Community participation in dry sanitation projects

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Abstract

This paper addresses community participation issues in the sanitation sector. A brief introduction is provided, including a historical explanation of the origins of participation in sanitation projects. Subsequently, Participatory Hygiene And Sanitation Transformation (PHAST), a participatory methodology, is defined and its advantages and disadvantages are discussed.

Additionally, this paper addresses the importance of community participation in the design and implementation of sanitation projects and provides background information on the sanitation sector. Two case studies on dry sanitation taking place in Northern Mexico are presented and analyzed. Finally, conclusions are drawn and recommendations for future projects are given.

Keywords: Community participation; Dry sanitation; Stakeholder involvement

Introduction

According to the World Health Organization (WHO) and the World Water Council (WWC), every year water-related and water-borne diseases kill 3–4 million people around the world. Diarrhoea alone kills more than two million children worldwide (Cosgrove & Rijsberman, 2000; World Bank, 2001). A significant portion of the deaths is associated with lack of access to adequate sanitation services, especially in developing countries.

International organizations, governmental and non-governmental organizations and private institutions expend millions of dollars every year in the implementation of meticulously designed water and sanitation projects. Despite the amounts invested and the efforts made, the number of successful and sustainable projects is not encouraging. The main causes of the negative results in the past include lack of community participation, utilization of inappropriate technologies, lack of a sense of ownership on...
the part of the beneficiaries, failure to provide the institutional support required for the project and the dissatisfaction of the community with project outcomes.

In order to design a more effective and responsive approach to the provision of water and sanitation, development organizations and donor agencies are utilizing a series of participatory methodologies and techniques that focus on getting intended users actively involved in all stages of the project cycle. The underlying principle is that community participation increases the probability of success and the sustainability of the projects implemented (Chambers, 1983, 1994; Whyte, 1986; Asamoah, 1998; Rietbergen-McCracken & Narayan, 1998; Good, 1996).

Even though participatory methodologies are used with the intention of including stakeholders, especially the beneficiaries of the project, in all stages of the project cycle, often all that development practitioners and project managers can hope for is participation of the community in a preconceived idea originated outside the location of interest. Engineers, scientists and other experts from developed countries propose a series of “good ideas” to be implemented in less developed areas of the world, usually in the form of aid money or development projects promoted and supported by the United Nations, PanAmerican Health Organization, World Health Organization, Danish Agency for Development Assistance, Swedish International Development Cooperation Agency, the World Bank and many other development agencies. It is important to remember that projects coming out of these agencies have already been outlined and decided upon and all the agencies are looking for are good candidates for the implementation of those “good ideas” formulated by outside experts.

This paper has four main objectives. The first one is to provide an overview of the history of the sanitation sector and highlight the importance of community participation and the utilization of participatory methodologies such as Participatory Hygiene and Sanitation Transformation (PHAST) for the design, implementation and evaluation of dry sanitation projects in peri-urban areas. The second objective is to provide background information about the situation of peri-urban communities in Ciudad Juárez, Mexico that lack adequate sanitation facilities. The third objective is to present two dry sanitation pilot projects implemented by different organizations utilizing two distinct approaches in Ciudad Juárez, Mexico. Finally, this paper analyzes and discusses the participatory and non-participatory components of the two projects that contribute to developing more sustainable and successful projects, which can be replicated in other areas of the world by practitioners and development organizations involved in the Water and sanitation sector.

Overview of the sanitation sector

Prior to the Water Decade (1980s), the United Nations estimated in 1980 that 1800 million people lacked access to safe water supplies and 3900 million lacked access to sanitation services. At the same time, the international community established as a common goal the provision of safe water supplies and adequate sanitation services to all the communities around the world. This meant that by 1990 everybody on this planet should have their basic needs met and should recognize the importance of hygiene and education for the interruption of the water–disease cycle. Even though the goal was not accomplished, according to the united Nations Development Programme (UNDP) during the Water Decade approximately 750 million people obtained access to sanitation facilities and more than one billion people gained access to safe water.

By the end of the decade and after two world conferences (New Delhi in 1990 and Dublin in 1992), the international community came to the conclusion that water and sanitation could no longer be
regarded as simply social rights. After the Dublin conference it was argued that water should be seen as an economic good because it had an environmental and a productive value. It was made clear that need was no longer a sufficient reason for the provision of water and sanitation to any community (Black, 1998; Cosgrove & Rijsberman, 2000).

