

CONTENTS		PAGES
CHAPTER I	.. Introductory	1
CHAPTER II	.. A Historical Retrospect	4
CHAPTER III	.. An Assessment of the Problem	10
CHAPTER IV	.. Effective Measures for Stock-taking ..	33
CHAPTER V	.. The Problem of Finance	37
CHAPTER VI	.. Organisational Reforms	47
CHAPTER VII	.. Special Aspects of the Rural Problem ..	53
CHAPTER VIII	.. Procedural Reforms	61
CHAPTER IX	.. Production and Procurement of Materials ..	65
CHAPTER X	.. Water Resources Conservation and Water Pollution Control	69
CHAPTER XI	.. Summary of Recommendations	74
APPENDICES	81

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CHAPTER I

INTRODUCTORY

1. *Constitution of the Committee*—The Ministry of Health, Government of India, in their order No. F. 12-1(WS)/60, dated the 28th April, 1960, constituted a Committee consisting of the following members to make an assessment of the requirements of water supply, both urban and rural and to suggest ways and means for financing these Programmes effectively (Appendix I).

Shrimati Lourdhammal Simon, Minister for Local Administration, Madras	Chairman
Dr. N. N. Kailas, Deputy Minister for Co-operation, Government of Maharashtra, Bombay	Member.
Dr. Ram Subhag Singh, M.P.	”
Shri H. C. Mathur, M.P.	”
Shri N. V. Modak, Director, Central Public Health Engineering Research Institute, Nagpur	”
Shri M. K. Kutty, Deputy Secretary, Ministry of Health	”
Col. Barkat Narain, Adviser (Health), Ministry of Community Development and Co-operation, Department of Community Development	”
Shri K. S. Krishnaswamy, Deputy Director General (Public Health Engineering)	”
Shri S. Rajagopalan, Assistant Director General (Public Health Engineering)	Member-Secretary.

2. *Terms of reference*—The letter constituting the Committee states: “. . . . the National Water Supply and Sanitation Programme has now been in operation for about five years. It was felt that it would be useful to make a critical review of the progress made so far and of the requirements of the future in the field of water supply and sanitation. The Committee will decide its own procedure but may visit the States to review progress and examine the problem on the spot.

3. A clarification of the terms of reference was given by Shri D. P. Karmarkar, Union Minister for Health while inaugurating the first meeting of the Committee. He referred to the fact that so far a correct and comprehensive assessment of the urban and rural water supply and sanitation requirements in the country has not been made and stressed the need for compiling a realistic forecast of the requirements now as well as in the future. He desired that the

Committee should decide and recommend on the procedure to be adopted by the Central and State Governments to set about this task and come up with a realistic and authoritative assessment of the urban and rural water supply and sanitation needs and requirements in the country. He indicated that it was open to the Committee to widen and amplify the terms of reference to include subjects which, it considered, have a bearing on an overall assessment of the problem. He also suggested that the Committee should go fully into the problem of financing of the schemes, both water supply and sewerage, with special reference to the tax structure and revenue potential in the urban areas as also into the question of training and research as part of the problem of the Organisation of the different States. He would also welcome the Committee's views in regard to the agencies in the States, technical and administrative, who should be entrusted with the implementation of the rural works, irrespective of the particular Ministry at the Centre or the State level which may be administering the Plan, in order to ensure uniformity of procedure and efficiency and economy in construction and maintenance.

4. *Committee's meetings*—The Committee held 11 meetings between July 1960 and August 1961 and visited a representative number of States including Delhi, Madras, Kerala, Andhra Pradesh, West Bengal, Assam & Jammu and Kashmir. At its very first meeting in Delhi, the Committee finalised 4 detailed proformae on urban and rural water supply and sanitation and 2 detailed questionnaires to be issued to State Governments and local bodies for furnishing relevant data covering the entire field and for eliciting the views of the different agencies on the organisational, financial and related issues (*vide* Appendix III).

5. *Proformae and Questionnaires*—Proformae 'A' and 'B' relate to factual data in respect of urban water supply and sewerage schemes, defining the position as on 31st March 1960. Proforma 'C' deals with the details of financing of urban schemes with an analytical assessment of the several contributory factors and collation of statistical data therefor. The proforma was devised specially in order to review existing financing methods for urban schemes and to suggest suitable re-orientation of policy in such methods for the better success of the programme in future. Proforma 'D' deals exclusively with rural water supply in a comprehensive manner seeking information on the existing position and the future workload. In order to reduce the details to a close and realistic approximation, the proforma indicates a geographical grouping of the rural areas in each State as also the different kinds of rural water supplies implemented under the different programmes.

Questionnaire I relates to the Organisational set up in the State. Questionnaire II deals with rural sanitation on a broad canvas.

6. A large number of printed copies of the proformae and questionnaires were sent to all the State Governments and Corporations with the request that they may be filled in as complete a manner as possible and returned to the Committee at a very early date. The Union Health Minister, as also the Chairman of the Committee, addressed in addition, by a D. O. letter the Chief Minister of each State requesting that special attention might be paid by the State Governments to the filling of the proformae and questionnaires in view of the importance of the information sought for formulating the future plan of action

7. *Inspections and Discussions*—In the several States visited, the Committee took the opportunity to make on the spot inspections of urban and rural water supply and sanitation projects in progress and to hold detailed discussion with the State Ministers, Secretaries to Government, Engineers and other officials and non-officials connected with the Programme and to exchange ideas on the several problems bearing on the entire subject. The Committee also had the benefit of studying the variety of information available with the Central Public Health Engineering Organisation in regard to the States which the Committee has not been able to inspect so far. (Minutes of the Committee's meetings are given in Appendix II).

8. *Earlier study by other bodies*—In addition, the Committee was able to study the work already done by the Panel (Modak Committee) on National Water Supply and Sanitation Schemes under the Committee on Plan Project of the Planning Commission, as also by the T.C.M. Team of Public Health Engineers from the U.S.A. The Committee has taken into account the recommendations made by these two independent bodies and found them useful while analysing the problem before it.

9. Likewise, the Committee has derived useful material from the reports and recommendations made by other Committees relating to this problem, the Proceedings of the Public Health Engineers' Conferences, the Central Council of Health, Local Self Government Ministers' Conferences and Mayors' Conferences. The Committee has received valuable information and willing assistance from the State Government Minister and concerned officials during their itinerary and discussions and appreciates the co-operation from all the agencies who have furnished available data in regard to proforma and questionnaires sent to them.

10. The Committee is grateful to the Union Minister for Health, Shri D. P. Karmarkar, for his sustained interest and guidance and to all the State Ministers and officials concerned. The Committee also records with appreciation the valuable work done by the Member-Secretary and his staff, in arranging the Committee's several visits, and in drafting the Report.

CHAPTER II

A HISTORICAL RETROSPECT

11. *Importance of Environmental Sanitation*—The purity of water for human use finds mention even in the Rig Veda. Civilisations through the ages have been in quest of pure water. Emperors and administrators of old attached special importance to the provision of good water for their citizens. That water can act as a vehicle for the transmission of disease is a knowledge rediscovered by the scientific world in the recent centuries. In the advanced countries, organised water supply systems for communities gained importance with the growing urbanisation of population in the wake of Industrial Revolution. Water supply and sanitation measures then got priority in their Nation-building programmes, as community life recognised and demanded them as essential requisites.

12. *Poor progress*—While the provision of these necessities for the well-being of the community was making rapid strides in the West, conditions in India remained static. Organised water supply systems were attempted first in the three Presidency Towns of Calcutta, Bombay and Madras in the late 'seventies'. Through the subsequent decades, measures to secure better health for the people found emphasis on the curative side. Water-borne and filth-borne epidemics were combated with drugs and vaccines. Preventive health measures were organised as palliatives in order to ward off periodic epidemics. A few towns came in for the benefit of protected water supply more due to the stress of local urgency and recurring epidemics, than under any organised plan or programme.

13. The responsibilities for health and health measures were transferred by the Central Government to the Provincial Government, who in turn, transferred the burden on to the weak shoulder of the local-bodies. As a result, the history of the struggle of the local-bodies for these essential amenities—safe water supply and sanitation measures—for over half a century consisted mostly of repeated importunities by the local-bodies to the State Governments in the matter, who ordered the investigation and reinvestigation of several schemes and eventually shelved them. A few of the more vocal local-bodies, however, succeeded in prevailing on the Provincial Government to install limited water supply systems, most of them heavily subsidised by the Governments. Local-bodies merely kept these systems going through the years without any improvements necessary to meet the growing demands from the increasing populations. Even these few water supply systems therefore soon reached acute stages of inadequacy for the needs of the towns.

14. *A short period of activity*—With the advent of Popular Ministries just before the Second World War, there was a sharp spell of an intensive programme to meet the challenge of water supply, particularly in the rural areas, in Bengal, Madras, Bombay and the old Mysore State. A programme of rural water supply on a province-wide basis was planned and a tangible measure of progress achieved before the war intervened.

15. *The Bhore Committee*—In the Post-War Developmental era, the Bhore Committee came into being and for the first time pin-pointed attention to the importance of safe water supply and sanitation measures on a country-wide basis. They assumed importance in the National Developmental Plans. The Madras Government followed by appointing a Committee—in 1947, to examine and report on the question of water supply and drainage for urban and rural areas in the entire State. The Committee came out with far-reaching recommendations in regard to organisation, finance, materials of construction and priorities. Madras and few other States launched on their Five Year Plans of development.

16. *The Environmental Hygiene Committee*—The Environmental Hygiene Committee (1948-49) appointed by the Union Government was the first agency of its type charged with an overall assessment of the country-wide problems in the entire field of Environmental Hygiene. The Committee made notable recommendations in the broader field of Environmental Hygiene and urged for greater activity in this direction. They recommended specifically a comprehensive plan to provide water supply and sanitation facilities for 90 per cent of the population within a period of 40 years and also suggested a scheme of priorities for certain areas. No concerted measures were taken to implement their recommendations.

17. *Planning by the States*—As part of the post-war reconstruction activities, some of the States initiated their Five Year Plans in which provision was included for the implementation of urban and rural water supply and sanitation schemes. Some headway was being made in this direction, but the States soon came up against formidable obstacles in the way of raising the finances for such schemes, building up of the organisations, and in the procurement of proprietary materials needed for such schemes.

18. *First Five Year Plan*—Then came the First Five Year Plan (1951-56) of the National Government. In the initial stages of the Plan, provision for water supply and sanitation schemes in the States was made from the fund under Community Development Works and Local Developmental Works included in the Plan. There was, however, no Central direction or leadership provided in the matter. In 1953, in response to a circular enquiry from the Union Health Ministry, the information was elicited from all the State Governments that they were unable to make any headway in regard to their water supply and sanitation schemes due to the several factors already mentioned. The States also expressed the desire that the Centre must step into the picture and announce a programme of assistance to help the States to proceed with such schemes.

19. As a result, it was in August-September, 1954 that the Union Health Ministry announced their National Water Supply and Sanitation Programme as part of the Health schemes under the Plan, and made specific provisions to assist the States in the implementation of their urban and rural water supply and sanitation schemes. Approved urban schemes would receive assistance by way of loans, while rural schemes, limited to population units not exceeding

5000, would be given a 50 per cent grant-in-aid by the Centre, the other 50 per cent being found by the State Governments, partly as grant-in-aid and partly as contributions from the villagers either in cash or in labour or in materials. The Programme started with an aid of about Rs. 3 crores offered by the T.C.M. under O.A.—25, to provide materials, equipment and technical services. The First Plan made a total provision of Rs. 12 crores for urban schemes and Rs. 6 crores for rural schemes to cover the activities during the last 18 months of the Plan period.

20. With the National Water Supply and Sanitation Programme included as part of the Health Plan, the State Governments were able to channelise their activities in the implementation of urban and rural schemes in a planned manner. Many of the States had already on hand a number of schemes in progress and ready for implementation. All such schemes were submitted to the Union Health Ministry for approval in order to avail of the funds under the Plan. Rural water supply schemes were taken up conforming to the pattern specified in this behalf. Only piped supplies to a group of villages from a single or multiple sources was envisaged under this programme. In the initial stages, however, piped supplies for individual villages were also included for implementation. Rural water supplies of the simpler types were all to be pursued under other programmes in the Plan administered by other Ministries. In all 252 urban water supply and sanitation schemes for a total estimated cost of Rs. 45 crores, and 133 rural water supply and sanitation schemes for a total estimated cost of Rs. 13.5 crores were generally approved for inclusion under the Plan for implementation by the State Governments. Actual expenditure under the First Plan was in all about Rs. 10 crores on urban schemes and about Rs. 5.60 crores on rural schemes, under the National Water Supply and Sanitation Programme.

Under the Community Development Programme, the total expenditure was about Rs. 4.5 crores incurred on all health schemes, including water supply taken up in Blocks; about 107,000 wells were constructed or renovated under this Programme.

The expenditure under Local Development Works Programme was Rs. 7.25 crores, the number of wells constructed or renovated during the period being 29,650.

21. *Second Five Year Plan*—A number of new schemes were included in the Second Plan, in addition to the spill-overs from the First Plan. Some 208 urban schemes at an estimated cost of Rs. 27.9 crores and 214 rural schemes at an estimated cost of Rs. 5.48 crores were added in the Second Plan. The total expenditure in the Second Plan under the National Water Supply and Sanitation Programme was about Rs. 42 crores on urban schemes and about Rs. 18 crores on rural schemes.

Likewise, the total expenditure under the Community Development Programme during the Second Plan was Rs. 11.5 crores and under the Local Development Works Programme Rs. 13 crores. The estimated number of wells constructed or renovated during the Second Plan under these Programmes was 33,000 and 102,050 respectively.

In addition, about Rs. 3 crores was spent under Welfare of Backward Classes Programme, under which some 20,000 wells are estimated to have been constructed or renovated.

The reported figures of the number of wells dealt with in the First and Second Plans under the Community Development Programme would, however, need verification as the cost figures appear rather low.

22. *Third Five Year Plan*—The Third Five Year Plan provides for Rs. 89 crores for urban water supply and sanitation schemes and Rs. 67 crores for rural water supply schemes, comprising Rs. 16 crores under National Water Supply and Sanitation Programme, about Rs. 35 crores under Local Development Works Programme, Rs. 12 to 13 crores under the Community Development Programme and Rs. 3 to 4 crores under the Welfare of Backward Classes Programme. The same pattern of assistance as in the Second Plan is proposed to be continued.

23. *The first comprehensive concept*—The spurt of activities stimulated by the Central Government under the two Plans has prompted many of the State Governments to organise and expand their public health engineering departments in order to cope with the increasing workload. The organisational pattern for public health engineering works, both in the urban and in the rural sectors, shows variation between State and State influenced by local factors. All the same, the programme helped to bring State Public Health Engineers under one canvas and discuss their problems on a common platform. The Third Conference of Public Health Engineers which met in October 1958 made a notable contribution with an overall assessment of the problem attempted for the first time. It estimated that the total magnitude of the urban water supply and sanitation schemes awaiting accomplishment would be of the order of Rs. 900 crores. The figure was based on a rough approximation of the population in urban areas assumed to be without these amenities at present and a rough per capita cost for providing water supply and sewerage for urban areas in the country on an average. While the figures were all based on broad assumptions, as they had to be, this is the first time that an overall picture of the entire problem was sought to be presented for the benefit of the public and the administrators. Likewise, the magnitude of the problem in regard to rural water supply and sanitation was estimated about Rs. 600 crores, the idea being that such a capital outlay would be necessary to cover the entire rural areas of the country with a satisfactory measure of safe water supply and minimum sanitation facilities.

24. *Current pace vs. total needs*—Having thus sized up the magnitude of the problem, the Conference helped to focus attention on the need for a comprehensive planned programme to cover the urban and rural phases within a specified period. The inadequacy of the present pace of progress in the context of the total magnitude of the urban and rural problem, and the need for a radical re-orientation of the present policy in regard to the financing and management methods for a total programme were also discussed by the Public Health Engineers' Conference presenting the subject in a new angle.

25. The Conference Resolutions served to stimulate re-thinking on the part of local-bodies, engineers and administrators. The subsequent meetings of the Central Council of Health, the Local Self Government Ministers' Conference and the Mayors' Conference convened by the Union Ministry of Health took up the consideration of the subject in the new angle, although the concerned agencies were still leaning heavily on the Central Government for financial help, direction and guidance for promoting the Programme.

26. *Report of the T. C. M. Team*—A 3-man Team of Public Health Engineers from the U.S.A. sponsored through the T.C.M. made a critical review of the National Water Supply and Sanitation Programme after a short visit in 1960 and wrote its Report dealing with the socio-economic and public health significance of the Programme, and a review of its operation with special reference to Governmental organisations, tax structure and finance including suggested legislation, training facilities and related problems.

27. *Panel of the Planning Commission*—During 1959-60, a critical review of the National Water Supply and Sanitation Programme was also made by a Panel of Public Health Engineers appointed by the Planning Commission under the Building Projects Team of the Committee on Plan Projects. The Panel made a detailed review of the urban and rural phases of the entire programme and while elaborating on the new line of thinking suggested by the Third Public Health Engineers' Conference, has sought to give concrete shape to some of the suggestions, particularly in regard to financing methods and organisational reforms. The Panel has discussed the reforms necessary to ensure better progress within the limitations of the existing administrative set up and financing methods, and at the same time has indicated the broader policies and procedure to be adopted to expand the programme into greater dimensions and place future operations in this field on a self-generated momentum.

28. *Fourth Conference of Public Health Engineers*—The question of setting up Regional Water and Sewerage Boards has come into prominence in this connection. The Fourth Conference of Public Health Engineers held in November, 1960 has pin-pointed many of the important problems relating to this issue. The Conference reviewed again the magnitude of the future programme, and forecast a revised estimate of Rs. 1,300 crores as being the probable cost of providing water supply and sanitation facilities in all urban areas in the country to a satisfactory level. It also thought that while the forecast of Rs. 600 crores for rural water supply and sanitation would apply to a long-range programme about half this amount should be adequate to cover the minimum needs of rural water supply and sanitation all over the country. Naturally enough, the Conference discussed the concurrent problems of financing methods, organisational forms, management and administrative procedures which should be brought into effect to step up the programme to the required pace of activity.

29. *A new awakening*—There has been a widespread feeling till recently that water supply and sewerage facilities for communities constitute merely the satisfying of a physiological, if not personal, need so long as the epidemiological hazards of unsafe water supplies could be combated with drugs and vaccines. The history and development of water supply and sewerage systems in some of the more advanced countries have demonstrated the fact that such facilities

are not a mere satisfying of the felt needs in themselves, but also serve as a spring-board for progress in every activity which improve the material and mental well-being of men. Urban communities are now realising in an increasing measure the manifold advantages which such facilities could confer on them and are therefore getting more and more impatient to secure these necessities without avoidable delays. This growing feeling is reflected in the Conferences and Reports of Committees which give crystallised shape to such a growing urge on the part of the communities.

30. Because of the high priorities enjoyed by other sectors under irrigation, agriculture and industries during the two Plans, the country's agricultural and industrial economy and potential may be said to have reached the stage where the benefits should begin to flow back to the consumers. While the common man's opportunities have thus been advanced in the other spheres, water supply and sanitation measures for communities do not seem to receive their legitimate priority yet. Unless they are accorded a high priority in the future plans, an integrated uplift of the common man's condition may well be handicapped. As a result of the experience gained in the two Plans, all agencies interested and involved in public health activities in the country are now given to some heart-searching and are anxious to make an assessment of the totality of the problem and its implications. This is a healthy sign of development, in that from the initial stages of Plan consciousness, there is now an anxiety to examine the whole problem to get a full perspective thereof, and shape future planning on a more effective and realistic basis.

31. *Absence of statistical data*—But such a process has brought out the deficiencies under the present planning and the lack of authoritative data on which effective planning for the future should be attempted. This Committee has endeavoured to probe into this particular aspect in order to devise some practical measures for placing the future programme on a realistic basis. While the response from the State Governments and other local-bodies to the proforma has not been as encouraging as was expected, the replies, such as have been received, have served to show the weak links in the present set up which militate against a proper assessment of the problem. The Committee would like to dwell on this aspect at some length, because of its special importance.

CHAPTER III

AN ASSESSMENT OF THE PROBLEM

32. *Assessment of needs—a prerequisite for planning*—While planning is the key-stone to organised progress and for satisfying maximum of needs with the available means, the success of planning admittedly depends on a correct assessment of the problem in the field in which development is to be planned. In this respect, the position in regard to urban and rural water supply and sanitation in the country cannot be said to be satisfactory.

33. *Unsatisfactory status of urban water supply*—As has been remarked elsewhere, the history of the development of community water supply and sanitation facilities in the country is one of spasmodic attempts and haphazard progress without any organised planning, under the policy of *laissez faire* then in vogue. A few towns in each State succeeded in securing a partly satisfactory water supply system during the past few decades, mostly with financial aid from the State Government. The facilities so completed were being operated and maintained by the local bodies, without any timely measures being taken to provide further improvements to expand the scheme periodically to suit the needs of the increasing population. They had, therefore, to rest content with the system getting more and more inadequate against increasing demands from the communities. Urban towns where protected water supply systems were in operation soon acquired a notoriety for inadequacy of supply, for ill-served and unserved areas within the town, and for make-shift proposals being adopted to make the old system serve beyond its capacity.

34. *Meagreness of Sewerage facilities*—The position in regard to urban sewerage is more unsatisfactory. Excepting the few provincial towns, sewerage is still an unattainable luxury for the urban areas of many a State. The old sewer systems laid out in some of the provincial towns were not expanded and improved subsequent to their installation to cater to the increased population. The treatment and disposal of sewage followed crude methods, outmoded for current needs and conditions. Areas unserved by the sewer system began to increase and old sewers got overloaded. And local bodies continued to be helpless in the matter. Urban areas having water supplies without a sewer system began to suffer from increasing insanitation, and filariasis became endemic in many areas.

35. *Existing Handicaps*—With the National Water Supply and Sanitation Programme included as part of the Health Schemes under the two Plans, the States were able to take up a number of water supply and sewerage schemes which had been long pending for years. Most of them were improvements to existing water supply systems and a few, improvements to existing sewerage systems. In addition, new schemes were also taken up to the extent that the expenditure programme permitted. Not many sewerage schemes were taken up, however, as such schemes involve a heavy financial commitment to the local-bodies and also entail quite a lot of survey and technical work in preparing the plans and estimates. Advance planning and preparation of projects for local bodies in any order of priority had not received any attention until the advent of the Five Year Plan.

(36) The experience of the two Plans has served to bring out the state of unpreparedness of many of the States to handle the total programme on a comprehensive basis. Although a number of schemes were completed or were under way, there was hardly any inventory available in regard to the populations served by water supply or sewerage, either in full or in part, and the population yet to be served by such facilities. Preliminary survey and estimate of rough costs for schemes yet to be taken up had not been attempted in any planned manner. Local bodies were merely jostling one another for inclusion of their schemes under the Plan, and for liberal subsidies from the State Governments for their implementation. The Central assistance under the Plan was in the shape of a total loan to the State Governments who distributed the amount to the local bodies partly as loan and partly as a grant in aid subsidised by the State Governments. The pattern of such State subsidy varied from one third to two thirds of the cost of the schemes. The role of the local body was to explain its financial limitations and importune the State Government to implement its scheme quickly and liberally. The State Government had to select the beneficiaries from the contending applicants, the total activity being limited by the extent of subsidy it can find from out of its annual budget. The processing of the selected schemes through the stages of investigation, design, sanction and execution was seldom arranged in an orderly or effective manner as there was no advance planning. There were delays at every stage, duplication of work, and set backs in progress. Because of the system of yearly allocation of funds, advance procurement of scarce materials was not well organised. The incomplete or inadequate preparation and presentation of schemes also resulted in delayed approval and sanction. As a result, even when funds were allotted, schemes were held up due to want of materials or sanction. This factor must perhaps account for the paradox of the shortfalls in the two Plan provisions.

37. *Perspectiv view of the problem 'acking*—The set up engendered perhaps a lack of coordination and divided responsibility. Under the pattern of financing the local bodies' initiative was fulfilled by the presentation of its problem to the State Government. The latter tried to fulfil its obligations as and when it could do so, within its own financial limitations. The passage of time became incidental in the process. There was no incentive, either, for the State Government to take a perspective view of the problem of urban water supply and sanitation, and to get an integrated picture of the full situation, by taking an inventory of the needs of each local body, a physical and financial assessment of their total needs, with a plan for taking up the future programme in an order of priority within a predetermined period.

38. *Rural Problem a potent factor*—In the matter of rural water supply again, the position is very indefinite. Until the advent of Independence, rural water supply was a neglected subject. Villages had to depend on time-old tanks, ponds and wells for all their water supply needs, and where no such source existed, the villagers had to trek for miles in search of drinking water. After Independence, some of the State Governments initiated a programme of rural water supply and made some small measure of progress. These attempts

received a fillip with the advent of the First and Second Five Year Plans through several agencies under different programmes aided by the Central and State Governments.

39. *Its importance and urgency*—The rural problem has usually been associated with village communities having a population below 5,000. Some of the States, however, reckon villages with populations up to 10,000 under the rural sector. According to the 1951 census, the rural population was 295 million residing in about 5·597 lakhs of villages. It rose to nearly 360 millions in the 1961 census, forming roughly 81 per cent of the country's total population. The sizes of the villages vary greatly, some of the revenue villages comprising groups of hamlets. The average population per village was 529. The following statement would give classification at a glance (1951 census)—

Population	Number of villages and towns	Percentage of total	Total population (in thousands)	Percentage of total
(a) Less than 500	380,019	68·0	78,348	26·0
(b) 500—1,000	104,268	18·6	72,921	24·2
(c) 1,000—2,000	51,769	9·3	71,156	23·5
(d) 2,000—5,000	20,508	3·6	59,109	19·5
(e) 5,000—10,000	3,101	0·5	20,754	6·8
	559,665	100·0	302,288	100·0

The provision of safe water supply to the village, both acceptable in quality and adequate in quantity poses a variety of problems varying between regions and most often within the same region, depending on the local hydro-geological features. The vastness of the area, apart from the large number of villages, adds to the magnitude of the problem. The technical, administrative, financial, procedural and maintenance problems of a programme to encompass the entire rural area are a challenge to effective planning. With about 80 per cent of the country's population living in the rural areas, rural water supply and sanitation forms the single potent factor for improving the nation's health. Because of the long neglect in the past, the subject assumes an importance and urgency of its own under the National Plan. Almost all quarters are agreed that the provision of minimum measures of safe water supply and sanitation in the village areas would brook no delay.

40. *Different Programmes*—As already observed, it is not easy to obtain statistical data showing the extent to which water supply has been provided in the rural areas, both up to the pre-Plan period and during the two Plans. Under the two Plans, rural water supply facilities have been provided under four different programmes.

The Department of Community Development dealt with the simpler types of water supply schemes within the Community Development Blocks where a provision of Rs. 50,000 was set apart for this purpose under the schematic budget. The money was to be utilised for providing new wells, as well as renovating old wells.

