by having the drilling teams disseminate the basic WUHE messages while on-the-job. For this purpose members from the Central WUHE-team gave a one-day training session on WUHE to the drilling teams in September 1997. This one-day session seems too short to change knowledge and attitudes regarding the need to actively promote WUHE. This new situation also means a reversal back to the situation under the Ministry of Health where it was left up to the technical teams to do some education on the side. However it now happens in a different context, where MRD/RHC both in the center and in the provinces have started to actively promote and support COE for water supply.

As for the provinces visited by the Evaluation Team, WUHE activities have started to take shape. These provinces have benefited from the training and other inputs of various aid agencies active in COE since 1993 (OXFAM, CARERE, PRASAC) as well as from the provincial CASD Programme which has concentrated many training efforts in these provinces.

In Svay Rieng WUHE as part of the water supply programme started in 1995 when two staff from RHC started to join the Central Water Education Team and learned on-the-job. Their education involves two meetings for water users of the new water point, one time before and one time after drilling, giving talks, showing pictures and a video. Mainly women join in these meetings. Follow-up is not yet done as the staff said to have no time to do so, although they consider two sessions not enough. Most other staff of the RHC office work with other development programmes.

In Prey Veng in two districts RWS and RHC work closely together to complement water supply with water use and hygiene education. RHC-staff educate groups of users once before and once after drilling, district staff learning on-the-job from the provincial staff. They try to do follow up every three months. Provincial RHC has four staff to do this work, one in each district (five others work with other NGOs). Provincial staff train district staff to do this type of education, acting as role models. In the villages district staff work with Village Health Volunteers who report to the RHC office.

In both provinces the sessions include the basic messages for water use and care taking of the new well: what is safe water (water from tube well with pump or open well with a cover); how to use safe water; water storage; how to take care of the well: keep the apron and drain clean and how to protect the well: put a fence, repair the platform, drain waste water, use one bucket (in case of an open well).

Also in Battambang WUHE has been established under PDRD with a section of three staff for health education under RHC. Under the National Programme there have been no water supply activities since 1995. Health Education staff have been involved in a project supported by CARERE for the rehabilitation of old wells doing community organizing and education. PDRD Battambang is planning to integrate the offices of RWS and RHC to improve co-ordination and work towards integration of programmes in the field of environmental health.

Conclusions:

- The input of the Central WUHE Team has meant an improvement over the past but was still a marginal effort. To make people change their knowledge and behavior regarding water use and hygiene much more is needed than one talk by a visiting team of outsiders.
- With the decentralization of COE for water supply to PDRD and training of staff in CD-principles and health and hygiene education the groundwork has been done for the implementation of a more participatory process of community organization and education. A bottleneck identified is clearly the lack of staff in the districts, who have an essential role in working with villagers and village health volunteers in monitoring use and maintenance of facilities and follow-up on education activities.

Recommendation 3.11:

To organize frequent WUHE-sessions over a period of time, starting with raising awareness regarding safe water and hygiene before construction, and discussing water use, hygiene and care taking after the well is completed. This is preferably done by local staff and volunteers who stay close to the people and are able to follow up and monitor water use and hygiene behavior in the village on a regular basis.

MRD/RHC commitment towards Community Organization and Education for WES

MRD/RHC is showing clear commitment for WUHE and an integrated approach for water supply and sanitation of which many activities testify:

- Chairing of the Steering Committee to organize the first National Workshop on Water Use and Hygiene Education in December 1996 with 120 participants of government departments, NGO's and other agencies.

- Chairing of the Water Use and Hygiene Education Working Group formed by government ministries and interested agencies after the workshop as a forum to discuss all education aspects of community based water supply and sanitation. Also school sanitation will start to join this working group.

- Chairing of the Integrated Water Sanitation and Hygiene Education Working Group (IWSHE), formed by the technical departments of MRD (RWS, RHC, CD, Training and Planning) in April 1997 to look at ways and means for integration and decentralization of rural sanitation, water supply and WUHE.

- Organizing various training events for RHC-staff on WUHE and inclusion of WUHE in the training curricula for Village Health Volunteers.

- To plan for WES facilities in an integrated way, as nowadays proposals state clear objectives for sustainable facilities and include education for users of facilities and capacity building at various levels. Before the government would only request for a certain number of wells and incentives for staff.

3.1.5 Training supported by UNICEF

Water Use & Hygiene Education (WUHE)

To build capacity for WUHE UNICEF funded the Water & Hygiene Education Training (WHET) project implemented by World Education, a course in three phases running over a period of one year (6 weeks of training), starting January 1994. Participants came from MOH in Kandal as a pilot area (12), MRD (2), Women's Affairs (1) and UNICEF (1) and included one member of the Central WUHE Team. Objectives of the project:

1. "To increase the utilization, acceptance and proper maintenance of the physical input of the UNICEF Water and Environmental Sanitation Programme and,

2. To institutionalize the training process, curricula and education materials within co-operating ministries, secretariats and community-based agencies and organizations."

The main idea behind the project was to train district and commune staff in the commune to do water education at the time when the technical teams would come to drill. Follow-up with the Kandal participants facilitated by UNICEF WES staff was done up to December 1995 when attention shifted to CASD and the UNICEF ceased to cooperage with MOH on WES activities. Therefore the impact of this pilot project on the nation-wide programme has been limited.

As a follow-up to this project a Training of Trainers course was organized by World Education from March 1995 - January 1996 (6 weeks of training), for which UNICEF funded the participation of 9 participants from MRD (7 from RHC of which 3 from the Central team; 2 from RWB). These MRD participants are now the trainers on WUHE for RHC staff in the provinces.

Regarding training of Provincial RHC-staff UNICEF supported in 1996 the training of RHC-staff from 10 provinces in TOT for health/hygiene education in Phnom Penh. It should be noted that regarding water use and hygiene education MRD does not deal with these topics in isolation but these are embedded in a broader programme of health and hygiene education and training of RHC staff and Village Health Volunteers.

In October 1997 a Provincial Training Workshop on WUHE is planned for 54 PDRD staff from 16 provinces. This workshop will include topics on provision of WES facilities, Water Use and Hygiene Education and discuss community development themes such as community organizing, participation and management. The staff trained will be the future trainers for the district and communes in carrying out a community-based approach for WES. This kind of training is meant to break with a hardware driven approach for WES as PDRD staff will become involved in all COE-issues. Further as staff from RWS, RHC and CD will be trained together this should lead to a more integrated approach, supply of WES facilities becoming part of an overall community development programme.

Recommendation 3.12:

For MRD/UNICEF to increase and ensure on-going support to PDRD/ RHC and CD staff in further developing their Community Organizing and Education skills: organizing regular training and workshops, organizing/encouraging exchange visits to other provinces and with NGO's, development of participatory training/education methods and materials.

Technical training

Not much technical training has taken place in the past five years with UNICEF support, as can be seen from the list below. This is mainly because late 1994 the CASD concept started to preoccupy the minds of senior UNICEF staff and at the time it was not yet clear what role (if any) central MRD would play. It was then decided that rather to start something, which could possibly not be finished once CASD started to operate, not to do any capacity building activities at all in 1995 and 1996.

- In 1993/94 an intensive six months training in geophysics/resistivity testing for six MRD staff was organized by UNICEF and CONCERN; the idea was to set up a geophysical unit, but after the completion of training in 1994 no equipment was bought, so nothing has happened up to now.

- Hand pump maintenance training: six times in the province in 1993 (PNP, Kompong Speu, Kompong Chhnang) and 1994 (Takeo, Battambang, Prey Veng): but no system established.

- Hand dug well training in 1993 with own consultant and in 1994 with GRET.

- *On-the job training* of drilling technicians, mechanics, geologists and on planning & management has taken place as long as UNICEF staff was directly involved in CWB activities (drill master, mechanic, hydro geologist, etc.).

Conclusion:

All the transfers in the past years, from MOH to MRD/DWS and then to MRD/RHC resulted in no clear capacity building policy and large gaps in training outputs.

