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**THE CHALLENGE OF SUSTAINABLE DEVELOPMENT  
IN  
COMMUNITY WATER SUPPLY AND SANITATION**

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# **THE CHALLENGE OF SUSTAINABLE DEVELOPMENT IN COMMUNITY WATER SUPPLY AND SANITATION**

## **1. INTRODUCTION**

- 1.1 The period since the beginning of the International Drinking Water Supply and Sanitation Decade (1981-1990) has seen significant progress, worldwide, in the provision of potable water supplies and basic sanitation. According to WHO (WHO, 1988) over 500 million people throughout the developing world have received improved water supplies, while about 250 million have been provided with better sanitation. However, the goal of water and sanitation for all by 1990 will only be reached in a few countries.
- 1.2 Experience to date indicates that high population growth and rapid urbanisation have tended to overwhelm the capacities of installed facilities. In addition a significant number of these facilities have quickly become inoperative due to inadequate operation and maintenance, reducing both the effective level of service and extent of coverage. The main challenge for the provision of water and sanitation facilities in future is not only to extend coverage but to ensure that the facilities are sustainable - that they are functioning properly, they are properly utilised, and the facilities lead to the desired positive impacts.
- 1.3 Sustainability and its achievement for rural water supply and sanitation programmes in Africa is the main theme of this paper. The paper takes a hard look at the concept of sustainability and what it means in project terms, and then discusses a recently proposed framework for sustainability in community water supply and sanitation systems. The paper concludes with an exploration of the prospects for promoting this basic approach to sustainability, and the implications for applying it in practice.

## **2. THE DECADE IN PERSPECTIVE IN AFRICA**

### **2.1 Coverage and Levels of Service**

- 2.1.1 Many countries in Africa have reported significant improvements in the provision of water and sanitation facilities since the beginning of the Decade in 1981. The overall coverage of water supply and sanitation facilities had increased from 33 percent and 28 percent, respectively, in 1980 to 40 and 38 percent in 1985, at the halfway mark of the Decade (WHO, 1987).

The greatest improvement has been in urban water supply, where coverage improved from 66 percent in 1980 to 78 percent at the end of 1985. Rural Water Supply coverage made a modest increase from 22 percent in 1980 to 25 percent in 1985. Both urban and rural sanitation coverage have lagged behind water supply.

- 2.1.2 While coverage and levels of service have increased, in real terms the situation has not improved to the same extent. Evaluation reports of major rural water supply programmes in various parts of the developing world point out many examples of recently implemented projects which have fallen into disuse and disrepair. Consequently the extent of coverage and levels of service are in fact lower than the official statistics of coverage indicate.
- 2.1.3 It has been estimated recently (WHO 1988) that by 1990 at least 800 million people in the rural and peri-urban areas will be without safe water supply, and many more millions will not yet be provided with adequate sanitary facilities. Taken together with the high population growth rates, rapid urbanization, diminishing funding of the sector, and inadequacies in operation and maintenance, universal coverage of water and sanitation facilities is still a formidable challenge requiring innovative strategies.

## **2.2 Lessons from the Decade**

- 2.2.1 The Decade has provided valuable lessons regarding approaches to the provision of community water supply and sanitation facilities. The most critical of these lessons involves the relationship and partnership between the water agency and the benefitting community at all stages of project planning, implementation, operation and maintenance. The experiences from the Decade have also led to the knowledge that sustainability is not the result of any one project activity but of a number of interlinking "key elements." These elements can be considered as building blocks, together providing the foundation for properly functioning, well utilised water and sanitation facilities, with assured long term impacts. It is now widely appreciated that both the water agency and target community have vital roles to play in order to ensure sustainability of investments in water and sanitation facilities, by together ensuring such elements are in place and properly resourced.

## **3. SUSTAINABILITY AND RESOURCE COVERAGE**

### **3.1 Sustainability**

- 3.1.1 A sustainable water supply system is one which continues, beyond its implementation, to function properly as originally conceived, is regularly utilised by the users, and continues to deliver its intended benefits to the users. In short the system works, is used and has a positive impact. The same meaning also applies with respect to a sanitation system, except that the target group is primarily the household rather than the community.
- 3.1.2 Ensuring sustainability has not been easy, and despite the best intentions of recent years it has not been achieved, as evidenced by a number of failed or underutilised schemes and those with little impact. Part of the problem has been the lack of clearly defined guiding principles and frameworks for achieving sustainability. The other part of the problem is the lack of appreciation of the need for clearly defined, agreed and accepted roles of the two

principal parties to the community water supply and sanitation system - the community, on one hand, and the water agency on the other.