The Local Development Works Programme operating outside Community Development Blocks expended a part of its allotted moneys on rural water supply. Statistical data in regard to actual performance does not seem to be available.

The Programme for the Welfare of Backward Classes provided water supply facilities to scheduled castes, scheduled tribes and ex-criminal tribes operating specially in areas where these groups are concentrated. The extent of progress made is not known.

The National Water Supply and Sanitation Programme (Rural) administered by the Ministry of Health dealt with the more difficult types of schemes requiring technical skill and design consideration to provide piped water supply to villages from surface and subsurface sources. It is estimated that some 11,000 villages were dealt with under this Programme during the two Plans.

41. *Multiplicity of agencies*—The activities of the different agencies employed under the several programmes got diffused over a wide range. Because of the multiplicity of the agencies handling the different programmes, there was a singular lack of coordination at all stages. The organisational pattern for implementing the programmes, both on the technical and administrative sides, varied from State to State, and in many cases the technical aspects of the works as designed and executed, simple though they were, did not receive competent scrutiny or guidance. There was no agency charged with any long range planning for an integrated progress of the rural phase of the problem. Neither a preliminary assessment of the needs nor a follow-up about achievements was made. This made the analysis of the situation at any time difficult.

42. With the development of medical facilities in recent years, both on the curative and preventive sides, facilities have been created for the compilation of correct statistical data in regard to vital statistics, but one is struck by the lack of any attempt to present corresponding data in regard to water supply and sewerage facilities available to the urban communities and to the rural areas particularly.

43. *Past attempt at an assessment*—For the first time, we have the Health Survey and Development Committee (1944) giving a brief survey of the number of water supplies and sewerage systems in India. These figures were recapitulated by the Environmental Hygiene Committee in 1949. According to them only 16 per cent of the total number of towns in India had protected water supplies which served 6·15 per cent of the total population or 48·5 per cent of the urban population, the supplies varying from 2 to 40 gallons per head per day. Sewers had been laid only in 35 cities and towns, but even so, there were unsewered areas within these cities and towns.

44. *Basis for future planning*—During the past decade, the activities in all the States in regard to urban and rural water supply and sanitation have been proceeding on an increasing scale. Compared to the tempo of works which obtained between the late seventies and up to the advent of Independence, the two Five Year Plans during the last decade made relatively large allocations towards these facilities and many of the States are now geared up to an expanding programme of activities, both on the urban and rural phases.

For the same reason, the paucity of information in regard to the present situation and future requirements has become more and more marked. For future planning to be more effective and realistic, it is essential that a correct assessment is made of the urban and rural phases of the programme without any further delay. One of the main objects of the Committee's work was to find out how far the State Governments were prepared in this connection and what machinery should be set up to deal with this important aspect of the entire problem.

45. *Inadequate response to proformae*—The detailed proformae and questionnaires issued by the Committee elicited varying degrees of response from the States and local bodies. A few State Governments are yet to send their replies to the proformae. A few others have filled in the proformae in an incomplete and inadequate manner. Many have ignored some of the important queries raised in the proformae, particularly in regard to financing methods. The replies bring out the unpreparedness of the States to present a correct and comprehensive picture of the present situation in regard to urban water supply and sanitation and rural water supply. The forecasts of the future workloads in these fields, where furnished, are naturally arbitrary and also exhibit a wide divergence in the basic assumptions as between the different States.

46. *A general picture of the situation*—The replies to the proformae received from the several quarters are all assembled and exhibited in the appendices to this Report. In order, however, to gain a general idea of the current situation at a ready glance, the following 4 statements should be helpful. They are:

STATEMENT 'A'
URBAN WATER SUPPLY & SEWERAGE
NUMBER OF TOWNS SERVED AND EXPENDITURE UNDER THE PLAN

Serial No.	Name of State	Urban population distributed in			Number of Towns with		No Sewerage water supply full or Partial.	No. of Towns with sewerage. II Plan sed in periods. III Plan.	Expenditure on water supply & sewerage (Rs. in lakhs)	Number of schemes in progress.					
		3(a)	3(b)	3(c)	4(a)	4(b)				4(c)	5(a)	5(b)	6(a)	6(b)	7(a)	7(b)	7(c)	7(d)
		Corpo-ration towns.	Muni- cipal towns.	Pancha- yat towns.	adequate water supply.	Partial water supply.	No water supply.			In I & II Plan.	Improve- ments. New	Water Supply	Sewerage		
1	2	3(a)	3(b)	3(c)	4(a)	4(b)	4(c)	5(a)	5(b)	6(a)	6(b)	7(a)	7(b)	7(c)	7(d)
1	Andhra Pradesh ..	1	62	119	13	23	146	1	181	531.59	680.00	17	6	5	1
2	Assam ..	—	41§	—	3	8	30	—	41	45.00	125.00	3	3	—	—
3	Bihar ..	1	76	—	21	—	56	4	73	532.48	400.00	9	12	3	3
4	Gujarat* ..	1	101	101	38	102	52	8	195	93.54	607.07	19	24	—	3
5	Jammu & Kashmir ..	—	2	19	2	9	8	—	21	85.16	95.26	2	2	—	—
6	Kerala ..	1	29	165	—	7	187	1	194	388.06	450.00	4	3	—	1
7	Madhya Pradesh ..	3	135	—	32	21	85	11	127	425.34	510.00	12	16	—	—
8	Madras ..	1	66	151	nil	35	107	6	212	926.01	950.00	21	27	4	1
9	Maharashtra@ ..	..	..	..	..	..	..	..	..	301.73	1150.00	..	..	..	..
10	Mysore ..	1	180	—	1	176	4	4	177	810.87	600.00	93	..	22	9
11	Orissa ..	—	64	—	9	24	31	2	62	170.99	150.00	6	5	—	1

M/L52DCHS-3

STATEMENT 'A'—contd.

1	2	3(a)	3(b)	3(c)	4(a)	4(b)	4(c)	5(a)	5(b)	6(a)	6(b)	7(a)	7(b)	7(c)	7(d)
12	Punjab ..	—	178	—	1	25	139	13	165	225.08	280.00	15	16	2	27
13	Rajasthan ..	—	138	52	18	5	151	3	187	375.59	500.00	13	33	—	—
14	Uttar Pradesh ..	—	135	299†	73			15		694.55†	1046.84	11	48	5	3
15	West Bengal@ ..	2	87	33†	34			7	115	324.41*	230.03	21	17	2	2
16	Delhi ..	1								887.00	959.12				
17	Himachal Pradesh@										30.00				
18	Tripura & Manipur@									4.83†	83.64				
19	Andaman & Nicobar Islands@										15.00				

*Data not complete.

@Data not received from the State but tentative figures shown where available.

† notified and town areas.

† Funds paid by the Central Government

§ Including 22 Town Committees.

‡ Does not include Towns with Skelton water supplies.

STATEMENT 'B'
URBAN WATER SUPPLY
PERCENTAGE OF POPULATION SERVED AND FORECAST OF FUTURE WORKLOAD.

Serial No.	Name of State	2	3	Percentage served by water supply system.		5	Forecast of amount required to complete water supply (Rs. Crores.)	
				4 (a) Adequately	4 (b) Inadequately		6 (a) As furnished by the State.	6 (b) As revised on a common basis.
1	Andhra Pradesh	..	62,61,130	26	41	33	23.70@	23.7C
2	Assam	..	8,89,080	0	24	67	1.26	4.8C
3	Bihar	..	39,15,300	34	10	47	9.50	14.3C
4	Gujarat	..	52,80,450	30	33	37	2.33	19.10
5	Jammu & Kashmir	..	6,01,958	43	14	43	0.15	2.00
6	Kerala	..	25,35,574	24	18	58	50.00	10.70
7	Madhya Pradesh	..	46,29,276	33	14	53	3.16	17.50
8	Madras	..	89,91,318	£	54	46	82.00	46.60
9	Maharashtra	..	110,28,852	40§	20	40	36.40@	36.40
10	Mysore	..	51,87,105	25	62	13	16.70	18.20
11	Orissa	..	11,11,058	9	24	07	8.00	5.60

STATEMENT 'B'—contd

1	2	3	4(a)	4(b)	5	6(a)	6(b)
12	Punjab	40,79,100	32	25	43	17.00	17.00
13	Rajasthan	32,33,215	27	18	55	8.37	12.90
14	Uttar Pradesh	94,76,118	30§	15§	55	37.70@	37.70
15	West Bengal	80,95,585	55§	25§	20	100.00†	100.000†
16	Delhi	23,44,051	90§	10§	0	28.00	28.00††
17	Himachal Pradesh	63,811					
18	Tripura & Manipur	1,70,559		32§	68	1.40@	1.40
19	Andaman & Nicobar Islands	4,099					
	TOTAL	779,07,439				426.37	395.95
	OVERALL AVERAGE		33.9	26.3	39.9		

18

* Forecast based on a per capita cost assumed as Rs. 60/- in the case of new schemes and Rs. 45/- in the case of improvement schemes.

@ Same figure as in col. 6(b) has been adopted under col. 6(a) due to want of data.

† Same figure as in Col. 6 (a) has been assumed under Col. 6 (b).

§ Figures are tentative due to want of data.

†† Forecast anticipated from W.H.O. Team's work.

‡ All Urban Schemes are in need of improvements.

STATEMENT 'C'
URBAN SEWERAGE
PERCENTAGE POPULATION SERVED AND FORECAST OF FUTURE WORKLOAD

Serial No.	Name of State	Population (1961)	Percentage served by sewerage system.		5	Forecast of amount required to complete sewerage schemes (Rs. crores)	
			adequately	Inadequately.		As furnished by the States.	As revised on a common basis.
1	2	3	4(a)	4(b)	6(a)	6(b)	
1	Andhra Pradesh	62,61,130	..	19	81	47.60†	47.6
2	Assam	8,89,080	—	—	100	5.20	6.1
3	Bihar	39,15,300	—	7	93	12.85	30.7
4	Gujarat	52,80,450	4	6	90	1.58	39.9
5	Jammu & Kashmir	6,01,858	—	—	100	4.80†	4.8
6	Kerala	25,35,574	—	7	93	20.00	19.9
7	Madhya Pradesh	46,29,276	12	13	75	2.25	31.4
8	Madras	89,91,318	..	22	78	114.00	67.9
9	Maharashtra@	110,28,852	40@	15@	45	49.60†	49.0
10	Mysore	51,87,105	15	6	79	10.40	34.6
11	Orissa	11,11,058	2	—	98	19.00	8.7

STATEMENT 'C'—contd.

1	2	3	4(a)	4(b)	5	6(a)	6(b)
12	Punjab	40,79,100	—	16	84	24.00	31.3
13	Rajasthan	34,33,215	—	18	82	18.00	24.7
14	Uttar Pradesh@	94,76,118	20@	10@	70	58.70†	58.7
15	West Bengal@	80,95,585	50@	20@	30	31.80=	31.8=
16	Delhi@	23,44,051	90@	10@	—	10.50	20.0‡
17	Himachal Pradesh	63,811	—	—	—	—	10.5††
18	Tripura & Manipur	1,70,359	—	—	100	2.00	2.0
19	Andamans & Nicobar Islands	14,099	—	—	—	—	—
	TOTAL	779,07,439	20.6	11.2	68.2	432.28	500.20
	OVERALL AVERAGE						

* Forecast based on a per capita cost assumed as Rs. 80/- in the case of new schemes and Rs. 60/- in the case of improvement schemes.

† Same figure as in Col. 6(b) has been adopted in Col. 6(a) due to want of data.

†† Same figure as in Col. 6 (a) has been assumed under Col. 6 (b) due to want of data.

@ Figures are tentative due to want of data.

= As forecast in the W.H.O. Team's Report for Greater Calcutta.

‡ Tentative figure for sewerage other urban areas in West Bengal.

STATEMENT 'D'
PROGRESS OF RURAL WATER SUPPLY

Serial No.	Name of State	Population (1961)	Progress under Community Development Programme (Oct. 52 to March 61)			4(c)	Progress under L.D. Programme Works		7	8	Expenditure during 1st and 2nd Plan periods (Rs. lakhs)	
			4(a)	4(b)	4(c)		No. of wells constructed	No. of wells constructed or renovated so far			N.W.S.S. Programme	Local Development works	Tribal Welfare Programme
1	Andhra Pradesh..	29,716,869	17,900	65,000	82,900	780				73.90		
2	Assam ..	10,970,979	10,100	15,900	26,000	1,947				39.19		
3	Bihar ..	42,641,742	21,700	28,200	49,000	584				73.95		
4	Bombay ..	15,340,833 28,475,442	8,700	12,300	21,000	858				131.49		
5	Jammu and Kashmir.	2,981,627	1,100	1,300	2,400	7				25.34		
6	Kerala ..	14,339,625	2,900	1,600	4,500	31				34.20		
7	Madhya Pradesh	27,765,099	15,700	10,200	25,900	671				71.79		
8	Madras ..	24,659,599	12,300	13,900	26,200	518	132,000	20,000		61.96	1600†	2,025
9	Mysore ..	18,359,976	7,600	13,600	21,200	183				62.96		
												300†

STATEMENT D—contd.

1	2	3	4(a)	4(b)	4(c)	5	6	7	8	9	10	11
10	Orissa ..	..	16,454,587	13,200	10,500	23,700	1,141		60.06			
11	Punjab ..	..	16,219,051	18,000	13,300	31,300	346		71.32			
12	Rajasthan ..	..	16,912,958	8,200	9,300	17,500	4,597		92.64			
13	Uttar Pradesh ..	..	64,276,796	63,000	92,700	155,700	1,563		149.99			
14	West Bengal ..	..	26,872,049	11,200	9,500	20,700	1,357		115.38			
15	Union Territories		3,408,076	4,900	14,500	19,400	130		58.53			
	..			216,500	311,800	523,300	14,713	132,000	20,000	1,600	2,025	300

* Represents 50 per cent subsidy from Central Government.

† Includes expenditure on all health programmes including water supply in blocks.

‡ Estimated tentative figure.

- (1) Statement 'A' depicting the present status of urban water supply and sewerage and the expenditure on such schemes under the 3 Plans;
- (2) Statement 'B' showing the percentage of the 1961 urban population served by water supply and the approximate future workload under this phase;
- (3) Statement 'C' showing the percentage of the 1961 urban population served by sewerage schemes and the future workload in this regard; and
- (4) Statement 'D' showing the achievements so far under the Plans in regard to rural water supply and the approximate future workload in this field.

47. *Forecasts based on assumptions*—In the absence of any authoritative data, the forecasts of future workloads under the statements 'B', 'C' and 'D' have had to be based mostly on assumed per capita costs applied to the unserved populations in the urban and rural areas. The figures in respect of such unserved populations are themselves based on the replies to the proformae, where available, and in other cases are approximations based on rough data. The forecast of the workload in respect of the rural programme is even more approximate as correct particulars in this regard are unfortunately lacking. Even so, the figures should serve to indicate the extent and magnitude of the urban and rural problems still awaiting solution.

48. *Urban forecast*—It will be seen that according to the figures in the statements 'B' and 'C', a total amount of Rs. 896 crores may represent the workload yet to be accommodated to provide adequate water supply and sewerage facilities for the population of 1961. This figure of Rs. 896 crores does not, however, include large scale additional expenses on special schemes in conserving and conveying water supply from distant sources to cities like Madras, Bangalore, Visakhapatnam and similar towns elsewhere. To include such contingencies also, the total figure may be assumed to be of the order of Rs. 950 crores.

49. *Rural forecast*—Various forecasts have been made by various agencies in regard to the magnitude of the rural water supply yet to be completed. The Fourth Conference of Public Health Engineers estimated that this may be of the order of Rs. 600 crores if piped water supply and sanitary latrines were aimed at for all villages. The estimate was placed at Rs. 300 crores, if minimum rural water supply and sanitation facilities were to be completed as an interim measure. According to the Planning Commission, the estimate of the total workload at the end of the Second Plan period to provide minimum drinking water supply to all rural villages was roughly Rs. 160 crores with another 25 per cent to be found by the villagers, or a total of Rs. 200 crores. The Committee considers that this latter estimate is likely to be nearer the mark. The provision of Rs. 67 crores only in the Third Plan envisages a large carry over of Rural Water Supply work into the Fourth Plan. The Committee feels, however, that the supreme importance of Rural Water Supply in the Nation Building Programme will not permit of any delay in its implementation, and it is essential to provide minimum water supply facilities in every village at least by the end of the

Third Plan itself. As this will involve a major programme of extensive activities, the Government should initiate the necessary administrative and organisational measures to increase the tempo of work for achieving this objective. The existing set-up and procedure will have to be enlarged and modified for the purpose, and the entire programme planned and directed with drive and vision.

50. The following salient features relating to each State from the proformae and other data would be of interest:

(i) ANDHRA PRADESH

Urban—Out of 1 Corporation, 62 municipal towns and 119 panchayat towns, the Corporation Town had both water supply and sewerage systems, 10 municipal towns had adequate water supply, 22 municipal towns had partial water supply and the remaining 30 had no organised water supply. No municipal town had any sewerage system.

Only 3 panchayat towns had adequate water supply, while the remaining 116 had no organised water supply.

Improvements to the Corporation schemes and 16 municipal schemes were in progress as also 6 new municipal schemes.

Rural—The total population of 2.62 crores was distributed over 9,260 villages with populations up to 2,000 and 342 villages with populations 2,000 and above.

Data in regard to villages with and without water supplies have not been furnished.

Financing—Urban schemes were assisted with loans only, subsidy being continued only in respect of schemes taken over from the Telangana region. Countervailing grants to offset centages are given by the State Government to third grade municipalities and panchayats in respect of their water supply schemes. Similar countervailing grants are given in respect of all urban drainage schemes.

Maintenance—Urban schemes are maintained by the local bodies with municipal engineers forming a provincialised service. Rural schemes under the National Water Supply and Sanitation Programme are maintained by the State Public Health Engineering Department.

(ii) ASSAM

Urban—Out of 41 urban units including 22 town committees, 3 towns had adequate and 8 towns had partial water supply systems. No town had any sewerage system.

Improvements to water supply schemes for 3 towns as well as three new schemes were in progress.

Rural—Details of the water supply position in regard to the 24,658 villages have not been furnished.

Financing—The State Government advances loans only for municipal water supply schemes. Municipalities are known to default in the repayment of their obligations.

Maintenance—The Public Health Engineering Department is in charge of maintenance of urban schemes and rural water supply under the National Water Supply and Sanitation Programme.

(iii) BIHAR

Urban—Out of 1 Corporation and 76 municipal towns (there is no panchayat town in the State) there was adequate water supply in the Corporation and 20 municipalities. The Corporation and 3 municipal towns had a partial sewerage system.

Improvements to the existing water supply schemes in the Corporation as well as 3 new schemes and 8 municipal towns as well as 12 new schemes were in progress.

Improvements to the sewerage systems in three municipal towns were also in progress.

Rural—Out of a total rural population of 4.25 crores, it is estimated that only 8 per cent is served with safe water supply.

Financing—Urban water supply schemes are assisted with a 50 per cent State subsidy while urban sewerage schemes are assisted with a 75 per cent subsidy, both for new as well as improvement schemes.

Maintenance—The State Public Health Engineering Department maintains the schemes. Even maintenance is being subsidised in some cases.

(iv) GUJARAT

Urban—There was a total number of 263 urban town groups including one Corporation. 153 towns alone had water supply systems and 8 towns alone had sewerage system. 46 schemes were in various stages of progress. 49 new water supply and drainage schemes were proposed to be taken up in the Third Plan.

Rural—Information received is incomplete.

Financing—District and Borough Municipalities execute the works with financial assistance from the Government in the form of loan and subsidy. 33-1/3 per cent of the cost of schemes is given as subsidy in the case of Borough Municipalities and 50 per cent in the case of District Municipalities and village panchayats.

Maintenance—Details not furnished.

(v) JAMMU AND KASHMIR

Urban—Besides Srinagar and Jammu towns, 11 out of 19 panchayat towns had partial or skeleton water supply, while 8 panchayats had no organised supply.

There was no sewerage in any of the urban areas.

Rural—Data not furnished.

Financing—All the schemes are financed entirely by the Government.

Maintenance—The Chief Engineer (Irrigation) Kashmir and the Chief Engineer (Roads and Buildings) as also the Chief Engineer (Electrical) Departments are in charge of the State Public Health Engineering works in their respective jurisdictions. Public Health Engineering is under the Development Ministry.

(vi) KERALA

Urban—Out of 1 Corporation, 29 municipal and 165 panchayat towns, water supply was inadequate in the Corporation town and seven other municipal towns. There was no organised supply in 22 municipal towns and 165 panchayat towns.

Excepting in the Corporation town, there was no sewerage system in the urban areas.

Seven municipal schemes were under progress.

Rural—The total rural population of some 1.43 crores was distributed over some 4,590 villages. About 4,345 villages were stated to be without any potable supply.

Financing—For urban schemes, 50 per cent of the cost is given as loan and 50 per cent as grant. The State Government suggests a 75 per cent as grant instead. For rural schemes, likewise the State Government suggests that the subsidy may be 75 per cent instead of 50 per cent from the Centre.

Maintenance—Trivandrum Corporation water supply and sewerage works are maintained by the State Public Health Engineering Department. The agency for maintenance of other urban schemes now in progress is perhaps yet to be decided.

(vii) MADHYA PRADESH

Urban—The urban population was distributed over 3 Corporations and 135 Municipal towns.

The 3 Corporation towns had a partial water supply, 32 municipal towns had an adequate water supply and 18 had partial water supply, while 85 had no organised water supply. 10 existing municipal schemes were under improvement and 16 new schemes were in progress.

1 Corporation had complete sewerage, another had a partial sewerage and the third had open drains. 7 municipal towns had complete sewerage, 2 had partial sewerage, 4 had open drains with intercepting sewers and 50 had open drains only. 72 towns were without any drainage system.

Rural—The total rural population of 2.77 crores was distributed over some 70,000 villages. Some 30,600 had draw wells with satisfactory supplies, 675 had conserved tanks and 850 villages had wells with hand-pumps. 200 villages had wells with power pumps and 200 more villages had piped supply. 23,575 villages had potable but inadequate supply from local sources.

Financing—Urban water supply received 30 per cent grant and 50 per cent loan, with 20 per cent deposit by the local body. For sewerage works, the State Government gives no subsidy at present. But it is likely that the same formula as for water supply may be applied.

Maintenance—Urban schemes are presumably being maintained by the local bodies concerned. The services of the engineering staff under Municipalities are not provincialised. Rural works are to be maintained by Gram Panchayats with 50 per cent of the cost of maintenance recommended as grant by the

State Government. Also the permanent staff for maintenance will be appointed under the supervision of the Public Health Engineering Department. It is stated that experience so far shows that Gram Panchayats do not take over schemes for maintenance due to their poor financial condition.

NOTE—The Madhya Pradesh Government took up a comprehensive survey of the rural water supply position last year and has compiled statistical data in this behalf. The following particulars may be of interest.

Number of districts—43.

Total area in sq. miles—1,71,052.

Total rural population—2·3255 crores.

Number of villages—73,038.

Number of villages where water supply position is satisfactory—35,834

Villages where additional wells have been proposed—15,897.

New Wells proposed for such villages where there are no wells—10,894.

Number of wells proposed to be taken up—15,797.

Number of villages proposed for piped water supply—566.

(viii) MADRAS

Urban—Out of 1 Corporation, 66 municipal and 151 panchayat towns, the Corporation had an inadequate water supply and sewerage system. 3 municipal towns had both water supply and sewerage. 33 municipal towns had partial water supply, 12 had a skeleton water supply and 21 had no organised water supply.

2 Panchayats had both water supply and sewerage, 1 panchayat had partial water supply, 4 panchayats had skeleton water supply and 146 panchayat towns had no water supply.

Improvements to the water supply scheme to the Corporation and 20 municipal schemes were in progress. 14 new municipal schemes and 13 panchayat schemes were in progress.

Apart from the Corporation, 3 municipal towns and 1 panchayat town had partial sewerage and 6 municipal towns had open drains with or without intercepting sewers. 57 municipal towns and 150 panchayats are without any sewerage system.

Besides the Madras Corporation sewerage improvements, 4 other municipal schemes were in progress.

Rural—Data not received.

Financing—Urban schemes were usually assisted by the State Government with 50 per cent subsidy and 50 per cent loan. The State Government had, however, passed an order that all urban water supply schemes should, as far as possible, be taken up as self-paying projects with revenues realised by the sale of water.

Maintenance—Urban schemes are maintained by the local bodies, Municipal Engineers forming a provincialised service.

(ix) MAHARASHTRA

Urban—Data not received (except for Bombay Corporation).

Rural—Replies to the proformae not received. The following, however, is extracted from the draft Third Plan of the State Government.

“Rural Water Supply—The schemes of rural water supply relate to village water supply, sanitary wells programme, regional water supply for a group of villages and protected water supply for places of pilgrimages or fairs.

The main object of the programme included in the Third Five Year Plan is that every village with a population of 200 and over should have at least one safe drinking water well. With a view to achieving this objective, the State Government has undertaken a survey of villages in order to ascertain their requirements in this matter. For village water supply schemes, grants are given to the village panchayats provided at least 25 per cent of the cost is raised as local contribution for every additional well. No local contribution is expected for the first well in a village. Similarly, in the case of backward areas, the condition of local contribution is relaxed.”

The following information is available from a Note received from the State Government—

No. of villages without a single public well	9,858 (excludes 2 districts).
No. of villages without public wells where water scarcity is felt ..	1,905 (excludes 4 districts).
No. of villages with public wells but where water scarcity is felt ..	2,920 (excludes 4 districts).
Total No. of villages experiencing water scarcity	4,825 (excludes 4 districts).

(x) MYSORE

Urban—Out of 1 Corporation and 180 municipal towns, water supply and sewerage systems were available in the Corporation and 3 municipal towns. 176 municipal towns had some partial water supply.

The Corporation town had a sewerage system as also 3 municipal towns. 177 municipalities had open drains.

Rural—Data not received.

Financing—50 per cent of the cost is given as subsidy by the State Government.

Maintenance—Local bodies operate and maintain completed works with their own staff. There is no Municipal Engineering Service as such.

(xi) ORISSA

Urban—The total population of 1.11 million was distributed over 64 urban towns. 9 towns had adequate water supply and 24 had inadequate water supply. 2 towns alone had sewerage systems. 12 urban schemes were in progress.

Rural—The total population of some 1.65 crores was distributed over some 48,400 villages. The number of villages having safe water supply was only about 2,000 forming roughly 4 per cent of the total population.

In the State Government's Draft Third Five Year Plan, however, it was stated—"Taking all efforts put in under different programmes into account the over-all position is that only about 16 to 17 per cent of the total number of villages would have been covered."

Financing—For urban schemes 2/3rd grant and 1/3rd loan was given. For the Bhubaneswar water supply and sewerage schemes, however, the entire cost was borne by the State Government.

Maintenance—Information not furnished.