3.1.6 Material Development for Water Supply and Sanitation

During the period 1992-1994 UNICEF developed a number of materials for water and sanitation education including booklets on hand pump maintenance (4), a booklet on Safe Water, a booklet on School Sanitation, a leaflet with hygiene messages from "Facts for Life", a flyer on How to build a Water Seal latrine and a poster of a latrine. Furthermore some songs were produced on diarrhoea and safe water, a song, video spot and video programme to promote latrine construction and video programme on water and hygiene and school sanitation. In 1995 MRD/UNICEF produced a booklet promoting guidelines for water and sanitation. Also seven posters was produced on water use and hygiene.

For development and testing of materials UNICEF co-operates with MRD and some NGO's. Production is done by UNICEF. MRD has taken responsibility for the distribution. In the provinces within PDRD there seems no capacity yet for own material development, but materials are used from the center and received from other NGOs.

The type of the materials developed for the water supply programme reflect the quick impact approach: it was important to leave something behind in the village for people to read (leaflet /booklet) as education time was short and did not allow for active community participation (no use of flip charts, games, stories, etc.). The printed materials are generally attractive (use of many colors) and therefore well liked. Only the flyer with hygiene messages does not invite for reading as the ratio between text and picture is something like 10:1. The Environmental Sanitation programme can best make use of videos as latrine promotion allows for time to do so. In combination with a discussion on ES in the community this can be an effective medium and is liked by the rural population.

The Seven Key Messages for Water and Hygiene that UNICEF has been consistently promoting are adapted from Facts for Life:

1. Diseases can be prevented by washing hands with soap and water after contact with faeces and before handling food.
2. Diseases can be prevented by using latrines.
3. Diseases can be prevented by using safe water.
4. When water does not come from a safe water point, diseases can be prevented by drinking boiled water.
5. Raw or fresh food is often unsafe and should be washed or cooked. Cooked food should be consumed quickly, and not left too long. Heating and re-heating food should be done carefully.
6. Diseases can be prevented by preserving food in a clean manner.
7. Diseases can be prevented by burning or properly disposing of garbage.

3.1.7 Summary of Programme Impact

- Although the preparation and subsequent start of the CASD programme reduced support for capacity building activities for the Central level from 1995 till now, the output in wells is impressive : 6313 successful wells, from which an estimated 80% are still functioning.
- With an average number of 20 families making use of one water point, this means that ca. 700.000 beneficiaries have been assisted by the programme.
- In the dry season when traditional water sources (shallow wells, ponds) dry up in many villages the UNICEF supported wells are the only source of clean water.
- The support of UNICEF in the process of standardizing hand pumps has led to the first main policy breakthrough of adopting three standard hand pumps for Cambodia and the subsequent VLOM approach.
- MRD has shown their responsibility in repairing broken water points, where possible; this is demonstrated also by a large rehabilitation and repair project covering 2300 wells, which were contaminated during the 1996 floods.
- The on-the-job technical training resulted in teams of qualified technicians, who can construct proper wells in most areas of Cambodia, where normal geological conditions are found.
- A start has been made in various provinces with establishing community organization and education activities for water supply, to enhance community ownership and

proper use and maintenance of facilities.

- Under the responsibility of MRD Rural Health Care staff of 10 provinces have been trained in TOT for health and hygiene education.

- UNICEF has developed various booklets, posters, flyers, videotapes and audio cassettes for water and sanitation education, such as booklets on handpump maintenance and various materials to promote proper water use and hygiene practices.

3.2 MRD/RHC SANITATION COMPONENT

3.2.1 Background & Objective

The UNICEF assisted Sanitation programme started in 1989 with the promotion of dry latrines. 500 dry latrines were constructed until 1991, but further construction was stopped, because field visits showed that this type of latrines were not acceptable for the users. In 1992 UNICEF started with the promotion of the poor-flush latrine.

Objective of the Sanitation Programme:

"To promote appropriate latrines for rural areas, including the establishment of local producers of latrine parts"

In the period from 1993 - 1997 (data from 1992 were not available) a total of 9410 latrine slabs and concrete pipes were distributed, divided over 16 Provinces. Most were provided to Kandal (1557), Pursat (1309), Battambang (1182) and Prey Veng (1046), which accounts for 54% of all slabs/pipes. For more details please see Annex 13.

Between 1992 - 1994 two procedures were followed:

- UNICEF provides slab and concrete sewer pipe, with production done by local contractors. Future users have to provide everything else (rings, digging, superstructure).The cost for UNICEF is $12 and for the users between $ 30 - $ 40, depending on the number of rings

- In December 1994 a trial of 200 latrines took place, targeted at poor villages in Svay Rieng Province and squatters in Phnom Penh. Here UNICEF provided all cement and iron, but the families had to make the slab and rings themselves. The cost for UNICEF was $ 22 (almost double compared to option 1) and for the families $ 12 (less then half of option 1). This project required a lot more training and monitoring as families had to make their own slab and rings.

The second option was discarded when the programme was transferred to MRD/Rural Health Care section in 1995, when a choice had to be made between providing more latrines with less subsidy or providing less latrines which are better affordable for the poor.

3.2.2 Survey Results

A field survey of 192 of the 9410 latrines (= 2 %) was done in three provinces during this evaluation to establish the functioning and utilization of the latrines. The survey forms and a summary table with all results can be found in Annex 11. Even though the forms were tried out in Kandal Province, still it was found out during the analysis that some of the questions could not be used, because of unclear answers; this is due to the lack of preparation time, since this survey was not originally included in this evaluation.

PROVINCE	No.	%
Svay Rieng	28	15
Kandal	96	50
Takeo	68	35

TYPE	No.	%
nothing built	53	28
eccentric pit, with concrete rings	118	61
latrine on top of pit, concrete rings	18	10
latrine on top of pit, brick walls	3	2

Table 3.5: Division of 192 surveyed latrines by Province and type

The following is a summary of the outcome with % based on the original 192 latrines:

72% of the **planned latrines** is actually constructed by this time, a reasonable output

The same **division of 4 house types** was used, as in the CASD programme to determine which category families could afford a latrine:
- House type 1 (poorest): 4%
- House type 2 (less poor): 9%
- House type 3 (medium): 29%
- House type 4 (well off): 48%

From the 28% **latrines not constructed** lack of money was always the main reason.
If this 28% is measured against house type is looks as follows:
- House type 1 (poorest): 45% not constructed
- House type 2 (less poor): 47% not constructed
- House type 3 (medium): 26% not constructed
- House type 4 (well off): 18% not constructed

Note: For all the latrines not constructed, slabs were delivered in 1996 or 1997

The average **number of users** per latrine is 7.25 persons, which corresponds with the average household size, taking into consideration that sometimes two or three families are counted as one household.

74% of all constructed latrines provided good privacy and 78% a good shelter against rain

80% of the latrines had clean slabs and 75% a clean surrounding around the latrine

Water for cleansing and hand washing was available in 82% of the constructed latrines

The contribution in cash differed widely for all the latrines: from $ 0 - $ 100:
- < $12: 8%; $12 - $25: 29% ; > $25: 59%.
- From the first category 50% did not provide shelter anymore
- From the last category only 25% did not provide shelter anymore

Only 10% of the users mentioned that they can not repair the latrine it something breaks and they have to hire someone to do it.

58% of the users interviewed had never received any Hygiene Education, 35% remembered one time a general talk and only 6% said they had taker part in more then one session.

Table 3.6: Summary of survey results for Latrines

3.2.3 Technical Issues

The following chapter describes a variety of technical issues, with regard to the Sanitation programme, which are based on field findings during this evaluation and previous experience by the Evaluation Team with these issues. They are grouped in 4 sections :

A. Appropriateness of Design
B. Implementation
C. Monitoring systems
D. Cost effectiveness

A) Appropriateness of design:

A1: General design remarks

The shift from dry latrine to poor-flush latrine has been a good decision; all people interviewed appreciate this system much better. The total cost however is much higher and since the users have to pay most of this cost this seriously affects the coverage rate.

