

IMPACT AND SUSTAINABILITY OF COMMUNITY WATER SUPPLY AND SANITATION PROGRAMMES IN DEVELOPING COUNTRIES

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ABSTRACT

Sound strategies for community water supply and sanitation programmes in developing countries should be based on a clear understanding of the existing problems, the beneficial impacts achievable, and the factors which determine sustainability. The impacts of many water and sanitation programmes are limited, and many systems break down and are abandoned prematurely. Only limited impacts are achievable in the short term without greatly increased investment. Sustainability, in the sense of continued delivery and uptake of services, is threatened by numerous attitudinal, institutional and economic factors, and community participation approaches alone are no guarantee of success. The key to sustainability is that all stakeholders involved in consumption/use, maintenance, cost recovery, and continuing support perceive it in their best interests to deliver high quality services. The paper proposes new sets of programme aims and objectives in relation to impact and sustainability, which can be used in programme design, monitoring and evaluation. It also makes longer term recommendations to external support agencies.

Keywords: impact, sustainability, water and sanitation, developing countries.

INTRODUCTION

Proposed infrastructure developments can only be viable (a) if they will have a beneficial *impact* on communities, and (b) if this impact will be long-lasting or *sustainable*. Unless beneficial and sustained impact is likely, there is little point in carrying out environmental, economic, and other appraisals with a view to subsequent implementation. This is as true of developed as of developing countries, and as true of the water and sanitation sector as of any other.

In developing countries, a significant number of projects, including those in the water and sanitation sector, fail to deliver benefits to society over the long term. Part of the cause of this failure lies in poor understanding of the issues of impact and sustainability.

A sound, practical, analysis of these two concepts must include:

Impact:

- a clear understanding of the present water and sanitation *problems* faced by communities;
 - identification of the *potential benefits* which can be delivered by improved infrastructure;
 - observation of the *actual benefits* experienced by users and consumers;
- and so:
- quantification of the *magnitude* of beneficial impact achievable in practice.

Sustainability:

- a pragmatic *definition* of the concept;
- an understanding of the *component elements* of strategies for sustainability.

From an understanding of what impacts can be achieved, and how they can be brought about in a sustainable fashion, sound strategies for the planning and management of development projects can emerge. This paper, based on the authors' experience in Africa and Asia, is an attempt to present such an understanding and analysis, in the case of water and sanitation projects in developing countries.

THE WATER AND SANITATION PROBLEM IN DEVELOPING COUNTRIES

The problems people experience with water supply and sanitation in developing countries are numerous and complex. The nature of the problem differs depending on the context - rural or urban, routine or civil emergency - and the level of engineering (if any) of water supply, excreta disposal, and wastewater disposal. This paper focuses on the poorest rural and peri-urban areas, where people have access to a very low level of water supply and sanitation engineering; it does not specifically address the situations of emergency need, nor those of urban pipe-borne water supply and sewerage.

It is useful to break down the wider problem into its components. Inadequacies in water supply and sanitation infrastructure (sanitation taken here to include excreta and wastewater disposal/treatment) pose separate, but linked problems. The immediate problems result in a string of further consequences, which adversely affect the quality of life of the poor. This chain of consequences is summarised in Table 1.

The direct human consequences of poor or non-existent water and sanitation infrastructure are:

- large amounts of time (often several hours per day) and energy are spent on water collection and hauling (mostly by women and children);
- children in particular, suffer poor health, as a result of:
 - direct injury through hauling heavy loads (commonly 15-20kg) over long distances;
 - through use of insufficient amounts of water to maintain adequate standards of hygiene (where the source is more than 2km from the home, consumption may be as low as 3-4 litres per caput per day);

- through consumption of faecally contaminated water;
- through faecal-oral disease transmission because of excreta- or wastewater-contaminated environments;

Note also that poor health may be due in large part to poor hygiene practices, whether or not infrastructure is adequate.

- there is little privacy for defaecation.

