1.6 Water and sanitation

I will describe some lessons learned in community-based projects in water and sanitation, focusing on development and demonstration methods and with the intention of drawing conclusions for the PEC approach. First, a look at the global situation. The worldwide percentage of urban residents served by water supply is not improving, and may be declining by the end of the decade. In rural areas the picture is slightly better, the percentage of population served by water supply is increasing but, even if we manage to maintain the current rate of improvement, is likely to remain as low as 66% by the year 2000. Moreover, the percentage of urban and rural inhabitants served by adequate sanitation remains very low. A factor that limited these improvements is, obviously, population growth, and the picture I have sketched is global and strongly affected by what, in different contexts, is defined as 'adequate'. Yet, it clearly appears that better results require a dramatic increase in our efforts to provide services. This is not a small task. We have to become very active in helping people to help themselves.

J. T. Visscher

In Colombia, only 13% of the population is currently served by safe water supply. In Peru the figure is 20%. In Thailand a review of water supply systems found 44 cases in which a chlorination system was installed, but not functioning. The global picture is grim: service providers are often far from their customers, communities are not in control, maintenance is not well planned, technology is not suited to the local situation. However, there are also positive signs. In Kenya there are hand-powered pumps maintained by women. This morning we heard a presentation on new solutions in West Africa. We have also seen large efforts implemented in the last decade, and these efforts have at least been able to cope with a large increase in population.

I will talk about a "development and demonstration" program supported by the Dutch government in the Valle and Cauca region in Colombia.

When we arrived in the region, we found an acute need for water treatment. Among 400 local water systems many had no treatment whatsoever, and the water quality was deteriorating because of the population increase in upstream areas. Some treatment systems had been installed, for instance a very nice chemical plant in Guapi. It had been set up eight years ago with the support of French aid, but it worked for eight days. The plant is excellent in itself, but it cannot be effective in that location. After a study of the situation, we decided to opt for traditional techniques such as slow sand filters.

Slow sand filters are just boxes (different types in different parts of the world) with sand in them. While water percolates through the sand, biological and biochemical processes take place and remove impurities. The biological process is very important: a thin layer formed on top of the sand is able to very effectively remove bacteria and viruses harmful to people. This type of treatment is appropriate because it can be easily maintained by the communities that are being served, and it is environmentally sound, since it does not use chemicals. Why does not everyone use it? Good question. Perhaps because it is not a highly regarded technology, it has no impressive tubes and machineries... it is just a box with sand.

In Colombia we felt that a development and demonstration program was needed because conditions and approaches to integrate hardware and software needed to be examined in depth. First of all, the treatment system needs to be managed by national staff, so they have to possess the know how. We thus gave advisory support. We started by identifying subjects together with the local institutions involved, clarifying a general knowledge basis and local experiences and resources and developing a specific strategy that could respond to local constraints. We then proceeded with applied research and development, and in so doing promoted local expertise and confidence. Finally, we began disseminating the knowledge basis and expertise for the wider effort needed to match the size of the problem. To cover the whole region we had to repeat the same process for 44 water treatment plants.

We learned a number of lessons. First of all, "it can be done". Sand filters are indeed a useful technology for that region. This supported us in our plans to extend the project to eight other regions in Colombia, again demonstrating the use of the technology and developing local expertise. Hopefully, we will manage to do in two years what in the first region took 5 years to be implemented. And the "we" is now primarily the Colombian institutions in charge. Secondly, the technology is not very costly. It is about 2-3 US$ per person in investment costs; which is about 10% of the

investment cost of a water system or about one third to one fifth of the cost of hand-powered pumps. We found that the treatment is environmentally sound, and can be managed by locals who just need to clean the sand box by scraping. Referral help needs to be in place, but it is not often used. Another lesson we learned is that it is possible and indeed necessary to involve local communities in every stage of the process. We have to learn to involve the communities in planning, for instance in deciding for what services they can provide resources and who should be the caretakers and the managers of the local systems.