The design of one pit makes it very hard to empty it later because when it is full it contains fresh faecal material, which is highly contaminating. The alternative used in other countries is to have two pits and a small dividing chamber, which are used alternatively. It does increase the cost and requires more water for flushing, which makes this system only affordable for the richer families in the village. The poorer have to do with the single pit, but need good awareness/training to be very careful when it should be emptied (burning or burying is the best solution). Under no conditions should the fresh materials be sold for fertilizer for vegetable growing (this suggestion was made for one latrine in Kandal!).

In solid or semi-solid soils (like clay or sandy clays) it is possible to dig an open hole below the concrete rings, with a diameter smaller than the rings. In this way the volume of the pit can easily be doubled, without additional costs. This limits the problem of emptying.

Recommendation 3.13:

Future programmes should continue using the poor-flush latrine principle, but simplify the design (without jeopardizing minimal design standards) to make it more affordable for poorer families.

Recommendation 3.14:

The problem of emptying the pit should be studied carefully and the best options and risks included in future latrine training programmes.

A2: Affordability and User Contribution

At this moment UNICEF provides only the latrine slab and the concrete pipe for an estimated value of US $12 together. This is a low subsidy compared to what other organizations give, including the Government with the PIP input. The user contribution therefore is high (estimated at US $30 or more). In this way the latrines are not affordable for the poorer

community members, which is exactly the target group for UNICEF. In practice the better-off families (who can afford to built a latrine with their own money), now benefit most from the UNICEF subsidy. When communities and their leaders were asked how much they could afford for a latrine a figure was mentioned of around US $10.

But just doubling the subsidy from UNICEF is not the answer, because this will effectively reduce the number of latrines to be built by 50%. During discussions in the field, with UNICEF national staff and MRD/RHC staff, various alternatives were compared and the following combination of activities is suggested to be examined closer:

- Cheaper design, using only two rings and no more eccentric placement of the pit. When the pit needs to be emptied the whole slab can be removed and the pit emptied;
- Increase UNICEF subsidy with one ring per latrine;
- Use a credit scheme for part of the user family contribution, small enough to be paid back within six months (this would only apply for some of the poorest families);
- Find a way with the allocation of the subsidy to target the poorer families.

Description	Present System	Possible New system
Latrine slab	$11 - by UNICEF	$11 - by UNICEF
Concrete pipe	$1 - by UNICEF	not needed
Concrete rings	$18 (3 rings) - by Users	$6 (1 ring) - by UNICEF $6 (1 ring) - by Users
Cover for eccentric pit	$2 - by Users	not needed
Superstructure	$10 - by Users	$10 - by Users
TOTALS	UNICEF: $12 Users: $30 (3 rings)	UNICEF : $17 Users : $16

Table 3.7: Comparison of subsidy systems for Latrines

In this way latrines will become more affordable for the poorer community members, which is likely to have a greater impact on village health than providing mainly the richer part of the village with a latrine:

- Once the poorer families built latrines, the better off families may decide to build one as well by themselves, even without the subsidy; this would mean that the objective of promotion has worked (the other way around is not possible).
- In general, poorer families have more problems with sanitation related diseases (like diarrhoea and worms), because they usually use less water, have poorer housing and can not spend that much time on washing and looking after the children.

Conclusions:

If MRD/UNICEF wants to reach the poor with their Environmental Sanitation component they have to change the existing policies of level of subsidies and selection of families.

The subsidizing of latrines, especially for the poorer families, is still very important in the coming years and should therefore continue at least at the rate of the past years, but preferably at a higher rate, to cope with a larger area of operation and to make more impact.

Recommendation 3.15:

With regard to the user contribution for family latrines the following recommendations can be made:

- UNICEF should examine the possibility to increase the latrine subsidy, as part of a package to reach the poorer families; this may go together with a trial in allowing small credit for latrine construction. Primarily poorer households should be targeted.
- If the subsidy of UNICEF is increased, this should not affect the total number of latrines planned per year. To come more in balance with the expenses for water supply facilities the budget for latrines should be increased to cover for up to 10,000 latrines per year, which may be a realistic demand figure with higher subsidies and cheaper designs.
- Families should be fully aware of the costs involved before making the commitment to build a latrine; the contract between provider and family should stipulate responsibilities of each party and details on a minimum standard for the superstructure, operation and maintenance of the latrine and emptying of the pit.

B) Implementation

The programme clearly succeeded in encouraging the private sector to become involved in the construction of latrine slabs and small concrete pipes; they are presently working in all provinces and the producer visited in Svay Rieng made good quality slabs, properly reinforced and cured.

The quality of 75% of the superstructures is good, with some of them beautifully made with bricks, tiles and a zinc roof costing over US$ 200. Others extended their houses and included the latrine inside. For the 25% which was partly or completely damaged, it was clear to see that some had never been properly constructed. No damage on rings or the concrete pit cover was seen, which is very encouraging.

The locations of the latrines is almost always correct: not too far away from the house and not close to a private well. In a few cases however it was far away in the backyard, making access

more difficult, especially for children. Or it was found right next to existing drainage streams, allowing seepage from the pits to enter into the water.

C) Monitoring systems

MRD/RHC have a monitoring system recording how many slab are provided and how many latrines are actually constructed but it seems that this system does not properly keep track. Actual figures in Svay Rieng differed a lot from the planning figures given by MRD to the Evaluation Team at the start of the evaluation. The Central level sends funds to the province for the amount of latrines requested, but there is a problem in receiving feedback on how many latrines are actually built.

At provincial level requests are generated from interested villages, who do not yet know the contribution required. As soon as the implementation starts, the number of families in the village who can actually afford the contribution is lower than expected and the district has to look for other villages to use the slabs already under construction with the private contractor. The field survey revealed that 28% of the latrines are not constructed. Originally policies were in place to avoid the distribution of slabs without latrines being constructed: 1) before a slab is provided to a family they first have to buy the rings and 2) if a latrine is not built after one month the slab is taken away from that family and given to another family. It was however explained to the Evaluation Team that in practice this decision is left to the village chief and these policies are hardly ever applied.

MRD has recently changed their traditional approach and only starts with 15 slabs in each village, regardless the request from village or commune chief. Only if they are all distributed and completed, more slabs will be provided. This seems a very sensible approach and is clearly easier to monitor as well. Also the promotion effect will be greater, because more villages can benefit.

The figures UNICEF receives are planning figures and not actual figures and may have to be corrected for actual constructed latrines, which is probably 75% of the planned ones.

> **Recommendation 3.16**:
>
> MRD should continue on the path taken recent y to try out a small number of latrines in new villages and only increase the slabs if the demand is genuine; this should go together with a good monitoring system including feedback to Central level for planning and policy purposes.

D) Cost effectiveness

To construct over 9000 latrines with a subsidy of only US $12 per latrine, from which 75% is functioning, seems a very cost effective way of providing sanitation facilities, but the comments raised in Paragraph A2 (Affordability) above indicate that most of the present latrines are with the better-off families. It must be said however, that even though the better-off families can probably afford to construct the latrine by themselves, it is unlikely that they would have done so without the UNICEF subsidy, because hardly any other latrines were seen

in the villages visited.

It has to be possible to construct cheaper latrines in order to motivate the majority of the rural population to pay the contribution and construct one for their family; only in this way it will be possible to substantially raise the coverage for sanitation facilities (presently at 10.4%) in the coming 10 years.

3.2.4 Hygiene Education and Training

For the Environmental Sanitation Programme education has been a fixed component from the start, carried out by staff from MOH until 1994 and then by RHC staff when the programme was transferred. Since 1996 the ES programme has also become part of the Provincial CASD programme as requests for latrines are generated during the action planning process. The Provincial Training Team is trained by Provincial RHC staff to do the latrine promotion/ education in the CASD villages. For the National Component RHC-staff is responsible to implement the programme.

The evaluation team witnessed the training of the Provincial Training Team (PTT) in Battambang and consequently witnessed a promotion session by the PTT in Ta Sei village, Ta Moeun commune, Battambang district. The three CASD communes together have requested for 1000 latrines this year; last year 500 were built. In a nearby village along route 5 the village map showed that almost all houses along the main road have latrines already. The people in Ta Sei are thus aware of the concept and cost of latrines. This year Ta Sei has requested 17 latrines; the village has no latrines yet.