Table 1. Components of the water and sanitation problem of developing countries

| ASPECT | IMMEDIATE PROBLEM | CONSEQUENCES |
|----------------------------|---|---|
| Water supply | <ul style="list-style-type: none"> • distant sources | <ul style="list-style-type: none"> • much expenditure of time and energy (especially by women) • low levels of water consumption, resulting in water-washed disease |
| | <ul style="list-style-type: none"> • unreliable sources (drought-prone, or poorly engineered or managed) | <ul style="list-style-type: none"> • time spent queueing or seeking alternative sources |
| | <ul style="list-style-type: none"> • poor quality (faecally contaminated) sources | <ul style="list-style-type: none"> • water-borne disease |
| Excreta disposal | <ul style="list-style-type: none"> • lack of safe facilities for disposal of human faeces | <ul style="list-style-type: none"> • contamination of soil, surface water and groundwater |
| | <ul style="list-style-type: none"> • little privacy for defaecation, and lack of water for anal cleansing and hand-washing | <ul style="list-style-type: none"> • defaecation (by men) in open, often near water (eg canal side or river banks); hardship for women for whom public defaecation is unacceptable |
| Wastewater disposal | <ul style="list-style-type: none"> • engineered facilities for treatment or safe disposal rarely exist | <ul style="list-style-type: none"> • indiscriminate disposal leads to environmental contamination, insect habitat creation, and/or unsafe re-use downstream |

IMPACT

Potential benefits of improved water and sanitation infrastructure

The ideal target is the elimination of all the problem components of Table 1. This would be brought about by appropriate water and sanitation hardware, and hygiene education to support infrastructure improvements. It is now accepted wisdom among development agencies that water supply and sanitation (at least in the sense of excreta disposal) technology, together with hygiene education, form the three foundation stones of good water and sanitation projects.

From an objective point of view, it seems clear that *time saving*, *health improvement*, *provision of privacy*, and *environmental protection* are the desirable aims of water and sanitation programmes in developing countries. We have argued in an earlier paper⁽¹⁾ that specific objectives and quantified targets deriving from these broad aims should be agreed between the major stakeholders involved in water and sanitation projects (Government, NGOs, donors or lenders, and communities) (Table 2).

Table 2: Proposed aims and objectives of water supply and sanitation programmes in developing countries (developed from Carter et al, 1996)

Overall Aims

The aim of such projects and programmes is to bring about health improvements, privacy in defaecation, and reductions in time and effort spent in water hauling, for the whole community. Soil, surface water and groundwater are to be protected from faecal contamination. Hygiene practices are to be improved by appropriate components of such projects. These goals should be achieved at acceptable capital and recurrent costs. These goals should be realised for the foreseeable future.

Specifically, the objectives in relation to *impact* should be:

- to bring about per caput daily consumption of at least 20 litres
 - to reduce time spent in water-hauling to a maximum of one person-hour per day
 - to bring about significant improvements in water-hauling technology
 - to achieve a water quality target of 10 faecal coliforms per 100ml at the point of use
 - to achieve water supply system downtimes of no more than 2% (7 days per year)
 - to bring about safe excreta disposal (minimum technology an improved pit latrine) by the whole community
 - to bring about safe disposal of wastewater (minimum technology a functioning soakpit)
 - to achieve full adult adoption of good hygiene practices (hand-washing after defaecation and before food preparation or consumption, careful disposal of infant excreta, proper care of water storage containers, use of drying racks for crockery)
 - to achieve equity in all aspects of service provision
 - to bring about a decrease in contamination of soil, surface water and groundwater with human excreta
 - to supply these services at a per capita capital cost of no more than £20
 - to supply these services at a per capita recurrent cost of no more than £2 per annum.
-

Specifically, the objectives in relation to *sustainability* should be:

- see Table 3.