I know of a good example in Tanzania, in a village where the water supply was operated by people directly responding to the ministry. Every month the service was suspended for a week because the operators had to go to Dar es Salaam to collect their salaries, and before leaving they shut off the plants. Today the operators have to report to the water committee and the village chairman. They still respond to the ministry, but under the control of their local communities. Obviously enough, now one operator goes to town one month and the other the next month, and the system works without interruptions. Communities can contribute in construction, and this should not be overlooked because it can bring down costs by 30%. With regards to operations, some engineers affirm that communities vandalize their water systems. I do not agree. It is true that communities try to get water even in times of acute shortage and low pressure, and in so doing they at times damage water posts, but this is just a demonstration of their cleverness in getting what they need. In maintenance, communities can contribute to support the sand filter caretaker, and provide cash and kind for repairs. Finally, communities have to be satisfied, and therefore they should be involved in evaluation.

What else have we learned? Water treatment may not be the first priority in a local context. We have to find out what interventions may have the largest impact on a specific problem. It may be personal and domestic hygiene, saving water, safe water handling, excreta disposal... The decision calls for an in-depth consideration of the local context. If the problem is worm infestation or filariasis, the impact of water supply projects is much less than the impact of safe excreta disposal. We should also build upon the existing local structures, and here we face the problem of motivation. How can the Primary Health Care Workers and Community Development Workers work better and feel that their activities are worthwhile? What can we do to help them? What can the communities do?

In summary, I can say that slow sand filtration is a sound technology that promotes and enables community involvement, and that by promoting it we help people to help themselves. Access to knowledge and information

are key-components of development. We all (us included) do better by learning from the experience of others. I believe that disseminating information on the experiences of others should be fundamental in PEC. This involves many issues. Information should not be 'sent around', but disseminated as part of specific strategies. Technical knowledge is important, but so are other kinds of knowledge. We should remember that people can change their governments. Governments are more often backrunners than forerunners, in both developed and developing countries. I hope we will discuss some of these questions together.

M. Sommi   Water is one of the most important resources for human beings but, because of a series of correlated factors (climatic factors, human interventions, etc.) current resources are diminishing while the user population is growing. There is a tight relationship among water as a natural resource, the local environment, the local population and the uses made of water. In general, both the natural and social environment benefit from the protection and the expansion of water resources. The relationship is so close that at times a small change in one of these factors can have a large impact on the others, including an impact on the survival of a community. A striking example is given by the drought in the Sahel. Although emergency measures can quickly patch-up the problem and specialized technology can provide good-quality water in large areas, such measures cannot solve the problem globally.

I will now discuss some examples of Italian Cooperation projects born with the 'original sin' of being emergency measures. The projects were in agreement with national plans and complied with standardized parameters (distance from the village not exceeding 100 meters; WHO standards for drinking water; supply not less than 1 cubic meter per hour, one well every 200 inhabitants). The first phase of the projects involved a detailed study of the hydro-geological and geophysical situation, so as to drill wells in the most appropriate locations. During the second phase (operations) we worked with the local population, encouraging the integration of the new water points in their way of life. The location of the wells was discussed with the locals, as well as the procedures for collecting and managing the funds necessary for the maintenance. We also provided training for local technicians so that they would be able to do routine maintenance and small repairs. The projects I am discussing are based in Mali (466 wells drilled from 1984 to 1988, and 310 to be completed within 1990) and Niger (45 water points built in 1986, and 370 in the phase of completion). I would like to stress that we paid special attention to the continuous monitoring and improvement of the projects, and strived to leave the locals autonomous in terms of capacity to drill and

do ancillary works. We also promoted, through training and extension services, local operative units, village repair teams and village water committees.