- 3.1.3 The long term success of any project begins with careful planning and design. If the goal of sustainability is missed out at this stage and not carefully built in, then it will not be possible to achieve sustainability of the system during its life time. Careful planning will take into account the totality of the project environment - the users, the resources, skills, and organisations available, as well as the corresponding inputs needed as back-up by the agency. The inputs expected from the agency will include technical support (during planning, implementation, operation and maintenance), finances and training to provide the necessary skills for operation and maintenance of the system. Guidance will also be needed on appropriate financial systems (cash raising, record keeping, financial control) to ensure availability of cash for spare parts and major repairs. A catalogue of community-based financing systems has been published by IRC (rec, 1987), to assist Agencies in providing such guidance.
- 3.1.4 The water and sanitation sector now needs to make a new acceptance of open and timely audits of a project's potential for remaining sustainable, and regular analyses of the resources this will require and where they are to be found. How such assessments might be done will vary from project to project and country to country. Nevertheless it has been possible for a broad group of sector partners to recently develop a proposed framework of key elements which need to be in place before sustainability can be anticipated. (WHO, 1989)

## 3.2 Elements of Sustainability

- 3.2.1 The ten proposed key elements of water supply sustainability and extended low cost sanitation coverage are summarised in Table 1, and discussed in detail in the report of the joint work (WHO, 1989). The order of elements in the sequence does not presume relative importance. It is important however to note that each of the elements is considered an essential building block for achieving sustainability.

**Table 1: Key Elements of Sustainability**

<b>Water Supply</b>		<b>Extended Low Cost Sanitation Coverage</b>	
<b>Number</b>	<b>Element</b>	<b>Number</b>	<b>Element</b>
1.	Community Institutions	1.	Support of Community Institutions and Local Leaders
2.	Developed Skills	2.	Created Awareness
3.	Supportive Attitudes	3.	Involvement of Women
4.	Community Extension Services	4.	Household Priority
5.	Accepted Service Levels	5.	Examples of Low-cost Sanitation Success
6.	Appropriate Technology	6.	Developed Skills
7.	Operational Phase Inputs	7.	Appropriate Technology
8.	O&M Related Supportive Systems and Services	8.	Community Extension Services
9.	Allocation of Responsibilities	9.	Allocation of Responsibilities
10.	Execution of Responsibilities	10.	Execution of Responsibilities

### **3.3 Resources Coverage**

3.3.1 Little will happen in establishing key elements without the right inputs, usually from both community and agency. Quantifying and timing such resources and dividing responsibility between agency, community and individual householders has now become known as the process of "resources coverage." The important relationships between resources coverage, sustainability and the higher order goals of development of water and sanitation - (namely, improved quality of life and health) - are shown in Fig. 1. The figure illustrates the fact that cash raising and cost recovery are important lower level contributing activities within the entire framework of successful water and sanitation programmes. There are also many other inputs/resources, besides money, necessary for achieving sustainability.

3.3.2 The assessment of inputs necessary for each key element, quantification of these inputs and the division of responsibilities, is accomplished through a series of worksheets. The worksheets feed into the overall framework as indicated on Fig. 1.

## **4. APPLICATION OF FRAMEWORK**

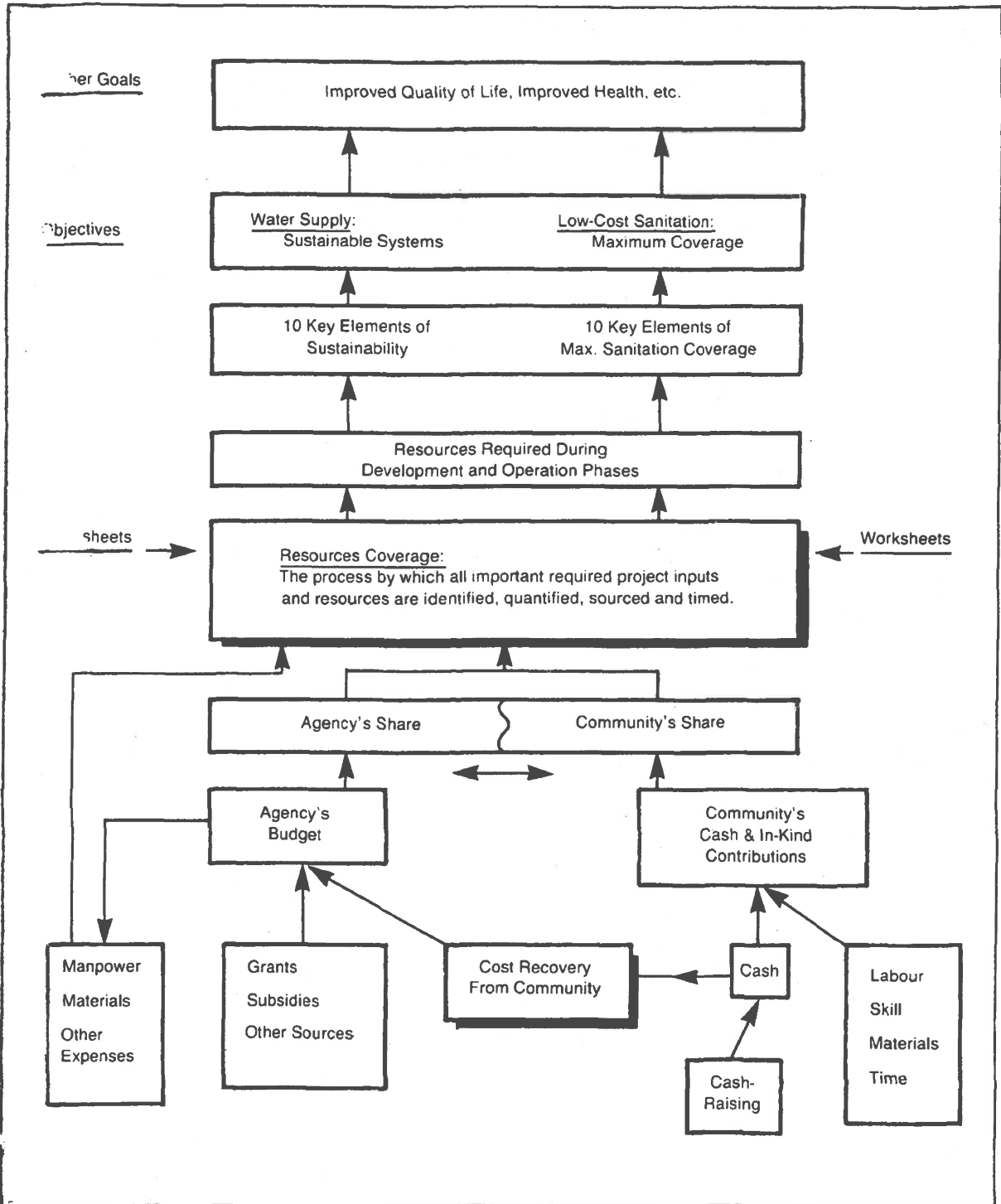
4.1 These Principles and Models for achieving sustainability in community water supply and sanitation systems have been under development since 1985 through a series of consultations under the auspices of WHO, with important inputs by the International Reference Center for Community Water Supply and Sanitation (IRC/CWS) and many