(xii) PUNJAB

Urban—There was adequate water supply in 1 town, partial water supply in 25 towns, skeleton water supply in 12 towns and no organised water supply in 139 towns. 31 improvement and new schemes were in progress.

13 Municipal towns had partial sewerage, 10 towns had open drains and intercepting sewers, 77 towns had open drains only and 85 towns had no drainage system. 29 schemes were in progress.

Rural—The total population of 1.62 crores was distributed over some 17,106 villages with population below 1,000 and 3,661 villages with populations from 1,000 to 5,000 and 71 villages with populations over 5,000.

The number of villages without any local potable water supply was reported to be about 10,000.

Financing—Grant-in-aid of about 2 per cent (to cover cost of preparing plans and estimates) is given by the State Government. In exceptional cases, grant in aid to the extent of 25 per cent is given. For rural schemes, Central assistance is 50 per cent, State assistance 38 per cent, and villagers' contribution 12 per cent.

Maintenance—Urban schemes were maintained by local-bodies. Municipal Engineers were not provincialised.

(xiii) RAJASTHAN

Urban—Out of 138 municipal towns and 52 panchayat towns, 18 towns were served adequately and 5 inadequately by water supply systems. 16 had a skeleton water supply. 151 towns had no organised water supply.

46 water supply schemes (both new and improvement schemes) were in progress.

Only 3 towns had partial sewerage systems. 3 others had open drains and intercepting sewers. 24 towns had open drains alone. 160 towns were without any drainage system.

Rural—The total rural population of 1.69 crores was distributed over 31,295 villages. Under the National Water Supply and Sanitation Programme, 516 villages had draw wells, and only 1 village had a piped supply.

Some 15,635 villages had potable but inadequate supply.

Financing—Urban schemes are assisted with loans only. The State Government suggests, however, a 25 per cent subsidy for municipal schemes and 50 per cent subsidy for panchayat schemes. For rural schemes, other than piped systems, the existing pattern of financing is 50 per cent as Central grant, 17 per cent State assistance and 33 per cent villagers' contribution. For piped schemes it is however 50 per cent Central grant, 45 per cent State grant and 5 per cent villagers' contribution.

Maintenance—Urban schemes are maintained by the State Public Health Engineering Department and rural schemes by the local panchayats.

(xiv) UTTAR PRADESH

Replies to the proformae have not been received. The following information, however, is extracted from the State Government's draft Third Five Year Plan—

“By its end (2nd Plan), the State will have water works in 70 towns and scientific drainage works in 27 towns. The outlay in the Third Plan has to show a sizeable increase in order to tackle, though on a modest scale, problem, at once big and complex. U.P. has as many as 486 towns (population approx. 8032 lakhs) and even with the expansion of water works undertaken in the First and Second Plans, very large number of towns remain without water supply. Then a fairly large number of water works require urgent re-organisation to cope with the increase in population and the growth of industries.....

“Rural water supply schemes have made slow progress. In the First Plan, water supply schemes were taken up in about 1,700 villages. During the second Plan period, however, it would not be possible to provide drinking water facilities to more than 800 villages. In the Third Plan, it is proposed to run these schemes with the collaboration and assistance of the Community Development Blocks, which was not attempted in the Second Plan.....

“There are 1,11,722 villages in this State having a total population of 5,45,90,043 according to Census figures of 1951. The work done so far cannot be said to have made any impact on the rural areas.”

(xv) WEST BENGAL

Replies to the proformae not received. The following information, however, was available to the Committee during their visit to the State.

There are two Corporations, 87 municipalities, 33 town areas and about 60,000 villages in the State.

Urban—

Total urban population (excluding Calcutta Corporation area)—1951 census	36·82 lakhs.
Population served by piped water supply prior to 2nd Plan	19·70 lakhs
Population served by piped water supply at the end of the 2nd Five Year Plan	23·85 lakhs.
Population without piped water supply at the end of Second Plan	12·97 lakhs.

Piped water supply was available so far in 32 municipalities and 2 town areas and in none of the villages.

Sewerage exists in 7 towns of which Kalyani township is completely sewered while the other 6 are partially sewered. Surface drainage systems for most of the unsewered towns in deltaic West Bengal is very unsatisfactory.

Rural—A rural water supply scheme was initiated in 1946. The first target to provide one source for every 400 persons has already been achieved, considering the State as a whole. The next targets are provision of one protected source for every village and provision of one source for every 250 persons. The former was hoped to be achieved by the end of Second Plan and the latter expected to be fulfilled by the middle of the Third Plan period.

Out of a total of 59,464 villages, 21,006 villages were without any protected source as on 31-3-60.

Financing—Urban bodies were assisted with 2/3rds of the cost of the scheme as subsidy and 1/3rd as loan.

Maintenance—Urban schemes after completion are handed over to local bodies for maintenance by their own staff. Rural water supplies are maintained by the State Engineering Department. The responsibility of the Department covers not only the development of new sources, but also maintenance of existing sources in working order and re-development of defunct or derelict existing sources.

Corporation—The Calcutta Corporation water supply and drainage facilities have been fully reviewed by the Team of Consultants sponsored by the W.H.O. who have recommended the creation of a Greater Calcutta Metropolitan Authority for solving the problems of Calcutta and a number of municipalities situated on the Hooghly, enveloping the rural areas also in-between.

The water supply and sanitation facilities in the adjoining Howrah Municipality were far from satisfactory.

The financial capacity of the Municipal bodies was so poor that the State Government was reportedly considering the question of taking over the whole of the water supply and public health activities from the Municipalities and shouldering the burden themselves.

Recently the State Government have created the Calcutta Development Corporation outside the purview of the Calcutta Corporation, which will have the responsibility to provide water supply and sewerage facilities to 4 Municipalities and 1 non-Municipal area. The idea was that the Corporation would raise its own loans backed by the State Government. As the smaller Municipalities cannot stand on their own legs, and as it was not practical to have different agencies pursuing parallel activities a common authority has been created to expedite matters.

The Development Corporation employs a separate staff for public health engineering and some of the schemes initiated by the State Public Health Engineering Department have been taken over by the Development Corporation. It was stated that the Corporation and the Public Health Engineering Department work in close collaboration so that there is no duplication.

(xvi) DELHI

Delhi's special problems are discussed in detail in the special Note received from the Corporation and appended to this Report (*vide* Appendix IV).

CHAPTER IV

EFFECTIVE MEASURES FOR STOCK-TAKING

51. *Current limitations*—An assessment of the problem both on the urban and rural side attempted in the previous Chapter was handicapped by the paucity of the data necessary for the purpose. The replies received in respect of the proformae have brought out clearly the need for setting up a machinery in each State charged with the task of collecting correct data in regard to the several facets of the problem, both urban and rural, on which future planning and implementation could be based for successful results. It would appear as if no State has so far undertaken the necessary survey and investigation for deciding on the quantum of work which remains to be done for providing water supply and sanitation facilities to a satisfactory level in all the urban and rural areas.

52. Unless such a preliminary survey and investigation is carried out, the forecasts of the future workloads will necessarily have to be based on a uniform per capita cost applied to the assumed figures for unserved populations all over the country. But such a procedure can hardly constitute the basis for firm planning. An average per capita cost ignores several local factors influencing the scope, nature and content of an urban water supply or sewerage scheme. The nature of the source and its proximity to the town, water development techniques, physical configuration of the areas, and lay-out of the urban developments, are all widely varying factors and for this reason an average per capita cost may not be a correct index of the situation. Likewise, an average per capita cost for developing rural water supplies ignores the wide variations in the geographical and hydro-geological features as between the different regions of the country. Furthermore, the figures assumed in respect of unserved populations, both in the urban and rural areas, will need verification by actual survey teams in order to ensure correctness in the future forecasts. The sooner the State Governments pursue vigorous action to get over this basic handicap and initiate measures for correct assessment of the situation, the more will it be possible to place future planning on a realistic basis.

53. *Initiative taken for rural survey by a few States*—The replies to the proformae further indicate that an assessment of the rural problem is an even more indefinite factor than the urban. Excepting the States of Maharashtra, Rajasthan, Madhya Pradesh, West Bengal and to a certain extent Madras, it would appear other States are yet to initiate measures for a survey of the water supply position in all the villages. The Maharashtra Government have already taken steps for carrying out such a survey. The Rajasthan Government set up a Committee in 1959-60 which has come up with an assessment of the situation with the data made available to it. Even so, the position in regard to the smaller village units with population groups of less than 2,500 do not figure adequately in that Report. Moreover, the Report was confined more to the desert and semidesert areas of the State comprising only 16 out of 26 districts. The Madhya Pradesh Government seem to have taken an inventory

of the existing conditions in the villages and have furnished a statement with information in regard to existing wells and future requirements. The West Bengal Government have, likewise, made an inventory. In Madras State, rural water supply is mostly under the purview of the Revenue Board and it is believed that a fairly correct inventory of the situation is available with the District Collectors. Other States have to initiate action yet, in this regard.

54. A physical enumeration of the village water supply position does not thus seem to be possible in regard to a number of States. In those States where this has been done, the physical magnitude of the problem is still a matter of conjecture. Broad per capita costs have been applied to assumed rural populations for the whole State as an average in arriving at the magnitude of the work yet to be accomplished. These estimates are bound to show a wide variation in actual implementation. A preliminary survey, investigation and engineering assessment is a pre-requisite to arrive at fairly workable forecasts of the financial commitments involved in each scheme, be it urban or rural. Without such a step being taken, approximate forecasts based on per capita costs can serve only as a rough indication.

55. *Compilation of essential data to be pursued*—Most of the parties who have answered detailed questionnaires I and II seem to have missed the administrative, organisational and financial implications conveyed in the questions. The need for a sustained programme of health education and promotional work in the rural and urban areas in regard to the entire field of public health engineering is indicated. Again, almost all answers to proforma 'C' seem to prefer the "old rut" policy for financing all urban schemes. Some exhibit a pathetic dependence on an increasing measure of Government aid now and for ever. There were a few refreshing exceptions which suggested that future pattern of financing should depend on the imposition of sewage tax, increase in water revenue and supplementing with additional resources from octroi etc.

56. The Committee devoted considerable attention to make the proformae exhaustive, informative and also educative. It must confess, however, that the replies received on the proformae and questionnaires have not come up to expectations. The Committee would feel rewarded, all the same, if the proforma on each subject and the questionnaires would stimulate measures for a satisfactory compilation of data and a discerning assessment of the situation in the near future.

57. *Special Committees to be set up*—The Committee's attempts to make an assessment of the situation have not thus yielded the anticipated measure of success. It would suggest the following procedure to get over the difficulty and for better planning in future.

(a) *An Urban Assessment Committee for each State*—Each State Government may be advised to set up immediately a Special Assessment Committee to deal with the problems separately in the urban and in the rural areas. The Urban Committee may be headed by the Minister for Local Self Government with the Chief Public Health Engineer of the State as the Secretary. It may be a compact body to include representatives from the State Legislature, from the

Municipal Councils, and the Directorate of Public Health. The Committee should be assigned the task of making a preliminary survey and assessment of urban water supply and sewerage for the entire State to include :

- (i) a physical and demographic inventory of the position in regard to water supply and sewerage conditions in each urban unit of the State;
- (ii) a preliminary engineering forecast of the nature, scope and magnitude of each water supply and sewerage scheme (based on preliminary local inspection by an engineering unit of the State Public Health Engineering Department) with an estimated figure of cost;
- (iii) a presentation of the magnitude of the total problem with suggestions to complete the programme within a practical specified period;
- (iv) a list of relative priorities to be followed in implementing the programme;
- (v) special recommendations in regard to organisational and administrative reforms suggested for the implementation of the programme to suit local conditions;
- (vi) recommendations in regard to production and procurement of critical materials required for such a programme.

(b) *State-wise Rural Assessment Committees*—The similar Committee for the rural programme may be headed by the State Health Minister with members to represent the State Legislature, Development Department, and Panchayati Raj institutions, Directorates of Public Health and Public Health Engineering, with the State Director of Public Health acting as the Secretary.

The Committee may include in its assignment :

- (i) a physical inventory of the existing facilities village-wise for each Panchayat, and of the needs of present and future requirements to ensure minimum drinking water supply facilities and satisfactory excreta disposal;
- (ii) the nature, scope and extent of additional facilities so recommended and the approximate cost thereof based on preliminary local engineering and other factors;
- (iii) financing pattern for such a programme;
- (iv) maintenance problems, the agencies therefor, and administrative, operational, managerial and fiscal resources;
- (v) list of priorities for rural areas based on special local factors including public health aspects, occupational hazards, industrial, commercial, religious or other factors etc.;
- (vi) specific rural areas which should be provided with a piped water supply because of special local factors;
- (vii) the administrative and organisational set up recommended for implementing a programme of this nature, suggesting the period and pace of activity to complete the entire programme;

- (viii) specific suggestions for evaluation of the programme at intermediate and final stages and for an effective follow-up after completion to ensure efficient maintenance and periodical improvements and expansions to facilities, to suit increase in populations.

58. *Need for urgent action*—The Committee attaches great importance to the assessment of the problem State-wise on the lines indicated above. Without such an assessment, planning in the field of environmental sanitation with special reference to water supply and sewerage schemes in the urban and rural areas, would continue to be lopsided and indefinite in the coming years. The experience through the two Five Year Plans has clearly indicated the essential need for stock-taking at this stage so that the succeeding Plans could be made effective and purposeful, fitting into a planned pattern of development for the future. The Committee would suggest that the Central Government may advise the State Governments to set up Assessment Committees at each State on the lines indicated and to ensure that such assessment work is completed within a specified time limit. There is no need to stress the point that the policy, procedure and functions of the Assessment Committees should be uniform throughout the country so that an integrated picture can be drawn up based on comparative data made available by each State on all aspects bearing on the problem of urban and rural water supply and sanitation.

59. *Tentative basis for current action*—Until however, a realistic assessment is done, as indicated above, it is necessary for this Committee to draw upon the data already available to it from the proforma replies and formulate general conclusions in regard to the implementation of the programme under the Plan. The approximate forecast of the funds required to complete water supply and sewerage schemes in all urban and rural areas based on 1961 population figures could be roughly assumed as Rs. 950 crores for the urban, and Rs. 200 crores for the rural programmes explained in paras 48 and 49 above. These figures would cover the 1961 population, based on current prices for labour and materials. If the period of implementation of the entire urban programme is spread over say the next 2 or 3 decades, the amount is likely to be increased by about 20 per cent for every decade of such period.

The Committee realises that the total figures of estimate as above may show significant variations after a fuller assessment State-wise has been made with special Committees set up for the purpose as recommended above. Nevertheless, the approximate figures derived above may be taken as indicative of the extent and magnitude of the problem in the urban and rural sectors, and as approximate enough to warrant a discussion of the further implications of the programme in regard to organisational, administrative and other aspects. The Committee would now proceed to discuss these aspects as such a discussion need not wait until a correct figure of the future magnitude of the work is made available.

CHAPTER V

THE PROBLEM OF FINANCE

60. *Inadequacy of current allocations*—Taking stock of the position at the commencement of the Third Plan, we have the rough forecast that the capital outlay necessary to complete all urban schemes to satisfy the needs of 1961 population would be of the order of Rs. 950 crores. The allocation of Rs. 89 crores for the Third Plan represents no doubt a significant increase over that for the Second Plan, the contribution by local bodies from their own resources may bring in a small additional amount and increase the total figure to say Rs. 100 crores. Even so, it would form but a tenth of the actual needs considering the totality of the problem. With the growing urbanisation and the higher standards of living aimed at, it is essential that adequate water supply and sewerage facilities in all the urban areas are provided within a foreseeable time under a planned programme. But the allocations for this particular programme under a total Plan for the entire country rest necessarily on the relative priority it can secure from among contending nation-building activities, and also on the pattern of financing applicable to the programme.

61. It is no doubt universally admitted that protected water supply and sewerage facilities should receive a very high priority, not only from the standpoint of public health in a limited sense, but also because of the wide impact such facilities bring about in improving the general health of the Nation and the manpower potential for future progress. Nevertheless, the Plan allocations for the programme, though it forms about a third of the total allocation for Health, is woefully inadequate compared to the needs of the situation.

62. *Current financing method fetters progress*—The pattern of financing perhaps operates as the main handicap. As explained elsewhere, the local-bodies are the recipients of the loan assistance under the Programme, but allocations are distributed by the State Governments to the local-bodies based on their financial capacity to repay the loans. No doubt, some of the State Governments pay a subsidy to the local-bodies, and thereby share in the financial burden in implementing these schemes. Because of this very obligation to subsidise the schemes, the extent of operations on urban schemes gets restricted by the budgetary exigencies of the State Governments from year to year. While the obvious need for the schemes is universally recognised, the method of financing in vogue fetters the progress.

63. *Inhibiting tendency of subsidies*—It is relevant to discuss here the question of subsidy for urban water supply and sewerage schemes. It is a moot point whether the Central Government can afford to set apart any sums, now or in the future, as subsidy for urban schemes, apart from the loan assistance that is now being offered under the Plan provision. Subsidising urban schemes would therefore be a local burden to the State Governments if and to the extent they want to help out local-bodies with subsidies. The need for such help from the State Government arises from the fact that local-bodies are ostensibly

unable to get the required moneys from out of their tax resources. It has also been the tacitly accepted practice in these States that the only resource available to the local body for the retirement of the loans would be their inelastic water and drainage tax. The concept of selling water as a commercial commodity based on its cost of production and management is new to these local bodies, as subsidy has over-shadowed such a concept. In one or two States where the State Government does not give any subsidy, local-bodies have been prompted to implement their water supply schemes falling back on their own financial resources made up of water and drainage tax and all elastic water revenue derived from the sale of water to the consumers at rates such as would make the entire scheme self-supporting.

64. *Concept of water as a merchandise*—The concept that urban water supply schemes should be undertaken as a self-paying proposition is now gaining ground. Except in the rare cases where the cost of pumping and conveyance of water from a distant source may make the scheme very costly and increase the water rate somewhat high, in all normal urban schemes, the cost of water at the consumers' door may not exceed a rate of Re. 0-12-0 per thousand gallons. In all urban areas now without any protected water supply, the house owner is incurring some expenditure, willy-nilly, to procure the quantity required for his minimum domestic needs. The urban dweller would seldom grudge to pay, for a safe water delivered at his tap, charges based on actual cost of production and distribution. Payment for water consumed should not therefore, be a burden to the urban dweller, and normally a majority of the assessed number of houses should be compelled to take a house-connection under metered supply. All the same, a part of the population living in unassessed houses, hutments and pavements will have to draw their supplies from public stand-posts subsidised at the cost of the rate payer. The selling rate for water can easily be made to include for this subsidised service to the poorer classes.

65. *Water and sewerage systems as a joint-utility venture*—State subsidies for urban water supply schemes should therefore, be an exception than the rule. Sewerage schemes, however, may require a different method of approach. A sewer system and sewage disposal is an inseparable concomitant of a water supply scheme. The obligation to collect the waste water and dispose it off safely is there, once a water supply scheme is installed. Normally therefore, water supply and sewerage schemes should be dealt with as a joint utility venture and the rates for the sale of a water should be made to include the charge on both the services.

66. *Present limitations*—But such a proposition may be more ideal than practical under present circumstances. The concept of a self-paying industry as applied to water supply system is itself new to many of the urban bodies. It may take some time for them to appreciate the advantages of such a system. A sewerage system costs more to install initially and more to maintain annually, and the charges for this facility cannot be levied on the same lines on which water could be sold. Either the water charges should be made to include for the corresponding quantity of waste water from the premises or a separate sewer rental will have to be levied in addition. In most panchayat towns and minor municipal towns, the house owner may demur to pay for the two services

on such a basis. Local bodies may well have a grievance that they cannot afford a sewerage scheme on their own in addition to a water supply scheme under present conditions.

67. *Required—a change in out-look*—It is relevant here to quote the Union Health Minister from his address to the Fourth Conference of Public Health Engineers, November 1960.

“Water supply and sewerage are twin facilities, and normally should be taken up side by side. There is no point in relieving water scarcity by installing a water supply scheme and increasing local insanitation by delaying the sewerage scheme. The cause and the effect are obvious. But here again, local bodies are faced with difficulties. While a local body may successfully argue its ‘ways and means’ position to undertake a water supply scheme, it usually gets into a state of mental atrophy in regard to its sewerage scheme. The conventional norms deciding the financial viability of a project, make a sewerage scheme almost a total liability on the community, as there is no visible or direct monetary return therefrom. This is not a correct basis of assessment and some change in outlook seems justified. A sewerage system relieves the local body of expenditure on obligatory services like scavenging and night-soil conservancy, anti-Filaria and anti-Mosquito measures, and sullage drains crews, apart from giving relief in medical expenditure to the local body and the Government alike. These beneficial factors should all be evaluated as remunerative features contributed by a sewerage system and financial allocations should be based on such judgment.”

68. *Special help to encourage sewerage schemes*—It is quite possible that a part of the loan obligations against a sewerage scheme could be returned by husbanding the resources applicable to the above factors by the local body. It is also possible that a part of the liability may be met by increasing the water rates to the extent that the consumers can reasonably bear this liability. None the less, it may be possible in many cases that urban sewerage schemes may require an allocation of subsidy from the Government, at least in the initial stages of the Programme. It may be of interest to point out here that in the U.S.A., the Federal Government is even now setting apart construction grants in its yearly budgets to assist, with a subsidy up to 30 per cent of the estimated cost, the State Governments in implementing their sewage treatment projects. This was necessitated by the increasing measure of water pollution control since local bodies all over neglected to treat their sewage before they discharged them into the nearby stream-courses.

69. *Time-lag between water supply and sewerage schemes*—Because of the financial incapacity of local-bodies and the element of subsidy needed to promote urban sewerage schemes, it is possible that the progress of sewerage schemes will be retarded in the implementation of the Programme. This cannot be helped; and it should not also result in impeding the progress of water supply schemes, either. It is inevitable that more water supply schemes would be installed under the Programme before a corresponding number of sewerage systems come into effect. A certain time lag between the completion of a water supply scheme and that of a sewerage system for the same town may have to be tolerated because of the financial limitations of the local-body and the

State Government to do anything better. It will be necessary for the State Governments, and possibly the Centre, to give a fillip to the implementation of urban sewerage schemes by offering subsidies in the initial stages to the extent necessary, after all other resources available to the local-body have been completely tapped. With an improved standard of living and the felt need for a sewerage scheme along with water supply, it may be expected that urban communities would be prepared in an increasing measure to support their sewerage systems on a self-sufficient basis.

70. *Continuing Commitments*—There is yet another important aspect to consider. The magnitude of the problem as at present forecast is that a figure of Rs. 950 crores would be required to complete all urban water supply and sewerage systems to meet the requirements of the present population in the country. The schemes are usually designed for a 30-year period, with the quantity of supply restricted to the needs during such period, the components of the scheme like treatment plants, conveying mains, distribution systems, service reservoirs and the like all being designed to suit the needs of the present generation. At the end of the design period of 30 years, local-bodies will be called upon to improve, expand and add to their water supply and sewerage systems to suit the needs of the next generation. The loan commitments taken against the current schemes would have been mostly returned by the end of the design period, so that the next generation will have to initiate further stages of improvements and additions with a further loan to be returned in a subsequent period of 30 years. The cycle thus goes on as a continuing commitment for local-bodies, with periodical expansion to the schemes to suit the needs of the increasing population. There is no stage therefore, when the local-bodies and the State Governments could say that they have completed the programme, and that no more financial commitments would be involved.

71. *Subsidy in a perpetual programme*—Urban water supply and sewerage schemes are thus public undertakings which cost a perpetual financial commitment on the urban communities. It is hardly likely that the Central or State Governments could commit themselves to subsidise urban water supply and sewerage schemes in perpetuity. Even under the current Five Year Plans, many of the schemes in progress constitute improvements or expansions to existing schemes, apart from new schemes for the first time. All Five Year Plans in the future would continue to include improvements and expansions to existing schemes, in addition to new schemes, since obsolescent schemes have to be brought up to date when their design stage had been exceeded, as explained above. It would therefore, be difficult to draw a demarcation line and confine the subsidy only to new schemes installed for the first time. The experience so far has shown that once local-bodies are wedded to the theory of subsidy for their schemes, they put a premium on continued dependence on the Government.

72. *Further implications of subsidy*—The question of subsidy has therefore to be reviewed in the light of the far-reaching implications it creates in a continuing programme of urban water supply and sewerage. Moreover, if State subsidy for all urban schemes became a common feature in an intensive programme of implementation, the burden of subscribing to the subsidy through

the State Government will fall again only on the urban communities, since the State Government or the Central Government will have to raise the additional moneys required for such subsidies through additional taxation. The Committee cannot do better than to quote the Union Health Minister in this connection :

“Local-bodies, no doubt, have to overcome certain inertia before taking to this new method of approach. Most of them are used to the concept that the Government must be a compulsory financial partner in providing water and sewerage facilities to all urban areas. This concept has not helped progress so far, because the heavy capital investment required has been the deterrent factor. A proper understanding of the means of amortisation, however, should help to allay any fears in this respect. The amount of capital required is less important than the annual interest and amortisation payment. This potential for repayment can be generated in the country, if only water is sold as a merchandise whose production and distribution costs money, and which must be paid for. On the other hand, if subsidies are demanded for such schemes, the Government can only raise them from the general tax-payer. The incidence of the tax falls, anyhow, on the public to promote the schemes for local communities. The urban dweller cannot, therefore, escape the burden of contributing to the community’s water and sewerage facilities. This is as it should be, for, with the rapid urbanisation in the past few years, the urban citizen is constantly creating problems for himself, his neighbour and the local-body representing the community.

“The need for a re-orientation of the present method of financing of urban schemes will thus be self-evident. How best and how soon we can achieve progress depends on the willing co-operation of the local bodies, and an energetic lead from the State Governments in this behalf”.

73. *Annual outlay needed for an effective Programme*—This takes us to the important issue of the pace of the programme. Elsewhere it has been pointed out that as against a probable total magnitude of work for about Rs. 950 crores yet to be done, the Third Plan provision may be in all about Rs. 100 crores. Viewed from the stand-point of the Nation’s health, the community’s aspirations for improved environs, and improving standards of living, it will not be expedient to spread out the programme beyond a period of the next 10 or 15 years although practical limitations may prescribe a period of 25 years as an optimum. This would mean an annual capital outlay on urban schemes alone of the order of Rs. 40 crores. Prima facie, an allotment of such a magnitude may not find a place in the Five Year Plans under the present context. Local bodies, however, have now come to depend on the State Governments for financial help in sustaining any activity in this direction. The State Governments in their turn have come to depend on the Central Government. Any assistance which the Central Government could extend in this behalf must, in its turn, be inevitably dictated by their budgetary exigencies year after year. In the result, the question of urban water supply and drainage schemes all over the country has become, more or less, a centrally financed and controlled activity subject to its own vicissitudes year after year depending on the extent to which more important and vital projects under the Central Plan would permit any diversion of funds to feed the Programme of urban

water supply and sanitation schemes. At this rate a successful solution of the urban problem will have to be a long drawn out process extending beyond half a century to cover all the urban areas, and even then, the problem would remain as a continuing commitment to improve and sustain the projects in perpetuity.

