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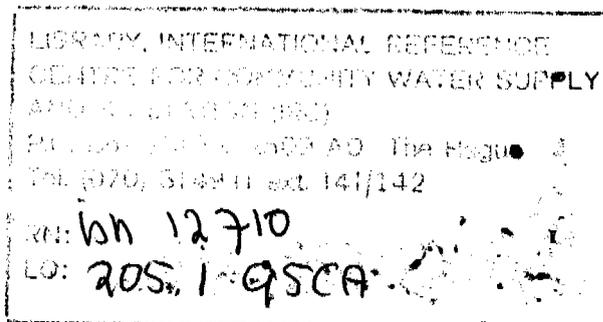
CASE STUDIES ON COMMUNITY SELF-IMPROVEMENT

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INTRODUCTION

This paper gives a review of case studies of community self-improvement. In the case studies presented communities or households self-improve their living conditions by adopting relatively simple technologies or improving existing water and sanitation facilities. The efforts to improve living conditions may have been initiated by a community worker based in the community, an outside agency, the private sector or the community itself. Fields of activity are related to water supply, sanitation and environment.

As it is difficult to select cases on the basis of this definition a number of criteria have been defined:

- The solution found should be related to key problems in the community. The focus should be problem oriented rather than technology oriented.
- People should be given the opportunity to make informed choices.
- It should be a validated improvement, which means it should be appreciated and sustainable.
- The largest part of the investment (at least 90%) needs to be made by the community.
- Operation and maintenance is the responsibility of the community or household.

The aim of this paper is to distinguish different methodologies used to implement community self-improvement efforts and to discover which features characterize these efforts. Based on this overview a methodology will be developed for agencies and community based workers in developing countries to assist or stimulate communities to improve their living conditions in a low-cost programme.

In order to analyse the case studies presented a number of factors will be reviewed. These factors are: the initiator of the programme, implementation, promotion, design, unit of decision, contribution, investment, operation and maintenance and training.

Initiator of the programme

This factor indicates who initiated the programme. The initiator could be the community, a community worker based in the community or an agency outside the community.

Implementation

This factor shortly indicates how the community self-improvement effort has been implemented.

Promotion

The factor promotion indicates if there is a person or agency who promotes the project and what methods have been used to inform people about the project.

Design

This factor indicates whether a new design is developed or an existing design is adopted and adapted to local circumstances. It also indicates how communities are involved in selection of designs.

Unit of decision

This factor expresses at what level in the community the decision is made whether or not to join in the programme.

Contributions

This factor elaborates how the parties involved contribute to the project. This factor serves to give insight in how communities can contribute to self-improvement efforts.

Investment

This factor indicates the investment made by the household in cash (expressed in US dollars) and relates this amount to the GNP per capita in that year. The ration of these numbers gives some indication of how much communities can financially contribute in self-improvement efforts.

Operation and maintenance

This factor indicates who is responsible for operation and maintenance. As maintenance is acknowledged to be an important determinant for the sustainability of a project, it may be interesting to see how this is organized in the case studies of community self-improvement that have been presented.

Training

The factor training indicates to whom training is provided in the programme and which skills are taught in the training courses.

In the first part of the paper a summary is presented of each of the case studies. A number of cases have been marked with an asterix (*) which indicates that they do not comply with all the conditions set but that they still have interesting elements which may provide valuable insights.

In the second part the factors selected are set out in tables.

In the third part the different methodologies applied are distinguished and factors that are characteristic for community self-improvement efforts are discussed.

CASE - THE ROPE PUMP IN NICARAGUA. *

General outline: After several attempts to introduce the rope pump in Nicaragua in 1990 a new approach is tried out. The enterprise Bombas de Mecate S.A. was set up (Alberts et.al. 1993). The company felt that the older versions of the rope pump were too much focused on the principles of appropriate technology based on locally available technology and materials, leading to a pump with a low efficiency. Instead, they designed a more efficient pump, as that is what they felt the consumers wanted. After improving the existing design of the pump, the owners of the company started an extensive campaign to promote their product. They travelled through the country to trade and household fairs and informed the people about their pump on the radio and in the newspapers.

The pump costs about US\$ 75. (GNP per capita 1993 is US\$460).

By 1993, the company had installed approximately 2000 rope pumps.

Alberts, H., R. Meza, D. Solís, M. Rodriguez (1993): How the rope pump won in Nicaragua. In: Waterlines, vol.12, no.2.

Programme initiated by: Bombas de Mecate S.A.

Implementation: Company contacts community

Promotion: The company Bombas de Mecate S.A. The company promoted the product on the radio and in the newspapers, by visiting trade and household fairs and by extensive travelling and informing people throughout the country.

Design: Adapted by the company. One design is available.

Contributions: Bombas de Mecate installs the pump. The user pays for the pump installed.

Investment: US\$ 75. GNP per capita is US\$460.

Operation and maintenance: The user is responsible for operation and maintenance.

Training: No

CASE - IMPROVED STOVES IN BURKINA FASO

General outline: In the end of the 80's the Government in Burkina Faso started a national stove programme to reduce the consumption of woodfuel (Joseph et.al. 1990).

Desertification posed a major problem and also measures were taken to increase the number of trees planted and limit the damage caused by animals and prevent bushfires. Several improved stoves were introduced by the Burkinabe Institute of Energy (IBE) of which the improved three stone fire, 3PA is the most widely known and also the cheapest stove. This stove is constructed of local materials by the users and has one hole and no chimney.

In 1984 and 1985 a campaign was started on radio and television to promote the 3PA. Also, IBE trained 35 to 40 women in each district. These women trained other women how to construct the 3PA so the use of the stove could spread throughout the country. Since January 1987, the use of metal stoves has been promoted. In 1984 craftsmen were trained to produce these stoves. The stoves were checked on quality before they were sold. The price of these stoves was F.CFA 650 (US\$ 2.5). The ceramic stoves were sold for a reduced price of F.CFA 750 (US\$3). The GNP per capita was US\$160 in 1986.

Two channels of distribution were used. The metal stove and also a ceramic stove were sold in the private sector. The 3PA was constructed by the user.

In 1985 60 percent of the population used improved stoves. A little over 40 percent used the 3PA. A study carried out in 1986 indicated that 40 percent of the 3PA stove was cracked, which means they can still be used but need to be repaired. Another 27 percent was broken. The remaining 30 percent was in good condition. This indicates that instruction on maintenance and repair of the stove has not been sufficient.

Joseph, S, K. Krishna Prasad, H.B. van der Zaan (eds) (1990): Bringing stoves to the people: an assessment of impact. FWD, Nairobi, Kenya.

Programme initiated by: National government

Implementation: A. Government trains local craftsmen. Craftsmen sell stove.
B. Government trains users. Users construct stove.

Promotion: The government starts a campaign on radio and television

Design: Government improves existing designs. User chooses between different types.