These ideal aims however point the way only towards the *potential* benefits which may be realisable. There are many ways in which infrastructure use differs from that intended; equally there are many reasons why actual benefits fall short of potential benefits. The phrasing of the specific objectives of Table 2 is designed to account for these differences.

Actual benefits of improved water and sanitation infrastructure

The following list indicates some of the ways in which potential benefits of water and sanitation infrastructure can fall short of those intended:

- people use less than the design per caput water supply volume;
- while distance to source has been reduced, women still have to carry heavy loads of water in clay jars or plastic jerry cans, leading to discomfort or injury;
- while water quality may be good at source, faecal contamination may be evident at the point of consumption;
- periodic breakdown of new sources necessitates continued use of 'traditional' contaminated sources;
- while latrines may have been built, they may not be fully utilised by all community members;
- while increases have taken place in water supply, attention to wastewater disposal may be inadequate or non-existent;
- adoption of good hygiene practices may be limited.

Furthermore, since 'correct' usage of water supply and sanitation infrastructure and good hygiene practices are a *necessary but not sufficient* condition for disease reduction, health improvements may not be as extensive as hoped. Therefore a realistic magnitude of the impact of water and sanitation projects needs to be assessed.

Magnitude of impacts of water and sanitation projects

Few studies have actually quantified consumers' responses to 'improved' water supply technology. Very few projects carry out measurements of actual consumption, and time spent on water carrying, pre- and post-project. A significant exception to this is the classic work "Drawers of Water" carried out in East Africa nearly 30 years ago⁽²⁾. Little is known too about exactly how much water is required to maintain a minimum standard of hygiene; various Government standards on this issue range from 15 to 50 litres per caput per day, with 20 being the commonest⁽³⁾. Further field measurements and research in these areas are needed.

The impact objectives in Table 2 imply that water consumption should be increased from as little as 3-4 litres per caput per day to 20 litres. This would require as many as six times more journeys to the source daily. In this extreme case this can only happen with concurrent time saving if the new source is located more than six times closer than

the old one. The combination of the first two objectives of Table 2 implies new source proximity to user of no more than 400m (this based on a family size of six, a walking speed of 5km/h, and only two minutes spent at the source per round-trip). However, it is generally accepted that consumption rates do not tend to increase significantly until sources lie within a few minutes (say 100m) of home. People seem to prefer to save time than use more water.

In many cases, especially in rural Africa where population is dispersed and traditional sources commonly lie 2-5km (and sometimes more) from people's homes, a high density of new sources would imply a level of investment far above what is presently available. If so, then one or both of the consumption and time expenditure objectives are unachievable. Either consumption will not reach the target level, or significant amounts of time and energy will still be spent on water collection. Source proximity to home closer than a half to one kilometre, let alone house or yard connections, is a prospect in the very distant future, if ever, for many rural households in sub-Saharan Africa.

It has been clear for many years now that the impact of water supply and sanitation programmes on public health is both difficult to predict and measure, and rarely very great. Esrey's synthesis⁽⁴⁾ of a large number of health impact studies demonstrated this, concluding that the median reduction in morbidity achievable by improving water supply and sanitation ranged from as little as 4% in the case of hookworm, to 76% in the case of guinea worm, with the figures for diarrhoeas, ascariasis, schistosomiasis and trachoma falling between these extremes.

Even if the immediate and direct health impacts of a water supply and sanitation programme are limited, this is not reason for despondency. We are trying to achieve the conditions, in relation to water, excreta, and hygiene, which provide the optimum *potential* for public health improvement. Until all other aspects of environment and infrastructure (such as solid waste disposal, wastewater disposal, and vector habitat reduction) are improved, the full health potential of water and excreta disposal interventions will not be realised.

The beneficial impact of water and sanitation programmes on the environment may be even more limited. The main benefit of such programmes is in the confinement of human excreta to pits or other means of safe disposal and/or treatment. However, this is not yet fully achievable. Farmers tilling land distant from the home, children shepherding livestock, and others more familiar with defaecation *al fresco* than in the confines of a latrine, continue to contaminate soil and water resources. Faecal parasites may in any case be very long-lived in suitable soil environments, and transmission can still continue within part of the population. Until a 'critical mass' of latrine users, hand washers, and shoe-wearers (in the case of hookworm) builds up, beneficial environmental impact will be a long time in arriving.