A latrine promotion session in Ta Sei village

All families this day were invited to learn about hygiene/ES and how to build a latrine. People were drawn to the meeting by organizing it in the local video hall and putting on a boxing video. Over a 100 people were packed together on benches under a big roof on a very rainy day. The session was facilitated by the provincial CASD training team, who used the same methods as during their own training, two days earlier, which is mainly question and answer, using pictures. Various people are encouraged to give their ideas by passing on the microphone and participation is active in the front. However the group is too big for all to participate actively. In this village the VDC already had received training on Child Assessment including topics on water use and health/hygiene. Many answers come from the VDC members.

The villagers seem aware of ES issues and can explain the need for proper excreta disposal and the dangers of becoming sick from human waste. The latrine video is shown and liked by all. This is followed by some questions on the messages of this video. Next an explanation is given on latrine construction using large drawings. People receive two leaflets with messages from "Facts for Life" and on how to build a latrine. At the end of the session all people raise hands when asked if they want a latrine.

After the session the Evaluation Team asked some women if they intend to build a latrine for their family. They simply say they need and want one but cannot afford it: they figure out what it costs to feed their families of many children and explain they have no penny to spare for a latrine as they have not enough food to eat.

Follow-up and further education to beneficiaries of the latrine programme is mainly done by the VHV's (in those communes where they have been selected and trained), monitoring and support coming from RHC-staff. This education involves VHV's visiting individual households where they discuss proper use and care taking of the latrine. It is clear from discussions that latrines are wanted but as the cost is high and people have many other priority needs latrines do not feature high on people's agenda. Those who cannot afford latrines should not leave latrine promotion sessions discouraged, but be addressed with other messages that can be followed without cost e.g. proper disposal of children's faeces, washing of hands after defecation etc.

Culturally in Cambodian rural areas the lack of latrines is not considered a problem, because of the environmental conditions in the villages and people's customs: people go into the rice field and faeces are buried or covered (from Evaluation Report 1992). Only where people live close together and do not have access to land close by latrines are more highly needed and desired.

For latrine promotion several types of internal incentives or rewards can be used as recommended in a project in Thailand: (ref-5):

- Economic: "You will spend less on health care and lose less time from work"
- Fashionable: "It is modern, private, and convenient to own a latrine and use it"
- Religious (Buddhist): "You can earn merit by helping to make the village environment clean and by teaching your children hygienic practices".
- Health: "You will have fewer diarrhoeal and parasitic infections and your children will grow healthier and will suffer less".

Latrine coverage will remain low for years to come. To make progress in environmental sanitation it is suggested to promote a broader definition of environmental sanitation, as ES deals with more than human waste as the following observation illustrates:

> *Chrey commune, Prey Veng district. Latrines had been distributed in a village along a main road with a high population density. Although the latrines visited looked clean the surrounding of the houses to which they belonged was very dirty, with big pools of mud for the pigs and piles of rotten garbage along the road. Latrines in this village were obviously a narrow interpretation of the concept of environmental sanitation.*

Concerning the integration of WES components, the CASD programme should look for an integrated approach for environmental health, looking at those parts of the human environment which in combination have a greater impact on health:

- *domestic water supply* (focusing on access, quantity and quality used)
- *sanitation* (the disposal of human and household waste)
- *hygiene behavior* (personal, food, domestic and environmental hygiene)

Rather than promoting and planning for latrines and safe water supply in isolation, CASD should plan for a package of measures which reinforce each other on the road to better health. The CASD programme offers such an approach but again what comes out of the village action plans should not be dealt with as separate projects but as parts of one village action plan for better health.

Education should be made the central focus of activity, as the provision of facilities can only go step by step. This is also hoped to encourage more villagers to become involved, as answers to different health problems can be offered which do not require high investments but have much more to do with people changing their everyday hygiene practices: washing of hands, cleaning of water jars etc. For UNICEF the challenge is to get away from the service delivery approach of the past and develop more appropriate ways to respond to the huge needs in Cambodian rural areas.

Recommendation 3.17:

It is recommended to make latrines part of a package of measures to improve environmental sanitation, thus ensuring that the objective of better sanitation leading to better health can be achieved. Measures should include promotion of safe garbage disposal, the fencing in of animals, protection of ponds and taking proper care of waste water.

Recommendation 3.18:

To be eligible for receiving a subsidized latrine a household should agree to abide by certain sanitary standards, which should be formulated by the office of RHC and checked before receiving the slab. Also after construction of the latrine the sanitary standard of the household should be monitored at intervals, not to loose the demonstration effect that is intended with the programme.

Recommendation 3.19:

MRD/UNICEF to further develop the various initiatives to integrate the water supply and sanitation programmes into one approach to make progress towards environmental health.

3.2.6 Summary of Programme Impact

- The ES programme reached the objective of promoting pour-flush latrines for rural households and establishing local producers on provincial level. It is by far the largest sanitation programme in Cambodia, with a budget for 4500 latrines per year.
- The output was high with the distribution of 9410 slabs and pipes, from which an estimated 7000 poor flush latrines were constructed, which are very much appreciated; 75% of these are located with the better off families, but this is unavoidable, because the UNICEF subsidy is too low to make it affordable for the poorer families.
- These days many Cambodians are aware of the benefits of good latrines.
- A structure for education and training for the latrine programme has been firmly established by MRD in their strategy for Public Health Care.
- It is not possible to measure to what extent the construction of the latrines with UNICEF support have actually encouraged other families to build one by themselves. According to the surveys done in 1993 and 1996 (see Chapter 2.2) nation-wide coverage has increased from 6% to 10% in these three years; this means that in this

period around 50,000 latrines have been constructed (4% of 9 million people, divided by an average of 7 users per latrine).

3.3 SUPPORT TO NGO PROGRAMMES

3.3.1 Background & Objective

UNICEF has supported NGO's since the early nineties and is presently still following the same procedures, which have been used since the beginning.

The main objectives for NGO support:

- To share experiences with other organizations, from which everyone (UNICEF, NGO and Government) can benefit.
- To increase coverage of water supply and sanitation facilities in rural areas, specially where UNICEF is less active.

The support is for both Local and International NGO's and has been done in two ways:

1) Direct contract between UNICEF and NGO:

NGO	Year	Project Description	Amount
GRET	1994	RWS programme - Kandal & Prey Veng	$ 21,455
GRET	1994	Water Management programme - Kg Speu	$ 24,155
IRC	1995	Water, HE and Rainwater jars - Kg. Chhnang	$ 25,670
PFD	1996	Pilot on iron reduction plants - Kratie	$ 8,900
PFD	1996	Pilot project on Iodine supplement - Kratie	$ 9,995
KRDA	1996	Construction 100 family Latrine - Battambang	$ 2,695
PFD	1997	Second phase of Iodine supplement - Kratie	$ 21,000
GRET	1997	RWS programme - Kandal & Prey Veng	$ 45,800

Table 3.8: NGO's with contracts from UNICEF

2) Material support through MRD, from stock provided by UNICEF to MRD:

NGO	Year	Project Description
PFD	1994 - 97	PVC, hand pumps, drilling spares, bentonite for Kratie
CESVI	1996 - 97	PVC, hand pumps for Kompong Chhnang
CARE	1997	PVC, hand pumps for Banteay Meanchey
IRC	1994 - 95	PVC, hand pumps for Kompong Chhnang
ANS	1996	Spares for India hand pumps for Battambang
LNGO's	1898	Various materials for different province

Table 3.9: NGO's receiving material support from UNICEF

The direct contracts allowed NGO's more freedom to experiment with new technologies, which are of specific interest to that area of operation, but also have a wider scope of sharing results with the WES sector. The material support is also well received by the NGO's, because it allows them to spend more money on staff training and education. This Chapter will highlight the co-operation of some of above contracts more closely.

3.3.2 NGO support description

PFD (Partners for Development), formerly AICF/USA in Kratie
PFD started operating in Kratie in 1992, with funding from UNHCR and OXFAM and later under an USAID grant. The programme is multi-sectoral and covers amongst others: community organization, water supply development, community health education, school health education, latrine & school construction, institutional development and monitoring and evaluation.