74. *Need to cut a new path*—It is necessary to cut a new path if the programme is to succeed and move on its own momentum. Local bodies should be encouraged to promote urban water supply and sewerage schemes as a self-paying industry just as electricity undertakings are promoted and operated. The method of financing of such schemes should be patterned after the procedure and practice which have succeeded and established themselves in the more advanced countries, with such modifications as are dictated by conditions in this country. A progressive plan in this direction must be made to rest on local-bodies agreeing to work it to a successful conclusion.

75. *Independent statutory-bodies needed*—In evolving a new line of approach the first essential step would be to divest local-bodies of their responsibility to provide water and sewerage facilities against the heavy odds at present, and transfer responsibility to independent statutory bodies created for the purpose by the State Governments, either on a State-wise basis or region-wise within each State. Such statutory bodies would be clothed with adequate powers for them to raise the necessary moneys required to install these projects and sell protected water to the consumers as a merchandise which costs money to produce and supply. Local-bodies themselves may be empowered to raise a loan in the market, and sell water bonds or debentures for the purpose of installing their water supply or sewerage projects; but such a step may not be successful in the initial stages of the programme. State-wise or region-wise Water and Sewerage Boards, on the other hand, would be able to infuse confidence in the subscribing public that their investments on the urban schemes would be properly safeguarded, both in regard to the interest guaranteed for payment, and also in regard to the security of the capital invested on these schemes. As another alternative, the State Government may raise a loan earmarked for such projects on the strength of bonds and debentures issued in this regard. May be the Central Government itself could earmark a part of its open loans for such purpose. But by far the best agency would be through independent Statutory Boards specifically set up for the purpose.

76. The Statutory Boards would sponsor and promote water supply and sewerage projects for the local-bodies within their areas, raise the necessary moneys from the open market for the purpose and arrange for the investigation, design, execution, operation and maintenance of the projects. Local-bodies will have to pay for these facilities by way of water-bills levied on the consumers on the actual quantities drawn by each assessed house, and by way of sewer rentals in addition. The tariff for the water and sewer charges would be based on the total cost of production and management of these facilities, the whole operation being undertaken in the same manner in which commercial enterprises are managed by business houses. Under such a set up, local-bodies will be relieved of their present unenviable responsibility of finding the money for their individual projects and getting them implemented against the

many hurdles which have to be crossed at several stages under the existing procedural handicaps. Municipal citizens need not have to suffer, either, for the inability of local-bodies to discharge responsibilities under the present set up. Inasmuch as the Government has a responsibility to the citizens to provide these amenities, it is but right that the State Governments set up separate bodies for the purpose, enable them to raise the necessary funds and implement the projects without delay for the benefit of the citizens. The burden of finding the capital would be taken away from the local-bodies while the charges recovered from the consumers for the sale of water would meet the financial commitments to the investors for retirement of the loans with interest. Such an arrangement should be specially welcome to the local-bodies as a satisfactory solution to their present difficulties.

77. *Proposal supported by other bodies*—The Committee is happy to note that the Third and Fourth Conferences of Public Health Engineers, as also the Modak Committee (Panel on National Water Supply and Sanitation Schemes under the Building Projects Team of the Committee on Plan Projects of the Planning Commission) have recommended the same line of approach and have strongly advocated the setting up of Regional Water and Drainage Boards by each State, armed with powers to take over the functions of local-bodies relating to the provision of these two amenities. The main purpose of setting up such Regional Boards would be to help local bodies with additional moneys from the subscribing public from local areas to finance their water supply and sewerage systems. On the possibilities of raising such funds, it is worthwhile to quote the Modak Committee which observes :

“It may be argued in some quarters that as the State and the Central Government are raising loans in the open market to finance all Development Projects included in the Five Year Plans, there may be no more money available to tap for water supply and sanitation schemes than what is already assumed to be available and provided for in the Plans. The Panel is unable to subscribe to this view. Urban population is getting increasingly insistent for these basic amenities of civic life. They may not wait indefinitely for years before their schemes could be implemented with the inadequate allotments made under the Five Year Plans. The Panel is confident that investors would be able to subscribe readily and liberally towards a local loan intended for their local amenities as they would be the immediate beneficiaries. Such investments for specific local facilities are not likely to affect the investments from the general public for the Five Year Plans to any appreciable extent. It is reasonable to expect that the felt need for water supply and sewerage facilities in many of the urban areas would bring in encouraging response from the local urban population for the purchase of water bonds or debentures as the only means for securing these amenities in a reasonably short period. At any rate, it is worthwhile to pursue this line of action to raise additional funds for water supply and sanitation schemes.

“The Panel has therefore no misgivings on the successful outcome of such a venture if pursued vigorously by all the States. A certain amount of initial education and leadership would be necessary in order to wean the urban citizen and the local-body from their established conventional notions that drinking water should be provided as a partial gift by the Government.

In the initial stages of the development of this method of approach, the Panel would recommend that Regional Boards may be set up in such of the States and in such areas where the people are already familiar with this idea."

78. Because of the supreme importance of this subject for the success of future planning, the Committee welcomes also the support for this idea contained in the Report of the T.C.M. Team, which states :

"The concept that water, like air, is free and should be provided without charge seems to exist throughout India, particularly in rural areas. This philosophy and a low per capita income have been responsible at least in part for the present under-development of safe water supplies and sewerage systems. These factors have also contributed to an observed reluctance of local officials to assume the financial responsibility for operating, maintaining and extending water works. This situation must be corrected by education and clear explanations of the fundamental economics involved. Water in nature is free, but its collection, purification and distribution cost money and must be paid for.

"The funding of water works and sewerage improvements requires large capital expenditures during construction. Such funds are usually raised by loans or bond issue which are retired over a period of years. Seldom, in any part of the world, can a community raise of the construction cost from current revenue. Communities have frequently found it advantageous, in order to introduce stability and good business methods into the management of their water and sewerage works, to set up independent boards for this purpose. Such a method of funding is practical and workable only if there is a market for the securities. This depends on two factors—the existence of privately held capital and savings that can be invested and the confidence of the public in the credit and stability of the corporate bodies; municipal, regional, state or national that issue bonds.....

"The Team recommends that during the Third Five Year Plan, areas be selected for experimentation with various methods for inducing public participation in the financing of water supply and sanitation projects.....

"With the competition for funds in the national development programme and the frequent classification of water and sewerage projects as 'unproductive' social services, it is certain that even with greater awareness of the economic importance of these services, there will not be sufficient allocations from national budgets to mount an adequate programme. Sources of capital funds for water and sanitation works outside of the Five Year Plans should therefore be explored.

"The formation of independent Regional Water and Sewerage Boards organized to operate as utility businesses and removed from the fluctuating vagaries of political change, is considered by the Team as the technique most likely to attract the voluntary participation of the public in water and sewerage financing schemes. This type of organization is similar to the one recently recommended for the Calcutta Metropolitan Area. It is especially suited to closely settled metropolitan areas composed of numerous independent local bodies but can easily be adopted to some widely separated groups of municipalities or even to whole State".

79. The T.C.M. Team, in addition, has also touched upon the methods of (a) Financing through compulsory loans; (b) Financing through imposition of a National or State Cess; (c) Financing by special Improvement Assessment; (d) Financing by a Revolving Fund based on Internal loans and International grants-in-aid, and (e) Financing by Lotteries and Prize Bonds.

80. *A High Power Committee to work out the details*—In view of the fact that this new method of approach has found wide acceptance from different quarters, the Committee has no misgivings on the successful outcome of a policy of enlarged field for financing urban schemes, with special Regional Boards set up for the purpose. The Committee attaches great importance to this aspect of the programme as it will cut the Gordian knot of the entire problem. As an immediate measure, the Committee would recommend that the Union Health Ministry may set up a High Power Committee with members representing the field of Public Health Engineering, Business management, Administration, Finance and Banking, for the purpose of setting down concrete measures to be taken by the State Governments in this behalf, the legal enactments suggested for the purpose, the organisational, administrative and managerial reforms that will be necessary, and the Codes and By-laws applicable to the Regional Boards under consideration.

81. *A favourable response*—The Modak Committee has recorded that this new method of financing urban schemes found satisfactory response from the State Ministers and officials with whom they had discussed this subject. The State Ministers with whom this Committee also discussed the subject expressed themselves in broad agreement with the need for a re-orientation of the present policy and were hopeful of the successful utility of setting up Regional Water and Sewerage Boards to expedite the programme. Some of the State Governments, however, wanted time to think over the subject. The Andhra Pradesh State Government was of the view that tapping additional funds from the Life Insurance Corporation reserves for the Programme might not upset the Plan provisions. In fact, big Corporations like Calcutta, Delhi and Bombay have at present no difficulty in raising the loans required for their Developmental schemes. The position should be equally favourable to the Regional Water and Drainage Boards when they come into being, since they should command the confidence of the public by virtue of their statutory powers and responsibilities.

82. The Committee feels that no time should be lost in bringing about an orientation of the financing policy so that a better momentum for the programme could be given even in the initial stages of the Third Plan. The position is continually improving in all the States in regard to organisation, training of personnel and generally with a better state of preparedness to handle an increasing workload in the coming years. But the outstanding bottle-necks against progress are the question of finance for a major programme and the difficult situation in regard to foreign exchange. All local-bodies and the State Governments would welcome any solution calculated to remove these bottle-necks at the present juncture.

83. *Prospects of International aid to be explored*—Amongst the several methods of financing suggested by the T.C.M. Team referred to above, mention has been made of financing by a revolving fund based on International loans

and International grants-in-aid. The Committee would here suggest the desirability of exploring ways and means to secure assistance under the United Nations Revolving Fund for Global Water Supply Programme and also financial assistance from the International Development Association (I.D.A.) Both these agencies are now presumably in the initial stages of their programme and details and methods of procedure may have to be evolved yet for initiating concrete action in any particular field.

The Committee understands, further, that the I.D.A. would be in a position to offer financial assistance (by way of loans) against specific schemes under the Health Plans depending on their urgency, importance and the solvency of the agency seeking such assistance. The establishment of Regional Water and Sewerage Boards as effective instruments for implementing a progressively expanding programme should enable such Boards to secure financial loan assistance from these foreign bodies, since the very nature of their functions and responsibilities should entitle them to such assistance.

84. The Committee visualises that similar assistance could also be secured for establishing any industry or industries connected with the manufacture of proprietary materials required urgently for the implementation of the programme, provided proposals could be drawn up in some concrete shape for such a purpose and presented to the International agencies for consideration. Some concerted action in this direction is essential now since under any programme of foreign assistance, the field of environmental sanitation is bound to claim and receive the highest priority in the future developmental plans of the country.

CHAPTER VI

ORGANISATIONAL REFORMS

85. *Public Health Engineering a Speciality*—The Water Supply and Drainage Committee set up by the Madras State Government in 1948 wrote as under :

“*Supreme importance of Organisation*—We need hardly point out that in the carrying out of the large scale plan ahead, the question of Organisation holds the key position. The State may draw up the programme and lay down the policy to be followed; it may find the money by taxation, borrowing or otherwise; it may procure the materials from within or without the country by concerted measures; but in the actual prosecution of the schemes, it is the organisation of technical personnel of various grades as created and built up by the State that becomes most important. The measure of efficiency of the organisation is the measure of achievement of success of the Plan”.

These remarks apply with equal force at the present stage of development. Public Health Engineering is indisputably a specialised subject in the field of engineering. The principle of employing public health engineers, qualified and trained in their work, for the planning and execution of public health engineering schemes is accepted by all the State Governments, and yet the organisational pattern in the different States presents an unaccountable diversity at present.

86. *Position in the States*—In Andhra Pradesh, there is a separate Public Health Engineering Department controlled by a Chief-Engineer, P.W.D. in charge of Buildings also, working under the Health, Housing and Municipal Administration Department. In Assam, a Superintending Engineer is in charge of a separate Public Health Engineering unit working under the Health Ministry. In Bihar, there is an independent Public Health Engineering Department under the L.S.G. Ministry. In Gujarat, there is a Public Health Engineering wing under the control of a Chief Engineer of the P.W.D. In Jammu and Kashmir, the Chief Engineer, Irrigation and the Chief Engineer, Electricity, look after Public Health Engineering Schemes. In Kerala, there is a separate Public Health Engineering Department, but manned by officers of the P.W.D. Madhya Pradesh has a Public Health Engineering unit with a Superintending Engineer-in-charge. In Madras, the Chief Engineer, P.W.D. is in charge of Public Health Engineering with a separate circle for design and another for construction. Maharashtra has a Public Health Engineering wing under the Chief Engineer, P.W.D. In Mysore, the Chief Engineer, P.W.D. is in charge of Public Health Engineering with a Superintending Engineer, P.W.D. assisting him in designs. In Orissa, there is a Public Health Engineering department with a Chief Engineer, P.W.D. in charge. In Punjab, there is an independent Public Health Engineering department. In Rajasthan, likewise, there is a Public Health Engineering department with an Additional Chief Engineer, who, however, is subject to the control of the Chief Engineer, P.W.D. Uttar Pradesh has a separate Public Health Engineering department

styled as the Local Self Government Engineering Department working under the Local Self Government Ministry. In West Bengal, there is an independent Public Health Engineering department as part of the Directorate of Health, the Director of Health himself acting as the Secretary to Government.

It is only in the case of Andhra Pradesh and Uttar Pradesh that the L.S.G. Ministry has a direct voice over the control of the Public Health Engineering activities. In the other States generally, these activities are under dual or triple control. The L.S.G. Ministry examines the financial implications and decides the allocations to local bodies; the Health Ministry deals with the actual implementation of the local-bodies' water supply and sanitation schemes; while the Public Works Department Ministry controls the administration of the Department through the Chief Engineer, P.W.D. in charge of the Programme.

87. It is indeed strange that a few of the States try to implement the Programme without setting up an independent Public Health Engineering Department for the purpose. Want of a big workload, as is often held out as a reason, is not a correct or rational basis. It is an expanding programme and the workload will be increasingly dictated by the size and quality of the organisation built up therefor. Shortage of engineers is not a valid reason, either, since almost all the States are deploying special staff to handle Public Health Engineering works, even where the control is under the P.W.D. The reluctance of existing Engineering Departments to acquiesce in the creation of a separate Department for Public Health Engineering is presumably a major obstacle. But the issue is of major importance and calls for a deeper consideration.

88. *Independent Department—a sine qua non*—There are two ways of looking at the issue. If public health engineering activities are split up amongst diverse agencies, the need for a full-fledged Department would not be so obvious. If design of schemes is entrusted to a public health engineering wing, construction to a PWD Circle, and maintenance distributed amongst the Municipal Engineers outside the Department, the control may perhaps be exercised by a P.W.D. Chief Engineer since such a disintegration of the functions itself makes the creation of a unitary Department unnecessary. For the same reason, rural water supply design and construction may also probably be fragmented and distributed among diverse engineering agencies. On the other hand, if design, execution and maintenance of all urban as well as rural schemes are entrusted to a unitary engineering agency, it makes the need for an independent public health engineering department self-evident as in the case of West Bengal, Uttar Pradesh, Punjab, Rajasthan, Bihar, Orissa, Kerala, etc. Because of the absence of such an independent Department presumably the Madras State Government has found it necessary to entrust rural water supply schemes to the Highways Department recently. This is yet another fragmentation of public health engineering functions amongst one more agency.

89. *Essential to integrate Municipal Engineers with the Department*—The Committee would stress that it is high time that each State sets up an independent public health engineering department with separate cadres, service

rules and conditions for the officers pertaining to this department. The Committee attaches special importance to the integration of municipal engineers as part and parcel of the Public Health Engineering department; as otherwise the successful operation and maintenance of urban water supply and sewerage schemes in the future will be in jeopardy. Investigation, design, execution, operation and maintenance are all integrable functions of the public health engineering department and the agencies in charge of these functions should not be divorced from one another. It is not in the interests of efficiency of water supply and sewerage works that a separate group of public health engineers should be utilised independently for design, for execution and for operation and maintenance without an interchangeability of staff and without all the members forming part and parcel of a single department. It is because the maintenance aspect of urban schemes has been relegated to the background so far that the public health engineering profession has been retarded in its growth. It is equally injurious to the interests of works that officers of the general P.W.D. should be entrusted with the execution of schemes drawn up by public health engineers employed only for their design. Experience has shown that the designer should not be divorced from the execution or maintenance and *vice versa*, as thereby the opportunity to build up a unitary department with a continuity of training and experience and standards to be followed is lost. Eventually, such a set up would result in men of calibre avoiding the public health engineering field and seeking their prospects elsewhere. With an expanding programme of public health engineering works ahead, it will be a short-sighted policy for the State Governments to continue their organisations with a skeleton of public health engineering staff controlled by other branches, and to cut up public health engineering activities into fragments amongst several engineering departments.

90. *Local Self Government Ministry to have an effective voice*—The Committee would like to dwell on yet another important aspect of this issue. Irrigation, Buildings, Highways and Electricity works are all more or less State undertakings and the employment of independent Engineering Departments to handle works directly under the control of the State Government is a rational procedure. Urban water supply and sewerage schemes, on the other hand, are primarily the concern of local bodies who have to assume financial responsibility for such schemes and who will be involved in their operation and maintenance. But because the State Government helps them with loans and subsidies, the local bodies have no say in the organisational pattern which may be set up by the State Governments to help in implementing urban schemes. When local bodies have to shoulder the responsibility of returning the capital with interest on their schemes and maintain their schemes in efficient day-to-day running, one would expect that any organisational arrangement for working such a programme would serve the maximum interest of the local bodies exclusively. But it is common knowledge that many of the local bodies suffer from lack of guidance, advice and sustained direction for sponsoring, promoting and implementing their schemes. The set up is such that they have to make repeated importunities on the State Government authorities for pushing up their schemes at every stage and for crossing hurdles. Eventually, this causes a lot of avoidable delays in the implementation of a scheme and finally detracts from the efficiency of operation and

maintenance of the scheme when completed. It denies the local bodies the full value of the money invested on their projects.

91. *Greater liaison needed between Health and Local Self Government Ministries*—Moreover, the engineering departments employed by the State for the design and construction of these schemes are mostly maintained from out of the centage charges recovered from the local bodies forming part of the estimated cost of such schemes. Such being the case, it is but reasonable that the local bodies through the Local Self Government Ministry should have an effective voice in the management and control of the engineering organisation employed to carry out its schemes. This will be facilitated if the large number of Municipal Engineers employed severally under different local bodies are all integrated as part and parcel of the public health engineering department and the department is placed under the control of the Local Self Government Ministry. The officers manning the department will then have their roots into the local bodies and will be in tune with their aspirations and needs and would be better able to influence promotional work in the local bodies to sponsor and pilot a water supply or sewerage scheme to better advantage. The Committee has been impressed by the fact that the Uttar Pradesh Government has the public health engineering department working under the control of the Local Self Government Ministry. The position is effective in the case of the Andhra Pradesh Government where the Health and Municipal Administration Departments are under the same Ministry controlling public health engineering activities of the State. The Committee would commend this idea to the State Governments as it feels that it is no longer realistic to keep local bodies and Municipal Engineers aloof from the public health engineering departments of the State. An integration of functions between the Local Self Government and Health Ministries seems rational. At any rate the Local Self Government Ministry should be allowed to play a more dominant role in the implementation of urban schemes.

92. *Public Health Engineering Department should encompass all its legitimate functions*—Again when an independent department is available for public health engineering activities, the rational procedure would be to integrate all work loads on the rural and urban schemes under the department and also invest it with overall control of all engineering services within the Municipality or Panchayat. Similarly, other municipal functions like cleansing, conservancy etc. now being attended to by non-engineering agencies would legitimately devolve on the Public Health Engineering Department. All engineering works bearing on environmental hygiene would become the legitimate functions of this department. So much so that an independent department, when set up, would have adequate workload flowing to it by such encompassing of its legitimate activities. The plea of want of workload standing in the way of setting up an independent department can be overcome by following a realistic method to combat existing handicaps.

93. *Rationalisation of Subordinate Municipal Engineering Services*—The need for provincialising the Municipal Engineering Services and integrating them with the Public Health Engineering Department of the State has already been stressed. Besides the Municipal Engineer, there is a large subordinate technical staff of different categories, who will be working under him

and assisting him in his several duties. Apart from Supervisors, Overseers, Draftsmen, Plumbers and Mechanics on the executive side, the maintenance of the installations would call for the employment of water and sewage plant operators and laboratory technicians like bacteriologists, biologists, chemists and the like. At present there is no standard for qualifications or experience prescribed for most of these staff and municipal bodies seem to exercise their own discretion in making appointments to such posts. Admittedly some uniformity is desirable in the qualifications and experience to be prescribed for such staff to befit them for employment in water works and sewerage works installations, in the interests of economy and efficiency.

It should also be possible for some of the subordinate engineering staff to seek mutual transfer from one municipality to another based on their qualifications, experience and career prospects and also qualify by virtue of their services for recruitment to the State Public Health Engineering Services under suitable arrangements.

94. *Regional Boards vs State Public Health Engineering Department*—The Committee would stress the fact that the organisational reforms advocated as above would be an essential preliminary step to the formation of Regional Water and Drainage Boards. These Boards could employ the State Public Health Engineering Department or draw officers from that Department for the design, execution and maintenance of the schemes under their jurisdiction, in view of the competence and experience available to officers working under a unitary independent department of public health engineering in the State. When the Regional Boards should choose to employ private public health engineering consultants for drawing up their schemes, the State Public Health Engineering authority would be available to assist them in the scrutiny and control over the technical services rendered by outside authorities.

95. *A continual Training Programme necessary*—With an expanding department for public health engineering established on the lines indicated, concurrent steps will have to be taken for a continuing training programme for the benefit of the officers of the Department in all disciplines. The Committee understands that for basic post-graduate qualifications in Public Health Engineering, there are already five institutions catering. The number of applicants seeking these training facilities is steadily increasing, which is an encouraging sign. The expansion of these facilities may be expected to keep pace with the expanding needs of the public health engineering profession when a comprehensive plan for the country is implemented on the lines visualised.

96. For instituting training programme for in-service personnel, the Committee visualises that the State Departments of Public Health Engineering, in collaboration with the Central Public Health Engineering Organisation and Central Public Health Engineering Research Institute would evolve suitable training courses, seminars and refresher courses to suit the different categories of the engineers and auxiliaries employed in the profession. These training programmes will have to take into account the needs of the situation including orientation on rural problems, health education amongst rural populations, promotional work amongst urban communities and local bodies,

and problems relating to efficient maintenance of waterworks and sewage works, cost accounting methods, billing etc.

97. *Importance of Research in Public Health Engineering*—The Committee would stress that fundamental and applied research on all current problems arising in the public health engineering field should receive the constant attention of the public health engineering departments of the State in conjunction with the Central Public Health Engineering Organisation and the Central Public Health Engineering Research Institute, so that water supply and sewerage projects in the future may be based on rational factors applicable to local conditions, rather than on conventional methods.

CHAPTER VII

SPECIAL ASPECTS OF THE RURAL PROBLEM

98. *High priority to be accorded*—The rural phase of the entire programme has an urgency and importance of its own. There is a unanimity of opinion all over the country that safe water supply should be provided within the reach of every village and hamlet by the end of the Third Plan, if possible, and before the end of the Fourth Plan in any case. And, side by side, rural sanitation also should receive simultaneous attention, with a special emphasis on the hygienic disposal of human excreta, and sanitary disposal of liquid wastes. These measures demand the highest priority in the Rural Health Schemes as they constitute the only positive practical step for the eradication of water-borne and filth-borne diseases from the rural areas of the country. Their far reaching effects in rehabilitating rural health and economy are too significant to miss.

99. *Third Plan Proposals*—In the Third Plan, the Rural Programme will be continued under these 4 agencies under the same pattern of financing as hitherto. About Rs. 13 crores would be available under the Community Development Programme, the schematic budget of the Programme providing Rs. 75,000 blockwise, for rural water supply and sanitation in Stage I, and Rs. 50,000 in Stage II. The Local Development Works Programme would set apart roughly Rs. 35 crores for rural water supply. For the welfare of backward classes about Rs. 3 crores would be available under watersupply. The National Water Supply and Sanitation Programme would include roughly Rs. 16 crores for the rural phase in the Third Plan. Altogether Rs. 67 crores would be available for rural water supply under the Central Budget. The total expenditure programme may well be of the order of Rs. 100 crores taking into account the contribution from the States and the villagers benefited under the different Programmes. This is indeed a project of magnitude and would call for intensive and extensive operations for achieving the desired results.

100. *The work ahead*—As pointed out already, an accurate assessment of the work ahead is not possible in the absence of correct statistical data on the present position and future needs. According to the Planning Commission, the funds which the Centre and the States will have to raise for providing water supply to the rural areas in the entire country would be roughly Rs. 160 crores, the people's contribution being placed at an additional amount of 20 to 25 per cent of this amount. The Public Health Engineers' Conference estimated a total cost of about Rs. 300 crores for providing essential water supply facilities and minimum sanitation in the rural areas. These figures of forecast may serve to signify the magnitude of the problem until more accurate particulars are made available by the Special Assessment Committees in the States as advocated earlier in this Report.

101. *Basic objectives*—Such a programme needs vision and sustained drive for its success. The technical aspects in the survey, design, preparation of plans and estimates for a variety of rural schemes in the different regions of the country call for a comprehensive grasp of the rural needs and resources,

and competence to evolve the simple as well as complex types of schemes in the most economical manner, to suit local conditions. The financial and administrative aspects of the programme call for skill in drawing the best out of the villagers as their own contribution, so as to get them involved and interested in the programme, and in organising the planning, execution, and maintenance of all works in a manner whereby responsibility for action and results will be undivided, and progress made could be evaluated at all times.

102. *Multiplicity of agencies a handicap*—Unfortunately, many of these objectives are not easy of realisation in the current programmes under implementation by the different agencies in charge of rural water supply. Because of the multiplicity of agencies simultaneously handling the rural phase of the Programme during the First and Second Five Year Plans, it has not been possible even at this stage to make any correct assessment of the physical achievements under the different Programmes and to take stock of the position in order to formulate proposals for the future on a definite basis. Experience has also shown that many of the rural water supply works carried out under the different programmes suffer from lack of adequate technical supervision and guidance and followup. The Committee would like to stress that these handicaps should be overcome at least in the implementation of the programme ahead.

103. *Per capita costs*—The simpler types of rural schemes usually develop a supply from driven wells, drilled wells, sunk wells and built wells, apart from harnessing surface supplies with or without treatment. The cost of a simple driven well in a favourable strata may normally be Rs. 3 to 4 per capita while other types of wells may cost quite a considerable figure depending on the local terrains and the number of people served by the source. A masonry well is reported to cost some Rs. 500 in Orissa, Rs. 2,500 in Madras while a similar well taken deep down to tap subterranean sources in the difficult areas of Rajasthan may cost as much as Rs. 30,000. The Committee has noted that rural water supply schemes, particularly under the National Water Supply and Sanitation Programme, have shown a wide disparity in regard to basic criteria, per capita cost and maintenance features. The Ministry of Health, has, in fact, advised the States that under normal circumstances, the per capita cost of rural water supply schemes under the Programme should not exceed Rs. 30.