To summarise, even if investment in water and sanitation projects were to reach the level necessary to achieve the targets in Table 2 (which should in our view be seen as *minimum* standards), the impact on quality of life would still be limited. As these

targets are more widely achieved however, beneficial impact will grow. The widespread achievement of these minimum targets is a pre-requisite for longer term impact on health and convenience. However limited the short-term impact of projects may be though, the second aspect, sustainability, is of even greater importance. A sustained but small impact adds a drop to the ocean of need; an impact which fails to be sustained evaporates and is lost.

SUSTAINABILITY

A pragmatic concept

This is not the place to enter into a theoretical and wide-ranging discussion of the concept of sustainability. What is needed for project designers and managers in the field is a pragmatic concept, which is specific enough to allow the development of objectively verifiable targets. As a general programme aim we will simply refer to the achievement of sustainability; as specific objectives we identify key components of this idea, which can be designed in and measured or observed.

As a pragmatic definition, Abrams' wording⁽⁵⁾ is difficult to better. He defines sustainability as "whether or not something continues to work over time". In the present context, the test of sustainability is whether water continues to be abstracted at the same rate and quality as when the supply system was designed, whether the excreta and wastewater disposal systems continue to function and be used as planned, and whether environmental quality continues to improve. As Abrams points out, "if the water flows, then all of the many elements which are required for sustainability must have been in place. There must have been money for recurring expenses and for the occasional repair, there must have been acceptance from the consumers of the service, the source supplying the service must have been adequate, the design must have been properly done, and there must have been sound construction."⁽⁵⁾

Why are improvements not sustained?

The commonly observed fact is that many water and sanitation programmes in developing countries have not "continued to work over time". They have not been sustainable.

The causes of breakdown or non-sustainability are numerous:

- communities or households may never have been convinced of the desirability of new water sources, or particularly new excreta disposal facilities, in the first place;
- the financial costs which communities are expected to raise as a contribution to capital or recurrent expenses may be unacceptable, unaffordable, or impracticable (eg monthly or quarterly cash contributions may be impossible for households which only receive income at harvest);

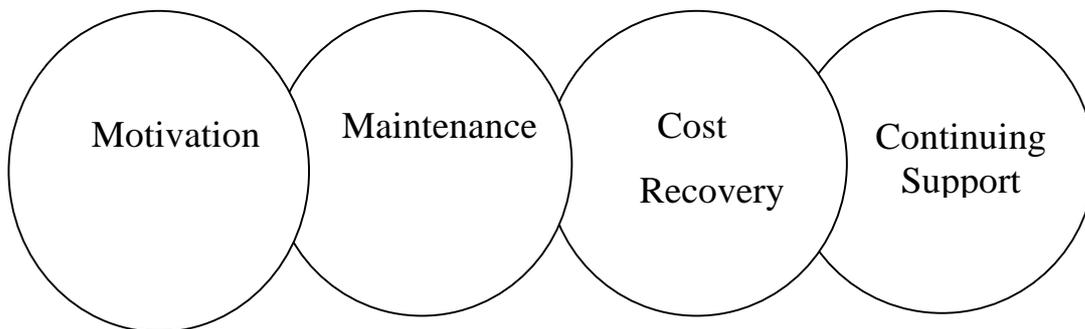
- communities may never have felt ownership of the new infrastructure, and Governments may have been over-stretched and under-resourced, so that repairs and maintenance have not taken place;
- benefits promised at the outset of projects (eg dramatically improved health) have failed to materialise;
- community education (eg hygiene education) and the attitudinal and behavioural change expected to be achieved by it, take a long time to produce results, and yet it often ceases prematurely;
- even where full community participation or management has been planned in from the start, community-level committees and caretakers have lost interest or trained individuals have moved away. This can be a particular risk if community-level organisation is on a voluntary basis.