Unit of decision: Household

Contributions: User pays the full price, or constructs the stove by herself.

Investment: A. US\$2.5 - US\$3. GNP per capita is US\$160
B. No cash

Operation and maintenance: User.

Training: A. To local craftsmen and welders for construction of ceramic and metal stoves.
B. To users for construction of 3PA stoves.

CASE - COMMERCIALIZATION OF FERROCEMENT TANKS IN PAPUA NEW GUINEA.

General outline: In the North Solomons Province of Papua New Guinea availability of water poses serious difficulties. Surface water is scarce and groundwater is unsuitable for consumption. Inhabitants of the islands store rainwater in old 44 gallon oil drums, but these are too small to serve a whole family for longer periods.

The Provincial Government has asked the Village Industry Research and Training Unit (VIRTU), a local NGO, to find a way to transfer ferrocement tank technology to the islands, as these tanks have a far greater storing capacity (Layton 1984, 1987).

Apart from developing a new tank, VIRTU gave a lot of thought to how the technique could be successfully spread. Previous programmes had not been very successful, as they were limited to demonstrating the construction of a tank at special workshops or courses. From there it was hoped that the people who attended these meetings would themselves construct ferrocement tanks in their villages.

VIRTU decided to commercialize the production of the ferrocement tank. A training was organized for new entrepreneurs. During the month of the training the young entrepreneurs learnt to build a strong ferrocement tank that was cheaper than other commercially available tanks. For the investment needed to start their business, buying a fibre-glass mould, the government agreed to provide a loan.

The price of the VIRTU tank was US\$227 (GNP per capita 1984 is US\$820).

In the first year of production the entrepreneurs gained 6 per cent of the annual market. This number was expected to increase to 12 or maybe 14 per cent.

Layton, S (1984): Progress with ferrocement tanks in Papua New Guinea over the last 18 months. In: Waterlines vol.3, no.2

Layton, S (1987): Business - a way of transferring technology. In: Proceedings of the third international Conference on rain water cistern systems: 14-16 January. Khon Kaen, Thailand.

Programme initiated by: The local government

Implementation: NGO trains entrepreneurs. Enterprise sells technology.

Promotion: not described.

Design: NGO develops new technology. One technology is developed.

Unit of decision: The household.

Contributions: The user pays the full price of the tank.

Investment: US\$227. GNP per capita is US\$710

Operation and maintenance: The household.

Training: NGO trains entrepreneurs.

CASE - IMPROVED SANITATION IN LESOTHO

General outline: In 1983 a three-year pilot Rural Sanitation Project was launched in the southern districts of Maseru's Hoek. The aim of the pilot project was to develop and test a plan for a National Rural Sanitation Programme (Blackett 1994).

The technology chosen was the Ventilated Improved Pit latrine, as this latrine was already known by the public and users of these latrines were satisfied with the technology. A number of designs was built on a test site and groups of people of proposed pilot sites and representatives of relevant government ministries and donor agencies were invited to discuss the designs in workshops. Based on the views of the participants the most acceptable design was selected (Evans 1987).

The users pay the full cost of the latrines and also they buy materials and hire local builders themselves. The costs of a latrine vary between US\$75 and US\$150. The GNP per capita was US\$370 (in 1987).

Trainings in building VIP latrines were organized at district level. Anyone interested in the course could enter. The training aimed to teach the trainees construction skills as well as management skills, so that people who had followed the course would contact customers and start producing latrines on their own.

The government also organized health and hygiene education. In the pilot phase this campaign focussed too much on the distribution of flyers and posters and was not very effective.

In the pilot phase slightly more than 600 latrines were constructed, 200 more than the target set. In 1986 the government of Lesotho expanded the programme district by district to a national level.

In the national programme a different method was used for health and hygiene promotion. Firstly District Sanitation Coordinators were trained. They in their turn would train extension workers who would go to the villages. In the villages issues related to hygiene and health were explained and related to the importance of latrines. Methods used in village meetings were interactive methods: games, map making, theatre. These methods proved to be very effective. Health workers in villages were encouraged to take up sanitation promotion in their work, as they would stay in the village and extension workers would not.

Mid 1989, approximately 900 local latrine builders had been trained and an estimated 12,000 latrines had been constructed by the private sector.

Blackett, I.C. (1994): Low-cost urban sanitation in Lesotho. Water and Sanitation Discussion Paper Series 10, UNDP-World Bank Water and Sanitation Program.

Evans, Ph. (1987): Planning self-sustaining programmes for sanitation: the Lesotho experience. In: Waterlines, vol.6, no.2.

Evans, Ph. and Pollard, R.W. (1988): Local latrine builder training programme: contributions to rural employment and income generation. Ministry of Health, Lesotho.

UNDP/PROWESS (1990): Rural sanitation in Lesotho. From pilot project to national program. Water and Sanitation Discussion Paper Series 3.

Programme initiated by: Government and foreign donor

Implementation: Government trains builders to produce and sell latrines.

Promotion: By government by training builders and by organizing training on hygiene and health education.

Design: Existing design is selected by implementing agency and inhabitants of pilot district. One design is used in project.

Unit of decision: Household

Contributions: User pays full price

Investment: US\$75-150 GNP per capita is US\$370

Operation and maintenance: Responsibility of the household

Training: To builders for technical and management skills.
To extension workers

CASE - THE IMPROVED LATRINE PROJECT MOZAMBIQUE

General outline: Because of intervention of the government by a massive national latrine-building campaign a coverage rate of 72 percent in urban areas had been attained in Mozambique by 1984. However, the quality of the constructions was bad as some structures collapsed and the wooden floor could not be cleaned which meant a health hazard for the user.

UNDP and IDRC supported research to develop technically sound and hygienic latrines (Brandberg 1985). It was decided to decentralize production and set up workshops in neighbourhoods. The first pilot workshop was set up just outside Maputo city. In this workshop people were trained how to produce latrine covers and latrines. Trained latrine builders were encouraged to set up their own workshop or start a cooperative.

Slabs cost US\$10 dollars each in 1985, which covered the costs of material, of labour, of equipment and of administration. The GNP per capita was US\$160 in 1987 (no earlier data available). The price of complete latrines covered material and labour costs, no exact number is given.

Public hygiene education was supported by posters, leaflets and puppet theatre.

In the beginning of the programme no attempts were made to push sales, even though local authorities were informed about the availability of latrine slabs. Despite lack of promotion sales went up from less than 20 in 1980 to 120 in 1982 in the pilot workshop of Maputo.

At the pilot workshop in Maputo 350 people were as professional latrine constructors and community motivators in other communities.

In 1988 there were 13 cooperatives in Maputo. The total production of the cooperatives was 40,000 latrine slabs since 1979. In other cities 3 cooperatives and 6 workshops were set up with a total production of 5,000 latrine slabs since 1979 (WHO 1988).