other partners from the developing countries, ESAs and consultants. The work has now reached an implementation stage, with planned country-level applications in East and Central Africa, and in the Phillipines and possibly Thailand. At the same time ESAs have agreed on the importance of sustainability (WHO/IRC 1987) and will consider supporting specific activities within the framework of investment programmes undertaken in conjunction with developing countries.

- 4.2 A sub-regional working group meeting to further discuss and try out such a framework was held in January 1989 in Mongu, Western Province, Zambia, with support from the Norwegian Agency for International Development, IRC and the Deutsche Gesellschaft fur Technische Zusammernarbeit (GTZ). (DWA/Zambia 1989) following this, Malawi is now carrying out a field application of the proposed framework. The objective of the work, supported by the Netherlands Directorate General for International Co-operation (DGIS), is to field test and adapt the guideline manual, based on the proposed framework, and to provide insights for policy discussion on the issues of sustainability and resources coverage in Malawi.
- 4.3 On-going and planned activities in the promotion and adaptation of the sustainability and resources coverage framework in Africa should greatly assist the planning and implementation of sustainable water supply and sanitation facilities. In turn this will lead to more successful projects in Africa.

## **5. PROSPECTS FOR SUSTAINABLE WATER AND SANITATION DEVELOPMENT**

- 5.1 The significant developments which have so far taken place in the provision of water and sanitation facilities in Africa, will be undone if the facilities fall into disuse soon after construction. The progress towards further coverage is currently constrained by relatively high annual increases in population, high rate of urbanisation, and diminishing financial commitments to the water and sanitation sector. Thus in order to make the limited investments more effective the schemes should be designed to ensure sustainability - that they work, are used, and have the desired impact.
- 5.2 However, implementing the sustainability and resources coverage framework will require political will and government commitment. In the past, governments in many parts of Africa provided water and sanitation facilities at virtually no cost to the user. Because of this legacy, it will require political will to reverse the status quo and accept the principle that to the maximum extent possible communities or users should be responsible for their own facilities. The decision framework for allocating responsibilities, quantifying inputs and the timing of such inputs has now been developed through the WHO-initiated work. It should be adopted to suit each project or country, tried out, and then applied more widely.
- 5.3 The provision of water and sanitation facilities should be seen in every sense as a partnership between the agency (government) and the community. This calls for close collaboration in all phases of the project - planning, implementation, operation and



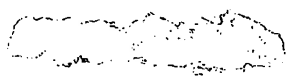
Acknowledgements:  
 World Bank Task Force on Cost Recovery  
 W/91: CWS/89.6

**FIGURE 1: SUSTAINABILITY, RESOURCES COVERAGE AND COST RECOVERY**

maintenance. However this collaboration calls for multi-disciplinary skills and an integrated approach, as evidenced by the wide range of key elements of sustainability.

- 5.4 Partnership between agency and community should go further to include the external support agencies also. Sustainability will not be achieved without ESA inputs in the areas of technology, funds, training and technical support. It is only when all the inputs/resources have been identified, quantified, and timed, and all responsibilities accepted and agreed between the three parties - the community/household, the agency (government) and ESAs - that we can ensure rapid progress towards sustainable development in community water supply and sanitation in Africa.

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