The program in Mali was born, as I have mentioned, as an emergency measure, but there has been a gradual trend towards a 'development' plan, more connected with the appropriate use of water as a resource for human, environmental and productive needs. In Niger we worked with a strongly decentralized governmental structure, which facilitated the involvement of communities in our work. We also had to work in close proximity with projects financed by other aid agencies. The program was structured around relatively small 'sub-areas' that could be differentiated in terms of social characteristics. Both in Mali and Niger we promoted local capacities by training technicians able to maintain and repair the water points, and we are now considering water uses for productive activities beyond the satisfaction of basic human needs. Again, we have to stress that our programs responded to an emergency. This is why we made use of expensive technologies, which implied a readjustment of the relationship between the locals and their 'familiar' water sources.

In the course of the programs we faced several problems, including the fact that some pumps were not fully used or left out of order, that some water committees remained inactive, that the collection of water charges in some villages proved difficult, that there seemed to be little interest on the part of some locals, and that women remained poorly 'visible'. The problems may have several causes. Pumps do not fit the village 'water system'; they are perceived as emergency devices and abandoned when the emergency ends (in the course of our programs the climate improved and traditional water sources recharged). Moreover, water committees were created 'ad hoc' and not according to the traditionally recognized system of representation. Women, the village members who more closely deal with water, were too often excluded from decision-making and received less benefits than men. We learned that a water program must contain measures, such as soil reclamation and water conservation, that benefit the water resource within a whole environmental context. We learned that suitable assistance must be provided to determine the potential of the surface and ground water in the area, with a view to long-term water conservation. We learned that organizational and functional structures (water committees, maintenance technicians) and standards of management and behavior devised by expatriate experts must fit the villages' traditional structures and standards, that the new water sources must fit the local 'water system', that traditional sources must be rehabilitated, maintained and adequately protected from pollution.

How to achieve all this? The attention of aid providers in the field of water supply should shift from the borehole to the 'water system', and a local management committee of such a system should be set in place. The village should be recognized as an autonomous reality (with its own methods, skills, technologies, practices and means of production that deserve to be protected and supported) as well as a part of a larger reality (interrelationships among villages, particular environmental context, national institutions, laws, etc.). Women should be safeguarded as a group with highly important responsibilities and highly peculiar needs in terms of water. They should have access to the socio-economic benefits of water programs and receive training as men do.

Learning from our experience, we recommend promoting and strengthening both the organizational capacity of communities and their technical capacities (by appropriate training). We recommend diversifying the water intakes with the aim of conserving and improving all water sources, in particular the traditional sources, and providing technical assistance to diversify uses. We recommend using culturally compatible technologies that can be easily diffused. Finally, we recommend strengthening the technical and management skills of central and peripheral structures that need to be used by communities as referral services.

D. Munro   Both speakers this morning have emphasized the importance of motivation factors. Could we further discuss success stories and problems in terms of motivation for any sort of development programs (water supply, food supply, housing, etc.)?

F. Lieberherr   I would like to hear more about the ways in which people were involved in management and evaluation.

J.T. Visscher   Motivation is a difficult issue to talk about. It is important to distinguish the different groups you work with, because each group needs a different type of motivation. In water treatment the community will obviously benefit, but it may not be aware of that. In a participatory approach to planning you have chances to clarify this point. Motivation is more easily achieved when there are tangible benefits, such as less work (water closer to home) or financial savings (for instance, in switching from chemical to sand filter plants, the cost of maintenance drops five times). These benefits need to be clearly understood by the locals. In our work in Colombia several suggestions for community benefits came directly from the community members.

The most difficult element in the process is the transfer mechanism. We need people able to transfer ideas and to support communities. We identified mechanisms such as training by external people, visits to external programs, and parties to get people together to talk. These absorbed peanut money in our program and were very useful. On a long term, I do not have ready-made answers. Some programs have adopted continuous training and discussion of common problems and solutions. The most discouraging situation is to seat somewhere alone, not knowing what can be done.