Brandberg, B. (1985): The latrine project, Mozambique. IDRC Manuscript report. IDRC, Ottawa, Canada.

Paqui, H. (1988): Low-cost sanitation in Mozambique. In: Waterlines, vol.7, no.1.

WHO (1988): water supply and sanitation in Mozambique. Inter-agency meeting on water supply and sanitation. Joint planning 28-30 November 1988. Harare, Zimbabwe.

Programme initiated by: The national government and foreign donors.

Implementation: Government trains builders in pilot workshop.

Promotion: Workshops sell slabs in neighbourhood.

Design: Design is adapted in pilot workshop. Users choose between two options.

Unit of decision: Household

Contributions: Users pay full price

Investment: US\$10. GNP per capita is US\$160 in 1987.

Operation and maintenance: Responsibility of the user.

Training: Builders are trained in pilot workshop.

CASE - PROMOTING SANITATION IN A DEMONSTRATION VILLAGE IN UGANDA *

General outline: In the 1960's in Uganda the latrine coverage was fairly high, but when colonial laws and by-laws in which people were obliged to construct latrines stopped being enforced, the coverage rate dropped fast. WaterAid and the Jinja District Medical Office (DMO) decided to promote sanitation in the district by starting in a demonstration village (Causer 1993). It was expected that people from other villages would come and see the changes in the demonstration village and decide to improve their own sanitation situation by upgrading their existing latrine or having a new one constructed.

A village was selected and two inhabitants, a man and a woman, were trained as a mason (*fundi*). They were taught how to make different types of latrine covers and how to upgrade latrines. Training included producing a full-sized latrine slab, a smaller "sanplat" (sanitation platform), and plastering an existing mud floor in a latrine. The full sized latrine slab cost US\$7.5, the sanplat US\$2.6 and plastering a mud floor US\$0.70. After the training the fundis started producing latrine covers in the village. The health assistant was responsible for a health education programme and would stimulate the villagers to upgrade their existing latrine or constructing a new one.

In the first phase of the project the *fundis* charged the full price for the sanplats. As the government's water and sanitation programme working in the same area started subsidizing the price of the sanplat in order to stimulate people to improve latrines the price of the sanplat was reduced to the same level in the demonstration village. The sanplat now cost US\$0.60 and demand greatly increased. Upgrading existing latrines by plastering mud floors was abandoned.

In 1989 the coverage rate in the sub-county had been 30 per cent. In the demonstration village it was found that in 1991 out of 151 households, 146 had latrines. No data are given of the effect of the demonstration village on the surrounding communities.

Causer, H. (1993): Low-cost techniques for improving latrines in a demonstration village in Uganda. In: Waterlines, vol.11, no.3.

Programme initiated by: Local government and foreign donor.

Implementation: Local government promotes sanitation in demonstration village

Promotion: Health workers stimulate villagers to improve sanitation

Design: Households choose from different options

Unit of decision: Household

Contributions: Users pay full price or subsidized price

Investment: Slab costs US\$7.5., sanplat US\$0.60. GNP per capita in 1993 is US\$170.

Operation and maintenance: Responsibility of the user

Training: Local government trains local masons

CASE - RURAL SANITARY MARTS IN INDIA

General outline: During the Water Decade the policy of the Indian government to promote sanitation coverage was to provide subsidies to individual households. This strategy proved to be very expensive and did not lead to a satisfactory increase in latrine owners. As a result, the Indian government was looking for alternative strategies.

In 1991 UNICEF initiated a new strategy of Rural Sanitary Marts (RSM). The aim of this strategy was to commercialize the supply of sanitary facilities and to promote private initiative (Global meeting of UNICEF WES professionals). The function of the RSM is twofold. On the one hand RSM's sell construction materials for latrines and items related to the use of latrines, such as soap or brushes for cleaning. On the other hand RSM's serve as a resource centre and advise users which sanitation system to choose. Also RSM's keep a list of addresses of trained masons, so that households can approach them if they want to for the construction of a latrine.

A RSM could be set up through the government, private sector channels or established NGO's. However, an implementing agency should have commercial experience and should be located at strategic places so as to also reach the rural hinterland.

UNICEF provides a subsidy for the first investment of starting a RSM. The amount is 25% of the expected turn-over in the first year with a limit of 50,000Rs (1575US\$) (Visscher, Wijk 1994). Also UNICEF provides management training for shopkeepers. The first RSM's were set up in Uttar Pradesh in 1991 and they can now also be found in other states. The government of India supports the new strategy by providing financial assistance for establishment of RSM's.

Visscher, J.T, Wijk, C van (1994): Travel report Nepal-India, may 1994.

Global meeting of UNICEF WES professionals. Rural Sanitary Marts. Unpublished.

Programme initiated by: Foreign donor

Implementation: Enterprise sells latrines

Promotion: Not described

Design: User chooses from different options.

Unit of decision: The household

Contributions: Costs completely for the user. Prices fixed, however, will be lower than existing market price, because of financial support to RSM by the Indian Government.

Investment: Not described

Operation and maintenance: The household is responsible

Training: UNICEF provides management training for shopkeepers.

CASE - COMMUNITY SELF-IMPROVEMENT IN KOREA.

General outline: The Chulsea community began as a squatter settlement on the slope of the hills, 4 km from the centre of Seoul. Immigrants from rural areas occupied the area in the beginning of the 1960's. There was no electricity, no water supply, no drainage, no waste collection service and the settlers lived in shacks. In 1963, the authorities decided to clear all the illegally occupied areas near the city. The residents of the Chulsea neighbourhood were summoned to leave the area. The community however organized itself and sent petitions to the local government to allow the residents to stay in the neighbourhood (Park et.al. 1986). The community leader played an important role in mobilizing the residents. After repeated appeals to the local authorities the residents were allowed to stay and improve their houses. The community did not only upgrade their houses but also constructed a sewerage system to prevent flooding during rainy season. In 1968 the government policy concerning illegally occupied areas was changed. It was allowed to improve houses in substandard areas, but these improvements needed to meet certain standards such as the width of the roads and size of the housing plots. The houses and roads in the Chulsea neighbourhood failed to meet these standards and residents once again asked permission from the authorities to improve their neighbourhood. After three months of negotiation this permission was granted. The residents redivided the land and two or three households would share a construction plot. Materials for construction were bought on credit from neighbourhood stores. Skilled labourers were be hired on a credit basis. Many residents contributed free labour to the construction of houses. To be able to pay the debts, rooms in the newly constructed houses were let to other people. Residents bought the land from the Ministry of Defense, who owned the land. The improvement of the area did not only involve roads and houses, but also a children's playground was built and communal garbage collection containers, from where garbage was transported by government services. It took four years to rebuild the community and now the neighbourhood looks like an average middle class area.

Park, S.Y., Y.W. Kim, O.H. Yang (1986): Urban services and the poor: the case of Korea. In: Y.M. Yeung, T.G. McGee (eds): Community participation in delivering urban services in Asia. IDRC, Ottawa, Canada.