104. *Optimum Design Criteria*—Obviously there is no uniformity in design standards for such schemes at present. Nor does it seem feasible to lay down any uniform standard to suit the variety of cases met with all over the country. Certain broad assumptions, however, could be laid down for the purpose in order to keep down the cost. A major point would be the per capita rate of supply to be assumed. Where shallow and abundant sub-soil supplies are available involving cheap driven or drilled wells, the difference between a 5 gallon or 10 gallon supply may not be material; but where the cost of drilling wells in difficult terrains is high and available sources are not plenty, it does make a difference between a 5 gallon and a 10 gallon scheme. In a rural scheme where the consumers are expected to draw all their requirements from a public well or from street standposts and convey the supply to their homes, it may not be practicable to assume that each family would draw and convey

a 10 gallon supply for the entire household. If a 10 gallon supply has been assumed in a design for such schemes, it can obtain in practice only if facilities are provided at public stand-posts for subsidiary local use of the water. This, however, is not a sound practice. It is desirable, therefore, that the supply in such cases is limited to 5 gallons where high local costs and limitations of source dictate such a step.

105. Incidentally, where a rural scheme is designed on a 10 or 15 gallon per capita rate of supply, it can permit of a limited number of house service connections being granted if the supply is made through a distribution system. The question of subsidising such schemes with a full grant from the State and the Centre may not, however, carry full conviction, as the idea is to make the available funds reach the maximum number of rural communities to provide the minimum quantity of drinking water in the first instance. All the same, if a scheme involves heavy investment on treatment plant and distribution system the cost of such components not being sensibly affected as between a 5 or a 10 gallon scheme, it may be worthwhile to provide for a 10 gallon supply so as to make the scheme viable against future demands.

106. Some quarters advocate the inclusion of cattle with the rural population in the design of rural water supply schemes. The source could no doubt be designed to include the quantity needed for the cattle population wherever it is feasible and when the source is located near the community, in the shape of impounded lakes, conserved tanks, wells and the like. But it is extravagant to design the treatment plant, conveyance and distribution systems so as to provide also for the cattle population. Conveyance of a piped supply of protected water from distant source may cost as much as Rs. 50 and more per capita of the rural human population. To invest a like amount per head of cattle as a subsidy from the State and Central Governments is not a practical proposition. Local unprotected sources should be made to serve such needs. Here again, exceptions may have to be made in special cases, where local sources are not available for men or cattle, and where the population may not care to stay in the village and utilise the scheme unless it met the water scarcity for the cattle as well. Such special cases may have to be dealt with on their merits, depending on the special local conditions.

107. *Safety factors*—As the emphasis is on the provision of a safe water supply to the rural areas under all these programmes, the Committee attaches importance to the provision of sanitary wells with hand-pumps as a minimum requirement. Supplies developed from shallow sub-surface sources without a full-range of treatment could be safeguarded where necessary with provision for disciplinary chlorination. Water-seal privies with sub-surface disposal of the sewage should not be located in close proximity to well points, but adequate distance should be there to prevent bacterial pollution and chemical pollution depending on the nature of the subsoil layers.

108. *A unitary agency to have control*—The Committee has had to take note of the fact that diverse agencies were administering the programme of rural water supply hitherto and different Engineering Departments were employed on the actual field implementation. The State Public Health Department, Revenue Department, Agriculture Department, Community Development and Rural Development Department, Industries Department, Tribal

Welfare Department, etc. have been severally administering different programmes. Similarly, the Public Works Department, Public Health Engineering Department, Highways Department, Irrigation and Electricity Departments have been entrusted with the field implementation of rural water supplies under the different administrative agencies. Such a multiplicity of agencies, both on the administrative and engineering side, is hardly conducive to effective results. In view of the importance and urgency of the rural water supply programme in the coming years, the Committee strongly recommends that a single administrative department of the State should be entrusted with the execution of all rural water supply programmes. Likewise, there must be a unitary technical agency which should guide, advise, implement and follow the progress of the programme both at the States' level and at the Centre. The State Public Health Engineering Department could be utilised for this purpose with advantage by creating a wing for rural water supply. At the Centre, the Central Public Health Engineering Organisation under the Ministry of Health could be utilised to function as the coordinating authority for the implementation of the rural water supply programme under all the Ministries by giving them the necessary guidance, supervision and decision on major technical factors. It would also function as the coordinating agency for all the State Engineering Departments in charge of the rural water supply programmes.

109. *Planning at District level*—Actual field implementation must follow previous detailed assessment of the problem in each area in order to decide on the extent and scope of the water supply facilities to be provided in each rural unit under the Programme. Once the assessment of the problem is available, planning should be carried out District-wise and Block-wise. The Zilla Parishad should be fully brought into the picture and it will be helpful to set up a Sub-Committee of the Parishad with the concerned technical officers as members, to deal with the entire subject of water supply and sanitation in the district. As the Panchayat Samitis (Block level) are represented in the Zilla Parishad, they would also get associated with the overall plan. The resources made available to Zilla Parishad, under the National Water Supply and Sanitation Scheme should be allocated by the Zilla Parishad to the Panchayat Samitis after taking into consideration the latter's requirements, the funds already available with them (Panchayat Samitis) under Community Development and other programmes and the extent to which voluntary contributions etc. would be available. The needs of backward and neglected areas should receive due priority and consideration in the selection of schemes and allocation of funds by the Zilla Parishad. The supervisory and superior technical personnel should be deployed from the District Headquarters for preliminary investigations, drawing up of plans and estimates, supervision and guidance. Actual construction and execution of works, except in any special cases, may however be entrusted to the Panchayat Samitis, the technical supervision remaining with the district level organisation. This is necessary because utilisation and maintenance of these works will subsequently become the responsibility of the Panchayat Samitis. All the same this procedure would place the higher technical and administrative supervisory control and surveillance with a unitary agency at the District level, so that preliminary assessment, actual implementation and a follow up programme could all be coordinated under that single agency at any stage.

110. The Committee expects that there should be no difficulty in adopting this procedure. Since the Zilla Parishad will be the coordinating authority there should be no difficulty for the State and Central Governments to keep track of the actual rate and quality of the progress achieved under the programme. This will ensure optimum utilisation of funds. The Committee would suggest that the details of this procedural change may be gone into in a comprehensive manner by the Special Assessment Committees suggested at the State level, so that they may take into account all local factors to evolve a new procedure in this respect.

111. *State Public Health Engineering Department to assist*—It is essential that the State Public Health Engineering Department is entrusted with the implementation and control over the rural water supply programme so that rural schemes of whatever character are technically sound and the safety of the supply to the villagers is ensured even during the stages of preliminary investigation, design and execution of each project, big or small. It would ensure uniformity of standards and quality of design all over the country and would facilitate the collection and compilation of statistical data in regard to the progress of the programme at desired stages on an efficient basis. The Committee deprecates the practice of employing all available engineering agencies of different Departments to tinker with rural water supply schemes. Because the engineering staff employed for constructing even simple sanitary wells had no public health bias, moneys have been spent on rural wells where instead of sealing the well with a cover slab, an elevated roof slab had been provided more to serve as a protection.

With the unitary agency in charge of the entire programme at the district level, it will be more economical to set up a Central Store Yard and Manufacturing Yard for pipes and specials, closets, fitting and appurtenances to suit local requirements. This aspect is being dealt with separately in a later Chapter.

112. *Maintenance highly important*—The maintenance of completed schemes should receive special importance. Most often, it was neglected in the past as a result of which the villagers were helpless against inefficient operation and maintenance of a system or its break-down in consequence. The administrative responsibility for the proper operation and maintenance of completed water works involving any kind of mechanical equipment like water treatment plant, pump-sets, chlorinating equipments, distribution reservoirs and a distribution system with appurtenances should be placed under the local Panchayat or Samiti with effective control being exercised at the district level. The technical responsibility for proper operation and maintenance should be ensured by the employment of minimum qualified technical staff either singly or any particular village system or jointly for several contiguous villages, so that proper operation and supervision thereof is ensured round the week. The district centre should have adequate spares for necessary materials and a mobile unit with a repair gang available to deal summarily with break-downs, repairs, renewals, etc. The Committee feels that the fiscal responsibility for the operation and maintenance of the rural water supply schemes should be shouldered exclusively by the local panchayats or samitis or panchayat unions. The tendency to look to the State Government for a subsidy even to maintain completed schemes should be discouraged.

113. *Status of Rural Sanitation*—Although rural sanitation forms, as it should, an integral part of the programme, it is common knowledge that it has not made any significant headway so far. It looks as if we are still a long way from a universal promotion and adoption of water-seal privies in the rural houses. The villager's lack of scientific knowledge on cause and effect, and the socio-economic backwardness may be the contributory causes. How far health education and propaganda alone can transform peoples' habits is a moot question.

114. *Approach to the Programme*—A view is held in some quarters that latrine construction programme can receive a secondary importance and that rural water supply should be given top priority in any scheme of rural rehabilitation. Others consider that unless there is an adequate system of rural water supply, rural sanitation may not fare successfully. Some others feel, on the other hand, that rural sanitation can stand as an independent programme of action and that any activity intended to help the villager to have a waterseal privy in his house should receive sustained support and drive from the State and Central Governments. The Committee feels that a successful sanitation programme is tied up with simultaneous opportunities afforded to the villager for his economic and social betterment. The problem would, therefore, call for an integrated approach for effective results being realised.

115. *Sullage Disposal*—Irrespective of a mass programme for promotion of rural latrine construction, the rural water supply phase of the programme should not itself create problems of insanitation in the rural areas. Spill water from public standposts should be effectively disposed of locally or otherwise. Waste water from households can accentuate insanitation in crowded localities even in villages. Such areas should receive attention for a collection and disposal of the sullage to suit local conditions. Where the configuration of the village would permit an economical collection and conveyance of sullage or sewage, a satisfactory disposal should also be provided side by side in the shape of oxidation ponds or by sewage farming.

116. *Distinction between rural and urban*—In this connection, the Committee has to refer to an important issue concerning the distinction between urban and rural areas.

According to the 1951 census, there were 556,564 villages with a population less than 5,000 each, 3,957 villages with populations between 5,000 to 20,000 each and 585 towns with populations of 20,000 and above. The total population of villages between the 5,000 to 20,000 range was about 32.43 million, whereas the total population of towns above the 20,000 range was 42.91 million forming the ratio of 3 : 4, the population figure of 20,000 has been assumed as the limit above which urban units would normally opt for municipal constitutions. Although population groups between 5,000 and 20,000 fall under the category of urban areas under the National Water Supply and Sanitation Programme, some of the State Governments are prepared to consider population groups up to 10,000 as rural units. The Rajasthan Government has include in rural areas population groups up to 8,000. The Madras State Government consider villages up to 10,000 population as eligible for aid under the State's Rural Programme. The Kerala State Government explained that the entire State comprises of rural

communities from one end to the other without any significant demarcation line between one village and another, and it is difficult to single out specific rural communities for aid under the Programme based on a population limit.

117. *Relaxation of rule in special cases*—The Committee appreciates that a denial of subsidy to a rural unit wholly on the ground that it exceeds a population limit of 5,000 may result in undeserved hardship to many such rural areas. Presumably, the programme did not include villages with population above 5,000 as the funds provided were limited and the inclusion of the bigger or larger villages might be a handicap to the smaller villages which admittedly stand in need of immediate amelioration to relieve their water scarcity. While, therefore, the limit of 5,000 may be kept as the broad dividing line to distinguish the rural from the urban, it would be desirable to relax the rule in those cases where the State Government feels that there is a justifiable case for subsidising rural schemes where the population groups exceed 5,000. In such a case, the limit may be taken to 10,000 and not any higher.

118. *List of special cases to be prepared*—The Special Assessment Committee suggested in para 57(b) above for the rural problem may also be assigned the task of selecting special rural units with a population range between 5,000 to 10,000 which would claim financial assistance under the programme in the same way as the smaller villages with population below 5,000. A special list may be prepared of such rural units in need of special help with a relevant priority assigned for the implementation of the schemes. The Committee would recommend that the State and Central Governments may give specific consideration to such a list of villages which may be recommended by the Special Assessment Committees to be set up in the States.

119. *The case of semi-urban units*—The Committee would consider communities with population groups of 5,000 up to 20,000 may rightly be styled as semi-urban or rural-urban areas which should not be treated on a par either with the rural areas or with the urban areas. These semi-urban units would need water supply systems with a per capita rate not less than 15 gallons to meet the minimum demands. Since the size of the population generally decides the nature and the pattern of the scheme to be developed and the per capita supply to be given, it is obvious that the inclusion of the water supply schemes for these bigger units under a rural programme would make it a top-heavy factor. As these bigger communities have a certain measure of financial capacity to meet their civic needs, it would be also imprudent to invest on elaborate piped water supply systems and give grants-in-aid therefor under a rural water supply programme.

120. *A slab system of subsidy*—We thus have a difficult situation in dealing with these rural-urban areas between a population range of 5,000—20,000. Groups above 20,000 which form about 55 per cent of the urban population (above 5,000 limit) would normally include municipalities and major panchayats with opportunities available within their tax-structure such as should enable them to meet the cost of their water supply schemes from their own resources. The same measure of opportunity may be lacking for the semi-urban population as they form an intermediate stage of development between the purely rural villages which qualify nearly for a 100 per cent grant-in-aid and the more developed urban towns which can qualify for a loan assistance against their returning

capacity. The semi-urban units are prone to get elbowed out of the programme if they are included under the urban phase. The proportion of the less fortunate and more fortunate urban population is in the ratio of 45 to 55. It seems desirable to set right possible inequalities in the opportunities made available to these urban communities under the loan assistance. The Committee would suggest a slab system of grant-in-aid to the semi-urban units. The Central subsidy may be 35 per cent for units with population between 5,000 and 7,000, 25 per cent for units between 7,000 to 10,000 and 15 per cent for units from 10,000 to 20,000. Such a proposal would introduce an element of rationale in the aid contemplated under the Programme, as between the rural, semi-urban and urban units. Incidentally, if population groups up to 20,000 are taken care of under this slab system of aid, it would facilitate the implementation of the urban programme to population groups above 20,000, treating their schemes as on a self-paying basis, as already discussed. This aspect of the problem may also be gone into by the Special Assessment Committees to be set up by the States and the lists to be drawn up by them made to include purely rural, urban and urban units in each State, each to be administered in a different manner under the Programme.

CHAPTER VIII

PROCEDURAL REFORMS

121. *Procedure to be streamlined*—Comments are heard from many quarters that under the existing procedural set up, the processing of an urban water supply or sewerage scheme, from the stage of its initiation by the local-body to the final stage of approval and inclusion in the National Water Supply and Sanitation Programme by the Central Government, involves a long period of years. While procedural restrictions are necessary for orderly progress, they should not by themselves form an impediment to progress and upset the very programme. Without enumerating in detail the procedural handicaps and hurdles which affect the progress of the programme at present, the Committee would suggest that administrative and procedural reforms should be initiated on the lines indicated below to ensure a streamlining of efforts at all stages and quicker disposal of matters relating to the entire programme.

122. *Guiding Principles for Design*—The Committee understands that a Public Health Engineering Manual and Code of Practice is now under compilation by an Expert Committee. Steps should be taken to bring out the Manuals quickly so that the public health engineering profession in the country will get the necessary lead in preparing future schemes on common lines of acceptance.

123. At the Centre, the Central Public Health Engineering Organisation under the Ministry of Health should lay down the guiding directives for the preparation and presentation of schemes by the State Governments under the Programme.

124. *Scrutiny to be expedited*—Once the design criteria and the general pattern of preparing designs, plans and estimates for water supply and sewerage schemes are laid down for adoption by the State engineering authorities, the technical scrutiny of schemes at the Centre should be carried out quickly and without any avoidable delays. Repeat correspondence with the States on technical details of the same scheme should be avoided as far as possible.

125. *Personal touch needed*—The C.P.H.E.O. should deal directly with the State engineering authorities in respect of technical scrutiny and approval of Schemes, once the list of such schemes to be included under the programme has been decided between the State and the Central Governments.

126. Officers of the C.P.H.E.O. should undertake frequent tours to the States for personal discussions, clarification and settlement of technical issues, directly with the State engineering authorities, and to avoid delays through correspondence.

127. *Mutual exchange of officers desirable*—To make such a process effective, it is desirable to have an exchange of officers from the C.P.H.E.O. to the States and vice versa, so that preparation of schemes at the State level and scrutiny at the Centre could be done with mutual appreciation of the conditions at either end. It would also engender an *esprit de corps* between the State engineers and the C.P.H.E.O. which is essential for efficient despatch of work at all levels.

128. *Relative functions of State and Central Organisations*—It is argued in some quarters that as the State public health engineering authorities are fully competent to deal with their schemes, scrutiny by another engineering agency at the Centre may be dispensed with. The Committee considers that an independent second scrutiny at the Centre is essential to ensure uniformity of practice, coordination of results and exchange of worthwhile information between the several State engineering organisations. Moreover, many of the States are yet to set up Public Health Engineering Organisations of an independent status and adequate competence. Many of the newly formed public health engineering departments have yet to be strengthened with qualified and experienced public health engineers. Until all the States develop their engineering organisations to a full and competent level, the Central Organisation may have to assist some of the States with consultative service in the preparation and processing of the schemes. It is therefore desirable to allow the State engineering organisations and the Central Organisation to grow side by side, with a mutual exchange of staff as suggested. In addition to the processing of schemes figuring in the programme, the Central Organisation should help in disseminating information and knowledge on all technical problems, and organise conferences, seminars, refresher courses and training programmes for all disciplines in the profession. When the public health engineering profession takes over gradually all functions pertaining to environmental hygiene, the Centre will have to take continued initiative to bring out standards, manuals and codes, to apply to the new fields of activity, to establish procedures and conventions for inter-State problems and to initiate research on all current and long-range problems in collaboration with the Central Public Health Engineering Research Institute. The Committee therefore visualises a healthy and progressive growth and development for public health engineering both at the State level and at the Centre.

129. *Approval by the Health Ministry*—Once the technical scrutiny and approval is agreed upon for a scheme after mutual consultations between the State engineering authority and the C.P.H.E.O., the administrative approval thereto should be expedited by the Union Health Ministry without a reference to the Planning Commission; as it involves delay without any corresponding advantage.

The Committee is of the view that individual full schemes in a complete shape, the estimated cost of which does not exceed Rs. 1 lakh, need not be sent to the Centre for approval but could be approved by the State Government concerned, so as to speed up the implementation of the programme.

It may also be examined how best more powers could be given to the State Governments for implementing their schemes to overcome existing procedural and administrative handicaps in dealing with their schemes.

130. *Suggested Co-ordinating Committee at State level*—At the State level it is desirable to have a standing Co-ordinating Committee in the Secretariat to include the State L.S.G. Minister and Health Minister or the Minister concerned, the Secretaries of the respective Ministries, the State Public Health Engineer and the Director of Public Health, a member from the State Legislature and one from the Chamber of Municipal Chairmen who will meet periodically to study the movement of all the schemes figuring in the programme and

to deal summarily with delaying factors against progress. The State Public Health Engineer will act as the Secretary to the Committee and bring to its notice as frequently as possible all factors contributing to delays and initiate measures to expedite progress.

131. Mutual consultations between the State Health Ministry, L.S.G. Ministry and Finance Ministry for according sanction to a scheme should not lead to any avoidable delays, with a Co-ordinating Committee as suggested above.

132. *Progress of execution to be watched*—After a scheme is sanctioned for execution under the programme, the Co-ordinating Committee at the State level should continue to keep watch over the progress of the different schemes and ensure that delays are avoided by timely action in regard to land acquisition, procurement of materials, award of contracts and also arrange for the completion of the scheme in fruitful intermediate stages. It will be for this Committee to ensure that the expenditure is spread uniformly over all phases of the scheme and stock piling of critical materials is restricted to the minimum.

133. *Load on Distribution system to be built up without time lag*—In order to place the maintenance of completed schemes on satisfactory footing and to ensure that design assumptions are actually given effect to in the operation of the scheme, the execution programme of each scheme should encourage the building up of a load on the water supply and sewerage systems by the grant of house service connections from the water supply mains and house connections from the street sewers as an integral part of the closing stages of the execution of such schemes. If, without so doing, the State P.H.E. Department hands over a completed water supply or sewerage system to the local body, the latter takes years to build up a load on the system and thereby loses an appreciable amount of revenue realisable from these schemes if a large number of house connections had been in force even to start with.

134. *Maintenance staff to be trained in advance*—To ensure proper operation and efficient maintenance, the State Public Health Engineering Department should employ the necessary technical engineering staff to handle and operate a water supply or sewerage scheme in consultation with the local body before the scheme is actually handed over to the control of the local body. The technical staff so employed should be trained under the State Public Health Engineering Department for an initial period before they are placed in independent control of installations.

135. All local bodies should be encouraged to send out their engineers and engineering subordinate personnel to avail of the different training programmes in public health engineering, refresher courses, seminars and conferences organised at the State level and at the Centre.

It is understood that stipends are offered by the Union Health Ministry to candidates sponsored by the State Governments to participate in the training courses for different disciplines; e.g. post-graduate course in Public Health Engineering, short-term courses for Public Health Engineers, and for Subordinate Engineering Staff, training courses for Waterworks Operators, and for Sanitary

Inspectors etc. Post-graduate training is also being promoted by the Union Education Ministry with grants to Institutions and stipends to the candidates. It is necessary to ensure that the training facilities are properly utilised under a planned programme, and the personnel trained are employed in assignments where their special training would be of continuous benefit in the implementation of Public Health Engineering works. The training programme as such should also be periodically evaluated by the C.P. H.E.O. in consultation with the State Public Health Engineers and the details and number of training courses, refresher courses, and seminars should be decided upon to suit the actual needs of the profession from time to time.

136. *Satisfactory maintenance essential*—The operation and maintenance of completed projects should pay special attention to (i) the efficient laboratory control and tests to ensure on plant performance, (ii) to the systematic recording and compiling of plant performance data to serve as useful statistical basis for current study and future needs, (iii) accurate billing and collecting procedures in regard to revenue from water supply and sewerage facilities, and (iv) business-like book-keeping methods and cost accounting procedure, in the administration and management of the schemes.

137. *Operation of rural water supplies*—In regard to rural water supply there is need to set up a follow-up programme to keep a vigilant check-up and survey of completed rural schemes and to ensure on their proper maintenance by the appropriate agencies, both administrative and technical. Any time-consuming delays in the existing procedure for collection of the villagers' contribution towards their schemes, and the execution of rural water supply works should be avoided by suitable readjustments in the procedure. Adequate and correct statistical data should be made available at the District Centre regarding the quality and quantity of supply actually realised from each completed work, its engineering details as executed and the number of users thereof.

138. *Delays in taking over completed schemes*—The Committee has come across instances where rural water supply schemes planned and executed at considerable cost by the State Government were not taken over promptly by the village Panchayats concerned for operation and maintenance, pleading financial inability to do so. Requests for State subsidy to maintain the schemes made at that late stage involved further correspondence and delay in bringing the completed scheme into operation. To avoid such a contingency, it is desirable that the question of responsibility for the proper maintenance of the scheme is decided before it is approved for execution, after examining the ways and means position of the agency which is to undertake the operation of the scheme.

CHAPTER IX

PRODUCTION AND PROCUREMENT OF MATERIALS

139. *Handicap of Short Supply of Materials*—It is common complaint that critical materials required for water supply and sewerage schemes are much in short supply at present. It raises a problem of great importance and urgency. While current allocations for urban schemes are themselves inadequate against the total magnitude of the problem, the shortage of proprietary materials required for such schemes hampers the expenditure programme even against such inadequate allocations.

140. *Delay in securing C. I. Pipes*—The major important articles needed for the schemes are cast iron pipes and specials, valves and fittings. Until recently, the Indian Iron and Steel Co. and the Bhadravati Iron Works were the two agencies engaged in the manufacture of such pipes. New firms have recently joined in the venture. The Committee understands that the Indian Iron and Steel Co. Ltd., have also stepped up the production of C.I. Pipes in the bigger sizes. Despite this, State Public Health Engineers find it difficult to spend current allocations because of the long time-lag between order and delivery of cast iron pipes. This is particularly so in regard to pipe sizes in the smaller range—3" up to 10" diameter or so. The Committee understood that against current indents, delivery of the smaller pipes is not promised until 1964 or 1965. This is hardly a satisfactory situation. It has an upsetting effect on the expenditure programme on water supply and sanitation schemes.

141. *C.I. Specials*—The position is still worse in regard to cast iron specials. The production of specials is not as rapid as the pipes. As a result, even when pipes are made available after long delays, one has to wait again for the supply of cast iron specials required for the actual laying of the pipe lines.

142. *C.I. Sluice Valves*—C.I. Sluice valves are now being manufactured on an increasing scale in the country by a number of firms. The Committee understands, however, that the quality of production is not up to the required standards. The Fourth Conference of Public Health Engineers raised this issue and discussed the need for enforcing better standards in the materials and manufacture of C.I. sluice valves in the country and to ensure on the required quality of materials and workmanship.

The production of G.I. pipes, used mostly in the rural schemes, and for plumbing works in the urban schemes may not offer much of a difficulty, as the production capacity continues to be stepped up. Here again, vigilance is required to ensure high quality of the pipes manufactured.

143. *Production capacities to be increased*—The Committee must caution, however, that the planning of increased production of scarce materials required for the schemes will continue to be haphazard in the absence of a definite and comprehensive programme for the urban schemes with an approximate work-load indicated for the successive Five Year Plans in the future. Although

the potential workload in the urban field is assessed at about Rs. 1,200 crores now, the current rate of allocations and the procedure being followed for allotments hinders long-range planning not only in regard to the States preparing their projects, but also in regard to industries planning their production capacities. If some definite indication could be given in regard to the workload which must figure in the next two or three Five Year Plans, there is no doubt that industries will begin to play their legitimate role in stepping up the production to implement the schemes in a quicker and more effective manner.

144. *State Control and Regulation Desirable*—Increasing the production of C. I. pipes now should not face any serious difficulties at present with the new steel mills being in a position to supply pig iron. What is required, therefore is a comprehensive planning and a decision to implement the total workload within a specified period, which will give a proper indication of the future magnitude of the problem, and the quantum of requirements needed for such a programme. Nearly 60 to 70 per cent of the cost of urban water supply schemes comprises the value of C. I. pipes and specials. There is no doubt therefore that the total quantity of Cast Iron pipes and specials required for our schemes in the next 20 or 30 years would be of a significant measure and it would be worthwhile for the State to participate in the manufacture of cast iron pipes and specials so that the quality and price of pipes would be controlled and regulated.