In our experience, motivation comes from a few basic aspects. First of all, people have to demand support; we do not go around offering it. In this way, they present us with highly-felt problems and needs. Secondly, we study problems with them. In doing so, they are involved in all stages of the understanding and of the solution. We also evaluate with them the progress of activities. Thirdly, we stress the specific motivations of the people involved in finding a solution, for instance all the blacksmiths of a village, who can learn something useful for their own work, not only something useful for the specific problem at hand. The same is true for training women to build pumps. All the village benefits, but women may have an extra motivation to increase their own skills.

R. Tall

With respect to environmental protection activities, it is important to highlight people's direct interests. In our work we have begun by identifying the plots tended by a family through generations, which provide them with means of survival and satisfaction of needs, and is their responsibility to keep. Families have a direct interest to take care of that portion of the 'village environment' and we work with this kind of motivation. What I said is part of 'internal' motivation factors, but there are also 'external' motivations. There should be a consensus within the community on certain activities, but also a consensus around the community, on the part of the administrative and technical support teams and other communities. This is important to avoid conflicts and must be worked out in each particular context.

In terms of evaluation (the second question) AFOTEC has used different approaches. We asked leaders to evaluate activities, and generally we got results spelled out in terms of numbers. We also asked the common people, and they appeared much more interested in the practical 'workability' of solutions and on the kind of relationships these solutions promoted among the community members themselves. We also liked to carry out the classic type of evaluation, with external consultants. At best, we suggest to integrate the three approaches.

A. Catalano

I found particularly interesting a sort of 'derivative motivation' that I understood in Ms. Randrianarisoa's presentation on the Amboasary project. Once the immediate need of water was satisfied, it seemed to me that a motivation to do other things arose. In Andasibe, on the other hand, some external factors may have depressed motivation. For instance, the land tenure system, the exploitation on the part of external companies, etc.

O. Randrianarisoa

In the two villages that I have described there were two kinds of reactions. In the first the motivation on the part of women was high because they were full members of the village association ("self-helping peasants"), and they had legal status. There was a center in which women (as well as men and youth) were represented and had a leader who could express their views. In the second village the infrastructure at the village level was the same, but there was no organized membership of women as such. The World Wide Fund for Nature (WWF) was very influential in this association, and people tended to limit their freedom of expression. Women tended to be passive. Another example regards family planning. There is a national program supported by the International Planned Parenthood Federation (IPPF), and the women of the first village have made use of this program by their own initiative.

R. Belli

In the Italy-supported water programs in Mali and Niger, the first motivation of local community members was to obtain water, but the way in which water was made available was also very important. Decision making in terms of how and where water projects are to be implemented are taken by governments. When we arrive at the village level there is very little freedom left. In Mali we trained 27 local technicians according to methods chosen by our aid agency. Yet, we found that the real needs can only be perceived at the village level. This is why we recommend shifting the attention from the water point to the village water resource system. We are in the process of identifying how to improve our work in this sense, using the results of the evaluation of our programs carried out with local technicians and village members.

R. Tall

We work in villages and squatter settlements where many people are not literate. To enable everybody to understand, we make more use of verbal than written information. This is not easy, in certain areas we have to use three or four languages, but it is very worthwhile. We also take great account of the criticisms and suggestions of the locals. For instance, in the water containers with a tap that I have described before we adopted a modification suggested by locals, designed to save soap (an expensive

commodity). In another case we had long discussions about the opportunity to set up a grain mill in certain villages. Local women wanted to save labor and have means to generate income; they were very angry at us when we told them that their production level did not justify a mill on economic grounds. Finally, we agreed to train local blacksmiths to produce smaller mills. It was a long process.

Thank you for stressing the importance of means of communication and community feed-back.

A. Catalano

There are many conflicts in deciding priorities for work at the local level. I would like to discuss this point.