Programme initiated by: The community

Implementation: Community improves living conditions

Promotion: By community leader

Design: Not mentioned

Unit of decision: The community

Contributions: The community covers all the costs.

Investment: Not mentioned

Operation and maintenance: Partly the community, partly households

Training: No

CASE - TRADITIONAL IRRIGATION SYSTEM IN HIMALAYA, INDIA

In Himachal Pradesh in India an unusual water supply system has been built by the locals (D'Souza 1993).

The area of Spiti is located at a height of 3,000m to 4,000m. Water to this area is transported to the village from glaciers by *kuls*, channels. The *kuls* provide water that is needed for the cultivation of wheat, black peas, green peas and barley in Spiti. The *kuls* run from the glacier, where a stone lining prevents big chunks to clog the channel to the village and in the village the water is collected in a circular tank. From the tank the water is let out to flow over the fields. The use of the water provided by this system is embedded in social regulations. The waterrights are in hands of the original settlers of the village. Families who are not part of this group have to buy water, paying in kind or by providing labour. In times when the water supply is scarce the families who have the waterrights have first access to the watersupply. Other families will only receive water at a later stage. This way also labour peeks will be prevented as the other families start cultivating their land at a later stage.

Maintenance of the *kuls* is organized by the community. Community labour is used to repair the *kuls* when needed.

D'Souza, R (1993): Himalayan water-sharing system endangered. In: Down to Earth, April 15, 1993.

<p><u>Programme initiated by:</u> The community <u>Implementation:</u> Community implements construction of <i>kuls</i> <u>Promotion:</u> Not applicable <u>Design:</u> Developed by the community <u>Unit of decision:</u> not mentioned <u>Contributions:</u> Entirely organized by the community <u>Investment:</u> Community members invest by providing labour <u>Operation and maintenance:</u> Community <u>Training:</u> Not applicable</p>

CASE - WATER SUPPLY IN KERALA, INDIA

In Kasaragod in the district of Kerala annual rainfall is 3,500 mm, but still in summer access to water is limited and people have to depend on groundwater. As Kerala is a very hilly area it is difficult to construct conventional wells.

Since the 1970's a traditional water supply system has found growing recognition (Mitra 1993). A system of tunnels, dug into a hill, provides the community with water.

The *surangams*, as the systems are called, function in the same way as the *qanat* system used in ancient Iran around 700BC and the *falaj* still in use in Oman. The system collects underground water in horizontal tunnels dug into the ground. The tunnels are dug in aquifers in the ground that store rainwater. Usually these layers follow the slope of the hill. The water flows down due to natural pressure and is collected at the end of the tunnel. *Surangams* vary in length from 3 to 300 meters and in width from 0.45m to 0.70m. The height of the tunnel can be 1.8m or 2m. Vertical shafts are dug every 50m to ventilate the tunnel. The water collected in the *surangam* is used for irrigation purposes and can also be used as drinking water.

The costs of digging the tunnels vary between Rs100 to Rs150 (US\$3 - US\$4.5) per *kolu*, or 72cm. *Surangams* are difficult to build, but once a tunnel system is completed it requires little maintenance.

Since 1961 the number of *surangam* systems built per year has gone up from 51 in the district to 111 in 1990. In 1993 a total of 388 *surangams* could be found in Kasaragod, of which 237 were perennial, 121 were seasonal and the remaining *surangams* were dry. Of these watersystems, 56 had were built since 1970.

Mitra, A (1993): Age-old method supplies water in Kasaragod. In: Down to Earth, February 28, 1993.

Programme initiated by: Community

Implementation: Community organizes construction of *surangam*

Promotion: not applicable

Design: Design has been in use for centuries in that area.

Unit of decision: Not mentioned

Contributions: Community members pay construction costs and construct *surangam*.

Investment: US\$3 - US\$4.5 per *kolu*. GNP per capita in 1993 US\$330.

Operation and maintenance: Organized by community

Training: Not mentioned

CASE - GUINEA WORM ERADICATION IN TOGO

General outline: In Africa, millions of people suffer from guinea worm disease. World Neighbors initiated a programme in which the communities themselves take measures to eradicate this disease (Foly, Caudill 1987). The case is described of the village Kati in Togo where World Neighbors started its programme in 1980.

The Bethesda Hospital social worker and the World Neighbours Family Health Advisor made the first contact with village leaders, chiefs and interested individuals in Kati. In this first meeting the villagers told about all kinds of problems they had encountered in the past and how they had solved these problems. The project personnel then showed drawings of the guinea worm and problems encountered because of this disease and the perceptions of the villagers on causes of guinea worm disease were discussed. The village agreed that a health worker would come to live in the village and that action would be taken to eradicate the disease.

In the first two years the health worker discussed problems perceived by villagers and how they wanted to solve them. The women in the village wanted to learn how to prepare ORS, prepare nutritious food for their babies and get rid of guinea worm by filtering and boiling contaminated drinking water.

In the next phase health education in the village was expanded. The health worker helped the community to select 14 volunteer health workers (7 men and 7 women) in the community. A training was organized in the village that would last 5 days. The facilitators of the training came to live in the village for 12 days. In the training it was discussed what people in the village considered as the cause of guinea worm and trainees would talk to people in the village to find out. Also health volunteers learned how to prevent guinea worm by boiling and filtering water. After the training volunteers started working in the village, discussing with people the causes of guinea worm and socio-economic consequences and how the disease could be prevented.

The chief announced that there was going to be a well and that villagers would use clean water. The volunteers initiated a programme for a new well. Due to the granite rock table close to the ground surface the well needed to be drilled and it was decided that the village would pay for a team to come to the village and drill a well. In three years time, ten wells were dug in the village and the villagers paid in all US\$ 3,000. (GNP per capita was US\$230 in 1987). Also they provided housing and food to the drilling team and contributed labour as required. The maintenance of the wells was the responsibility of the villagers.

The incidence of the guinea worm in Kati nearly reduced 100% in a period of 5 years time. In 1982 928 cases of guinea worm were reported. In 1986 only two cases of guinea worm occurred.

Foly, A., D. Caudill (1987): Case study: Guinea worm: a successful approach to community education and participation results in safe drinking water supply and guinea worm eradication. World Neighbors, Oklahoma City, USA.

Programme initiated by: NGO

Implementation: NGO contacts community

Promotion: NGO contacts community

Design: Community selects design

Unit of decision: Community

Contributions: Village hires drilling team to dig wells.

Investment: US\$3000 by the village. GNP per capita is US\$230 in 1987)

Operation and maintenance: Village is responsible for operation and maintenance.

Training: Volunteer health workers are trained.

CASE - KROO BAY PROJECT IN SIERRA LEONE *

In November 1992 Youth With A Mission (YWAM) and a community in Freetown initiated a programme to improve water and sanitation facilities in the community (Kirby 1994). People in this community lived in shacks and only two water taps and one latrine served the 4,000 people living in the community.