145. *Judicious use of pipe materials*—The position in regard to alternative pipe materials like spun concrete, pre-stressed concrete, Hume-steel, asbestos cement and glazed stoneware pipes, etc. would also require simultaneous consideration. It is highly desirable that a more judicious choice of materials is made in the pipes adopted for several of the major and minor urban schemes so that pipe materials used correspond to actual needs and scarce materials are conserved for meeting appropriate requirements.

146. *The utility of pre-stressed concrete pipes*—The Committee understands that pre-stressed concrete pipes may have a good future in the programme. In the higher sizes, they offer an attractive saving to cost when compared to cast iron pipes with a simultaneous saving of critical material. The manufacturing process is simple and could facilitate regional production centres to be established to suit actual requirements in the field from time to time. Here again, some long-range planning is called for with arrangements for production of high-grade steel required for such projects, so that the industry can function without the handicaps of foreign exchange from time to time.

147. *International assistance for increasing production*—The Committee understands that certain reputable foreign firms are now interested in starting the manufacture of prestressed concrete pipes in this country. It would also appear that foreign firms will be interested in helping to increase the production of cast iron spun pipes. It should also be possible to secure financial assistance for starting these important industries from International Loan agencies, since the need therefor is unquestioned and their importance for national development well recognised. It is necessary, however, to channelise the interest evinced by several agencies in the field into a fruitful line of action so that the production of scarce materials needed for the total programme is planned and executed with vision.

148. The same conditions would apply to the production of pumps and motors required for water supply and sewerage schemes and of essential water-works appurtenances like water meters, flow recorders and flow regulators, chlorinators and the like. The Committee notes with satisfaction that foreign agencies are evincing interest in starting such ancillary industries for the production of meters, chlorinators, etc. needed for the total programme of Health Development in the coming years. What is required now is to stimulate the starting of such industries and tune their progress in keeping with the needs of the future programme, so that supply and demand could keep pace at all stages.

149. *Needed Industrial Expansion to be indicated*—Stepping up production of critical materials required for the schemes is admittedly a vital part of the programme. It is suggested that the High Power Committee recommended in para 80 above may also be asked to go into this major question, work out the details of the future requirements and indicate the extent and scope of the industrial expansion needed in this field.

150. *Hand Pumps for Rural Water Supply*—Rural water supply and sanitation schemes would equally be in great need of materials essential for their programme. The Committee visualises that the pace of the rural programme would be more rapid and intensive in the next decade than hitherto. The simpler type of rural water supplies envisaged under the programme would be in the shape of sanitary wells covered with a slab and with one or two hand-pumps to each well. It is well known that many such schemes executed in the past have fallen into unpopularity because of the failure of the hand pumps installed. A simple, efficient, robust and economical hand-pump for rural water supplies is yet to be devised. This would require some intensive and immediate study. Measures should be taken to manufacture a satisfactory type or types of hand-pumps to suit to the different localities on an increasingly large scale in future so that rural water supplies could be implemented on a fool-proof basis.

151. *Choice of pipe materials*—A few piped rural water supply schemes may require C. I., Concrete or G. I. pipes depending on local conditions. Since the hydraulic pressures in rural pipe systems would not be in the high range, it is necessary that a judicious choice is exercised on the pipe materials to be used on such schemes. In most cases, spun concrete pipes can do service in the place of C. I. pipes. Asbestos cement pipes would come in handy in many cases. In order to exercise the maximum economy in the use of materials, even on rural schemes, it is necessary that the engineering department in charge of the programme is equipped with the proper calibre of men with qualification and experience in the line. The need for entrusting all urban and rural schemes to a unitary public health engineering department in each State cannot be over-emphasized in this context.

152. *The role of the District Centre*—The Committee has referred to the District Centre as the pivot of future activity for implementing the rural programme in future years. The District Centre should be able to have a Manufacturing Yard for the casting, curing and storage of different sizes of concrete pipes for rural water supply schemes and latrine pans, squatting slabs, traps

and soil pipes etc. for the rural sanitation works. A mechanical section under adequate supervision of the District Centre could be entrusted with the production, stocking, supply and distribution of all materials required for rural water supply and sanitation works from each District Centre. Each Centre could, in addition, train the required number of masons, carpenters, mechanics, and mistries in the manufacture and assembly of concrete pipes, slabs and pans and other parts, and in the field lay-out and construction of latrines, dispersion trenches and allied works, so that trained and skilled artisans could handle the field work in the rural areas to better advantage. Overseers, sanitary inspectors, mechanics and mistries engaged in rural water supply and sanitation works could all receive necessary orientation and training in their work at the District Centre at periodic intervals.

CHAPTER X

WATER RESOURCES CONSERVATION AND WATER POLLUTION CONTROL

153. *Importance of Water Resources Survey*—The history of development of many an existing water supply scheme brings out the need for long range planning in regard to the source selected for the scheme. The potentialities of the source are most often over-estimated, while the future demands likely to arise from the communities served by the source are under-estimated. The result is that soon after the completion of the scheme, the demand far outsteps the capacity of the source and, because of lack of planning at the initial stage, additional sources have to be explored under an augmentation scheme. In the case of distant sources, treatment plants and long conveying mains which form part of the scheme are designed on assumed capacity of the source selected, but if such capacities are based on wrong assumptions without adequate hydrological data gathered over a representative period, any shortcomings experienced subsequently in the source not only affects the total supply as assumed, but also involves an over-investment on the conveying mains and treatment plants to that extent. Inadequate planning in the initial stage is thus a double handicap, in that it not only denies the investor the full utility of the other components of the scheme, but also necessitates fresh investigations for new sources beyond the purview of the original planning.

154. Long-range vision is thus a *sine qua non* in the selection of sources for major city water supplies. Over large tracts of the Indo-Gangetic plain and similar areas in deltaic regions, where urban and rural communities can draw a plentiful supply from the deep layers of alluvium, selecting the source for an urban scheme for present and future requirements does not pose much of a problem. But where cities have to depend on surface sources from impounded lakes or running rivers, comprehensive planning in the very initial stage can alone pay long range dividends during the operation of the scheme.

155. *Lessons from past experience*—We have thus the instance of Delhi where the securing of additional supplies to meet the City's rapidly growing demands is creating time-consuming problems. The drinking water needs of the city are tied up with competing irrigation needs from the adjoining State and the issue has been under long correspondence and numerous discussions. We have the instance of Bangalore City water supply having got into an almost chronic state of scarcity with an ever-increasing rise in the City's population. With the present rate of supply reaching so low as 11 gallons per capital per day, the City Corporation is facing continual difficulties to step up the supply to suit the demand. Increase in the treatment plant capacity, conveying main and distribution systems more often steal a march over augmentation of the source, resulting in a lopsided development of the project and idle investment on components far ahead of utility. The case of Madras City water supply is not an exception. The City has been living a hand-to-mouth existence in regard to its water supply over the past several years. The deficiency in the quantity of supply to the consumer is accentuated by its noxious quality. Calcutta City's water supply does not stand on any better footing. The problem is so stupendous in regard to the quantity and quality of the supply required for the City's

teeming lakhs that the Corporation is all but helpless. It is not necessary to multiply instances. Almost everywhere there is lack of a comprehensive planning for future requirements and failure to have a Master Plan to deal with the full ultimate needs of the City, taking into account all possible developments. Bombay is perhaps a refreshing contrast, in that its water supply is able to keep pace with the increasing needs of the City, as a result of timely planning and action at necessary stages, with an adequate plan to meet subsequent stages of development

156. It is wise to learn from the experience of the past so that future planning may be placed on a satisfactory footing. It is not sufficient that an urban water supply scheme provides for a source which is sufficient to cater for a prospective population upto the end of the design period; but it is also necessary that the source selected admits of further augmentations to meet increasing needs beyond the design period or, at any rate, it is necessary that the initial planners foresee the future requirements and indicate the line of development for additional sources such as would make the selected source fit in with the future development of the scheme.

157. *Need to conserve water resources*—The supreme importance of a water resources conservation programme in this connection needs hardly any emphasis. A total water resources survey and conservation programme for the entire country will no doubt envelop the needs of all water users for irrigation, navigation, power development, fishing and recreation. But such a programme restricted to the drinking water needs of urban and rural communities need confine itself to an initial exploratory survey of all possible sources which are to be harnessed for the present and future development of water supplies to these areas, and to the initiation of measures for conserving the required supplies from these sources for future needs of these schemes. Most often, it is established riparian interests that create a clash between drinking water supply needs and irrigation rights on an available source. Because of the fact that irrigation is more or less a State enterprise, and drinking water supply as a local-body's responsibility, the latter has always to play a losing battle against established riparian interests. Many an urgent scheme has been held up because of apprehended encroachment into vested irrigation rights on the only available source on which the City has to depend for its drinking water supply. It is necessary to safeguard future development of water supply schemes by suitable legislation which would enable drinking water needs to have priority over irrigation and other needs and by including drinking water requirements in new irrigation projects, wherever this is feasible.

158. *Utility of an advance Investigation Division*—Advance action to conserve adequate supplies required for a City's future needs is possible only if a proper investigation has been made on the water supply scheme. This takes us then to the question of each State setting up an Advance Investigation Division to conduct a preliminary survey of all urban units, (and rural areas where so indicated) to decide on the nature and extent of sources which will have to be harnessed for the present and future needs, to examine to what extent collaboration with other users of water from the same source is necessary, and to initiate measures so that drinking water requirements from such source could be

secured as and when required against future developments. Unless a State-wide investigation of all urban units as also of specially difficult rural areas, is undertaken by an advance engineering division for this specific purpose, advance planning to conserve available sources for water supply needs cannot be done in time. The special investigation division is essential, in that it can survey, foresee and reserve, the needs for the next say 50 years, and thus save urban water supply systems in the future from unhappy predicaments in regard to their sources of supply. The special division would be needed only for a temporary duration until the required survey and investigation work is carried out. The cost of such a special temporary division in the context of the total workload to be taken up in the future decades is an insignificant factor; but by engaging such a division in advance, a strategic part of future planning and development of water supply systems would have been ensured. The Committee would commend this idea accordingly for the consideration of all State Governments.

159. *Water Pollution as a problem*—The question of a Water Pollution Control Programme is a related subject. While measures for safeguarding the quantities required for future water supplies could be initiated on the lines indicated above, safeguards required for preserving the quality of the supply from present and future sources will have to be ensured by independent parallel action. The quality aspects of most of the sources of water supplies, both surface sources and underground sources, are tied up with a total water pollution control programme for the purpose. It is being realised in an increasing manner that waste waters, sullage and sewage from towns and villages, usually find their way into the nearest water course, rivers or lakes; likewise, trade wastes from an increasing number of industries are now being discharged into nearby water course. All these waste waters and trade effluents carry a heavy pollutional load varying in degrees and intensities which must necessarily impair the chemical and bacterial quality of the surface flow in the receiving streams. Where there is no water course to receive such waste discharges, several industries pond up their trade wastes with or without crude attempts for treatment and this results in a steady pollution of the large reservoir of ground water in and around the areas of operation.

160. *Current Measures inadequate*—Many of the States are yet to enact Public Health Laws governing the discharge of polluting wastes into public water courses. Even where Public Health Acts have been passed, the problem of water pollution is not receiving the attention it deserves due to lack of standards and regulations governing such waste discharges and the absence of a competent agency to enforce the necessary preventive and punitive measures against water pollution by private, public and industrial bodies.

161. Meanwhile, pollution of almost all the major and minor rivers, canals and lakes in the country is now on the increase. With a rapid industrialisation to be expected in the next few years and a growing urbanisation in the wake of it, it is certain that urban water supplies and sewerage systems will have a direct bearing on the problem of water pollution control, while industrial effluents will be a potent factor affecting the quality of stream flows in many of our rivers. Already the increasing pollutional load received by the Ganges from several major cities is well known. The drainage discharges into

the Jamuna within Delhi City need no mention. The Jhelum winding through Srinagar receives sewage and trade wastes at several points without any check or control. The Sabarmati is receiving the entire sewage and textile mills effluents from Ahmedabad City. Almost every river in the country, big and small, is receiving pollutional wastes at several points in an increasing measure in recent years. Paper mills, oil refineries, steel mills, textile industries, tanneries, sugar mills and a variety of other industries, will all be sending out significant quantities of their trade wastes in the coming years. Unless effective measures are devised and enforced to regulate and control the quality of such discharges, it will not be possible to prevent a large scale pollution of available water sources in the coming years.

162. *The Nature of the Problem*—The measures to be taken cover two aspects of the problem. The one is an initial assessment of the extent, nature and magnitude of water pollution as a problem in the several States and the other is the manner and method in which such pollution can be combated effectively and the administrative, technical and legal machinery to be set up for such a purpose. Water pollution as a problem has assumed serious proportions in the more advanced countries in the West, particularly in Germany and the United States, because of the earlier neglect in this field. One should not omit to learn the obvious lesson from the experience of these countries. It is wise to forestall the problem in time rather than be overtaken by it later.

163. It is not that methods are not known or are not available for the treatment of the different wastes that now find their way into public water courses. Adequate treatment methods are well established for every kind of industrial waste, as also for community sewage. But they call for technical skill and capital outlay, from both of which there is an escape possible by discharging such wastes direct into public water courses. Receiving waters can absorb some pollutional load depending on their capacity for self-purification before the next user lower down, draws on the river for his needs, and also discharges his wastes therein. If the conditions of river flow are such that a full recovery is not possible in between, the pollutional load gets cumulative and imposes a responsibility and financial burden on the subsequent users for adequate treatment of the water before use. It also affects other interests bearing on the public water course like irrigation, navigation, recreation, fish life etc. Eventually such pollution of a river by several agencies recoils on themselves, endangering public health and creating avoidable problems. The control and regulation of water pollution as a State policy would thus involve a study of the industrial locations region-wise in the country, the quantity and quality of their individual effluents as also of community wastes at the several outfalls into public water courses, a study of the recovery factor of the receiving stream at each point, and the imposition of obligatory treatment of effluents by the concerned bodies to adjust the pollutional load at each point to suit the actual capacity of the receiving body of water for self purification.

164. The engineering, economic and equity aspects involved in the problem and its solution thus deserve a discerning study of the local factors before regulations are enforced in each case on its merits. This would call for standardised laboratory methods and techniques for sampling, testing and assessing, a technical machinery to assess the engineering problems; and ar

administrative and legal machinery to codify the law, formulate rules and regulations and administer them to suit the needs of each case. An overall assessment of the problem with statistical data on the present and future pattern of developments is a prerequisite for working out the details of such a programme.

165. *Special Committee to go into the problem*—As an immediate measure, therefore, the Committee would suggest the following course of action. The Union Ministry of Health may set up a compact High Power Committee to include Public Health Engineers and Public Health Officials from the D.G.H.S. and the C.P.H.E.R.I., members from the Union Parliament and the State Legislatures, representatives from the industries and representatives from the Union Ministries of Law and of Commerce and Industry to study and report on a comprehensive Water Pollution Control Programme for the country.

The Committee will make detailed studies of river valleys with special reference to water pollution, make a general survey and assessment of water pollution as a problem Statewise, make a comparative study of existing laws and available technical and administrative machinery for controlling the problem in the States, and advise on the necessary legal, technical, administrative and general measures to be taken by the States for bringing into effect comprehensive water pollution control programmes statewise. The Committee may also go into the allied question of setting up State-wise Water Pollution Control Boards, and indicate their constitution, set up and functions for administering its programme. This will ensure a uniform policy and procedure being maintained by all the States in the future Water Pollution Control activities, and would also enable valuable exchange of material and data between the several States following a uniform pattern of regulatory and supervisory work.

It is understood that the Panel under the Building Projects Team of the Planning Commission referred to above is also currently making a case study of this subject.

CHAPTER XI

SUMMARY OF RECOMMENDATIONS

1. *Measures for assessment of the Problem*—In order to make a complete and correct assessment of the urban and rural situation State-wise, and to facilitate a realistic planning in the future years, the State Governments may be advised to set up an Urban Assessment Committee and a Rural Assessment Committee for each State.

(a) The Urban Committee may be headed by the Minister for Local Self Government with the Chief Public Health Engineer of the State as the Secretary and include representatives from the State Legislature, Municipal Councils and the Directorate of Public Health. The Committee would carry out a preliminary survey and assessment of the urban water supply and sewerage position for the entire State to include a physical and demographic inventory, preliminary engineering forecasts, forecast of the magnitude of the total problem, a priority list for implementation within a specified period, and set out the details in regard to organisational and administrative reforms, production and procurement of materials and all allied matters.

(b) The Rural Committee headed by the State Health Minister with members to represent the State Legislature, Development Department, Panchayati Raj institutions, Directorates of Public Health and Public Health Engineering, with the State Director of Public Health as the Secretary, would likewise include in its assignment a physical inventory of existing facilities, village-wise for each Panchayat, nature, extent and cost of additional facilities required, and include recommendations on the financing pattern, maintenance problems, list of priorities to be followed; administrative and organisational set up for implementation of the Programme and suggestions for evaluation of the programme at required stages.

2. Until a comprehensive and correct assessment of the problem is made (available through such special committees set up for the purpose, the approximate forecast of the funds required to complete water supply and sewerage schemes in all urban and rural areas based on the 1961 population figures could be roughly assumed as Rs. 950 crores for the urban and Rs. 200 crores for the rural programme.

3. *Financing Problems*—Considering the totality of the problem ahead, the Third Plan allocation may form but 1/10th of the total requirements for urban schemes. It is desirable to complete the entire urban phase of the programme within a period of 10 to 15 years, but from practical considerations the period may have to be spread over 25 years. Even such extended period may involve a capital outlay on urban schemes of the order of Rs. 40 crores per year. Such a heavy programme is not possible under the current methods of financing such schemes, where subsidies create an inhibiting tendency. The concept of water as a merchandise has to be popularised and local bodies encouraged to prosecute water and sewerage systems as a joint utility venture on a self-paying

basis. Special help may, however, be necessary in the initial stages of the programme to encourage sewerage schemes being taken up side by side with water supply schemes.

4. Independent statutory bodies styled as "Water and Drainage Boards", either State-wise or on a region-wise basis, may be set up, clothed with adequate statutory powers to promote and finance water supply and sewerage schemes for all urban local bodies. The statutory bodies will exercise control on investigation, design, construction and operation of the projects on behalf of the local bodies in the same manner in which commercial enterprises are managed by business houses. Independent statutory bodies for the purpose are necessary to infuse confidence in the subscribing public that their investments on the urban schemes would be properly safeguarded.

5. The Union Health Ministry may set up a High Power Committee with members representing the fields of public health engineering, business management, administration, financing and banking, for suggesting the measures to be taken by the State Governments for creating such statutory boards, the legal enactments necessary for the purpose, organisational, administrative and managerial reforms that will be needed and the Codes and Bye-laws applicable to the regional boards when set up.

6. The prospects of securing international aid for the implementation of urban water supply and sanitation schemes should be explored. Similar assistance for establishing any industry or industries connected with the manufacture of proprietary materials required for the programme should also be explored.

7. *Organisational Reforms*—The question of organisation holds the key position, in the carrying out of the major programme ahead. The measure of efficiency of the organisation is the measure of achievement of success of the plan. The setting up of an independent Public Health Engineering Department in each State should no longer be delayed or be a subject matter for debate. The Department should have an independent cadre with service rules and prospects available to the officers as in other established departments of engineering. It is essential to integrate Municipal Engineers with the Department. Initial promotion of schemes, investigation, design, execution, operation and maintenance should all be unified under the Public Health Engineering Department with opportunities afforded to the officers to deal with all these aspects in their normal career.

8. The Local Self Government Ministry should have an effective voice in the implementation of all urban schemes and should have control over the Public Health Engineering Department. The officers manning the Department will then have their roots in the local bodies and will be in tune with their aspirations and needs and will be better able to do promotional work in the local bodies to sponsor and pilot their schemes to better advantage. In any case, there is the need for greater liaison between the Health and Local Self Government Ministries in the implementation of the schemes in future.

9. The Public Health Engineering Department of the State should gradually encompass within its activities all legitimate functions pertaining to environmental hygiene.

10. All Subordinate Municipal Engineering Services should be brought under a rationalised system establishing some uniformity in the qualifications and experience prescribed for such personnel and in the service rules and prospects applicable to them through their service in municipalities. Provision should also be made for their absorption in the State Public Health Engineering Department wherever their qualifications and experience befit them for the purpose.

11. The State Public Health Engineering Departments should carry out the technical services on behalf of the Regional boards, supplemented by private consultants, depending on the workload to be handled.

12. Concurrent steps should be taken for a continuing training programme for the Public Health Engineering personnel in all disciplines, including academic courses, refresher courses, seminars, conferences and the like.

13. Fundamental and applied research on all current problems arising in the Public Health Engineering field should receive constant attention so that Engineering projects in the future may be based on rational factors applicable to local conditions rather than on conventional methods.

14. *Special Rural Problems*—Rural water supply and sanitation should receive very high priority as they have far-reaching effects in rehabilitating rural health and economy. The Programme needs vision and sustained drive for its success. The basic objectives should be to secure technical soundness and efficiency in the design, construction and maintenance of all types of rural schemes and at the same time adopt financial and administrative measures such as would draw the best out of the villagers and get them involved and interested in the programme.

15. The multiplicity of agencies employed on the rural programme at present operates as a handicap in the effective implementation of the programme. A unitary agency at the State level should have control over the entire field of activity irrespective of the number of Ministries administering the different programmes.

16. Once the assessment of the problem is available, all planning should be carried out District-wise and Block-wise. The Zilla Parishad should be fully brought into the picture, with a Sub-Committee set up to include the concerned technical officers as members to deal with the entire subject of water supply and sanitation in the district.

17. The resources made available to the Zilla Parishad should be allocated by it to the Panchayat Samities taking into consideration the latter's requirements and the funds available under all programmes for water supply and sanitation, and the extent to which voluntary contribution etc. would also be available. The needs of backward and neglected areas should receive high priority.

18. The State Public Health Engineering Department should be utilised as the single technical agency with a special rural wing at the Headquarters and technical units at the District level, to exercise overall control on the technical aspects of the programme with proper guidance, supervision and check over the field staff.

While preliminary investigations, drawing up of plans and estimates and supervision and guidance would be afforded by the technical personnel at the District level, actual construction of works, except in any special cases, may be entrusted to the Panchayat Samities, the technical supervision remaining with the District level organisation.

19. Maintenance of completed schemes should receive special importance. The technical responsibility for proper operation and maintenance should be ensured by the employment of minimum qualified technical staff either singly for any particular village system, or jointly for several contiguous villages, so that proper operation and supervision thereof is ensured all the time. The physical responsibility for operation and maintenance should be shouldered exclusively by the local Panchayat Samities or Panchayat Unions without looking to the State Government for a subsidy even for this purpose.

20. Rural sanitation should form an integral part of the programme. A sanitary latrine for each village house should be promoted under a sustained programme, so that filth-borne diseases may be banished from the rural areas as soon as possible. Sullage disposal in rural areas should also receive special attention.

21. The existing procedure of subsidising rural water supply schemes under the National Water Supply and Sanitation Programme to population units of 5,000 and below may continue. Relaxation of the rule may be made in special cases up to a population of 10,000.

22. The semi-urban communities with populations between 5,000 to 20,000 may be brought under a slab system of subsidy for their water supply and sanitation schemes. The Central subsidy may be 35 per cent for units with population between 5,000 and 7,000; 25 per cent for units between 7,000 to 10,000 and 15 per cent for units from 10,000 to 20,000.

23. *Procedural Reforms*—Procedural matters in processing urban or rural schemes from the stage of its initiation to the final stage of completion through the several agencies should all be streamlined in order to remove bottle-necks wherever they exist.

24. The Union Health Ministry should lay down the guiding principles for design of schemes for the State Governments to follow under the programme, so that delays in preparation of schemes and their approval may be avoided.

25. The scrutiny of the schemes both at the State level and at the Centre should be expedited. There should be an interchange of officers between the Central Public Health Engineering Organisation and the State Public Health Engineering Department.

26. The State and Central Public Health Engineering Organisations should play their mutual role in establishing standards and techniques for dealing with all problems in design, construction and maintenance and arrange for bringing out technical journals, manuals, codes and brochures for keeping the members of the profession abreast of current trends and latest developments.

27. The Union Health Ministry should expedite approval to schemes from the State Governments without any reference to the Planning Commission, as it involves delay without any corresponding advantage.

28. At the State level, a standing Coordinating Committee may be set up in the Secretariate composed of Ministries, Secretaries, Engineers, Legislators and Municipal Chairmen to meet periodically to study the movement of all schemes figuring in the programme and to deal summarily with delaying factors against progress.

29. The progress of execution of schemes should be specially watched in order to avoid delays by timely action, wherever needed. It would also be necessary to build up a load on the water supply distribution system and on the sewerage system side by side with the execution of these schemes, so that when the local-bodies take over completed schemes, the citizens would derive the expected benefits from these amenities without any long time-lag.

30. *Procurement of Materials*—It is common complaint that critical materials required for the Programme are much in short supply at present particularly C. I. pipes in the smaller sizes, Cast Iron specials and valve and other water works fittings. The current rate of financial allocations and the procedure being followed for allotments hinders long-range planning not only in respect of preparation of projects by the States but also in regard to industries planning their production capacities. What is required is a comprehensive planning and decision to implement the total programme within a specified period which will give a proper indication of the future magnitude of the problem and the quantum of requirements needed for such a programme.

Nearly 60 to 70 per cent of the cost of urban water supply schemes comprises the value of C. I. pipes and specials and the total quantity of such materials required for our schemes in the next 20 or 30 years would be of a significant measure. It will therefore be worthwhile for the State to participate in the manufacture of cast iron pipes and specials so that the quality and price of pipes would be controlled and regulated.

31. It is desirable that a judicious choice of materials is made in the pipe adopted in the several of the major and minor urban and rural schemes so that pipe materials used correspond to actual needs and scarce materials are conserved for meeting appropriate requirements.

32. The possibility of securing financial assistance for starting these important industries from International loan agencies may be explored. Reputable foreign firms are now getting interested in helping to increase production of scarce materials. What is required is to channelise the interest evinced by the several agencies into a fruitful line of action and to programme the future plan of production with vision.

33. The production of pumps and motors and similar water works appurtenances needs some stimulation for the starting of necessary industries so that under a planned programme of production, supply and demand could keep pace at all stages with a control over the quality and price range of all the materials produced.

34. The High Power Committee to be set up by the Union Health Ministry should also go into this major question, work out the details of future requirements and indicate the extent and scope of the industrial expansion needed in this field.

35. The District Centre would be the pivot of future activity for implementing the rural programme in future. It is desirable that the Centre is so developed that it has a manufacturing yard for the casting, curing and storage of different sizes of concrete pipes, specials, latrine pans, squatting slabs, traps etc. required for rural water supply and sanitation works. A mechanical section under adequate supervision of the District Centre should be entrusted with the production, stocking, supply and distribution of all materials required for the programme. Each Centre could, in addition, train the required number of masons, carpenters, mechanics, mistries and other artisans in their respective works so that they may handle the field work in rural areas to better advantage. The District Centre could, in addition, arrange for the necessary orientation, refresher and training courses for the subordinate technical personnel employed in the rural areas to better advantage. The District Centre could, in addition, arrange for the necessary orientation, refresher and training courses for the subordinate technical personnel employed in the rural programme.