G. Letizia

This discussion about motivation is similar to the one we had yesterday about participation. We seem to have identified a few clear points. One is that interventions have to respond to the perceived needs of the people concerned, not only of their governments. It is also part of human nature in all of us, not only in the poor, that we are motivated by what affects us personally more than by what provides a benefit to the community as a whole. There need to be clear, direct, personal motivations for people to participate. This relates to the question raised previously by A. Allo, about the fact that you need ownership to promote sustainable land-use. Until a few years ago I was not in agreement with the World Bank approach of structural adjustment in Africa, an approach that encourages personal ownership of land. You may still attack the World Bank for trying to promote a capitalist mode of farming and land tenure, but I have been wondering why so much land is left neglected. There is a sort of disjunction between the needs perceived by the poor and the agricultural priorities of the governments. Can we actually have good land husbandry in the common land system? People in the NGO communities are weary of policies that privatize land, but what about land distribution or land reform? If we agree that it is good to distribute the land that belongs to large enterprises, should not we also agree to distribute the land that belongs to states? Does it matter to the poor that the land owner is a benign state or an evil capitalist power?

J. Clark

I have learned some lessons in India, in social forestry programs in Karnataka or Gujarat, promoted by large aid agencies. One component of such programs is planting trees on common land owned by the village or land classified as waste, which is supposedly empty and barren but in practice used heavily by the poor to raise animals, collect fuel and so on.

This 'social forestry' developed into 'anti-social forestry' in the sense that it took away from the poor the land they desperately needed to survive. In such cases, why not implement some sort of 'tree ownership' rather than land ownership by people?

A. Catalano   Are not we entering too deeply in the realm of policy?

J. Clark   I believe policy is very important. We should not limit ourselves to discussing projects. Projects by themselves cannot solve the large problems we have in front of us. Can we hope that these problems can be solved by 'projects', let alone projects financed by other countries? We need policy reforms. The opportunities that come from our projects should be tapped for policy.

A. Catalano   This is very important, but we should be careful not to go beyond the scope of our workshop on PEC.

G. Borrini   There are many points of contact between the concerns expressed by John Clark and the ones expressed by Robert Chambers in his important work on sustainable livelihood security, and I believe they are germane to our discussion on 'projects'. How can a project work if there is not an element of future security attached to it? In particular, if a project wishes to address the very poor and help them transform a degraded environment into a sound, profitable one, it cannot just provide room for participation in labor and token decision-making, it needs to provide a long-term security of benefits for the people involved. This is true in practical terms (participation does not work unless these benefits are perceived) but also in ethical terms (how can we take care of an environment and forget the people who live there and are an essential part of it?).

I would also like to make another point, related to much of what has been said this morning. In the ideal world, aid agencies are only concerned about human solidarity with people in poor countries; in those countries the governments are the genuine expression of the popular will; and within local communities there is excellent agreement on acting for the common good. We do not live in such an ideal world. This means that the farther from the local level the projects are conceived, the lesser they meet the interests of the local environment and people. We could translate this in terms of recommendations, advocating that projects be rooted in a community-based process of identification of needs, analysis of problems

and development of solutions. This process is necessarily long. Projects conceived far from local realities and expected to be implemented quickly, following a blueprint approach, should be banned.

Try telling this to the parliaments that pressure aid agencies to spend money quickly! | *A. Catalano*

Many of the points that John Clark was raising we could see as desirable or essential preconditions to meet PEC, and they automatically point at policy change. Yet I believe, as also suggested by our Chairman, that it is not appropriate for us to lay down the reform of the world. We may say that desirable preconditions are local democracy, small-scale activities, transparency in government and land reform and entitlement. | *R. Sandbrook*

It all enters into the meaning of "community empowerment". | *J. Clark*

Much of our discussion has been about how to enable people to do PEC and how this can be facilitated by governments and the international community. One way is to provide an appropriate policy framework. | *R. Prescott-Allen*

I do not believe that PEC can be done in a cocoon or a closed box. The smallest community is influenced by the larger local, regional and national contexts and by the international situation. AFOTEC works with very small communities, but we have learned that the development process of a small or large community always involves a large number of negotiations, is very long and not limited to technical or financial aspects. Negotiations need to go on all the time within a community and between a community and a variety of near and far stakeholders. It is a long process before agreement is reached among different partners. | *R. Tall*