Mercy Ships provided training to community health education volunteers to educate the community in health issues and also to water supply and sanitation volunteers to identify problems related to water and sanitation and take steps to improve the situation. Training of the seven volunteers took place in the local youth centre (13 days) and was later continued as on-the-job practice (three and a half months). During the second phase others joined the training. The initial group included two local women and least one more joined in the practical phase. All the trainees were from Kroo Bay.

Mercy Ships provided cement, timber, tools, technical knowledge, part of the sand and gravel. YWAM provided local leadership and on-going supervision. The community provided all labour and a portion of funding for sand and gravel. The level of investment of the community was only little, but it was considered sufficient by YWAM as this community was the poorest, most needy district of Freetown.

The community has established a Development Committee and this committee elected a caretaker who will oversee the daily operation and maintenance. Training courses on operation and maintenance are held for community members.

In six months time a four compartment modified VIP latrine block, two water supply stand pipes, a two compartment shower house and one laundry slab were constructed. One year later, the community had built another latrine block and was planning to construct more.

Kirby, P (1994): One year later. In: Mercy Ships, a Ministry of Youth With A Mission, vol.12, no.5.

McCubbin, C.N. (1994): Questionnaire.

Programme initiated by: Local NGO

Implementation: NGO trains health workers and local builders

Promotion: NGO contacts community

Design: Existing designs are used. Community members are taught how to construct equipment.

Unit of decision: Community

Contributions: NGO's provide most of the materials, technical knowledge and supervision. Community provides labour and part of the materials.

Investment: Not described

Operation and maintenance: Responsibility of the community. Development Committee in the community elects caretaker.

Training: NGO provides technical training and training on health issues to volunteers from the community.

CASE - IRRIGATION COMPETITIONS IN PERU

General outline: In Cuzco many projects have been initiated to improve existing irrigation systems. It proved to be difficult to introduce improvements in such a way that they would fit in the existing irrigation techniques farmers use (Immerzeel 1991). In 1987 PRODERM invited four Camayoc farmers from Arequipa to exchange ideas with farmers in Cuzco, as it was felt that transfer of technology would be more efficient from farmer to farmer. In Arequipa water is very scarce and Camayoc farmers have developed a very efficient system of irrigation. However, the exchange of ideas was not very successful.

In 1988 PRODERM organized an irrigation competition for the farmers in several districts in Cuzco. Eight Camayoc farmers came to Cuzco to train the farmers and prepare them for the competition. Twenty teams, each consisting of five farmers spent one week to prepare a plot of land for irrigation. The last two days of the competition the jury visited the plots the participants were cultivating and asked questions. The winners of the competition were given a prize in money or in kind. Each participant received a set of agricultural tools and women entering the competition were also given a package of seeds.

This way of training proved to be more efficient than the training that had been organized previously as people were now more motivated because of the competition.

In 1988 in each of the four microregions a competition was organized and 400 farmers entered the competition.

In 1989 the festival was continued by the communities. The winners of the competitions of the previous year were trained by the farmers from Arequipa to become teachers and train other teams.

By this strategy of dissemination of improved irrigation techniques in one year eight percent of the farmers received training. In 1989 the number of farmers reached was 2000, or 20 percent of the population in Cuzco. The author estimates that in three years time 30% of the population could be reached.

Immerzeel, W.H.M van (1991): Field irrigation training in the Peruvian Andes. In: Waterlines, vol.9, no.4.

Zel, H. van der (1988): Riego en la sierra: la experiencia de PRODERM. Monografía no 2, Cuzco, Peru.

Programme initiated by: A local NGO

Implementation: NGO organizes a competition

Promotion: Not mentioned

Design: Techniques used by other farmers were adopted

Unit of decision: Household

Contributions: NGO pays prizes, farmers pay new technologies, advice comes from Camayoc farmers.

Investment: Not mentioned

Operation and maintenance: Is the responsibility of the farmer

Training: By farmers from Arequipa to farmers from Cuzco

CASE - ORANGI PILOT PROJECT IN THE CITY OF KARACHI, PAKISTAN. *

General outline: This self-help programme was set up in 1981 by Akhter Hameed Khan (Khan 1983, 1985, 1989). He considers the Orangi Pilot Project (OPP) as a research institution with the aim to discover the problems in Orangi and to find solutions for them through action research and extension education. The OPP is sponsored by the BCCI (Bank of Credit and Commerce International) Foundation. The main activity of the OPP is enabling the construction of sewerage lines in the squatter area Orangi. The design of the sewerage is based on the shallow sewer system used in Brazil and adapted to the circumstances in Orangi.

First the social organizers of the programme go to the residents of the area and inform them about the low-cost sanitation program. They bring plastic models of a pour-flush latrine connected to the sewerage system to explain the construction. Also they show slides of the construction work in improved lanes.

It is explained to the residents that if they want a sewerage system in their lane, the OPP will arrange for a plan and a survey and give the residents an estimate of the costs. OPP will also provide technical training to the lane managers, lend them trolleys for transport and tools and hire an experienced plumber and mason to supervise the work. The lane manager holds meetings with the lane residents, creates consensus, settles disputes, collects individual contributions and supervises the work. The lane residents provide the full cost of material and labour and they also have to organize and execute the work by themselves. The cost of the sanitary latrine, the house connection, the share of the sewerage line and the share of the secondary drain line are Rs1000 (US\$70) per household (Khan 1991). The GNP per capita was US\$370 in 1991.

Apart from the low cost sanitation programme, OPP organizes women's groups, kitchen gardens, tree plantation around the house and in the lanes, and immunization.

The OPP's approach proved to be successful. In five years time, 1273 lanes out of 3072 lanes in the area had sewerage lines constructed. In that same period 20,470 out of 43,424 houses had their latrine connected to the sewerage line.

Khan, A.H. (1983): Orangi Pilot Project. Progress Reports April 1980 - June 1983. Press Syndicate Karachi, Pakistan.

Khan, A.H. (1985): Orangi Pilot Project. Progress Reports. July 1983 - March 1985. Orangi Pilot Project, Karachi, Pakistan.

Khan, A.H. (1991): Orangi Pilot Project Programs. Orangi Pilot Project, Research and Training Institute, Karachi, Pakistan.

Programme initiated by: Local NGO.

Implementation: NGO contacts community and explains about the project.

Promotion: NGO contacts community.

Design: Adapted by NGO. One technology is used in the project.

Unit of decision: Lane residents

Contributions: Residents bear all costs, NGO provides know-how.

Investment: US\$70. GNP per capita is US\$370 in 1991.

Operation and maintenance: Responsibility of the lane residents

Training: To lane managers.