36. *Water Resources Conservation and Water Pollution Control*—A Water Resources Conservation Programme is of supreme importance, in order to safeguard and regulate future development of all water supply systems, big and small. Advance action to conserve adequate supplies for the future needs of each City should receive special attention. The State Governments may detail an advance investigation division to conduct a preliminary survey and decide on the nature and extent of resources which will have to be harnessed for the present and future needs of all citizens and of special rural areas, and also to examine to what extent collaboration with other users of water from the same source is necessary and to initiate necessary measures to reserve adequate supplies for future needs.

37. A Water Pollution Control Programme is equally important to ensure adequate safeguards for preserving the quality of the supply from present and future sources. Almost all water courses in the country are getting increasing discharges of pollutional loads from waste waters and trade effluents which may impair the chemical and bacterial quality of such stream flows.

There are two aspects of the problem of water pollution control. The one is an initial assessment of its extent, nature and magnitude in the several States; and the other is the manner and method in which such pollution could be combated effectively and the administrative, technical and legal machinery to be set up for such a purpose. The engineering, economic and equity aspects involved in the problem and its solution deserve a discerning study of the local factors before regulations are to be enforced in each case on its merits. An overall assessment of the problem with statistical data on the present and future pattern of development is a pre-requisite for working out the details of such a programme.

38. The Union Health Ministry may set up a compact High Power Committee to include Public Health Engineers and Public Health Officials from the Directorate General of Health Services and the Central Public Health Engineering Research Institute, Members from the Union Parliament and the State Legislatures, representatives from the industries and representatives from the Union Ministries of Law and of Commerce and Industry to study and report on a comprehensive Water Pollution Control Programme for the country. The Committee will make detailed studies of river valleys with special reference to water pollution, make a general survey and assessment of the water pollution State-wise, make a comparative study of the existing laws and available technical and administrative machinery for controlling the problem in the States and advise on the legal, technical, administrative and general measures to be adopted by the States for bringing into effect a comprehensive water pollution control programme. It may also go into the allied question of setting up State-wise Water Pollution Control Boards, and indicate their constitution, set up and functions for administering the programme on a uniform basis throughout the country.

Sd. Lourdhammal Simon—*Chairman*

Sd. Kailas N. N.

Sd. Harish Chandra Mathur

Sd. Ram Subhag Singh

Sd. N. V. Modak

Sd. M. K. Kutty

Sd. Barkat Narain

Sd. K. S. Krishnaswamy

Sd. S. Rajagopalan—*Member-Secretary*

APPENDICES

	Page
I. Ministry of Health's letter constituting the Committee	82
II. Minutes of the Committee's meetings.. .. .	83
III. Proformae and Questionnaires	123
IV. Special Note on Delhi Municipal Corporation	136
V. Proformae Replies—	
(i) Proforma 'A'	146
(ii) Proforma 'B'	154
(iii) Proforma 'D'	162

APPENDIX I
MINISTRY OF HEALTH'S LETTER CONSTITUTING THE COMMITTEE

No. F.-12-1(WS)/60-

GOVERNMENT OF INDIA

MINISTRY OF HEALTH

New Delhi the 28th April, 1960.

FROM

Shri M. K. Kutty,
Deputy Secretary to the Government of India.

TO

All State Governments/Union Territories.

SUBJECT—*Constitution of a Committee to make assessments of the requirements of Water Supply both Urban (including Corporations) and Rural.*

Sir,

As the State Governments are aware, the National Water Supply and Sanitation Programme has been in operation for about five years. It was felt that it would be useful to make a critical review of the progress made so far and of the requirements of the future in the field of water supply and sanitation. The Government of India have, therefore, set up a Committee to make an assessment of the requirements of Water Supply, both Urban (including Corporations) and Rural and to suggest ways and means of financing these programmes effectively. The Composition of the Committee is as follows—

Shrimati Lourdhammal Simon, Minister for Local Administration, Madras— <i>Chairman.</i>	
Dr. N. N. Kailas, Deputy Minister for Cooperation, Government of Maharashtra, Bombay	Member
Dr. Ram Subhag Singh, M.P.	"
Shri H. C. Mathur, M. P.	"
Shri N. V. Modak, Director, Central Public Health Engg. Research Instt., Nagpur ..	"
Shri M. K. Kutty, Deputy Secretary, Ministry of Health	"
Col. Barkat Narain, Adviser (Health) Ministry of Community Development and Cooperation, Deptt. of Community Development	"
Shri K. S. Krishnaswamy, Deputy Director General (Public Health Engineer- ing)	"
Shri S. Rajagopalan, Assistant Director General (Public Health Engineering)	Member- Secy.

2. The Committee will decide its own procedure but may visit the States to review progress and examine the problems on the spot.

3. It is requested that the Committee may be given all the facilities necessary for the discharge of the duties entrusted to it. The Committee will correspond direct with the State Governments and Central Ministries/Departments for obtaining information/documents and for arranging its tour programmes.

4. All the correspondence meant for the Committee should be sent to the Member-Secretary of the Committee, Shri S. Rajagopalan, Assistant Director General (Public Health Engineering), Directorate General of Health Services, New Delhi.

Yours faithfully,
Sd. M. K. KUTTY,
Deputy Secretary.

APPENDIX II

MINUTES OF THE WATER SUPPLY AND SANITATION COMMITTEE MEETINGS

MINUTES OF THE FIRST MEETING HELD ON 13TH AND 14TH JULY,
1960, AT VIGYAN BHAVAN, NEW DELHI.

Inaugural Meeting—10-30 A.M. 13-7-1960

The Meeting was inaugurated by Shri D. P. Karmarkar, Union Minister for Health. In the absence of the Chairman, Dr. N. N. Kailas, Deputy Minister for Co-operation, Government of Maharashtra, presided.

Lt. Col. V. Srinivasan, Director General of Health Services, welcomed the gathering.

Shri. S. Rajagopalan, Assistant Director General (PHE), Secretary of the Committee read a review of the National Water Supply and Sanitation Programme.

The Union Health Minister then delivered his inaugural address.

Dr. N.N. Kailas, then made an *ex tempore* speech stressing the importance of the subject and the urgency to provide the urban and rural areas with safe water supply and sanitation measures and briefly touched upon the administrative and procedural reforms called for, in this connection.

Extracts from the speech of Mrs. L. Simon, Chairman of the Committee, were then read out by the Secretary.

Mr. Robert Clark, Chief Sanitary Engineer, W.H.O. Geneva, who was present by special invitation then addressed the gathering. While endorsing many of the remarks made by the previous speakers, he laid special stress on the need for organising water supply and sanitation projects on a self-paying basis and quoted the examples of other countries where such a method has proved a success. He referred to the activities of the W.H.O. in promoting such programme and while complementing India on the progress already achieved in this direction, hoped that the pace of progress would be accelerated in the future. He also welcomed the idea that a Committee should have been set up for stock-taking of the position in the whole country and hoped that the labours of the Committee would prove fruitful for planning future programmes.

Shri K. S. Krishnaswamy, Deputy Director General (PHE), a Member of the Committee proposed the vote of thanks.

NATIONAL WATER SUPPLY AND SANITATION COMMITTEE—MINUTES OF THE SECOND MEETING HELD ON 29TH JULY, 1960 AT THE CENTRAL SECRETARIAT NEW DELHI

Morning Session—10.15 a.m. to 1.00 p.m.

The Committee met in room No. 73—Central Secretariat, North Block at 10.15 a.m. on Friday the 29th July, 1960. Smt. Lourdhammal Simon, Minister for Local Administration, Government of Madras, presided over the meeting. Dr. N. N. Kailas, Dr. Ram Subhag Singh, M.P., Shri H. C. Mathur, M.P., Shri N. V. Modak, Col. Barkat Narain, Shri M. K. Kutty, Shri K. S. Krishnaswamy and Shri S. Rajagopalan were present.

2. The meeting began with a brief address by the Chairman in which she recalled to the attention of the members the urgent necessity for making an assessment of the water supply and sanitation problem in the country. She regretted her inability to attend the first meeting of the Committee but thanked all the members for making it a success.

3. The minutes of the First Meeting as presented by the Secretary were then considered and adopted.

4. On a suggestion made by Dr. N. N. Kailas, it was decided that the Committee may be referred to as the "National Water Supply and Sanitation Committee" in future as it deals with the problems of the entire country.

5. The Committee then proceeded to discuss its plan of action. The Chairman referred to the earlier opinion expressed by some of the Members that the Committee's Report could, with advantage, be presented before the end of the financial year and doubted whether it was possible to do so as detailed information was to be collected from all the States and the Committee also had to tour the States.

Shri H.C. Mathur suggested the desirability of the Committee coming out with its recommendations before the commencement of the Third Plan period so that they may make an impact on the Central Health Ministry and the Planning Commission in the implementation of the Programme.

Shri K. S. Krishnaswamy pointed out that inspite of a claim for large allocation in the Third Plan made with the help of all available data and supported by the resolution of the Third Public Health Engineers' Conference, the Planning Commission could not make any sizeable allocation for the Third Plan. He wondered whether any Interim Report or recommendations from the Committee would be helpful.

Shri M. K. Kutty intervened to say that the quantum of financial assistance for the First Year of the Third Plan would be decided shortly, and any Report or recommendations from the Committee even before the end of the current financial year may not be able to influence a decision of the Planning Commission in this behalf.

Shri H. C. Mathur thought that the Plan allocations were not unchangeable and it was worthwhile for the Committee to make known its views to the Central Government and the Planning Commission as soon as possible.

Dr. Ram Subhag Singh added that even if the Committee was not in time to influence a decision on the financial allocation, its recommendations might be useful in regard to the agencies to be employed and the procedure to be adopted in implementing the Programme to better advantage.

The Secretary suggested that at the present stage, the Committee might not be in a position to decide how soon it could formulate its proposals and recommendations, but that the Committee could take stock of the position, say after 2 or 3 months, by which time it would have covered some ground in collecting information and visiting the States. It would then be in a better position to decide the question of presenting an Interim Report or a final one.

Shri H.C. Mathur agreed that the Committee may proceed in with its work bearing in mind that an Interim Report should be made, if and when possible.

The Chairman also pointed out that irrespective of any time limit, the Committee has been assigned a specific task which should be completed in as best a manner as possible and as soon as it is possible.

6. The Committee then took up the finalisation of the proformae calling for information on Corporation, Urban and Rural schemes. The four Proformae placed before the Committee by the Secretary were then examined and approved with minor alterations. The members were of the opinion that the proformae as presented were complete and exhaustive and would prove very useful if all the information called for were furnished by the State Governments.

7. Copies in each of the proformae as finally approved are attached.

8. Copies of Questionnaires I and II as finally approved by the Committee are also attached.

Afternoon Session—3.00 p.m.—5.00 p.m.

9. All the members of the Committee were present.

The Committee discussed procedures for the collection of data. The Secretary of the Committee read out a draft for a letter to issue from the Chairman to all the State Chief Ministers requesting their cooperation in collecting the data called for by the Committee. The Committee agreed to the issue of the letter (vide copy attached) and suggested a separate letter might be sent to the State Chief Ministers forwarding details of the Committee's Programme of visits to the several States.

10. A tentative tour programme for the Committee was then drawn up. It was decided that 2 States should be covered during each visit and that on an average two to three days may be spent in each State. Apart from discussions with officials and non-officials in the State Capital, the tours would include visits to projects under execution in representative areas of the State.

11. The following itinerary was decided upon—

Madras and Kerala—19th to 24th Sept. 1960.

Jammu and Kashmir—10th to 14th Oct. 1960.

West Bengal and Assam—24th to 29th October 1960.

Andhra and Mysore—Dates to be decided later.

Maharashtra and Gujarat—Dates to be decided later.

Bihar and Orissa—Dates to be decided later.

Uttar Pradesh and Punjab—Dates to be decided later.

Rajasthan and Madhya Pradesh—Dates to be decided later.

Details of further visits are to be decided in the Committee's subsequent meetings.

12. It was decided that the Committee would meet at Madras at 10.00 a.m. on the 19th September, 1960. The venue for the meeting and the agenda will be forwarded to the members separately.

13. The last item of the agenda dealing with a reference from Pondicherry Congress Committee to the All India Congress Committee was then taken up. The Chairman ruled that the questions raised do not come under the purview of the water supply and sanitation Committee and directed the Secretary to intimate the Health Ministry accordingly.

COPY OF LETTER ADDRESSED TO ALL CHIEF MINISTERS OF THE STATE GOVERNMENTS BY SHRIMATI LOURDHAMMAL SIMON, CHAIRMAN, NATIONAL WATER SUPPLY AND SANITATION COMMITTEE

SUBJECT—*National Water Supply and Sanitation Committee constituted by the Ministry of Health, Government of India—Information solicited as per proforma enclosed—*

As you are aware, a Committee has been appointed by the Central Ministry of Health to make an overall assessment of urban and rural water supply and sanitation programmes in the country and to suggest ways and means for quick and effective implementation of the Programme. For ready reference, a copy of the Government of India's letter constituting the Committee is enclosed.

2. The Committee has prepared a detailed proforma in respect of the following—

- (i) Proforma 'A' eliciting information in regard to "Urban water supply position as on the 31st March 1960";
- (ii) Proforma 'B' eliciting information in regard to "urban sewerage";
- (iii) Proforma 'C' in respect of "financing of urban schemes"; and
- (iv) Proforma 'D' in respect of "Rural Water Supply".

Each proforma has been drawn up so as to be self-explanatory as far as possible. The information sought is intended to help the Committee not only in making an up to date and authoritative assessment of the current position in the country, but also to make a reliable forecast of the future programme which awaits accomplishment in respect of the different States and the Country as a whole. You will appreciate that much of the current planning in regard to water supply and sanitation projects in the country, both on the urban and rural side, is handicapped by lack of adequate and correct data on the existing situation and the future needs. The Committee is anxious to overcome this handicap by collecting from all the States the necessary information in this behalf, so that the programme of work under the Third and the succeeding Five Year Plans could be placed on a satisfactory and progressive basis.

3. You will note that Proformae 'A' and 'B' relate to factual data in respect of urban schemes and it is hoped that the State Governments would be able to collect and compile the information from the concerned agencies and covering all the urban units in the State.

4. Proforma 'C' deals with the details of financing of urban schemes with an analytical assessment of the several contributory factors and collation of statistical data therefor. Information as in this proforma would be invaluable to the Committee in reviewing existing financing methods for urban schemes and in suggesting a suitable re-orientation of policy in such methods for success of the programme in future. It is requested therefore that special efforts may kindly be taken to furnish the data in the manner indicated in this proforma.

5. For this purpose, it is suggested that the proforma may be filled in respect of all the Corporation Towns in the State, three or four typical major and minor Municipal towns and a few typical Panchayat towns. The proforma so filled in respect of these urban units may be sent on to the Committee for their study.

6. Proforma 'D' deals exclusively with rural water supply in a comprehensive manner seeking information on the existing position and the future workloads. In order to reduce the details to a close and realistic approximation, the proforma indicates a geographical grouping of the rural areas in the State as also the different kinds of rural water supplies which are being implemented under the different programmes. It is requested that the State Government may kindly have the information collected from the different agencies in charge of rural programmes in the State and furnish full and complete data under the proforma.

7. In this connection, the Committee would be glad to have the views of the State Government whether the problem of rural water supply should also include water supply required for the cattle population in each village or in any difficult areas of the State.

8. In addition to the 4 proformae mentioned above, the Committee would also like to have your replies to the two questionnaires enclosed herewith. Questionnaire (1) relates to the Organisational set up in the State while Questionnaire (2) deals with rural sanitation on a broad canvass. The State Government's replies to these 2 Questionnaires would be very helpful to the Committee in understanding and analysing the concerned problems and suggesting appropriate solutions.

9. The Committee is anxious to complete its labours and submit its recommendations before the end of the current financial year so that the Government of India and the State Governments could take them into consideration in implementing the different programmes during the Third Five Year Plan commencing from 1st April, 1961. To this end the Committee will be grateful if the State Government would kindly deal with this reference as urgent and favour the Committee with the information required under the proformae and questionnaires as early as possible, preferably by the end of October, 1960.

MINUTES OF THE THIRD MEETING OF THE NATIONAL WATER SUPPLY AND
SANITATION COMMITTEE

The Committee had its Third sitting during a tour of inspection in Madras and Kerala States between the 19th and 24th September, 1960. The following are the details of the programme during the inspection:

19-9-1960

- I. 11-00 a.m. to 1-00 p.m.—Meeting and discussions with the Madras State Government officials in the Committee Room of the Madras Secretariat.
- II. 2-30 p.m. to 5-30 p.m.—Inspection of Madras Corporation Water Works—Red Hills Lake and Kilpauk Treatment plant.

20-9-1960

- III. 8-30 a.m. to 12-00 noon—Bodinayakanpatti, Andipatti and Kattakulam rural water supply systems and Primary Health Centre units.
- IV. Melakkal and Kochadei infiltration works of the Madurai Water Supply Scheme.
- V. Afternoon—Inspection of manufacture of self-closing taps and water meters in TVS Workshop, Madurai.
- VI. Evening—Inspection of Cumbum Valley Panchayats composite water supply scheme.

21-9-1960

- VII. Forenoon—Transit from Periyar to Quilon.
Evening—Inspection of Sasthamkotta Head Works and filter plant of the Quilon Water Supply Scheme.

22-9-1960

- VIII. Morning—Inspection of the WHO Pilot Project on Environmental Sanitation, Trivandrum.
- IX. Inspection of typical rural water supply and latrine installations in the Pilot Project area.
- X. Inspection of Trivandrum Water Supply Filter Works.
- XI. Afternoon—Meeting and discussions with the State Health Minister.
- XII. Meeting and discussions with the State Government officials.
Evening—Meeting with the Governor of the State.

23-9-1960

- XIII. Morning—Transit from Trivandrum to Nagercoil. Inspection of Nayyatinkara Hospital en route.

23-9-1960

- XIV. Meeting and discussions with the Municipal Council Chairman and Members, Kuzhithurai, regarding their Municipal Water Supply Scheme.
- XV. Meeting and discussions with the Nagercoil Municipal Council—Chairman and members regarding their water supply and drainage problems.
- XVI. Inspection of Nagercoil Municipal Head Water Works and distribution system, and unserved areas.
- XVII. Evening—Meeting of the Committee at Cape. Discussions with the Chief Engineer, Madras State.

The following are the points discussed and details of inspection during the above itinerary.
(I) above—(Meeting and discussions with the Madras State Government officials)

Smt. Lourdhammal Simon, Chairman of the Committee presided over the meeting. All the members of the Committee except Shri M. K. Kutty were present. Shri M. R. Kodandaraman, Adviser (Social Services), Planning Commission was also present by special invitation. The following officials and others represented the Madras State Government.

1. Shri K. Srinivasan, Secretary to Government, Education and P. H. Department.
2. Shri S. Subrahmanian, Dy. Secretary, Education and P. H. Department.
3. Shri Hanumantha Rao, Dy. Secretary, R.D. and L.A. Deptt.
4. Shri S. Krishnaswamy Pillay, Dy. Secy. R. D. and L.A.
5. Shri Balasubramanian, Commissioner, Corporation of Madras.
6. Additional Secretary, Board of Revenue.
7. Asstt. Secretary, Planning and Development Department.
8. Shri J. G. Abraham, Chief Engineer, Bldgs. and P. H.

9. Shri N. Parthasarathy, Director of Public Health.
10. Shri Govindarajan, Director, King Institute, Guindy.
11. Shri M. M. Mani, Sanitary Engineer.
12. Shri O. T. Raghavan, Water Works Engineer, Madras.
13. Shri K. G. Veeraraghavan, Chief Water Analyst, Madras.

At the outset, the Chairman read out a Report outlining the aims and objectives of the Committee and reviewed the present position and future needs in regard to urban and rural water supply and sanitation in Madras State.

Shri K. Srinivasan, Secretary, Education and Public Health Department then read a Note giving details of the progress made by the State Government under the Programme and the provisions made for the Third Plan. (Copies of the Report read by the Chairman and the Note read by the Secretary to Government are enclosed separately).

The discussions that followed aimed at eliciting information by the Committee in the form of questions and answers.

Q. What is the nature of financial assistance given to urban local bodies for their water supply and drainage schemes?

A. For Municipal Water Supply schemes, all assistance is given in the shape of loans. For Municipal Drainage schemes, a subsidy is given depending on individual capacity, upto a maximum of 50 per cent of the cost of the schemes. For Panchayat schemes, 50 per cent is given as loan and 50 per cent as subsidy.

Q. What was the actual expenditure in the last 4 years and what was the target achieved?

A. 50 out of 66 Municipalities and 15 out of 151 (major panchayats) will be covered with water supply by the Second Plan period.

The target was Rs. 472 lakhs for the Plan period up to the 4th year which was stepped up to about Rs. 6 crores in the last year of the Plan.

Q. Has there been any comprehensive survey for the assessment of the urban and rural water supply problems in the State?

A. Not so far. Recently Collectors have been asked to conduct a survey and report in regard to rural water supply.

Q. Have you indicated to them the nature of the work and the standards or norms to be adopted for collecting information?

A. The indication was given only in regard to the need for safe water supply,—not piped water supply as such. A criteria has, however, been indicated like periodicity of water-borne diseases etc.

Q. Was any thought given to the provision of water for cattle?

A. No.

Q. Could a copy of the instructions issued to the Collectors in this behalf be furnished to the Committee to know what information has been called for?

A. Yes. Will be furnished separately. (This has since been furnished by the State Government and a copy is enclosed for the information of the Members).

Q. Do you suggest any change in the pattern of assistance?

A. There has been no difficulty so far in getting the 25 per cent contribution from local beneficiaries except in the case of poor communities where such contribution is waived.

Q. But what do you do with areas where local costs on schemes are high and the communities are backward in economy?

A. The State Government consider such cases on their merits.

Q. How about the pattern of assistance to Municipalities? Is there any difficulty being experienced on the present policy of no-subsidy?

A. Communities with 8,000 population and more are eligible to be constituted into municipalities. In such smaller communities, no progress has been possible as financial difficulties stand in the way. The previous policy was a 50 per cent grant and 50 per cent subsidy to these urban units, but now no subsidy is given for water supply except on exceptional grounds.

Q. What is the relationship between the Government department and the Municipal Engineering staff?

A. The Chief Engineer, P.W.D. (Buildings and P.H.) is the head of the Department with a Public Health Engineering circle for execution of works, a sanitary engineering branch for investigation and design and a provincialised Municipal Engineering Service in charge of maintenance of schemes. The three units are not interchangeable.

Q. In Municipal Water Supply designs, is consideration given to industrial needs, and what is the per capita consumption assumed?

A. 40 gallons per capita is allowed for industrial towns and 25 gallons in other areas, although in many places 15 gallons per capita is the minimum adopted due to limitation of water resources and financial capacities of the local bodies. If all the urban areas in the State had to be provided with water supplies at the rate of 40 gallons per capita, the cost would be roughly Rs. 172 crores.

Q. How is the control of industrial discharges in public water courses controlled?

A. The control is exercised through the licensing of industries with some directives imposed on the treatment measures to be adopted.

Q. What is the extent of the problem?

A. The problem is just beginning to be felt with sugar factories, tanneries and rayon factories coming up recently.

Q. Is there any coordination between the P.H.E. Department and the P. H. Department to control trade wastes?

A. Yes. In fact, we have a Committee in which the D.P.H. and the Sanitary Engineer are represented.

Q. What is the reaction in rural areas to piped water supplies?

A. The number of such schemes is limited. Not much progress has been made. People usually prefer cheaper schemes than piped systems.

Q. But does it mean that piped schemes are provided where cheaper schemes are feasible?

A. Schemes which are feasible to suit local conditions are alone being provided.

Q. How is the maintenance of piped schemes ensured?

A. It is somewhat of a problem as servicing facilities are inadequate. In fact, Panchayats and Panchayat units have a scheme of maintenance gangs for each block for attending to irrigation pumps. The same unit can perhaps look after drinking water pumpsets as well. 350 bore wells were put down in the State mostly in 2 districts. These bore wells are being closed down for want of proper maintenance. There is not much future for bore wells because of this difficulty.

Q. What is the water supply bill for each family in rural and urban areas?

A. A well costs Rs. 2,500—3,000 to serve 200 families (roughly 1,000 people). In unserved areas it may cost a family as much as Rs. 15 per month for getting one barrel of water—32 gallons per day. In Municipal water supplies, a rate at Rs. 2 to 5 per month per family is usually levied.

Q. Can you give detailed information as to what it costs from place to place and also a Note on the new Panchayat system which will come into force from October 2nd as far as rural water supply is concerned.

A. Yes, Will be furnished.

Q. Out of 66 Municipalities, how many have the filarial problem?

A. About 20 out of 66. Priority is given in endemic areas. At present, there are only 14 out of 66 municipal towns that have drainage facilities.

Q. It is alright if Municipalities can finance their own drainage schemes. But when you give subsidies, do you give priority for drainage in filarial areas? Do filarial towns get top priority?

A. Generally yes, though every case has to be considered again on its merits. The financial position of the Municipality has to be taken into account. In fact, the Madras Government had appointed a Water Supply and Drainage Committee which fixed up certain priorities for implementing the various urban water supply and drainage schemes. But even these priorities have had to be changed based on the changing financial capacity of the Municipalities. All the same, some sort of priority is given to areas where Filariasis is rampant, each case being considered on merits.

Q. When you design a scheme for restricted supply, do you ensure that the source is capable of meeting future needs?

A. It depends on the finances available. The distribution system is designed for the future needs. One could look ahead and plan ahead provided there was an assurance for the necessary finance.

Q. What is the agency employed for selecting sites for rural wells?

A. For the simpler types, the Revenue Department selects and gets the approval of the Health authorities.

Q. Is the water analysed for satisfactory quality?

A. In the case of simple draw wells, palatability and suitability for cooking are the local tests on which the water is passed as safe without any scientific test being conducted.

Q. Are the wells covered?

A. Most of them are open.

Q. At the existing rate of progress, how many years will it take to complete the Corporation, urban and rural areas with adequate water supply and drainage facilities?

A. It may take 20 years for water supply and 50 years for drainage, without taking into account the increase in population.

If the population growth is also taken into account, we may not be able to catch up.

Q. That may be too pessimistic. The growth of population is a problem common to all phases of development. With a growing economy, we should be able to surmount it. There is also no need to assume that the succeeding plans will not make larger provisions for water supply and sanitation schemes.

The main difficulty is finance. The panel on National Water Supply and Sanitation Schemes appointed by the Planning Commission has suggested the formation of Regional Water Supply and Drainage Boards clothed with statutory powers for raising loans in the open market and implementing urban water supply and sanitation schemes at a quicker pace, dealing with these facilities as a commercial undertaking just like Electricity undertakings. Is it possible to tap additional moneys from local markets for such specific facilities if the Regional Boards are constituted?