After the World Conference on Water and Sanitation held at The Hague, Netherlands in March 2000, the international community set a new common goal and published World Water Vision: Making Water Everybody’s Business. The Vision proposes, by 2025, to achieve a world where everybody knows the importance of hygiene and education and enjoys safe water and appropriate sanitation services. A very important aspect of the document that reflects the concerns of the international community is the recognition of the need for a new approach. This new approach has to emphasize the provision of sanitation and education before the implementation of a water project in any community. Sanitation is an issue that can be decided on a household basis, thus facilitating the selection of alternatives and construction of adequate facilities. At the same time, this process empowers and helps to organize the community towards a future common goal, such as the procurement of safe water.

Another particular aspect of the World Water Vision report is the ratification of water and sanitation as basic human rights. After the Water Decade, the international community indicated that water and sanitation could not be seen as basic rights anymore because the beneficiaries of the projects did not value the improvements made and facilities constructed when they were not required to contribute monetarily. In other words, people will not appreciate, continue to utilize and preserve something that they have not paid for. Based on previous experiences the Conference concluded that the lack of a sense of ownership and commitment to project improvements on the part of the beneficiaries was due to the inadequate and often neglected inclusion of beneficiaries’ preferences into project design and implementation. Beneficiaries of water projects should be responsible for the costs of the operation and maintenance of the system but not for the costs of the water itself. Without water human beings cannot survive, so it makes sense to say that every individual on earth has the right to obtain and consume enough water to guarantee their survival.

In the old schemes for the provision of water and sanitation services, as in the Supply Driven Approach, participation was merely conceived as the contribution of the community in cash or kind to the implementation of a previously designed solution to their problems. These contributions did not give community members the opportunity to participate in the decision-making process, nor did they create a sense of ownership on the part of the beneficiaries of the project (White, 1981). The previous 30 years in the history of development interventions have been plagued by innumerable failures and marked by the misappropriation of funds, resources and institutional support (FAO, 1997). The amount of resources invested during those 30 years becomes astonishing when compared to the actual results achieved.

Despite the amounts invested and the efforts made, the goal of safe water and adequate sanitation services for all has not been accomplished. Global statistics in terms of access to these two basic services are not encouraging. Today there are still three billion people without access to appropriate methods for the disposal of human waste and over a billion without access to safe water supplies (UNDP, 1998; Cosgrove & Rijsberman, 2000).

Trying to ameliorate the situation, development organizations such as the WHO, United Nations, United States Agency for International Development, InterAmerican Development Bank, PanAmerican Health Organization, the World Bank and others have spent millions of dollars in the implementation of meticulously designed water and sanitation projects. A great deal of the US$30 billion dollars invested annually in water projects in developing countries is used ineffectively (World Bank, 2001).
Numerous studies have shown that resources and time are being spent in projects that do not take into account beneficiaries’ needs, preferences, customs, beliefs, values and socio-economic and political structures. There is an immediate need for a different approach, a more effective and sustainable one. Adopted approaches must be capable of accomplishing effective change in attitudes and behavior on the part of the beneficiaries of the projects that are implemented.

To encourage community involvement and participation, donor agencies are utilizing a series of participatory methods and techniques that focus on listening, learning and empowering the poorest of the poor, thus increasing the probabilities of success and the sustainability of the intended projects (Chambers, 1983, 1994; Whyte, 1986; Asamoah, 1998; Rietbergen-McCracken & Narayan, 1998; Good, 1996). Although the new participatory approaches utilized in the sector for the provision of services do not give communities absolute control of the process, they allow communities to play a more active and decisive role in all the phases of development projects including planning, implementation and monitoring and evaluation.

Participatory approaches have evolved from other disciplines such as anthropology, sociology, research on farming systems and others. These approaches were developed based upon the flaws identified and the lessons learned while implementing the Supply Driven Approach for the provision of safe water and sanitation services. The underlying principle was and continues to be the involvement of all stakeholders, especially the main users of the system, in all the phases of water and sanitation programs or projects with the intention of being more responsive to the needs and preferences of the users and more appropriate to given local conditions and environment. Participatory methodologies were also developed to facilitate the process of empowerment and capacity building of the communities benefited by development interventions (Sawyer & Clarke, 1997).