PFD has been the strongest NGO partner for UNICEF from the beginning and support which was given took the form of water supply materials (hand pumps, drilling spares, etc.); education materials & joint video production; assistance in design and evaluation of iron reduction plants as well as health education activities. What should be mentioned as well is a lively exchange of idea's and suggestions during many field visits.

The strong partnership is aided by the similarities between the NCCDP and CASD approach, both emphasizing bottom-up planning & management and full involvement of local government departments. In the coming years this co-operation will be further increased by the creation of a framework for more formal collaboration on the development of common approaches and integration of the CASD concept within Provincial Government. A draft was made on 17/9/1997 and is included in Annex 14.

Part of the Evaluation Team had a chance to visit the projects in Kratie during this evaluation and was impressed with the achievements, in a area with a very complicated geology and difficult access; the Iodine Supplementation project showed an 11% decrease in goiter rates and the previous piloting of Iron reduction plants has produced a small size plant, which can easily constructed and maintained. The fact that most of the PFD staff is seconded from the Provincial PDRD and the strong communication link with MRD will hopefully guarantee sustainability. At the end of the visit some idea's and comments were shared with PFD and they are also included in Annex 15.

GRET *(Groupe de Recherche et D'Echanges Technologique) in Kandal and Prey Veng.*
GRET is a French NGO in Cambodia since early nineties and the leading NGO on hand dug wells technology. For this it has organized many open attendance training's on hand dug well construction, where UNICEF supported with the development of training materials. In 1994 UNICEF supported a rural Water Supply project implemented by GRET in the Provinces of Kandal, Prey Veng and Kompong Speu. GRET further developed concepts of village committee's, contracts and contributions for maintenance funds.

In 1997 UNICEF (with funding from UNICEF-France) supported a new RWS programme by GRET, but this time the implementation is done by 2 local associations, created from localized GRET staff (ACAPE in Kandal and AKDEP in Prey Veng). The total project will cover 50 wells, equally divided over the two Provinces and includes community organization, implementation and training and hygiene education. For Prey Veng all training is done by district Government staff.

3.3.3 Conclusions and Recommendations

Conclusions:

- The Objectives as mentioned in 3.3.1 have been reached, because a strong dialogue has been established between UNICEF, MRD and NGO's like PFD. Some of the lessons learned from these NGO programmes have been used in the CASD process. PFD is also contributing a lot to the WES sector as a whole with pilot projects on Iron reduction and Iodine supplement.

- To work with NGO's is very cost effective, because the NGO's concerned also provides resources like staffing and transport to complement the UNICEF contribution. This is specially the case for the second method, where only materials are provided and all other expenses are for the NGO.

- The sustainability of this approach depends on the project approach chosen by the NGO; if the project is implemented only with NGO staff and the involvement of or communication with MRD is minimal (like IRC in Kompong Chhnang) then it will be difficult for the Government to feel committed to look after the facilities.

- But even if there is a close partnership between the NGO and PDRD/MRD (like PFD in Kratie), future monitoring and maintenance still requires an operational budget for staff DSA, transport and spares. At this moment the only system in existence for these expenses is to get money from the users themselves; this may be asking too much if larger maintenance or repair activities have to be executed

Recommendation 3.20:

With regard to NGO support the following points are recommended:

- UNICEF should continue with the support to NGO, both using the direct contracting and the indirect material support, though MRD.

- If the UNICEF resources allow it could expand these activities, specially for those NGO's who follow a process similar to the CASD process or who plan to pilot some other activities, which could be beneficial to the whole WES sector.

- To increase the chance for sustainability and to support the developmental approach adopted by both UNICEF and MRD it is recommended that a set of criteria is agreed upon with the respective NGO. The following criteria could be included:
  - either work with existing VDC or set up a new VDC structure.
  - close partnership with MRD/PDRD : field visits, seconded/counterpart staff.
  - use of only standardized hand pumps + provide proper caretaker training.
  - use Community Participation and 'Water Use and Hygiene Education approach.
  - active participation in Cambodian WES sector meetings & working groups.

3.4 SCHOOL SANITATION COMPONENT

3.4.1 Background & Objective

UNICEF has been working closely with the Ministry of Education (MOE) in developing the cluster school model to achieve access to basic education for all. Construction of sanitation and water facilities is a part of this. The implementation for the water supply facilities has already been covered under the National Water Supply programme. This section will provide a short description of the work UNICEF has done on promoting sanitation facilities.

The main objectives:

- Improve sanitation conditions at primary schools, through the construction of latrines.
- Provide educational support to ensure correct use, maintenance and understanding of the latrine importance

3.4.2 Description of support to Government and NGO's

Implementation of school latrine construction has been done in two ways:

1) Support to MOE, MRD, MOH to plan and implement sanitation activities at schools.
   - Actual construction has only taken place in Takeo in 1995/6 where latrines in 18 schools were constructed. But UNICEF also provided support to a field trip in 1995 to Vietnam for Government staff of the three departments mentioned above as an exposure to new developments. Also UNICEF promoted the start of the School Hygiene Education working group, which has been active in 1995 and 1996.

2) Direct contracting to NGO's already involved in primary school activities
   - Most of the activities on school sanitation have taken place with NGO's below. The new latrines constructed by PFD were visited by the Evaluation Team in Kratie (where PFD implements a similar programme as the one in Stung Treng, only with a different donor) and they looked very good. The design was modified so that basins inside each unit would fill automatically from a reservoir outside by gravity flow.

Unfortunately it was still school holiday during the field visit, so it was impossible to visit the use and to discuss with the teachers on the hygiene education lessons.

NGO	Year	Province	Latrine units /children	Amount
PFD	1995	Stung Treng	28/1196	$19,290
CONCERN	1995	Banteay Meanchey	32/3834	$21,944
IRC	1995	Battambang	36/17,000	$25,275
CHED	1996	Battambang	only education	$2,550
PFD	1997	Stung Treng	48/3600	$35,826
CONCERN	1997	Banteay Meanchey	44/8268	$46,807

Table 3.10: NGO's involved with school sanitation projects

CHAPTER 4

CASD PROVINCIAL COMPONENT

The Provincial CASD component has started in 1996 and only in Svay Rieng and Kompong Thom one full year cycle has been completed; in total 211 wells have been constructed. This means there is still little experience with the whole process (which in fact is still under development as well): no sanitation activities have yet taken place.

4.1 ASSESSMENT AND PLANNING FOR WATER SUPPLY AND SANITATION

Under CASD the requests for WES facilities come out of the process for Village Action Planning. This is a guided planning process which starts with a growth monitoring exercise in the village followed by what is called the Triple A Process: Assessment and Analysis of the nutrition situation and consequently Action to combat malnutrition. The process results in a Village Action Plan (VAP). As during analysis the facilitator asks the women what kind of water their family is using, requests for safe water sources feature high on the VAPs. In the process which is as follows, women participate more than men:

1. A number of families decides during the Triple A process as a group to request for a well and this request is put forward to the VDC; if in a general village meeting the requests for water are endorsed by the whole community, the VDC includes the request in the VAP which is forwarded to the PWG.

2. The VDC carries out a Technical Assessment for Water Supply to establish the real need of the village for additional water sources (this TA is done by the PWG as long as VDCs have not yet been trained). Based on this TA the province needs to decide on the allocation of wells with CASD support.

3. Raising of contributions: 70,000 riel drilling charge (should be evenly shared among the group of users), labor, food for drilling team, money, brick, stone, gravel.

4. Site selection is done by the group of families together, looking for a central place amidst their living area.

5. Every group of users elects a well committee of three people: one VDC member in charge of WES affairs in the village who helps to monitor the well, one male caretaker for maintenance and repair and one woman for water use and hygiene education.

6. Construction: all families contribute labor or food for the drilling team.

In its operation the CASD-programme relies heavily on the newly established VDCs. In the CASD villages VDCs have 5 members, of which one is responsible for WES (generally a man) and one for health education (often a woman).

The Technical Assessment for water supply is scheduled after preparation of the VAP (see Stages and Steps of the CASD Process, Annex 15 including the following steps:

1. Determining the existing water sources in the village (type, quantity and quality);

2. Looking at options to improve existing water points;

3. Planning for new water points: looking at the optimum number of beneficiaries per water point, distance between water points, type of new source required based on an analysis of (dis)advantages of the various options (hand pump, hand dug well, combined well).

