



## 10th WEDC Conference

**Water and sanitation in Asia and the Pacific : Singapore : 1984**

## Rural water supply planning and implementation

**S Amin**

### I. OBJECTIVES

In the context of the overall national objective of providing water supply to all the rural areas as a part of the minimum needs programme, the present paper seeks to comment on certain aspects of the process of planning, implementation and maintenance of rural water supply schemes with particular reference to the State of Gujarat. The focus of the paper is on the few critical factors/aspects standing in the way of appropriate planning and efficient functioning of rural water supply projects, investment on which has witnessed a significant rise in the recent past. The presence of such bottlenecks has resulted in inadequate realisation of benefits from such investment programme.

The paper begins with a brief description of the present process in case of the State of Gujarat, lists the important areas with particular reference to the planning and maintenance aspects, presents findings from a few case studies based on both field survey and official data and finally identifies a few critical factors, though based on very limited observations, which require immediate attention and call for both short-term and long-term measures.

### II. THE PROCESS

There are in total 18,725 villages in the State of Gujarat with a total population of 23.4 million in 1981, comprising about 70% of the population of the State. The water supply situation in the rural areas of the State is to say the least, acute. It is a matter of concern that more than 30% of the villages in the State do not have an assured source of drinking water supply. The problem is not only severe but varies in nature across different regions of the State. Accordingly its solution required a systematic and well defined approach in terms of planning, implementation and maintenance. The creation of Gujarat Water Supply and Sewerage Board (GWSSB), as a separate agency to look after this important aspect of public policy, was a positive step in this field. Since its inception in August 1979, the Board has been instrumental in pioneering water supply schemes in the rural areas of the State. The process of commissioning these schemes is fairly detailed, starting from a thorough

investigation of the problem villages - or 'no source' villages as they are named - their systematic categorisation in terms of priority, design of appropriate schemes and their implementation in due time.

For better understanding the entire process of commissioning rural water supply schemes is illustrated in the form of a flow diagram.