Participatory approaches used in the water and sanitation sector include five participatory methodologies: Demand Responsive Approach (DRA), Self-esteem, Associative strength, Resourcefulness, Action planning and Responsibility (SARAR), PHAST, Participatory Learning and Action (PLA) and Participatory Rural Appraisal (PRA). There are also four participatory methods that have been utilized in the water and sanitation sector: Beneficiary Assessment (BA), Social Assessment, Stakeholder Analysis and Rapid Rural Appraisal (RRA). These four methods can be used in combination with the five methodologies or the other methods and will generate crucial information for the design and implementation of water and sanitation projects or programs.

Of all participatory methodologies and methods mentioned, PHAST, which originated in Africa, has been the only one utilized strictly in the water and sanitation sector. In order to establish a good baseline to compare the case studies presented later in this paper, it is important to present more detailed information about PHAST. Special attention should be paid to its advantages and disadvantages when analyzing the two projects.

**Participatory hygiene and sanitation transformation (PHAST)**

*Definition*

Participatory Hygiene and Sanitation Transformation is an “innovative approach designed to promote hygiene behavior, sanitation improvements and community management of water and sanitation facilities using specifically developed participatory techniques” (Sawyer & Clarke, 1997).
PHAST practitioners that participated in a workshop in Kenya identified a specific set of characteristics that are present in all the PHAST communities:

- a belief in their ability to solve problems,
- a basic understanding of the health implications of poor water supply and sanitation,
- a sense of common purpose and a way of planning change in the community and
- the presence of a committed extension worker, who is collaborating with them to plan their own future (Sawyer & Clarke, 1997).

Origin

The PHAST initiative started in 1992 as a pilot project for the improvement of the sanitation services in four different countries of Africa (Botswana, Kenya, Uganda and Zimbabwe). It was designed, planned and sponsored by various international agencies some of whom include the UNDP–World Bank Regional Water and Sanitation Group – East Africa, the Rural Environmental Health Unit of the WHO in Geneva, UNICEF, the Danish Agency for Development Assistance and the Swedish International Development Cooperation Agency.

The 18-month, regional pilot program was implemented in collaboration with the government of these countries and in close partnership with UNICEF (particularly in Kenya, Botswana and Zimbabwe) and various regional and national NGOs (for example CARE, KWAHO and WaterAid).

Advantages

One of the main strengths of the PHAST methodology is that it helps communities understand the importance of improved water supplies and sanitation services (Sawyer & Clarke, 1997). This methodology also empowers communities to improve health conditions by promoting health awareness and understanding the fecal–oral route of disease (Sawyer & Clarke, 1997). PHAST involves all members of society (young and old, female and male, higher and lower status), including illiterate people and allows them to determine their own priorities. As a result of its implementation, communities are able to build their organizational skills and identify barriers against cooperation. Finally, PHAST recognizes the existence and importance of indigenous knowledge and it helps communities identify the barriers that can help block the transmission of diseases.

Disadvantages

PHAST, like any other participatory methodology, presents some limitations and risks. First, it requires sufficient time to be invested in field-based training of facilitators/researchers, which can sometimes be overly time consuming and resource demanding. Many projects have staff members who are accustomed to the traditional top-down approach, which does not allow beneficiaries the possibility to express themselves and formulate solutions to their problems. Second, PHAST emphasizes educational campaigns and capacity building, which might lead to constraints for the implementing agencies if there is lack of appropriate institutional support. Third, extensive monitoring and follow-up are required and most implementing agencies lack experience with participatory techniques and methodologies. Finally, PHAST requires flexibility in the design of projects so that findings from the
monitoring and evaluation phases can be incorporated in a timely manner. This flexibility creates uniqueness, which makes projects difficult to replicate in other areas.

**Tools and techniques**

Specific participatory activities were developed for community groups to discover for themselves the fecal–oral routes of disease. Community members then analyze their own hygiene behavior in the light of this information and plan how to block the contamination routes (Sawyer & Clarke, 1997).

The key tools of the PHAST methodology are contamination routes, barriers matrix, sanitation ladder, three-pile sorting, pocket charts, Dr. Akili Sana (name of a technique) and community mapping (Sawyer & Clarke, 1997).