CASE - DIOCESE OF NAKURU, KENYA

General outline: In 1984 the CPK (Anglican) Diocese of Nakuru started a development programme through the Christian Community Services (CCS). The area where CCS works is densely populated and the annual rainfall varies from 500mm to 1200mm. The programme concentrates on rainwater catchment (Cumberlege and Kiongo 1993).

A team of three trainers, specialized in water, agriculture and health contacts communities. The agricultural trainers inform individual farmers and community groups about organic farming methods, the proper use of chemicals and animal husbandry. The health workers teach individuals who will teach their community preventive health measures as unpaid Community Health Workers (Cumberlege 1993).

The trainer specialized in water informs the community about the different options that are available to improve their situation such as boreholes, hand-dug wells, springs, dams and rainwater cisterns, depending on hydrological and geo-hydrological factors. The community chooses the technology and design. The designs are either locally developed or existing designs are adopted and adapted to local conditions (Cumberlege, Kiongo 1993).

The technical trainers work with existing groups in the community. Most of these groups are women groups, who meet once a week. Every month the trainer meets with the group and a monthly contribution for the construction of the tanks is paid by the members. The amount of the contribution varies from US\$2 to US\$10. The money collected is directly invested in building materials or paying the mason. The group works together in constructing the tanks and one tank is built at a time. When one tank is finished the group starts building a tank for a new member of the group.

The price of the tank varies between US\$215 and US\$428, according to size and structure. The costs of a roof vary between US\$28 to US\$286, depending on the size and the materials used. (GNP per capita in 1993 is US\$340). As most households are not convinced of the importance of a roof, these are only constructed after all the members of the group have a tank.

In 1991 a training was organized for masons, so that the quality of the tanks constructed could be improved. Also the masons could persuade people to adopt the Ventilated Improved Pit latrine to improve sanitation facilities.

As a result of the project, tanks are being built everywhere in the region and also people who have never been in contact with CCS have also constructed rainwater cisterns. As an example, Ng'arua is mentioned, where two groups have been building rainwater catchment systems since 1985 and where in 1993 ten new groups have started building 16 tanks without the programme's direct involvement.

Cumberlege, O.R. (1993): Making every drop count. In: Waterlines, vol.11, no.3.

Cumberlege, O.R., J.M. Kiongo: A community approach to building rainwater cisterns. In: Bambrah, G.K. et.al. (1993): Proceedings of the sixth international conference on rainwater catchment systems; participation in rainwater collection for low income communities and sustainable development. Nairobi, Kenya.

Programme initiated by: Diocese of Nakuru

Implementation: NGO contacts community

Promotion: The team of CCS visits communities to involve them in the project.

Unit of decision: Community and (women) groups

Contributions: Members of the construction group pay for the building materials and the mason.

Design: Partly locally developed, partly adapted existing designs. Is chosen by community.

Investment: US\$ 215 - US\$428. GNP per capita in 1993 is US\$340.

Operation and maintenance: By households

Training: Local masons are trained to assist village groups in constructing rainwater cisterns.

CASE - SANITATION LOAN PROGRAMME IN HONDURAS

General outline: The population in Tegucigalpa has doubled in 10 years time from 350,000 to more than 700,000. The greater part of the population lives in unplanned settlements. It is estimated that at best, half of these people have a pit latrine (Peri-urban News 1992). In 1991 the Cooperative Housing Foundation (CHF) and UNICEF initiated a sanitation loan programme. This programme supports households in peri-urban areas by providing loans which can be used to invest in improving sanitary conditions. The CHF-UNICEF team started working with two local NGO's to develop the programme.

Based on research in two *barrios* sanitary engineers developed a menu of technologies which people could use to improve sanitary conditions. The research aimed to identify knowledge, attitudes and practices, and ability and willingness to pay for improved human waste disposal. It was concluded that social concerns were a more effective message for the promotion of sanitation than health benefits. People were more interested in safety and privacy and the possibility to use the latrine, wash clothes, or bathe in home without bothering neighbours or leaving children unattended. The project selected members of the community to be trained as promoters of sanitation. Most of the promoters were women and they organized meetings and paid visits to households to inform the residents about the importance of sanitation. At these meetings the promotor would hand out leaflets depicting the technology options for improvement.

Community members applying for a loan could choose from different technology options. Families taking out a loan had to attend a one day course on hygiene. At this meeting, the importance of good sanitation for good health was explained and illustrated with texts on a flipchart. The promoters paid six monthly home visits to the families who had taken out a loan. These visits provided the promoters with the opportunity to check whether the facilities were kept clean and well maintained and also to further explain the importance of sanitation for good health. At these visits, a cartoon illustrating health messages was handed out and the family was given a calendar poster with instructions on proper use of the latrine.

The costs of improved sanitation varied between US\$100 to US\$400 (GNP per capita in 1992 is US\$590). The loans had to be repaid in three years, at 17% interest per year (Aasen, Macrae 1992). A fee was charged to cover the costs of loan generation, technical assistance, health education programmes and supervision of construction.

Of the 150 families who had taken out a loan 85 percent built a combination of sanitation systems for human excreta, a "sanitation unit", consisting of a 0.5 cubic metre cement tank with an attached washboard, a 0.75 square metre shower and a latrine (Aasen, Macrae

1992). Most families chose a sewer connection or compost latrines, whereas only few opted for simple pit latrines.

Aasen, B., A. Macrae (1992): The Tegucigalpa model: water and sanitation through community management. In: Waterfront, issue 1, February 1992.

CHF and UNICEF provide options for improved urban sanitation in Honduras. In: Peri-urban News, May 1992, 4-5.

Programme initiated by: Local NGO and foreign donor

Implementation: Project staff contacts community

Promotion: Promotors organize meetings and visit households

Design: Project selects four designs, based on survey. User chooses appropriate design.

Unit of decision: Household

Contributions: User takes out a loan to pay for improvements

Investment: Varies between US\$100 and US\$400. GNP per capita in 1992 is US\$590.

Operation and maintenance: Responsibility of the user

Training: Projects staff trains members of community to be promotor

CASE - IMPROVING GRAIN STORAGE IN TANZANIA

General outline: The idea for this approach was born in 1975 when the Community Development Trust Fund and the Economic Development Bureau discussed the feasibility of a participatory approach to improve grain storage (Community Development Trust Fund 1991).

It was decided that teams would visit villages to discuss perceptions and problems encountered in food storage and find appropriate solutions.

One village was selected for an eight week lasting project during harvest time. A team was formed of members of the Community Development Trust Fund and the Economic Development Bureau to visit the village.

The Village Council selected a Storage Committee to help conduct village discussion meetings and make a selection of the ideas that came up during meetings. The ideas selected would be presented in the next meeting, including drawings to stimulate dialogue.

In the first phase of the project problems encountered by villagers in food storage and solutions found were discussed. These meetings provided insights in perception held by the villagers. The Storage Committee systemized the knowledge villagers had on food storage. As a result the self-confidence of villagers increased.