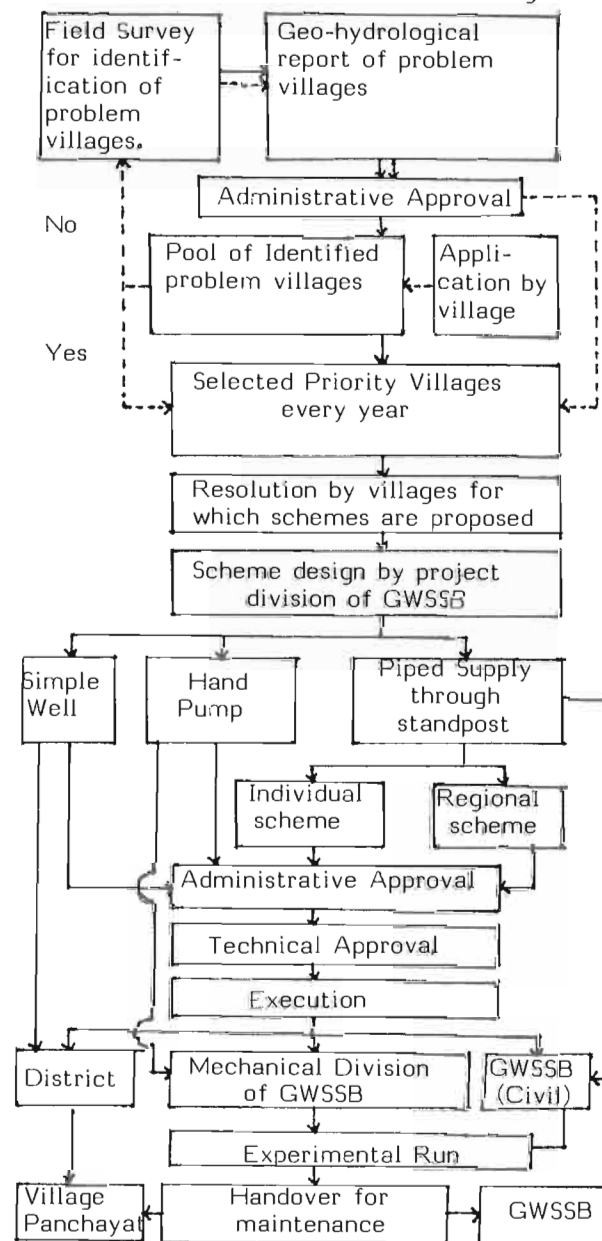


FIG.1 PROCESS OF PLANNING AND IMPLEMENTATION OF RURAL WATER SUPPLY SCHEME

It is clear from the flow diagram that the Board has adopted a well-defined and systematic approach to tackle the problem of rural water supply. This is most welcome, particularly when one considers that until the formation of the Board, provision of rural water supply schemes has been mostly in the nature of make-shift arrangements to grapple with a particular drought or disaster situation. It was only in 1976 that rural water supply received priority in the overall national plan and became more important under the Minimum Needs Programme. The creation of the Board was a direct outcome of these events. Accordingly there has been a remarkable shift in the pace with which rural water supply schemes have been commissioned prior to and the post 1976 period. The concerted efforts of the Board in this field has resulted in a much wider coverage of the problem villages compared to that achieved during the period before its inception. The Board's achievement is illustrated in Table 1.

Table 1: Provision and Progress of Schemes in Rural Areas of Gujarat State.

	No. of problem villages	No. of villages provided with water supply	No. of villages yet to be provided	No. of villages where schemes are in progress	Annual capital outlay (Rs. in crores)*
AS ON					
31.3.1980	9038	4514	4524	2168	12.0
31.3.1981	10621	5123	5498	2371	13.5
31.3.1982	12000	6030	5970	2562	14.2
31.3.1983	12300	7088	5388	2102	22.1

\* Exchange rate ₹ = Rs. 10.75

Source: GWSSB

### III. THE MAJOR ISSUES

While the efforts of the Board in commissioning rural water supply schemes need to be acclaimed, there is little room to be complacent. There still remains a substantial number of villages which do not have any assured source of safe water supply and the number of such villages is increasing over time. For that matter, at the time of its inception in 1979 the Board had inherited a huge backlog of such villages mainly due to the absence of any well-defined policy prior to that period. This backlog had resulted in a severe burden on the Board and has been accentuated by the continuous increase in the number of problem villages in the recent years. The direct result has been that in spite of the increased tempo in the field of rural water supply, the situation is still deteriorating, if one goes by the number of villages yet to be provided with water supply schemes (Table 1). The backlog is clearly and alarmingly

increasing. The increase may be due to either of the following reasons:-

(i) Inadequate identification of problem villages in the initial years. This means that any time point the number of problem villages is actually more than that identified. However, if this is the case, one can reasonably expect that the number will stabilize within a few years, after all such villages are identified, though in separate lots. Once the target becomes fixed, its fulfilment will depend on the rate at which the Board's activity is expanding.

(ii) Deterioration in the water supply situation in rural areas. This means every year new villages which were earlier having some source of water supply, are added to the total pool as their sources fail or deteriorate.

Deterioration is mainly due to the following reasons, (a) increase in water salinity, (b) industrial pollution, (c) drop in water table due to drought. This may also include villages which have been already provided with water supply schemes, but the same have failed for some reason or other. If this is the case, the ambitious object of reaching one and all with safe and assured water supply may not be fulfilled in the near future.

Without going into the relative significance of these factors in explaining the increase in number of problem villages, the three major issues which need immediate attention for the fulfilment of the decade's objective can be stated as :-

- prioritisation of problem villages;
- resource allocation; and
- effective maintenance.

It is now proposed to discuss these three issues in detail in the remaining part of the paper. While the first two issues are discussed from a macro view point with the help of official statistics at the State level, the third issue - maintenance - is discussed at a micro level with the help of few selected case studies.

#### A. Prioritisation of Problem Villages

The task of prioritisation of problem villages is a direct outcome of, the rapid increase in their number on the one hand and the limitation of resources on the other. Since the competing villages are many, it is necessary that they be ranked in terms of their relative urgency and need, to decide "which village comes first". In an effort to tackle this problem the Board has adopted the following categories for grouping the problem villages.

Category 1: Villages which do not have an assured source of drinking water supply within a reasonable distance (1.6 km) or within reasonable depth (15 metres).

**Category 2:** Villages which suffer from excess of salinity, iron or fluoride or other toxic element hazardous to health.

**Category 3:** Villages where sources of water are liable to the risk of cholera or guinea worm infestation.

The task is difficult in view of the additions of new problem villages every year. Under such circumstances if prioritisation is to reflect the ranking of villages properly, it is imperative that the list of such villages be updated every year.