**When and where to utilize PHAST**

The PHAST methodology has been applied within the development activities of various agencies including the United Nations Development Program (UNDP), the United Nations Children’s Fund (UNICEF), the World Health Organisation (WHO), the Promotion of the Role of Women in Water and Environmental Sanitation Program (PROWESS), the Danish Agency for Development Assistance (DANIDA), the Swedish International Development Agency (Sida), the World Bank, as well as many NGOs worldwide (Sawyer & Clarke, 1997).

PHAST has been utilized exclusively in the water and sanitation sector in a variety of countries such as Botswana, Kenya, Uganda and Zimbabwe. The methodology has been used to raise awareness in communities about health and hygiene issues, to assist communities in planning and managing their water and sanitation systems and to help communities understand the benefits of improved water supplies and adequate sanitation facilities. PHAST has generally been started on a pilot scale and then expanded in a wider scale follow-up project, or institutionalized in the public health or sanitary division of the national government (Sawyer & Clarke, 1997).

A common feature has been the use of PHAST techniques in combination with other participatory techniques and methodologies such as Participatory Rural Appraisal, SARAR and Beneficiary Assessment (Rietbergen-McCracken & Narayan, 1998).

**Background for case studies**

A recent study in Ciudad Juárez, Mexico, showed high rates of gastrointestinal diseases in communities lacking sanitation infrastructure. The proportion of households that tested positive for Giardia and Cryptosporidium was 82% and 70%, respectively, underscoring the need for interventions addressing hygiene, water supply and sanitation (Redlinger et al., 2002).

In Ciudad Juárez, urban growth, taking place in informal settlements, has hindered municipal governments from meeting the demand for piped water and sewage services. Moreover, sewage treatment systems require large amounts of water to operate and the city is presently facing severe water shortages. As a result, many low-income households in the peri-urban region rely on pit latrines or cesspools for excreta disposal. This solution is often not practical because of space requirements for pits, rocky soil conditions and groundwater contamination.
Ecological sanitation (Eco-san) applies the fundamentals of ecology to sewage and is gaining popularity in areas where there are limited water resources, sewage infrastructure or both. Eco-san, also called dry sanitation when the system does not use water, promotes ecological balance by recycling human excreta as fertilizer (Esrey et al., 1998). Human excreta have been recycled for hundreds of years in the Far East and this process continues to play a major role in agricultural production. The goals of eco-san are to provide a system that is affordable, acceptable to the community, simple to use, disease preventing and protective of the environment. Eco-san has made slow progress despite decades of promotion by donors. The lack of demand for Eco-san makes many development agencies question its viability. This paper examines two Eco-san projects taking place in similar communities of Ciudad Juárez, Mexico and analyzes the participatory characteristics of each project.

Case study 1 – “When water works for health”

Background

In 1999, the Paso del Norte Health Foundation and the Center for Environmental Resource Management (CERM) at The University of Texas at El Paso developed a program entitled, “When water works for health”. The two-year program focused on improving education and infrastructure in the area of water, sanitation and hygiene. It was implemented on both sides of the US–Mexico border and included Ciudad Juárez, Chihuahua, El Paso County, Texas and Doña Ana County, New Mexico.

In Ciudad Juárez, CERM sent out a request for proposals asking community-based organizations (CBOs) to submit project ideas related to water and sanitation. However, most of the organizations applying focused on social issues within their respective communities and had very little experience with water and sanitation issues. After selecting three organizations, each working in one peri-urban community where water and sanitation infrastructure was nonexistent, CERM began to develop the work plan and scope of work. CERM met the CBOs several times to discuss the community’s water and sanitation needs. The overwhelming reply was “improved sanitation”.

CERM began looking for low-cost waterless sanitation systems that would be appropriate for the communities involved. The technology selected was a prefabricated composting toilet (SIRDO – Sistema Integral de Reciclamiento de Desechos Orgánicos), designed by Grupo de Tecnología Alternativa (GTA – Naucalpan, Mexico). GTA was involved in the first training of families, which consisted of a large community event where residents were able to see various skits and models of how the dry sanitation system functioned. Three hundred composting toilets were installed in individual households (one hundred in each community) between August 1999 and March 2000 with follow-up visits lasting until April 2000. This dry sanitation system can be seen in Fig. 1. Selection of the households to receive a sanitation system was based on socio-economic status and the presence of young children or elderly in the home (low-income households with children or elderly received priority).