In the second phase of the project discussions in the village meetings were aimed at finding solutions to the problems. The team found it difficult to find the right moment to suggest improvements. If they would intervene too early they felt solutions would still be imposed on the community from outside, but if they would suggest solutions too late the process would take too much time and people would be discouraged.

In the third phase the solutions found were implemented.

The meetings were recorded on tape and villagers would listen to the tapes after the meetings to form an opinion. Farmers who could not attend a meeting thus had the opportunity to listen to what had been said in the meeting.

In all 20 meetings were organized in eight weeks time. Attendance to the meetings was good, especially considering the fact that the meetings were organized during the busy harvest season. A total of 900 man hours were put in the meetings. Fifteen improved rat-proofed storage systems were built with a total capacity of 25 tons. Another 25 peasants used insecticide to protect 12 tons of grain.

Another positive result of the project was that members of the community from different ethnic groups started exchanging ideas.

A drawback of the project was that women did not participate in the village meetings, despite the team's attempts to involve them in the discussions. Inputs of women would have been very important as they are responsible for the food once it is stored.

Community Development Trust Fund (1991): Appropriate technology for grain storage in Tanzanian villages. In: Haverkort, B, J. van der Kamp, A. Waters-Bayer (eds.): Joining farmers' experiments, experiences in participatory technology development. IT Publications, London, England.

Programme initiated by: Local NGO

Implementation: Projects team contacts community

Promotion: Project team contacts community

Design: Developed by the community

Unit of decision: Household

Contributions: Users make their own investment

Investment: Not available

Operation and maintenance: Responsibility of the user

Training: No

CASE - UPGRADING FAMILY WELLS IN ZIMBABWE *

In the beginning of the 90's Peter Morgan of the Blair Research Laboratory in Harare initiated a new approach to promote water supply (Waterkeyn 1993, Chimbunde, Morgan 1991). Families are stimulated to improve existing wells instead of investing large amounts of money in new equipment. The programme was supported by the Zimbabwean Ministry of Health. Since 1992 WaterAid supports the programme.

In this programme, it was avoided to introduce new technologies that would require maintenance on community level and families were stimulated to improve their family owned wells. Project staff demonstrates how to upgrade a well and families willing to participate in the programme are supported with a subsidy. The family is responsible for 60 to 70 percent of the costs to improve the well.

The family digs the well, lines it with bricks, provides sand stones and bricks and pays a trained builder to construct the headworks. The programme provides the family with three bags of cement, a steel windlass and a tin lid. The cost of the subsidy amounts up to US\$24-32 (Morgan 1991). Another incentive to improve wells is that family income can be increased by growing vegetables near the well and selling these.

In 1991 1000 family wells had been improved spread over the eight provinces. In 1992 the target to support the construction of 1000 wells was exceeded with 1400 and 5000 more families were in the process of improving their well. In the rural areas tinsmiths have taken up producing well cover lids and buckets.

Chimbunde, E., P. Morgan (1991): Upgrading family wells in Zimbabwe. In: Waterlines vol.9, no.3.

Waterkeyn, A. (1993): Pipe dream or pump dream?. In: Waterlines, vol.11 no.4.

Programme initiated by: Local NGO

Implementation: NGO demonstrates technology and provides subsidy

Promotion: By demonstrating how to improve wells and by providing subsidy. Manuals made by Blair laboratory are spread.

Design: Existing design is improved

Unit of decision: Household

Contributions: The family is responsible for 60 to 70 percent of the cost.

Investment: Investment per household is roughly 48 to 56US\$. GNP per capita is US\$650 in 1993

Operation and maintenance: The user is responsible.

Training: By NGO to local builders.

Table 1 Private sector

Case	Programme initiated by	Implementation	Promotion	Design	Unit of decision	Contributions	Investment/GNP	Operation and maintenance	Training
Rope pump * Nicaragua Water supply	small entrepreneur	company sells technology	by company in the press	adapted by company one design	household	user pays full price	US\$75/ US\$460	household	no
Metal/ ceramic woodstoves Burkina Faso	government	government trains craftsmen to produce technology	by government in press	government improves design more options	household	user pays full price	US\$2.5-3/ US\$160	household	to local craftsmen
Ferro-cement tanks Papua New Guinea * Rainwater catchment	government	NGO trains entrepreneurs to produce and sell technology	not mentioned	NGO develops new technology one option	household	user pays full price	US\$227/ US\$820	household	to small entrepreneurs
VIP latrines Lesotho Sanitation	government and foreign donor	government trains builders to produce and sell technology	extension workers visit communities	existing design is selected one option	household	user bears full cost	US\$75-150/ US\$370	household	to builders to extension workers
Latrine slabs Mozambique Sanitation	government and foreign donor	government trains builders to produce and sell technology	local authorities are informed	technology is developed in pilot workshop more options	household	user pays full price	US\$10/ US\$160	household	to builders
Demonstration * village Uganda Sanitation	government and foreign donor	government trains masons to produce and sell technology	health worker in community promotes latrines	household selects design	household	user pays subsidized price	US\$7.5 or US\$0.60/ US\$170	household	to local masons
Rural Sanitary Marts India Sanitation	foreign donor	enterprise sells technology	not mentioned	user chooses from different options	household	user pays subsidized price	not mentioned	household	to small entrepreneurs

Table 2 Community initiated

Case	Programme initiated by	Implementation	Promotion	Design	Unit of decision	Contributions	Investment/GNP	Operation and maintenance	Training
Slum improvement Korea Urban Services	community	community improves living conditions	by community leader	selected by community	community	community covers all costs	not mentioned	partly community, partly households	no
Glacier tapping India Irrigation	community	community improves living conditions	not applicable	developed by community	not mentioned	community covers all costs	not mentioned	community	no
Surangam India Water supply	community	community improves living conditions	not applicable	developed by community	not mentioned	community covers all costs	not mentioned	community	not mentioned

Table 3 Agency initiated

Case	Programme initiated by	Implementation	Promotion	Design	Unit of decision	Contributions	Investment/GNP	Operation and maintenance	Training
Guinea worm Togo Water supply	NGO	NGO trains health workers	NGO contacts community	existing design adopted community selects design	community	community covers all costs	US\$3,000 by community/ US\$230	community	no
Woodstove 3PA Burkina Faso Environment protection	government	government trains users	by government in press	government improves design more options	household	user constructs own stove	no cash	user	to users
Kroo Bay * Sierra Leone Water and sanitation	local NGO	NGO trains health workers and local builders	NGO contacts community	existing design adopted community does not select	community	NGO provides most materials and know-how	not mentioned	community	to health workers to builders
Competitions Peru Irrigation	local NGO	NGO trains farmers for competition	NGO contacts community	existing designs adopted from other farmers	household	farmers invest in improvement	not mentioned	household	to farmer-trainers
OPP Pakistan * Sanitation	local NGO	NGO contacts community	NGO contacts community	adapted by NGO one option	lane residents	residents: all costs NGO: know-how	US\$70/ US\$370	lane residents	to lane managers
Diocese of Nakuru Kenya Water catchment	Diocese	Diocese contacts community	Diocese contacts community	community chooses existing design	community or groups in community	user bears full cost	US\$215-428/ US\$340	households	to local masons
Sanitation loans Honduras	Local NGO and foreign donor	NGO contacts community	promotors visit households	community selects design	household	user takes out loan	US\$100- US\$400/US\$590	user	to promotors
Grain storage Tanzania Food storage	local NGO	NGO contacts community	NGO contacts community	developed by community members	household	farmers invest in improvement	not mentioned	user	no
Upgrading wells * Zimbabwe Water supply	local NGO	NGO demonstrates technology and provides subsidy	by providing subsidy	existing design is improved	household	user bears 60-70% of the costs	US\$48-56/ US\$650	user	to local builders