Although the “continues-to-work-over-time” definition of sustainability gives an impression of static conditions, this may be far from reality. What is required by this definition is a fixed or improving output - constancy in water supply and sanitation services - which may be achieved through evolving and adaptive delivery mechanisms. Although community participation is nowadays an essential foundation-stone of water and sanitation projects in developing countries, this alone is no automatic guarantee of success. The only way of approaching such a guarantee is to build in at all stages, in as many aspects as possible, and for all stakeholders, a perception that participation is more worthwhile than non-participation.

Component elements of sustainability

The sustainability of community water supply and sanitation systems involves a chain of four essential links, the failure of any one of which endangers the entire enterprise (Figure 1).

Figure 1. The sustainability chain.



Motivation

Without the motivation of the community to utilise the new source (or excreta disposal facility), sustainability is doomed. The users must believe that the new source is

preferable to their traditional source. The obvious and immediate benefit of an improved water source is usually access, or proximity, while valuing of health benefits may not be prominent. On the contrary, the taste of “safe” water may be unfamiliar, and the universal conservatism of consumers may be an obstacle to change. Health education, and involvement of the community, to the extent of vesting ownership in them, will usually be necessary to bring about such motivation. Although this may be a time-consuming activity at the beginning of a programme, it is common for demand, and levels of motivation, to grow rapidly as the benefits of clean water become more visible. A significant further obstacle to the motivation of a community to use a new source may be the change from “free” water to some system of cash payment.

Motivation, value, worthwhileness, or self-interest are essential features of the involvement of all stakeholders, not only the individual consumers. Caretakers and committees within the community, Government or non-Government organisations providing back-stopping for maintenance, those organising revenue collection, local Government, and private sector stakeholders should all perceive participation and the delivery of high quality services as in their own interests, financial or otherwise.

Maintenance

Despite the emphasis during and since the United Nations Water Decade (1981-90) on VLOM (Village Level Operation and Management of Maintenance)^(6, 7), a clearly structured, resourced, and trained maintenance organisation is necessary. The community-appointed caretaker(s) or committee may have an important role in maintenance (for which they need training), but in almost all circumstances they will need backstopping by some district, regional, or national level organisation. This Government agency or NGO will also need resourcing and training. Communication lines between community and backstopping agency need to be clear, and response times need to be rapid. Spare parts and tools, and appropriate forms of transport, must be available.

Cost recovery

Staffing, training, transport, spare parts, materials, tools, and replacement units all cost money, and some (as few as possible ideally) involve foreign exchange. In times of increasing financial stringency and realism, the trend is to place this burden of recurrent cost on the community⁽⁸⁾. Whether this is right or wrong, it is a pragmatic response to the fact that developing country Governments are grossly under-resourced, and even international NGOs have finite resources. The level of payment, including any subsidies, the basis of payment (by volume, or flat rate per household), and the means of administering and accounting for water charges, all have to be decided, preferably by the community.

Continuing support

Evidence from the field⁽⁹⁾ makes it clear that community enthusiasm for keeping water committees functioning, for adopting improved hygiene practices, and continuing the collection of revenue for recurrent expenses, can wane within two or three years of construction. It is essential that the supporting Government or NGO maintains responsibility for such follow-up. This is a long term function, with a need to continue until there is such a 'critical mass' of good practice within a district, that there is no going back. This notion of continuing support is in opposition to limited term 'projectisation'; the fact is however, that water and sanitation provision in developing countries can only work as a long term service managed jointly by community and external support agencies (Government and/or NGO together with donor or lender). Short term projects fail.