Creating the organizational infrastructure

One of the primary goals of the project was to involve communities and develop the capacity of local CBOs so that they could carry-on project activities in the future. However, time constraints did not allow
for the accomplishment of this objective. Project activities were rushed in order to meet project deadlines. Because of the deadlines, adequate education and training efforts could not be incorporated into the project, which generated feelings of dissatisfaction with project outcomes and even lack of commitment from the part of a number of beneficiaries. There was no time to empower the community and give them the tools required to succeed in the future when facing other problems.

Creating the physical infrastructure

The purchase and installation costs of the composting toilets were beyond the economic capacity of most of the community residents involved. For this reason, CERM sought funding outside the communities.

Originally, CERM had planned for community residents to provide the sweat equity or labor necessary for the installation of the dry sanitation systems. However, time constraints, owing to the granting period, required CERM to contract a local construction company to install the systems.

Once the systems were installed, project staff realized that the size of the sanitation system’s superstructure was too small for many of the users and that the superstructure material (fiberglass) was not sufficiently durable for the high winds common in the project area. Sawdust, which was needed as the bulking and soaking material to operate the system, was also difficult to obtain locally.

Training and educational opportunities

The initial strategy for the dry sanitation pilot project was to train health promoters from the CBOs to go from house to house providing information on toilet maintenance procedures and to complete follow-up questionnaires. However, funding for the project ended before follow-up was completed. At the same time, CERM received funding from a different source to perform a microbiological study of the dry sanitation systems. The goal of this study was to determine the effectiveness and safety of the sanitation
systems based on the pathogen levels in the end product. After initiating the study, CERM staff quickly
determined that users did not understand basic maintenance procedures for handling the sanitation
systems. Approximately 60% of the facilities installed were being used appropriately.

CERM established new contracts with the three CBOs to reinitiate a four-month follow-up project. The
follow-up consisted of providing households with information on toilet maintenance procedures and
completing questionnaires. During this period many of the dry sanitation systems (approximately 20%)
were moved from households, which no longer wanted to use the sanitation system, to other households
requesting the system. CERM performed community focus groups to develop a newsletter and a user’s
manual. These educational materials showed local residents demonstrating proper behavior for
managing the sanitation systems. By the end of the follow-up period, approximately 90% of the dry
sanitation systems were functioning properly.

Another issue that arose during the follow-up was the fact that families would now be responsible for
handling the sanitation system end product, which was a completely new idea for the communities.
Before the project, most households would dig a new pit latrine when their existing pit was filled.
Because of the misconception that the end product would be very similar to fresh human excreta, the
new task of handling the end product was considered to be overwhelming by some families. From a
public health perspective, training was required to ensure that families would handle the end product in
a safe manner, which would not create new and unnecessary health risks.

Analysis of community participation in “When water works for health”

The analysis of community participation and community involvement in “When water works for health” is based on personal conversations with Verónica Corella-Barud (one of the developers of the
program) and Sonia Torres (the program manager for a CBO in Ciudad Juárez). The information
obtained from them was compared with feedback received from community members during weekly
visits, other available information and published literature regarding community participation in water
and sanitation. For the analysis, the characteristics of “When water works for health” can be classified
into two categories: participatory and non-participatory.

Participatory: The following is the list of features generated by “When water works for health”, which
encouraged participation and commitment from beneficiaries and helped to improve the success and
sustainability of the project:

• education and training of women and children,
• development of educational materials with community involvement,
• communities chose improved sanitation when given the opportunity to choose between water and
sanitation improvements,
• capacity building of CBOs was accomplished,
• CBOs participated in all phases of the project and
• living conditions were improved as households switched from using pit latrines to using a dry
sanitation system.

Non-participatory: Some of the issues that need to be revised and improved in order to convert “When
water works for health” into a fully participatory and self-sustainable project include:
Outsiders developed and implemented the project with little input from the community.
The decision making process was not in the hands of the community.
The sustainability of the project was not ensured.
The project was developed in an inflexible manner.
The technology chosen was inappropriate for local conditions.
Communities did not participate in the selection of the sanitation technology.
Communities did not contribute to the project monetarily or through “sweat equity”.
Sufficient training was not provided until after the dry sanitation systems were installed.