ANALYSIS

In this part of the paper the case studies that have been presented will be analyzed. Firstly the different methodologies used in the cases presented are discerned and then characteristics of community self-improvement efforts will be discussed.

Based on this analysis a methodology can be developed on agency and community level to support households and communities in developing countries in improving their living conditions.

1. METHODOLOGIES

Depending on how a self-improvement effort has been implemented a number of methodologies can be distinguished. Three ways of implementing a community self-improvement effort can be discerned.

In the first approach technology is sold to the user. An outside agency may support the effort by training future entrepreneurs. The training involves technical and managerial skills.

In the second approach the effort is initiated and implemented by the community itself.

In the third approach the community self-improvement effort is initiated by an outside agency and community members are involved in the project by constructing the technology by themselves or by assisting in construction.

Within the three approaches different methodologies can be distinguished, depending on which role NGO's, governments or communities play in implementing a community self-improvement effort and which methods are used to set up an enterprise or to train members of communities. A total of eight methodologies can be distinguished, which are presented below.

Enterprise

Nicaragua

An enterprise is instrumental in spreading technology. The company promotes the technology throughout the country and installs the technology for the user. The design is developed by the company. Only one design is developed.

The strong point of this methodology is that personnel is highly motivated to sell products, as their income depends on it.

A weak point is that too much focus on sales figures may reduce the quality of the technology constructed. Therefore quality control is needed.

Enterprise induced by NGO

Burkina Faso, Papua New Guinea, Lesotho

In this category the initiator of the project trains future entrepreneurs. The training involves skills related to the production and marketing of technology. The entrepreneurs contact communities. The design is developed by the implementing agency. The users can choose between different options.

The strong point is that by training entrepreneurs and stimulating them to sell a great number of people can be reached.

A weak point is, as mentioned above, that too much focus on sales figures may reduce the quality of the equipment constructed. Therefore quality control is needed.

Enterprise in demonstration site

Mozambique, Uganda

People are trained to produce and sell a technology and sell technology in a demonstration site. Customers go to the production site. The design is developed by the implementing agency. Users can choose between different options.

The strong point is that on a demonstration site different options can be shown, so that people can make a well informed choice.

The weak element in this approach is that production off-site may lead to problems with transport.

Resource centre

Rural Sanitary Marts, India

The enterprise sells different sanitation systems and materials to sanitary facilities, such as soap and brushes. Also other improvements are available such as fuel efficient stoves or water filters. It is not clear who has developed the design. The user can choose between different technological options.

The strong point of this approach is that materials are available that enhance hygienic behaviour.

The weak point is that simply providing information on hygiene may not be an effective way of changing people's behaviour.

Self-help

Korea, India

The community initiates and implements a self-improvement effort by itself. The design is selected or developed by the community.

The strong point of this approach is that the technology used is appropriate for people's living conditions.

A weak point of this approach may be that it is difficult to replicate the effort to other communities.

Outside agency gives training

Burkina Faso, Togo, Sierra Leone, Peru

NGO trains community members in certain skills. The aim of this approach is to teach skills to selected people in the community who can pass on their skills or insights to other members of their community or other communities. The design is developed by the implementing agency or is passed on from one community to another.

The strong point of this approach is that skills by training community members who train other community the technology will be embedded in the community.

The weak point of this approach is that community members who give training will not get much support once the project team has left.

Outside agency offers package

Pakistan, Kenya, Honduras

An outside agency contacts the community and offers them a predefined structure in which the community can participate in order to improve their living conditions. The design is developed by the implementing agency. In one case, only one design is offered and in the other cases the community members can make a selection of several technical options.

The strong point of this approach is that technical support is at hand and by involving the community in construction community members will know better how the equipment functions.

A disadvantage is that in some cases the community as whole or groups in the community are considered as a basic social unit and are expected to work together, but these groups are not necessarily a unity.

Outside agency triggers initiatives

Tanzania

An outside agency contacts a community and discusses problems that prevail in the community. The outside agency supports the community in defining their own solutions to problems they encounter. The design is chosen by the community. This approach is called Participatory Technology Development.

The strong point of this approach is that not only appropriate technology is introduced, but also the community learns how to define problems and how to find solutions for them.

A weak point of this methodology is that it takes a lot of time to approach each community separately.

2 CHARACTERISTICS OF COMMUNITY SELF-IMPROVEMENT EFFORTS

- Initiator of the programme

Programmes initiated by the government usually involve the private sector in disseminating technology.

Programmes initiated by NGO's usually involve training and assisting households and communities in improving their living conditions, and establishing know-how in a community by training key persons.

- Promotion

Promotion of the programme does not usually involve large scale campaigns as in most of the cases communities are approached individually.

- Design

In community self-improvement efforts implemented by the private sector or outside agencies supporting communities technologies used can be an existing design that has been adapted to local circumstances or a design that has been newly developed by the implementing agency.

In the case studies of self-help and the case of Tanzania the community develops its own solutions.

The users can in most cases make a choice between different solutions.

The case of Zimbabwe indicates that instead of introducing a new design improving existing technologies may be a better option. However, stimulating households to improve their living conditions by providing subsidies does not fit in community self-improvement.

- Unit of decision

In programmes where the private sector is instrumental in dissemination of technology the unit of decision is the household.

In self-help and programmes where an outside agency assists communities in improving their living conditions the unit of decision is usually the community as a whole or groups within in community.

- Investment

The investment made by households can make up a considerable proportion of the GNP per capita. In cases where large investments are made sometimes a revolving fund helps people saving money, or in another case families wanting to improve their living conditions can take out a loan.

- Operation and maintenance

Not much can be said about how operation and maintenance are organized in community self-improvement efforts as only in a few cases it is elaborated who is responsible for operation and maintenance is organized and how people contribute financially to maintenance and repair activities.

- Training

Generally training is given to people who are expected to serve other people by teaching them the skills they have learned, or by raising consciousness on health issues in their community or by producing equipment.