Sustainability objectives

It is possible to set targets or objectives for the achievement of sustainability in practice. Ultimately the test of sustainability is whether facilities are functioning and being utilised. As means to this end, the functioning of community level caretakers and committees, including, especially, their revenue collection activities, should be effective. The backstopping agency should continue to be visible to the community, carrying on its education and training, encouragement, and maintenance support role. These issues are set out in Table 3 which should be read as a continuation of Table 2.

Table 3. Sustainability objectives for water supply and sanitation programmes in developing countries (extended from Carter et al, 1996)

Specifically, the objectives in relation to *sustainability* should be:

- caretakers should be in post and fulfilling their assigned job descriptions
 - committees should be meeting regularly, keeping minutes, and functioning in a manner acceptable to the community
 - revenue collection should be taking place in the manner agreed at the construction phase, or in some other effective way
 - the backstopping agency (Government or NGO) should be in regular and effective contact with the community
 - usage of water supply, excreta disposal and wastewater disposal facilities should be continuing at high levels
 - physical infrastructure should be fully functional
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Community participation

Conventional wisdom is that without community participation, there is little likelihood of sustainability being realised^(10, 11). This is in part a pragmatic recognition of

Governments' inability to deliver services, but in part an ideological proposition which values concepts such as 'empowerment', and 'capacity building' for their own sake. Even from a strictly practical approach, a number of the issues mentioned earlier illustrate the need for capacity building at the community level as well as at the level of Government or NGO.

Education in health and hygiene, training in maintenance and the handling of cash, and involvement of women in community institutions and decision-making, are key activities needed to create local capacity to manage. On the part of Governments and NGOs, listening and learning from the community, developing respect for existing methods of organisation, problem-solving, conflict-resolution, and decision-making, are essential components of such capacity-building work. This exposes the need for a cadre of staff in the Government or NGO which can fulfil these external support and capacity-building functions.

Of the many challenges to the sustainability of water supply projects in developing countries, two stand out. The first is the dependence of community-based approaches on the strength of community spirit. While it is true that in many developing countries, especially in more remote areas, traditional community organisations and loyalties are strong, many 'modernising' influences threaten this strength. Increased mobility, through infrastructure development; increased employment off the land, through industrialisation; rural-urban drift; increased wealth, materialism, and individualism; all weaken the traditional structures and values which make community management of development projects possible. In other words, 'development' itself is a threat to community-based approaches, even if in the long term such trends may increase national wealth and hence the resourcing of Government departments.

The second challenge lies within Government agencies themselves. Bureaucracies, especially in developing countries, tend to be rigid in their structures, staffing, rules, and procedures, as well as providing inadequate remuneration to their staff. The radical change of approach from direct implementation of projects to the enabling of communities to manage their own schemes, requires major shifts in attitude, approach, and technique, which have been very slow in emerging. To quote a recent review of the African domestic water and sanitation sector:

“(It is generally agreed that) community engagement and empowerment is the solution to the sustainability of water supply and sanitation services. The hallmarks of empowerment and capacity building are factors such as transparency, partnership, flexibility, respect, and empathy. The institutional models generally associated with government departments, however, are autocratic, bureaucratic, authoritarian, and “top down”. It is unlikely that an organisation with such characteristics will be able to develop and nurture a whole system of local level institutions which have very different characteristics. This is similar to expecting a sausage machine to produce biscuits.”⁽¹²⁾

The fact that NGOs usually have a greater rapport with communities explains the significant sums of aid money in this sector which flow through them. They will continue to have a key role for the foreseeable future. Whether this is the long term ideal is questionable, since there is a risk of NGOs undermining the Governments which at present have little choice but to permit their operation.

FUTURE PROSPECTS AND RECOMMENDATIONS

Sustainability of community-based approaches

Governments' inability (largely because of lack of resources) to maintain water and sanitation infrastructure has been the major factor leading to the promotion of community participation in development programmes. And yet communities rarely have the sustainable capacity to manage their own infrastructure, in complete independence of Government or non-Governmental organisations. Community participation works to the extent that it does (sometimes with spectacular success) because it has to. Whether this will continue to be the case over the longer term (several decades), as developing country communities succumb to the same pressures which have altered the nature of 'community' in the industrialised world, is debatable.