The assessment forms and the assessment training look adequate to get a good picture of the existing situation and need for additional water points. Some points that need mentioning here:

- In the summary form one source mentioned is rainwater catchment; it is not clear if this category refers to the small open jars that all families put under their roof in the rainy season or to the large ferrocement rainwater jars or tanks.

- Under the heading of 'other water sources' a variety of options is included: village ponds (traditional and improved; public and private), streams and river intakes, piped water systems. More details are required on each of these to be able to make a proper assessment of the existing coverage of safe water in the village. The VDC will need clear guidelines regarding how to weigh the various water sources in this respect. Also private water points are not included in the assessment, even though in provinces like Svay Rieng and Prey Veng there are many more private than public wells.

- An assessment of existing latrines and of the requests for new latrines that are included in the VAP is not yet part of this exercise.

To learn about the expressed need for additional water sources in the VAPs the evaluation team interviewed a number of VDCs in two districts in Svay Rieng province. These VDCs had been established in either 1996 or 1997. The interviews led to the following observations:

- The numbers of wells requested appear to be higher than the need (looking at population figures and taking into account existing water sources), also in villages where VDCs have been trained to do a TA;

- In two communes for all villages VAPs had been produced only two months after establishing the VDCs;

- VDCs mentioned that people want safe water for drinking but at the same time villagers are requesting for open wells as their preferred technical option;

- The number of families who intend to share one well differs greatly per request. VDCs in Svay Rieng had prepared lists of as little as 5 families per well and on average mentioned 5-10 families for one well, in a province where a private well is the norm rather than the exception and a private well can be constructed for as little

as US$ 50. One major reason to request for more wells is the distance between existing water points. A village which is stretched out along and in-between rice land wants a water source at an acceptable distance for all families;

- Asking what the new wells were needed for both household use and gardening were mentioned;

- People in the village want service delivery rather than training as one VDC explained; also people first need to see assistance before they will give their trust and mobilize their own resources. One VDC member gave the following example: a family wants to dig a pond to raise fish but first needs insurance that someone will support them to buy the fish. The attitude also persists to ask for (too) much to get at least something out of the process, resulting in a wishlist rather than a plan based on real needs;

- In Svay Rieng one VDC mentioned they would receive more wells from Samaki, a local NGO, apart from what they had requested from CASD;

- One VDC mentioned they wanted to support those families who do not have enough funds but want to take the initiative to become model families for the village to see.

The evaluation team witnessed one training on Technical Assessment of Water Supply to a VDC in Battambang province. Studying the outcome of the discussion on the village map it was noticed that quite a number of families who live at the back of the village in poor houses had no improved water source but were not participating in the request for additional wells. These families were said to have a pond and boil their water. However it was acknowledged by the VDC that in the dry season these families would come and join in using the new facilities as well, although at present (in the rainy season) they did not feel the need to participate.

These observations lead to a number of issues that MRD/UNICEF needs to address:

To include the poor in programme benefits
When assessing the need and requests for additional water points, the VDC should be made aware of their responsibility to facilitate the process in such a way that the situation/needs of the poorest in the village is taken into account if not given preference.

The need to raise awareness about safe water prior to making any requests for water
Villagers need to be made aware of the concept of safe water, as is presently briefly done under the Triple A process. If the village lacks safe water, the next step is to plan for an improved source. Under CASD it is said that people should be enabled to make informed decisions about their preferred water source but that implies that a lot of information, notably water and hygiene education should precede making the requests, otherwise it is likely that people will still opt for better taste and access (the open well) rather than having a source that can be properly protected (the pump well) as was observed by the ET.

Pace of the process
The process of Village Action Planning appears to be rushed, designed at a pace defined by the programme rather than by the villagers. This allows little time for awareness raising regarding the need for safe water and sanitation. In one village the VDC explained that it was

the district who told them what they should write, although this was not what they really needed. District staff are expected to be the facilitators of the process after receiving some basic training themselves, though facilitation is a skill that is not easily acquired.

Need for coordination in planning and approach with other agencies

When assessing the need for water, also contributions and intentions of other donors/agencies working in the same geographical area should be considered. Where CASD is working alongside another agency in the same area this should be taken as a learning experience for CASD in the field of coordination and cooperation.

Need to consider water for gardening as well

In the past under the Family Food Production programme water was provided specifically for gardening, with the objective to improve family nutrition. Under CASD, although the programme is based on the need to improve the nutrition status of children, in providing public wells only household use is considered. Separately the need for water for gardening and household use should be assessed to come with an appropriate and economic solution for both. In Cambodia for gardening some local organizations promote treadle pumps, as could be observed in some CASD villages as well. These pumps are cheap (US$45) but not appropriate for drinking as they are open at the top.

Allocation of wells

It is not yet clear which criteria the PWG is using for allocating additional water points to a village, whereas the resources: money, time and staff are all scarce. During one meeting in the district criteria were mentioned such as population size, providing the poorer families first, distance between water points, prevalence of disease, lack of existing water sources, but these criteria need to be spelled out more clearly with the PWG's to be able to decide on allocations. VDC's should be trained to make use of the same criteria to avoid unrealistic requests.

Also MRD/UNICEF needs to consider how it can best distribute a scarce and expensive resource (improved wells, at a cost of USUS$500 - USUS$1000, depending on depth and type of pump) among the rural population of Cambodia taking into account the present high requests for safe water sources and the increasing scale of operations of the CASD programme (see Chapter 2).

The present working process

Taking various issues into account one way to avoid some of the present obstacles in the process is to let the needs assessment precede the Village Action Plan. The proposed process would be as follows:

1) Raising awareness regarding safe water (by PWG, VDC, VHV's)
2) Needs assessment for water supply and sanitation (by VDC)
3) Village Action Planning (facilitated by VDC and district)
4) Action Plan Appraisal (by District and Provincial Working Group)

This process is in line with a proposal that was drafted in August 1996 of a working procedure for community water supply activities in the CASD programme. This draft was however left aside to shift attention to the overall CASD process (see Annex 15). In the diagram of the overall CASD process the village action plan precedes the technical assessment of action needed in the village. However this leads to unrealistic requests and an on-going revision of plans.

Conclusion:

To establish the need for (additional) water supply facilities, careful study is needed not only on a technical level making an assessment of existing water sources but also taking into consideration people's preferred technical options, perceptions regarding private versus public wells, expectations regarding donors, future usage of the water and activities of other aid agencies. CASD is still very new and the VDCs and PWG will need time to gain the skills and experience to facilitate this process.

Recommendation 4.1:

With regard to the technical assessments the following recommendations are made:

- To further develop the criteria for the technical assessment to assist the VDCs in determining the need for additional water points. Also to make some adaptations to the technical assessment forms to contain more information regarding water sources other than wells.
- To include a technical assessment for latrines to be carried out simultaneously as the assessment for water supply, thus making the link between requests for water and sanitation and working towards integration of the two projects.
- To co-ordinate with other agencies involved in rural water supply working in the same area prior to engaging in any planning regarding additional water sources.

Recommendation 4.2:

With regard to the Village Action Plans the following recommendations are made:

- During the process for Village Action Planning to both consider the need for water for household use and for gardening, as two different roads towards better nutrition/health.
- To raise awareness about what is safe water and what are safe water sources prior to let the people make any requests for water, and to let the technical assessment precede the actual planning for improved water sources in the village.
- For UNICEF/MRD to formulate clear criteria for the allocation of wells on the basis of the realization that in the future not all requests can be granted.

Recommendation 4.3:

With regard to the needs of the poor it is recommended to go for full coverage in terms of water supply in a village, that is to provide access to safe water to all villagers according to a general standard of 250 persons per water point:

- Community organizers/VDCs to mobilize all villagers for water supply and include them in the requests so that all will share in the benefits, including the poorest who otherwise do not volunteer to join in meetings/requests out of a fear for contributions or lack of time; the contributions should be shared among all users, meaning that some will be able to contribute more than others but all can feel ownership towards the new facility. Full coverage will prevent overuse and thus the risk of early and frequent damage to pumps and platforms;

- to provide safe water for all means that unsafe sources can and must be abandoned; during the technical assessment of existing water sources, unsafe sources should be marked as inappropriate. Such a strategy will require active promotion of safe sources over traditional ones.