#### B. Resource Allocation

Plan outlay for rural water supply sector has shown an appreciable increase in the recent years (Table 1). This is indeed commendable. However, if the decade's objective of providing all the villages with safe water supply is to be fulfilled, it will call for the allocation of additional funds to this effect. It is estimated that provision of water supply to all the rural areas within this decade will cost the Board a sum of Rs.350 crores (at 1981 prices) in total, which works out to Rs.35 crores annually. When seen in this context the plan allocation appears to be relatively less. As a result, the Board has been unable to keep pace with the deteriorating problem. As can be seen from Table 1, the net addition of problem villages has far outpaced the additional schemes that were provided every year. Keeping in view these factors the fulfilment of the decades objective will call for,

- (a) preparation of an updated list of problem villages;
- (b) systematic scheme design and estimate of the total cost involved;
- (c) sufficient allocation of funds towards meeting the cost; and
- (d) a well-knit organisational and implementation programme to complete the task in time.

#### C. Maintenance

Howsoever good may the process of planning be, and no matter how scientific is the approach adopted, a programme of rural water supply can hardly be successful unless backed by an efficient maintenance system. If the benefits of rural water supply schemes provided by expending scarce capital are to be reaped in full, it is imperative that the schemes be properly maintained, whatever be their limited number. It is an unfortunate observation that the assets so created are not maintained effectively. A survey was made in the year 1981 to know the position as to how many completed rural water supply schemes were properly utilised and how many were idle. The survey revealed that 70% of the schemes provided were working, while the remaining 30% were idle. The estimate

of the number of schemes idle was possibly lower than actual in view of schemes which were working for only a part of the year. The reasons for non-working were identified as:-

- (a) lack of funds;
- (b) lack of repair facilities;
- (c) lack of repairs of civil structures;
- (d) non-payment of electricity dues;
- (e) partial or complete failure of source.

National Environmental Engineering Research Institute also, independently, carried out in-depth study of 83 individual village water supply schemes in the country. Out of these, 7 villages were from Gujarat. The problems and constraints as listed in the study report for these villages were:-

- (a) inadequate allocation of funds towards cost of the schemes;
- (b) inadequate funds for operation and maintenance of piped water supply schemes maintained by local body;
- (c) Non-availability of spares in time at block/district head-quarters for repairs of pumps;
- (d) inadequate number of trained mechanics;
- (e) irregular power supply;
- (f) lack of community participation.

In order to examine the significance of these factors in the success or failure of rural schemes it is necessary to understand:

- (a) the exact organisation structure under which the schemes function; and
- (b) the actual working of the rural water supply schemes.

Rural water supply projects, after completion, are handed over for maintenance to:-

- (a) District Panchayats in case of regional schemes;
  - (b) Village panchayats in case of individual schemes.
- Due to the inability of these local bodies to maintain the assets effectively, the Board has recently taken over the maintenance of regional water supply schemes. However, maintenance of individual schemes is still with the village panchayats. The incidence of failure of these schemes is much higher compared to the regional schemes and unless the problems are located and corrective action taken, wastage of substantial investment is bound to occur.

To understand the reasons behind the success or failure of individual schemes, case studies of 4 villages were undertaken. In 2 of these villages the schemes have been successful, in other two it has clearly failed. The villages were selected equally from two talukas - one developed and the other in the process of development in the field of rural water supply. Summary information relating to these individual schemes is presented in Table-2.

Table 2 : Summary Information Relating to Water Supply Schemes in the Selected Villages.

Taluka	Village	Popula- tion (1981)	Scheme type	Constru- ction year
1	2	3	4	5
1. Savli	Kunpad	1813	Piped water supply	1978
	Balana- pura	728		1982
2. Santra-Malvan mpur	Ladipur	1025	-do-	1972
		747	-do-	1981

Village	Capital cost(in lacs)	Maint- enance cost (in lacs)	Status	Period for which it worked/is working
2	6	7	8	9
Kunpad	1.24	0.15	Not working	1 year
Balana- pura	0.77	0.11	Working	1 year
Malvan	1.23	0.18	Working	11 years
Ladipur	1.45	0.21	Not working	2 months

The major factors identified as being responsible for the success/failure of these schemes are as under:-

- (a) availability of funds;
- (b) interest of the local body vis-a-vis community involvement;
- (c) attitude of the beneficiaries
- (d) electricity dues and inter-department co-ordination.