Case study 2 – “Centro Mujeres Tonantzin”

Background

Centro Mujeres Tonantzin (CMT) is a faith-based organization working in Ciudad Juárez, Mexico. The organization is composed of women and the majority of their projects are directly related to women’s issues. CMT’s dry sanitation project consists of a combined effort between community residents and the federal government to improve sanitation infrastructure. The Secretaría de Desarrollo Social (SEDESOL), the federal social development office, pays for the materials for construction of the dry sanitation system; the households construct the system and CMT provides training, coordinates the pick-up and delivery of materials and provides continued technical support for the families.

One CMT staff member has had previous experience with dry sanitation in southern Mexico and has been primarily responsible for initiating and promoting dry sanitation projects in communities without appropriate water and sanitation infrastructure. CMT submitted a proposal in 2000 to SEDESOL requesting funds to purchase construction materials for 60 dry sanitation systems. CMT trained household members how to construct and maintain the dry sanitation systems. The majority of participants in the project were women and they were generally responsible for constructing the systems. SEDESOL required that CMT complete the construction of the first 60 dry sanitation systems before they could establish a new contract to provide additional materials for another 60 systems. The construction of the first 60 systems was completed and SEDESOL provided the additional funding. CMT is presently coordinating the construction of 60 additional dry sanitation systems and they have developed a list of households who are waiting to receive construction materials to start building their own system.

Creating the organizational infrastructure

CMT is a very decentralized organization. The organization allows its staff ample freedom to choose which issues in Ciudad Juárez they will be involved in. One particular staff member has promoted appropriate technologies, such as dry sanitation systems, for improving the environment and residents’ living conditions. As a result of their present dry sanitation project, CMT has created a microenterprise, consisting of women from the community, which constructs urine-diverting toilet bowls and urinals and sells these for a profit.

CMT promoted dry sanitation by using workshops to present the idea. Community members were very interested to learn how properly to construct, operate and maintain the systems. CMT required that
families attend a minimum number of workshops before they could be put on the waiting list to receive the construction materials. CMT was very strict regarding the commitment by families. If the families did not begin construction within 30 days of the delivery of the materials, the materials were moved to the next household on the waiting list.

Creating the physical infrastructure

CMT promoted one sanitation technology in the communities in which they work, but this was considered appropriate based on sample analysis results and feedback from users. The families were very committed to the project, noted by their involvement in constructing and maintaining their own facilities. The families also provided a small portion of the construction materials. Residents constructing the dry system chose to have the system connected to their home. This facilitated access to facilities at anytime by anyone in the families but required careful maintenance to avoid flies and/or odor problems.

The system selected uses a lime/soil mixture as the soak material. Residents are very familiar with lime and it is ubiquitous throughout Ciudad Juárez. If maintained, the system does not smell or have flies. The design is a double-vault system and its size allows residents to empty one chamber every 6 months. A working prototype of this system can be seen in Fig. 2.

Fig. 2 Urine-diverting toilet bowl and urinal.
Training and educational opportunities

Families are required to attend three training sessions before they can be put on the waiting list to receive the construction materials. Households experiencing problems with their dry sanitation system receive visits by CMT. A formal visit by CMT is done once the first vault is being emptied to ensure that users are maintaining their system correctly. The training sessions provided at the beginning are sufficiently extensive that very little follow-up is needed for the users.

Analysis of community participation for “Centro Mujeres Tonantzín”

The analysis of community participation and community involvement in CMT’s project is based on personal conversations with Aurora Isabel Ramirez (one of the creators of the program). The information obtained was compared with other available information and published literature regarding community participation in water and sanitation. For the analysis, the characteristics of CMT can be classified into two categories: participatory and non-participatory.

Participatory: The following is the list of features generated by the CMT project, which encouraged participation and commitment from beneficiaries and help to improve the success and sustainability of the project:

• Local resources and indigenous knowledge were utilized.
• Extensive education and training were provided for both women and men.
• Sustainability of the project was ensured through training and educating local people who were willing to take responsibility for their community.
• Living conditions were improved.
• Families are benefited by the project.
• Women are involved in all stages of the project.
• Families provided some of the materials and all the labor.
• High levels of cooperation and unity were observed in the community.
• The community is empowered with the help of the CBO to deal with other issues.
• Communities gained access to existing governmental resources and programs.