If full coverage is not an option for the future (considering the CASD scale of operations versus the available budget) the programme should consider how to target those families who are in most need of assistance for a safe water supply by the programme.

A Note on Gender

To talk about water and sanitation means to focus on women as main users of water facilities: as water carriers, taking care of the hygiene of children, doing food preparation, laundry etc. The CASD programme has a strong gender orientation as it is based on the needs of children and women and village action planning comes out of a process where mainly women participate. In advocating the CASD programme, a workshop session is organized on the Convention for Elimination of all Forms of Discrimination against Women.

This gender orientation is further reflected in the CASD structure. In 3 out of 6 CASD provinces Women's Affairs heads the PCOCOM and the Provincial Women's Affairs Office is a focal point for CASD activities. In the UNICEF CASD office there is also a gender balance in staffing. At village level for example in Prey Veng 9 out of 28 VDC's have a women as chief, all VDCs have 2 women and some have 3. When electing the VDC it is more the women who are present and vote but they vote mainly for men, as men are (still) said to have more knowledge and capacity to do the work.

For the CASD programme no special training activities to promote gender have yet been identified, which could help the Provincial Working Groups in keeping a gender focus in implementing all the different programme aspects and develop tools for planning and analysis with a gender focus in mind.

With regard to the WES programme it is recommended to look for strategies which ensure that the poorest households, often women/female headed households/widows share equally in the benefits of these facilities and are enabled to take an active role in improving the health and hygiene in their families.

Recommendation 4.4:

It is recommended to UNICEF/MRD to develop gender training for Provincial Working Groups in co-operation with the Women's Affairs office and develop tools for planning and analysis of programme activities and impact with a gender orientation in mind.

4.2 TECHNICAL ISSUES

Since the beginning of CASD in 1996 Svay Rieng completed the construction of 83 water points (41 Combined wells and 42 wells equipped with VN6 hand pumps) and Kompong Thom completed 128 hand dug wells. In the VAP's for these villages requests were made for a total of 500 water points (both new and rehabilitation), but this was not feasible:

1. During the technical assessment it was found that users requested for wells without knowing the criteria, like the number of users per water point or the minimum distance between two water points.

2. The budget available for water supply could not manage such large requests.

3. The time was too short, because the VAP's were finished in September and by the time the Technical Assessment was completed, the budget approved and a work plan made it was already January 1997. According to UNICEF policy funds allocated in 1996 can be used up to June 1997 but not later. This left a working season of 5 months.

For 1997 the same discrepancy is expected, looking at the numbers of the new VAP's.

The technologies used for the provincial CASD programme are similar to the ones presently used under the National CASD Rural Water Supply (Chapter 3.1) and Sanitation programmes (Chapter 3.2). All issues, conclusions and recommendations mentioned under these chapters also apply to the Provincial CASD programme. In addition there are a number of issues which are more specific to the Provincial CASD programme which will be briefly discussed here.

A) Supply of construction materials:

The standard policy of UNICEF-Cambodia is not to give money to the Government for the purchase of local materials (called a CCF = Cash Called Forward), but to let the UNICEF supplies office purchase the materials and then dispatch these to the various projects (called SCF = Supplies Called Forward). In the 1996 programme the SCF procedure was wavered in favor of the CCF procedure because of time constraints, but it was said that in the future the standard SCF procedure will be maintained.

In 1997 the same time frame applies as in 1996, because the VAP's are completed again in September and the Technical Assessment has just started. To order local materials (like cement, iron rods, bricks, etc) through the supplies office is estimated to delay the implementation with possibly one to two months. Also to buy materials centrally and then dispatch these to the provinces is contrary to the principle of decentralization, which is all about slowly handing over more responsibility to the provinces.

Recommendation 4.5:

It should be examined if the use of the standard UNICEF SCF (Supplies Called Forward) system, by which simple construction materials are ordered by the center and then dispatched to the provinces, can be bypassed in case of the CASD programme in order to allow for timely implementation of village action plans and to hand over more responsibility to the provinces.

B) Retrieval system for Combination well

In many areas of Cambodia dug wells are used to collect shallow or deep groundwater. A shallow or hand dug well is used for shallow groundwater and a combination well, which combines drilling and digging, is used for deep groundwater. Open wells are appreciated by Cambodians, especially in areas where water has a high Iron concentration (> 10 mg/l). The costs are however much higher compared to a drilled well equipped with a VN6 handpump.

The problem with these types of wells is the liveliness of contamination of the water inside the well, especially when people use their own buckets to fetch water from the well (as is the case in Svay Chrum district, Svay Rieng Province, for the new CASD wells). The only solution is a simple retrieval system of which several have been tried out in the past by different organizations (CARE, CONCERN, OXFAM and others). At this moment the system which is appreciated most by users is a VN6 handpump installed next to the combination well, which takes water from the well with a PVC suction pipe.

This system was discussed among UNICEF staff in 1996, but not approved at that time, with the argument that this addition should be covered by the user contribution. But that is asking too much from the users who are often not yet convinced about the need to protect their open well in this way. For the 1997 projects VN6 suction pumps will be included in the design.

Recommendation 4.6:

A simple, durable retrieval system to take water from combination wells should be included in the design of the new wells planned for 1997, to safeguard hygienic conditions of the well.

C) Height of top ring of Combination Well

It was witnessed in the field that the height of the top ring of the combination well is in most cases only 50 cm above the platform. This is a dangerous situation as it is too easy for someone or something to accidentally fall into the well. Checking with UNICEF revealed that the design specifies 75 cm, but apparently this is not always followed in the field. If the well was completely closed with a cover the height of the top ring would not matter.

D) Working with Private drilling contractors

For the combination wells in Svay Rieng province boreholes were drilled by a private contractor, which is a good and cost effective initiative. To guarantee quality the following three points are advised to be included in future contracts with private contractors:

- *Maintenance warranty* (of possibly one year) by the contractor if the drilled part of the combination well is blocked with sand or breaks (Government teams would have

to come back and redevelop or repair on their own expenses). The suggestion (whose) is that this (which?)contract is made between the contractor and the VDC and witnessed by district staff.

- *Minimum technical standards* for the construction of the well: materials used, hole diameters & depth, size of screen openings, use of gravel pack, sanitary seal are some examples, where it would be useful both for the client and the contractor to specify requirements in a contract.

- *Record keeping*; because wells are drilled by a private contractor no drilling logs are filled. In 1996 national drilling log sheets have been standardized for all public wells to gather more information on the underground aquifers. This information is then put in a national database managed jointly by MRD and GDIMH. The combination wells constructed under CASD should also use these forms. The best solution is to train the private contractor in how to fill the form. After completion of the well and before the contractor is paid he should hand in the log sheet, which is then passed on to PDRD.

Recommendation 4.7:

When private drilling contractors are involved in the construction, contracts should be made between them and the VDC covering maintenance warranty and minimum standards for construction and the contractor should be trained to fill the National Drilling log sheet.

E) Working with village volunteers

In each village which gets allocated one or more combination wells two volunteers are trained for the actual construction (see below for more details on the training). But during the actual construction they can not get enough supervision from their district trainers, because the district is understaffed. In Svay Rieng this resulted in a number of (minor) problems with the wells, especially for the slopes, drainage channels and height of the top ring. It can not be expected that these volunteers can work without supervision after constructing only one well during the training.

Recommendation 4.8:

With regard to the village well construction volunteers the following is recommended:

- An assessment of all the village volunteers who constructed the combination wells in 1996; for the ones who require more supervision/training, this should be included in the 1997 programme implementation.

- For new CASD villages, where only one or two combination wells will be constructed, it may be more economic and easier to manage to work with a qualified volunteer from another village.