Full involvement of communities in all stages of programme implementation and management is the correct pragmatic approach for the present. However, this approach does not divest Governments and NGOs of their responsibility for continuing and evolving support of the programmes which they promote. As communities change, and the needs of their water and sanitation systems change, the appropriate type of support - education, training, financial subsidy, technical assistance, maintenance, even rehabilitation - should evolve. Without support, however, few community-based water and sanitation systems will achieve anything approaching permanence.

New models of community participation, and specifically institutional, legal, and contractual links between communities, Governments and NGOs, need to be developed. The aim should be not simply 'sustainability', but permanence through evolution and improvement of water and sanitation services.

Private sector participation

Private sector participation in the water sector is a topical and growing issue⁽¹³⁾. However, it is important that the British model of privatisation is not foisted on developing countries, where effective regulation may be difficult to achieve.

The priority, in countries having the lowest water and sanitation service levels, is to develop the industries which can support the sector: equipment manufacturers and contractor businesses. Here competition can genuinely function, and quality standards can be raised by consumer pressure, unlike in the monopolistic environment of some privatisation scenarios.

The key with private sector participation is that reasonable profits should be achievable, while consumers or purchasers retain appropriate rights, protection, and real choice.

Recommendations

This paper has a dual purpose: to make practical suggestions to those designing or managing water and sanitation programmes in the short term, and to point towards some of the longer term changes which will be desirable or necessary in the sector.

For programme designers and managers

- Realistically achievable impact of programmes should be identified and clearly discussed with all stakeholders. Tables 1 and 2 are intended as a framework.
- Observations of water use behaviour (quantity and quality) in existing systems should be made more widely, in order to refine the targets in Table 2.
- Key indicators of sustainability should be identified and clearly discussed with all stakeholders. Table 3 is intended as a framework.
- Programmes should be designed in such a way that it is in every stakeholder group's best interests to fulfill its part of the service delivery. Voluntary roles are unlikely to be sustainable in the long term.
- Arrangements for continuing support of community-level organisations should be clearly set out, preferably in a contractual form between the community and the back-stopping agency.

For external support agencies

- New models of institutional, financial, contractual, and legal relationships between communities and back-stopping agencies should be sought. Permanence and improvement of service should be the goals. A short term "project" mentality on the part of funding organisations should be eschewed in favour of long term and evolving commitment to developing country partners.
- Greater emphasis should be placed on institutional support (re-training, resourcing, reform) of Government and non-Government back-stopping organisations.
- Where in-country private sector providers of equipment, materials, and services do not exist, or are weak, means should be identified to strengthen them. Genuine competition and choice should be sought.

CONCLUSIONS

1. Inadequate water supply and sanitation services in developing countries result in excessive expenditure of time and energy, water- and excreta-related disease, and lack of privacy in defaecation. Water and sanitation projects often fail to achieve

significant impacts in all these aspects, and systems are often under-utilised, broken down, or abandoned.

2. While investment levels remain insufficient in the sector, and in the absence of very close proximity of water source to home, time-saving and health impacts will remain limited. Nevertheless, small impacts contribute to an overall 'critical mass' of improved services, and the issue of sustainability far exceeds in importance that of short-term impact.
3. The achievement of sustainability requires incentives for all stakeholders involved in use, maintenance, financing, and continuing support of water and sanitation services. For those providing services, these incentives should be financial.
4. Community participation can be made to work in the short to medium term, but its prospects for long term success are limited. New models of permanent, evolving and improving service provision for the long term are needed.
5. Programme designers and managers should clearly identify, with all stakeholders, the realistically achievable impacts and the means for achieving sustainable services within their programmes.
6. External support agencies should encourage long-term management strategies built on clear relationships between strengthened support institutions and private sector participants, and communities.

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