Non-participatory: Some of the issues that need to be revised and improved in order to convert the CMT initiative into a fully participatory and self-sustainable project include:

• The project idea was derived from outside the community.
• Community members did not participate in the selection of the technology.
• The project cannot sustain itself, it is highly dependent on outside resources and institutional support.
• The project relies heavily on one individual.
Conclusions

Participation is not a simple process. In fact, it is probably much more difficult to plan, implement and develop a sanitation project in a participatory manner. However, the results of the process will often times be more appropriate and sustainable, thus increasing the probability of success and the longevity of the project. The sanitation scheme will also produce a greater impact on the community. The whole experience will be more rewarding and the community will be empowered and prepared to face future challenges.

Participation is time consuming. It takes a significant amount of time and resources until good rapport and a sincere relationship with the community can be established. Sufficient time and resources need to be allocated from the beginning to ensure communities’ participation and satisfaction with project outcomes (Whyte, 1986). The project manager has to decide what level, type of participation and methodology to utilize in each phase of the project. Pacing becomes extremely important because project activities and other priorities within the community have to be respected during the development of the sanitation project. More information about types and levels of participation used in water and sanitation projects can be found in Gomez and El-Nakat (2002).

The two case studies discussed earlier were not fully participatory because community members did not participate in all stages of the project cycle, especially in crucial instances such as the selection of technologies to be utilized. The projects had varying degrees of success, as is the case in many of the projects implemented around the world every year. Case study 2 was more successful and its results more sustainable. Community participation started early on in the process and strong commitment on the part of the beneficiaries was always one of the decisive factors for the selection of families who were to benefit from the project.

The technology selected must be appropriate. Projects should use local resources and indigenous knowledge for the construction of sanitation facilities. In order to ensure proper operation and maintenance of the dry sanitation facilities, it is important to utilize locally available bulking agents. The level of technology should also be in accordance with the level of education of community residents. Composting systems, which require a proper carbon:nitrogen ratio, continuous mixing to aerate the pile and a certain level of moisture appeared to be too complex for many users in the study area. Dehydration systems require users to divert their urine, but communities easily adopted this behavior. In contrast to the composting systems, dehydration systems do not require mixing and they use a readily available bulking agent.

As can be seen from case study 1, because the community did not participate in the selection of the technology and any of the design issues involved in the project, the level of satisfaction with project outcomes was much lower. It was successful in those cases where family members paid more attention and put more effort into improving the quality of life of their families.

Extensive training should take place before construction of sanitation systems. Training facilitates and enhances the implementation phase of dry sanitation projects by increasing user’s self-efficacy in operating and maintaining their systems. Women and children should be an integral part of the training since they are generally in charge of maintaining the systems. Depending upon the level of training provided prior to construction, the intensity of the follow-up program will vary accordingly. Ample training can minimize the need for a large follow-up program as was demonstrated by case study 2.

Monetary or in-kind contributions by the community are desirable. Higher levels of contribution by the beneficiaries of the project increase the level of commitment, sustainability and probability of success of dry sanitation projects. The level of ownership and appreciation is also increased when
communities are able to provide a portion of their income and/or sweat equity. Although the new participatory approaches utilized in the sector for the provision of services do not give communities absolute control of the process, they allow communities to play a more active and decisive role in all the phases of development projects including planning, implementation and monitoring and evaluation.

Finally, it is not advisable simply to replicate a successful approach in different communities, even if the conditions of the two locations and the characteristics of the population are similar. Because the approach utilized produced good results in one project, it does not mean it would work in others. Even though development organizations recognize the need for replicable projects, it is necessary to emphasize the importance of flexibility and adaptability as preconditions for the design and implementation of sustainable approaches in the sanitation sector.

This paper shows how community participation brings about numerous benefits to development projects. These benefits outweigh the time and costs related to the implementation of participatory approaches. Effective participation and commitment on the part of the community are of such importance to the future of the project, that it is necessary to ensure adequate financial and human resources at the beginning of the process for its successful accomplishment.

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