F) UNICEF name on platforms

It was found that on almost all the platforms (old and new) the name UNICEF is clearly written in the concrete. This is contrary to an agreement made between UNICEF and MRD, but clearly this is a habit of all installations teams (from other organizations as well), to show who paid for the construction. It may however influence the users perception who is the "owner" of the well, which is a very important concept for the sustainability of the water point. Only when the users feel that they are the owners of the water point, then they will take care and collect money for repair. A question was raised that name identification is required for future monitoring, but every well has a unique number, following a standard numbering system established in 1996.

Recommendation 4.9:

Installation teams should be instructed not to put the UNICEF name on the platforms anymore, but to make sure that the unique well number is used for later identification, following the standard numbering system.

4.3 WATER USE AND HYGIENE EDUCATION AND TRAINING

The approach and activities for WUHE under the CASD provincial programme carried out by RHC-staff are similar as to what happens under the National CASD component (see Chapter 3). The difference is that under CASD the PWG and VDCs also play an active role in WUHE. During the construction phase PWG-members said to go to the village almost every day to help the VDC in monitoring the construction and doing WUHE, passing on basic messages about safe water. From the field visits by the ET in Svay Rieng, mainly interviews with women, the following observations were made:

- Many women know a handpump provides safe water but still prefer the open well as it provides a lot of water at the same time, will not breakdown and the water has a better taste (because in an open well water gets in contact with oxygen, which helps to reduce the iron taste).
- It was observed that quite a number of households had their water supply separated: one small earthen jar with a cover inside the house for drinking; one big cement jar outside for other uses. This is recommended practice.
- The women talked to were aware of many WUHE messages regarding safe water storage, good sanitation, prevention of diarrhoea, safe food preparation etc.
- All women talked to expressed their interest in more education as prevention of disease is very important for their families.

What can be concluded is that around the time of construction of the water point various education messages find their way to the users, who are eager to develop their knowledge and improve the health and hygiene of their families.

> *"One CASD combined well which was recently completed could well become a CASD show case. It is found at the outskirts of Trapeang Chhuk village, Ang Tasou commune in Svay Rieng amidst very poor dwellings. A group of women expressed their happiness with this new source of clean water close by. "We made the request with 25 families together. All of us participated in the digging. Before in the dry season we had to walk far to fetch water many times a day. Now we have more time and can plant some vegetables. This water gives good health". The women told about their intentions to put a fence and flowers around the well and start using only one bucket, as they had been told during an education session".*

The CASD strategy to achieve community ownership of facilities is to focus its efforts on capacity building at all levels, from the province down to the village level. Out of the PWG a Provincial Training Team (PTT) is formed consisting of government staff coming from all the various departments, who go through an extensive series of training by UNICEF/PDRD to prepare them for their job. These provincial and district trainers then have the responsibility to pass their new knowledge on to the village level/VDCs. In the village it is the PWG together with the VDCs who are in charge of all CASD activities in the village. Each member of the PWG is responsible for a number of villages and helps the VDC to monitor projects and carry out training and education.

For the provision of WES facilities the following training activities are identified :

- *Growth Monitoring and Child Triple-A Assessment*; when analyzing the weighing results in the village the question is raised what water the mother gives to the child, consequently discussing what is safe water.

- *Sanitation and Latrine construction* (by PDRD/RHC and UNICEF). For the training of latrine construction the Provincial Training Team trains the villagers directly, as they want to have feedback concerning the construction and use of latrines, and want to know the interest of people in latrines. Normally the PTT will only train the VDC and then help the VDC to train the villagers.

- *Training for Technical Water Assessment* is given by staff from PDRD/RWS (and UNICEF) to the PTT; members of the PTT will go to all CASD villages to do the assessment with the VDC and villagers as on-the-job training, so that next year the VDCs can do it by themselves.

- *Health and Hygiene Education*; under CASD VHV's and VDC's receive a 4-day training by the PTT (with support from RHC-staff) which covers many subjects: fever, aids, diarrhoea, dengue, pre-and postnatal care, family planning, vaccination, water use and hygiene. It is the VDC who has to become responsible for growth monitoring so they should know about health education. When there is training for handpump maintenance to the provincial and district level by MRD/UNICEF, also half a day of Water Education is included.

- *Hand Dug Well training* for district PDRD staff was given by SAWA Cambodia in February 1996 (3 weeks); this training was mainly technical, not really covering TOT issues. In Svay Rieng the trainees then trained two volunteers in each village to do well construction; this training was only 10 days and only one well was dug. The volunteers then constructed the wells in the villages, with little supervision; this resulted in some bad slopes, poor drainage channels and low top rings (dangerous for children).

Regarding the training of VDCs and VHVs on health and hygiene, none of the VDCs/VHVs interviewed by the ET team had yet many ideas how to follow up on this training and start doing health education in the village by themselves apart from going house to house and meet the women at the well site. Although the training does include some basic elements of TOT that will help the volunteers to do their job (talking about participatory teaching methods for use in the community) they will need more training and especially supervision and support on the job, helping them to identify the appropriate and priority messages for the village, to make creative use of education materials and so on. Several times it was mentioned by VDCs that training was very short covering many topics. VDCs expressed the need for review and more training.

There are two main areas which need to be further developed by the programme in order to have an effect on changing water use and hygiene practices (and this accounts for both the National and Provincial CASD Component):

A system for the Planning, Monitoring and Evaluation of WUHE activities

To carry out meaningful education activities VDC-members and VHVs will need to make an education plan: identify education subjects and messages appropriate for the village, identify who should be educated about what and where, who can be the educators, how often activities should and can be carried out using which methods. Initially the volunteers will need quite some help to make such a plan, and will need to look for opportunities to involve others. For example at village level the VDC's/VHV's can work with many different actors who can pass on different messages: school teachers, monks, achar, traditional healers, TBA's and so on. To learn about such an approach it will be helpful to look at the experience of other agencies such as PFD and OXFAM.

MRD/UNICEF should take an active role in developing WUHE guidelines and developing a more comprehensive training package for WUHE. WUHE activities for UNICEF facilities up to now been have been fragmented, one or two sessions here and there if the right staff is available. To help make WUHE a fixed and strong programme component more UNICEF support will be required, in terms of contributing ideas, manpower, materials, funds, monitoring and supervision, etc.

Once education in the village gets underway it becomes important to monitor what is going on and how messages are received, what impact they have on present knowledge and practices. MRD/UNICEF up to now under the WES programme has no information on impact of education activities as no information regarding water use and hygiene practices has been collected in the past or at present for evaluation purposes. For monitoring and evaluation of CASD interventions a system is presently under development by UNICEF including a baseline survey.

Development of baseline indicators for water use and hygiene knowledge, attitudes and practices will be essential to be able to learn about programme impact in the future. Village educators will need a monitoring system that they can manage by themselves, which will help them to evaluate their own activities in the village. Using the baseline, village educators will need to discuss targets for change with programme beneficiaries, and define how and at which intervals these will be measured. In this way education in the village can become progressive, one message/campaign building on the previous one, step-by-step building a healthier village.

To explore participatory education methods and materials

VDCs/VHVs mentioned their need of materials (posters/pictures) to help them educate and help illiterate people understand health messages. The volunteers need to receive more materials as an incentive to do their job. Also other methods than showing pictures should be explored, as to make health education more participatory, more interesting and more fun. Various health education games have been developed in Cambodia that can be ordered and used at the village level. With support from CASD VDC's can initiate the making of public notice boards, stand posts, wall paintings and so on.

Conclusion:

It is too early to write about impact of water supply and sanitation under the CASD programme. What can be said is that the CASD process offers good potential for the sustainability of WES facilities and improved water use and hygiene practices in the long term as:

- Villagers are involved in problem identification and decision-making regarding new facilities, implementation of the projects and monitoring of the use of facilities;
- Good co-operation and co-ordination by the different government offices involved in WES projects is encouraged through their participation in the PWG and in various training events together;
- The structure of PWG, VDCs and VHVs all trained for WUHE should contribute to regular input/support for WUHE activities in the villages.

Recommendation 4.10:

MRD/UNICEF to give on-going support to the trainers and educators for WUHE in the villages by providing them training (on-the-job and in the class room), help with material development, monitoring and evaluation and sharing of ideas and experience with others.