(a) Availability of funds

It is normally expected that the beneficiaries would pay for the water supply services created over a period of time. The payment by the beneficiaries should cover all the operating cost if not a part of the capital cost also. There was a clear reluctance on the part of the beneficiaries to pay for these operating and maintenance cost in village Kunpad and Ladipur where the scheme failed. Payment by the beneficiaries is the only source of generating the required funds for maintenance, as the local bodies do not have power to mobilise resource in any other way. The consumers in India and for that matter in any developing country, are not motivated to pay for water, as water is erroneously considered as a free natural gift. They ignore the fact that water is free, at the spring, not at their water taps. One has to accept that one has to pay for water just one pays in case of food and other services. One has to motivate people that they have to pay for the service they expect. It may

not be possible to achieve the change immediately. It may take time, one should first develop political and social will and effect the change progressively. Till such time cross subsidy and other arrangements should be developed. In particular, the local bodies should be induced to levy appropriate taxes to generate partly or fully the maintenance and repair charges of rural water supply.

(b) Interest of the local body and community involvement

The success of any individual scheme is directly dependent on the willingness of the local body which has the full responsibility of maintenance. Equally important is the interest of the community at large. In most cases the local body does not show much enthusiasm in taking over the completed work because the operation and maintenance of a scheme means the raising of money which a local body does not want to do because of political interest. Reversibly, if the local body does have sufficient desire to operate the scheme, it is well maintained. The scheme in village Malvan has been working for the last 11 years. The village panchayat is vigilant and regularly collects water charges to meet the operating expenses. On the contrary such efforts are clearly absent in Ladpur and Kunpad.

(c) Community participation (attitude...)

Community participation is another important factor. An important observation made regarding this factor was that "wherever alternative sources of water were available the community showed little or no interest in the constructed scheme. Village Kunpad is a benefitting example. The village has alternative sources of water in terms of an open pond and few private wells meant primarily for irrigation. However, villagers were using these sources for regular domestic use. These sources are not safe and hygienic still they were used in that the water was free whereas water from the scheme entailed a cost on the consumers, though it was safe. This lack of preception to distinguish between minimum water as against minimum safe water has manifested itself in the general lack of the community to restart the scheme, lying idle for the last 4 years. In village Malvan too, sources were available at a distant place about 2 kms away from the village. Since the water was free at such open but polluted wells the community preferred to adhere to the traditional sources rather than go for a safe source which however called for payment of water charges.

This is not to say that community preception is absent in all the rural areas. Village Malvan did have alternative sources, but the same were abandoned no sooner the scheme started.

The point to be stressed is this that the attitude of the beneficiaries and their ability to value the quality of water is an important determinant of the success of rural supply schemes.

(d) Electricity dues and inter-department co-ordination

The general reluctance on the part of the beneficiaries in village Kunpad and Ladpur to pay for the operating cost has resulted in long outstanding dues on electricity account. As per the present policy of the Electricity Board the connections have been promptly cut. The villagers, do not seem to be in a mood to clear the dues and consequently the Board does not re-install the connection. As a result the schemes are lying idle for many months. While the policy of the Electricity Board may be defended from the organisation point of view, it is doubtful whether the same is justified as an overall strategy from the public sector view point. Such a policy may enable it to reduce its losses but would at the same time render substantial investment in rural electrification and rural water supply ineffective. It is a matter of concern that in rural water supply alone, investment to the tune of Rs. 1 to 1.5 lacs become unyielding due to the non-clearance of a small sum of dues. This is of course, not to suggest that the Electricity Board should go on bearing the burden, but it does call for framing a more appropriate policy towards the dealing of this problem. At present there is little co-ordination between the village panchayat, district panchayat and the Electricity Board which is perhaps responsible for this unfortunate event.

#### IV SUMMARY OBSERVATIONS

The paper has tried to bring out in brief the present status of rural water supply with particular emphasis on some of the major problems in this regard, covering Planning and maintenance. While it is true that the activities of the Board have expanded substantially in the recent years, much more attention will be needed to complete the tasks ahead. The tasks called for are not limited to the GWSSB and the Government machinery at large but should penetrate into the root of the social system, including public motivation and community participation.

In the context of the preceeding discussions with particular reference to the individual village schemes which are outside the purview of GWSSB for maintenance, the following aspects require attention and corrective measures:-

- (b) resource mobilisation with a determined effort to recover a certain part of the operating costs from the beneficiaries;
- (c) imposition of an indirect tax, where social reluctance to pay directly for water exists;
- (d) framing of appropriate policy to educate and motivate the people to participate actively in rural water supply schemes;
- (e) inducing the local bodies to levy appropriate taxes and discharge their responsibility; effectively; and above all
- (f) setting up of a separate maintenance division within the Board to look after the regular operation and maintenance of village water supply schemes.
- (a) development of more objective basis of resource allocation and prioritisation;