A. It may be difficult since the entire Five Year Plan is based on the maximum available resources of the country. If any resources can be tapped outside the provisions assumed in the Plan, to that extent the planning may be said to be defective. It may be possible to tap small amounts, but not big amounts by such a procedure. All the same, this suggestion deserves to be examined and would require a detailed scrutiny.

Chairman

It is a very sound suggestion and must be examined carefully. Every Municipality wants a loan only, but the State Government is unable to give even loans. Some way must be found.

Shri M. R. Kodandaraman

The Plan already provides for borrowings from the private sector. Many State borrowing agencies are there. But the extent of success depends on the extent of public response and how much of reserve we could tap outside the Plan assumptions. The question certainly deserves a closer examination.

The discussion then turned to the question of rural water supply figuring wholly under the Community Development and Local Development Programme in the Third Plan period with no provision made under the National Water Supply and Sanitation Programme.

Shri Kodandaraman pointed out that the present policy of the Planning Commission is to reduce considerably the extent of subsidies, and hence it was thought that rural water supply should be included as part of Local Development Works along with School Buildings, Approach Roads, etc. relating to Rural Improvement, so that rural uplift can receive its due priority and attention in all its phases by a unified agency with local contributions realised to the extent possible.

Col. Barkat Narain added that no allotment has been made for rural water supply exclusively during the Third Plan, but it is likely that a major portion of the allotments for Local Development Works might go for providing rural water supply and sanitation facilities.

The Chairman added that many Panchayats in Madras State though with more than 20,000 population are resisting any move to upgrade them as Municipalities simply for the reason that they will not get any subsidy either from the Centre or State Governments for executing their water supply and sanitation schemes.

The Chairman then raised the question that the Central Government should exempt from excise duty pump sets supplied by any foreign agency for rural water supply schemes. She cited the instance of some schemes in Salem district where such pumps were offered but difficulty was experienced in securing them as a heavy excise duty had to be paid on such pumps even though they were supplied free. She said this question may receive due consideration of the Committee.

An official of the Planning and Development Department then pointed out that the large scale use of agricultural power pumps in recent years in many areas of the State was fast resulting in a depletion of the sub-soil water resources, so much so existing and prospective sources of water supply for urban and rural areas were getting impoverished. Some steps should be suggested to overcome this difficulty.

Madras Corporation Water Supply and Drainage—The Commissioner of the Madras Corporation then explained to the Committee the details in regard to the Corporation Water Supply and Drainage schemes on hand and in view, during the Third and successive Plans. At present their supply capacity was 30 m.g.d. for a population of 2 millions in the City. But even this quantity they could not manage to supply because of the precariousness of the source and the vagaries of the monsoons. Currently, the Corporation was facing a severe water famine as their lakes, the Red Hills and the Poondi Reservoir, had reached low levels and the Corporation had to ration out the available supplies. The Corporation wanted to go in for a more dependable supply and was investigating the feasibility of drawing upon Cauveri River for the supply required for the City. According to him, a 150 cusecs supply from Cauveri might cost approximately Rs. 30 crores.

As regards drainage, the position is very bad. The existing system is overloaded, and a considerable proportion of the population does not enjoy adequate drainage facilities.

The essential and compelling measures of improvements for the City's water supply and drainage included additional sources of water supply and re-zoning of the distribution system and construction of relief sewers, extension of the sewerage and provision of sewage disposal works. Immediate improvements to the drainage system would alone cost Rs. 5 crores.

The Third Plan requirements for the Corporation Water Supply and Drainage would be Rs. 30 crores.

Q. Are the water supply and drainage schemes of the Corporation self supporting? Do you levy adequate charges for water supply to consumers?

A. We collect only water and drainage tax as part of the general property tax. All house service connections are free except the small number which are metered and except supplies which are given to non domestic consumers. The Corporation has been resisting a suggestion that house taps should not be given free and should be charged on a suitable tariff. It is possible to realise additional water revenue by bringing all house taps under a graded system of charges.

Q. It is surprising that when the State Government refuses any subsidy to Municipalities for their water supply schemes, they should give a fifty per cent grant for the Madras Corporation. It should be possible to make the water supply and drainage for a big Corporation like Madras self-supporting. It is all the more necessary if comprehensive improvement schemes costing Rs.30 crores are to fructify.

A. It is because the Corporation does not get any help from the Government by way of Anti-Malaria or Anti-Filaria schemes unlike other Corporations. Subsidy was being sought for water supply and sanitation schemes. All the same, the position will bear a review.

Item (II) above—Inspection of Madras Corporation Head Works

In the afternoon the Committee inspected the Madras Corporation Water Works—The Red Hills lake was at a low level as also the Cholavaram Lake and the Poondi reservoir. They all suffered a common handicap from the same monsoon.

Mr. Modak wanted to know whether the Corporation had taken adequate measures to conserve available sources before going in for a distant source like Cauveri to augment its supply. In reply, it was understood that the Red Hills Lake has a first charge on an ayacut of about 5,000 acres of paddy cultivation and that if such rights were purchased by the Corporation, it would cost them about Rs. 2½ crores and at the same time stabilise their available supply by another 5 m.g.p.d.

Likewise, the Irrigation Department had suggested the conveyance of the supply from Poondi to Red Hills by a covered conduit instead of through open channels which would ensure a further supply of 5 m.g.d. to the City at a cost of Rs. 1½ crores.

The Committee felt that the additional expenditure of Rs. 4 crores was certainly worthwhile if, thereby, the City could secure an additional supply of 10 m.g.d. from the existing source. To that extent, the cost of conveying the same quantity of 10 m.g.d. from the 200 miles distant Cauveri source could be avoided by the City. It was essential that the Corporation should take all possible steps to conserve every gallon of supply available from its existing cheaper source before augmenting the supply from a distant and costlier source.

Item (III) above—20th September 1960—Bodinayakanpatti, Andipatti and Kattakulam rural water supply systems

(i) The Committee visited the Rural Water Supply scheme at Bodinayakanpatti. The present population is 1,898. An old existing well had no potable supply. A second well in a different location was constructed under the C. D. Programme and later piped water supply from this well is proposed under the National Water Supply and Sanitation Programme at an estimated cost of Rs. 26,000. The work was in progress. The proposal is to supply water to the population at 12 street stand posts.

(ii) *Andipatti*—The primary health centre at Andipatti was visited. The centre seems to be popular.

The water supply arrangements for the village are more or less on the same pattern as at B. N. Patti (i) above.

(iii) *Kattakulam*—Rural water supply at Kattakulam was inspected. The proposal is to use an existing unfailing well for piping the supply through a number of standposts inside the village. The pump house adjacent to the well was in progress. Local reports have it that the well which is 24' deep will have a water depth ranging from 12' to 2'. In case of any failure or diminution of supply, the idea seems to be to deepen the well further as and when the necessity arises. The village had also put up a number of roadside drains for carrying sullage. Some of the drains were at a higher level than the road surface. Presumably, the roads will have to be raised.

Item (IV) above

Melakka Infiltration Works—The Melakkal Infiltration Works in the Vaighai river bed to augment the supply to Madurai City was inspected. The work, it is stated, was started in 1956; the gallery 1000' long has been completed and the syphon pipeline was in progress. The local officials complained of a long delay in acquiring the padugai land required for the pump-house and staff quarters. The conveying main from the Head Works to the City has been mostly completed.

The existing Kochadi Infiltration works for Madurai water supply was inspected en route to Madurai.

Details of Melakkol water supply scheme were explained to the Members of the Committee by the local officers and a small brochure was also furnished for the information of the Members.

In reply to the questions raised by the Committee, it was elicited that as against a total number of assessed houses of 37,000 in the City, there are only 2,000 house service connections and 1,060 public fountains under the Municipal Water Supply system. The house service connections are not metered and a flat tap rate was being charged. In addition, the Municipality had put up a number of street stand-posts supplied from local tube wells and shallow wells not coming under the category of a protected supply. Deep wells with overhead tanks were also serving a number of public bath rooms and conveniences in the City. A number of lorries were supplying water to people in the unserved areas. The approximate cost of improving the water supply and the sanitation facilities to the City to an adequate level would be Rs. 4 and 3 crores respectively.

Item (VI) above

Details of the Cumbum Valley Composite Water Supply Scheme were also furnished to the Members of the Committee by the local officers on the evening of the 20th September. The scheme serves a group of eight villages over a stretch of some thirty miles from a common head-works.

21st September 1960 (Item VII) above

Sasthamkotta Head Works for Quilon water supply, Sasthamkotta lake off-take works, pump-house, chemical treatment and settling basins as also filter beds were inspected on the 21st evening. The scheme is still under progress. The laying of the 27" dia. pre-stressed concrete conveying main is almost completed. The pipes are supplied free under the Norwegian Government Aid Programme. The phasing of the scheme had not received proper attention.

22nd September 1960 (Items VIII to X) above

WHO Pilot Project—The Engineer in charge explained to the Committee the scope and functions of the Pilot Project and the details of its activities since 1957 up to date. The main points elicited were that the pilot project has covered roughly 42 per cent of the total one lakh population under its purview during the three years of its activity, the people had taken to the water supply and latrine facilities readily, the contributory factors being the high level of literacy among the population, a better sense of personal cleanliness, the nearness and accessibility of the area (almost as a suburb) to the Trivandrum City, and the good work done by the Pilot Project staff. Latrine seats were subsidised up to 75 per cent of their cost and people encouraged to take to sanitary privies in their compounds through health education, demonstration and follow up surveillance. It was stated by the Project Engineer that the expenditure so far incurred for providing water supply and sanitation facilities to roughly 42,000 people under the Project Programme was of the order of Rs. 4 lakhs or roughly Rs. 10 per capita, and that the project area represented an average area for the State.

The Project has developed simple and popular techniques for preparing the moulds for the latrine seat pans and traps and has also given training as part of its programme to a number of skilled workmen and Gramsevakas in the manufacture of these equipments on a wider scale in the villages.

Typical rural water supply systems involving shallow filter points, deep tube wells with power pumps and windmills and overhead tanks as also shallow dug wells with power pumps, and development of a supply from surface springs were inspected. Sanitary privies installed in the rural houses and in use were also inspected.

(Item XI) above—Discussions with the Kerala State Health Minister—

The Committee met Shri Velappan, Health Minister of the State in the Chief Minister's room at 3-15 P.M. The Minister explained that the State Government was giving 50 per cent grant and 50 per cent loan assistance for the Municipal schemes while for Panchayats the entire cost was given as full grant, only maintenance cost being met by Panchayats. He also explained that there was no hard and fast criterion for conversion of Panchayats into Municipalities. There were poor Municipalities and affluent Panchayats. He agreed with a comment that the present procedure of financial assistance may indirectly discourage panchayats from becoming Municipalities.

The State Government was proposing to give liberal grants for schemes in the Third Plan and good Municipalities into action.

In Trivandrum, house service connections were all metered and a motor rent of Re. 1 per month was levied with 12 As. for 1,000 gallons charged for excess quantity over the free allowance.

The Public Health Engineering Department has functioning as a separate and independent entity. Certain handicaps with existing staff borrowed from the P.W.D. had to be set right under the change over.

Item (XII) above—

The Committee then met the State Government officials in the Durbar Hall. The Chief Secretary, Deputy Secretary (Health), Under Secretary (Planning), Director of Health Services, (PHE), Deputy Chief Engineer and E.E., Chief Engineer WHO Project were present. The following points were discussed.

A separate administrative set up with a Chief Engineer (Public Health) exists in the State independent of the Director of Public Health. There is coordination at the Secretariat level with the Health Secretary and the Health Minister. The Department deals with all urban and rural water supply and sanitation schemes as also sanitary installations for Government buildings.

The detailed note furnished to the Committee Members explaining the present situation and future needs of the State in regard to water supply and sanitation programmes gives the figure of Rs. 30 crores as the approximate cost for completing rural water supply schemes for a population of 100 lakhs. It would appear the estimate is based on a per capita cost of Rs. 30 as being the maximum limit laid down by the Union Health Ministry for claiming grants under the National Water Supply and Sanitation Programme. The estimate of Rs. 30 crores as assumed by the State Government is not thus based on any rational figure representative of the actual average cost of schemes in the State.

The Chief Secretary also explained that the average per capita cost of Rs. 10 given out in respect of the WHO Project activities should not be taken as a representative figure for the entire State and that the figure was to be verified. It was more correct to assume Rs. 30 as probable per capita cost as this was the actual figure operating in respect of the Malabar area where a few schemes had been completed. The Chief Secretary added that it is not correct to draw conclusions from the WHO Project area as Kazakuttam is not representative, but is comparatively an easy area in the State.

Q. What agency of the PHE Department has to supervise the Gramsevak in the Blocks? How will you administer the expanded programme in the Blocks?

A. We have an Executive Engineer at the District level. We have not yet decided about the set up for C.D. Blocks for the future expanded programme. Special staff under the PHE Department will be required like Minor Irrigation staff employed under the PWD for irrigation works. The District Development Council is already the mechanism available for district level while at the policy making level the higher hierarchy of officers are associated.

Q. In the absence of a proper assessment of the needs under urban and rural water supply and sanitation, the Union Health Ministry finds it very difficult to draw up a realistic programme under the Plan. Has the State Government attempted to make any correct assessment of the position?

Chief Secretary—No such assessment has been made so far. What we should perhaps do is to take half a dozen representative areas and work out the cost of schemes and then strike out an average for the State. I shall undertake to do it and send the details.

Q. How do you propose to deal with rural water supply?

A. The population limit of 5,000 imposed by the Union Health Ministry is a handicap. Kerala State is a continuous village and there is no clear-cut demarcation between village and village. If the programme under the National Water Supply and Sanitation Programme is not to continue in the Third Plan, it will be another handicap. We have to give a safe supply as a first requirement, leaving piped supply as a luxury to follow.

Q. If the financing of schemes was to be undertaken by the setting up of Statutory Regional Boards for Municipalities and Urban areas and water supply and sanitation schemes for such areas taken up similar to electricity undertakings as a business-like selfpaying venture, do you think that there would be popular response for such a proposal?

A. We have not given any thought to this question. Whatever be the method of financing, some sort of Governmental guarantee is necessary for people to subscribe to any loans. All the same, such a proposal sounds plausible for urban areas and may be viable. It deserves to be considered in detail.

Item (XIV) above —23.9.1960—

Kuzhithurai Municipality—The Chairman and Members of the Kuzhithurai Municipality represented to the Committee that a 15 gallon water supply scheme for the Municipality estimated to cost Rs. 10.5 lakhs was under consideration with the Government and that the Municipality had requested for a half grant and half loan against this scheme. The present population of the town was 12,257. The scheme proposed was to serve an ultimate population of 25,000 at 15 gallon supply, the distribution being made through 100 public fountains and 250 house service connections. It was explained by the State Public Health Engineers that although water supply to the major part of the population would be through street taps only, the supply could not be reduced to less than fifteen gallons per capita, as otherwise it may handicap a future sewerage scheme to the town. The Ways and Means position of the Municipal Council was discussed and it was explained by the State Chief Engineer that the Inspector of Municipal Councils and Local Boards would be examining these aspects and recommending to Government before a final decision was taken by the Government on the quantum of assistance to be given to the Municipality.

Item (XV) above—

Nagercoil Municipality—The Committee then inspected Nagercoil Municipality where the Municipal Chairman and the Councillors gave a representation explaining the present situation in regard to their water supply and drainage schemes. A copy of the Commissioner's Report is already with the Members of the Committee.

The Chairman of the Committee gave a reply exhorting the Council to husband all their resources to the maximum advantage possible and to explore ways and means of providing essential amenities to people relying on self help as far as possible.

Item (XVI) above—

The Committee then visited the source of the town's water supply and later the filter works inside the town. The Engineer Members in the Committee felt that the natural water impounded in the lake was so satisfactory that further chemical treatment and filtration was not necessary and more disciplinary chlorination would have been sufficient. This was also borne out by the analysis reports on samples of water shown to the Committee at the Treatment Works.

For this reason future augmentation of supply to the City could perhaps be arranged without any addition of treatment works, utilising the existing settling basins and filter beds to deal with increased quantities adopting higher rates of settlement and filtration. This aspect of the problem would in any case deserve full consideration while in future proposals for increasing the supply to the town come up for examination.

The Committee then inspected unserved areas of the town where the people draw their supply at present from available local deep wells. The water level in those wells lay so deep below ground that the people complained of the physical exertion involved in lifting water through human labour alone.

The Municipal authorities explained that the hardships represented by the local officers were real and that the Municipality was anxious to extend the piped supply to those areas provided that State Government helped them with the necessary funds for the purpose. Some of the Committee Members felt that until the piped supply could be extended to those areas and as a temporary measure, some relief could have been afforded to users by installing deep well pumps at those wells.

Item (XVII) above—

In the evening the Committee met to finalise the programme for inspections proposed during October. The Committee also discussed the problems of organization and administration with the Chief Engineer of the Madras State. The Chief Engineer explained that while the State attached importance to public health engineering as a specialised subject, the creation of a separate public health engineering department was not in their view justified unless the workload increased from the present figure of 1½ crores to Rs. 6 crores per year. For the present, the Chief Engineer PWD (General) and Buildings was also in charge of public health engineering, with a separate circle for execution and another for design. The Sanitary Engineering Branch

formed a wing of the PWD and a few officers had also been recruited direct for that branch but difficulty was being experienced, in that there was stagnation of prospects for such officers and there was a feeling that the cadres should all be amalgamated.

The Municipal Engineering Services was provincialised in the State, the Chief Engineer exercising technical control in regard to public health engineering works, the State High Ways Department exercising technical control over roads and buildings, while administrative control was vested with the Municipal Councils. There was a proposal to amalgamate the Municipal Engineering Service with the P.W.D.

The Chief Engineer further explained that although the State Government had decided to vest all rural water supply works under the Highways and Rural Works Department, his personal view was that all urban and rural water supply and sanitation should be under a unitary agency for better coordination and efficiency of operations.

In regard to the problem of Industrial Wastes, the Chief Engineer wondered whether the funds required for their treatment and disposal could not be tapped from the industries concerned. He also said that the Public Health Engineering Department of the State did not come into the picture until a problem arose in regard to trade wastes and their disposal and that the Industries and Public Health Departments dealt with these agencies in the initial stages. It was desirable, according to him, that the Public Health Engineering Department also was associated in these matters at all stages.

He also suggested that in areas where industries were not able to come up due to lack of adequate water supply some method should be found to provide water supply facilities in order to stimulate the development of industries in all such areas, and that separate funds could be found from appropriate sources for this purpose.

The Chief Engineer also explained the difficulty experienced at present in that sufficient priority is not given for drinking water supply over irrigation rights and that many schemes are held up on this account and that the Committee could suggest some solution in this behalf.

The Committee then decided to hold its next meeting between the 13th and 16th October 1960 in Kashmir. The Committee also confirmed that the subsequent inspection would be made between the 24th and 30th October in West Bengal, Assam, Manipur and Tripura.

S. RAJAGOPALAN,
Member-Secretary.

MINUTES OF THE FOURTH MEETING OF THE NATIONAL WATER SUPPLY AND
SANITATION COMMITTEE

The Committee had its fourth meeting during a tour of inspection in West Bengal between the 24th and 26th October, 1960. The following are the details of the programme during the inspection.

24-10-60

I. 3.00 to 5.00 p.m.—Discussions with the State Government officials at the office of the Metropolitan Water Board at P-11 Mission Row Extension, Calcutta.

25-10-60

II. 8.30 a.m. to 1.00 p.m.—Inspection of Howrah Municipal Area followed by visits to Balli, Konnagar, Uttara para and Howrah Head Works at Seraampore.

III. 3.30 p.m. to 6.00 p.m.—Inspection of rural water supply and sanitation works in Mallikpore of the Bauripore Community Development Block and also water supply and sanitary installations at Ganguli Bagan.

26-10-60

IV. 2.30 p.m. to 5.00 p.m.—Discussions with the officers of the Calcutta Corporation, Howrah Municipality, Howrah Improvement Trust and Development Corporation of Calcutta at P-11 Mission Road Extn., Calcutta.

I above—The following are the points discussed and details of inspection during the above itinerary.

Smt. Lourdhammal Simon, Chairman of the Committee, presided. All the Members of the Committee except Dr. N.N. Kailas and Col. Barkat Narain were present. The following officials and others were present on behalf of the State Government :

1. Shri H. Banerjee, I.C.S., Development Commissioner and Secretary to Government, Development Department.
2. Lt. Genl. D.N. Chakravarty, Director of Health Services and Secretary to Government, Health Department.
3. Shri J.C. Talukdar, I.A.S., Joint Secretary, L.S.G. and Planning Department.
4. Shri P.C. Bose, Chief Engineer, Public Health Engg. Deptt.
5. Shri S.K. Majumdar, Deputy Chief Engineer, P.H. Engg. Deptt.
6. Shri S.K. Ghoshal, Executive Engineer, Metropolitan Water Board.
7. Shri A. Chowdhuri, Assistant Secretary, Health Department.
8. Shri S.K. Chatterjee, Dy. Director of Health Services (PH).
9. Development Officer, 24 Parganas.
10. Assistant Secretary, Tribal Welfare Department.

The Committee referred to the detailed Note furnished by Shri P.C. Bose, Chief Engineer on the present position of urban and rural water supply and sanitation in West Bengal and expressed satisfaction that the Note was comprehensive.

Dr. Ram Subhag Singh wanted to know whether there was any special difficulty being experienced about rural water supply. Shri P.C. Bose explained that there was not much difficulty over the major part of the State as they were able to provide simple filter point tube wells of 1-1½" dia. with hand-pumps wherever required. There was not much difficulty felt in regard to the supply of pipes, but there was difficulty in regard to the procurement of fittings, valves, C.I. specials and similar appurtenances. He mentioned specifically that valves produced in the country by the generality of manufacturers are not good and are liable to break. Pumps are manufactured in the country but their supply period varies from 18 to 25 months. C.I. pipes of smaller diameters are not also easily available and their short supply was a bottleneck. There was a general shortage of transport which held up progress of work. Cement was scarce for the past 6 months. There was a Transport Advisory Committee to consider these difficulties and the Chief Minister of the State holds a meeting every week to resolve all such bottlenecks.

Dr. Ram Subhag Singh again drew attention to the fact that whereas in some regions of the State only 10 per cent of the rural areas were suffering from water scarcity, in other districts as much as 50 per cent went without a safe water supply. The Chief Engineer explained that wherever tube wells were successful, the incidence of water scarcity was easily removed, whereas in other areas with laterite and hard soils like in Burdwan district, open sanitary wells had to be provided which took time and money, and the progress was not as quick or extensive as in the case of tube wells.

M/L52DGHS—8

The entire rural water supply was under a planned basis with Regional Health Committees and District Magistrates deciding on the priorities and the list of villages to be covered. They had covered about 60,000 villages so far with the sources numbering about 79,000. Their rural water supply planning started from 1947. The State Public Health Engineering Department was now in charge of all rural water supply including the Tribal areas water supply.

The Chief Engineer further explained that for rural water supply during the Third Plan, the State Government hope to integrate the tube-well programmes of the Irrigation Department with the rural water supply. The Irrigation Department is to sink some 3,000 tube wells and it was anticipated each tube well would be made to serve 3 or 4 villages. Roughly the cost would be some Rs. 22 per head per capita and the supply would be from standpost with 3 or 4 stand posts for each village. Each tubewell will be within a radius of 1-1/2 to 2 miles. A 5 or 10 gallon supply would be provided with no provision for cattle.

The Secretary, Health, explained that all urban, sub-urban schemes were based on a 20 gallon per capita supply, while the rural schemes aimed at one standpost for every 250 people or one for each village as a minimum. At present, they could say they have one standpost for every 400 people.

Q. In regard to rural water supply, will you be able to complete the entire programme in the Third Plan?

A. It depends on the allotment under the Community Development and Local Development programmes. The condition imposed regarding local contribution may not help progress. But the insistence on contribution results in (a) inflation of estimates, (b) difficult places not receiving any attention and (c) the non-vocal "have not" sections of the population not receiving any attention. It is far better to bring all activities on rural water supply and sanitation under one single unitary programme. That will make for better efficiency and quickness in the progress.

The discussion then referred to the difficult situation in the District of Darjeeling. The Chief Engineer explained that it was a rocky area and there they had to arrange surface supply by gravity. Springs are tapped and the supply conveyed through pipes, chlorinated and distributed. Sometimes even chlorination is not possible. With the help of the Community Development scheme and the rural development works, the State had executed during the past 7 or 8 years nearly 60 water supply schemes in Darjeeling itself.

Dr. Ram Subhag Singh repeated, however, that in Darjeeling proper the position was very bad. The Chief Engineer agreed and said that the population had gone up rapidly without corresponding expansion of the water supply. They have provided in the Third Five Year Plan a scheme costing Rs. 14 lakhs for the first phase and Rs. 28 lakhs for the second phase, to place the water supply on a satisfactory footing, including requirements of an ultimate population.

The Secretary, L.S.G. Department intervened to say that the whole question of supply to Darjeeling was dependent on the rainfall and if there was failure of the monsoon from January to May, a number of sources developed will all suffer from the same handicap. It is a factor which the Municipality cannot help. They could only augment the reservoir but they could not guarantee a minimum permanent supply as demanded by the Army.

Shri H.C. Mathur wanted to know the pattern of subsidy for Municipals schemes. The Chief Engineer and the Secretary, Health, explained that the State gave 2/3rd as subsidy and 1/3rd as loan to Municipal water supply schemes, provided the Municipalities have the capacity to repay the loan with interest. If they cannot return it, the Finance Department does not sanction the scheme except in special cases.

Dr. Ram Subhag Singh referred to the difficulties expressed in the Chief Engineer's note about delays in land acquisition and coordination with authorities. The Chief Engineer explained to say that there were procedural difficulties and the Department could take advance action if only they had adequate prior intimation about the allotments available for any particular year's programme. His main grievance was that the present financial allocations were on a year to year basis, which does not give the State Public Health Engineer time for advance planning and action. The Chairman agreed that some sort of phased programme should be made in order to expedite progress.

The Chairman then referred to the conditions in Madras where many major panchayats having a population of more than 20,000 are refusing to form themselves into Municipalities, because they will not then get any subsidy for their schemes. The Secretary, L.S.G. said that the same motivation would apply also in respect of education, since in rural areas no fees are levied, whereas in Municipal areas they have to pay fees. The Chairman replied that whereas education is an individual problem, water supply is a necessity and a problem for the entire community, and there was a difference between the two. Secretary, Health, said that some

contribution from the rural population was possible in the case of costly sanitary wells but not in the case of tube wells. Even in the case of wells, the contributions will be in the shape of labour.

Even in regard to Municipal schemes, the maximum tax leviable was only 7-1/2 of the rateable value which was very inadequate. The State Government, the Health Secretary said, was seriously considering the question of taking over the whole of the water supply and public health activities from the Municipalities and shouldering the burden themselves. He felt that smaller Municipalities are not in a position to have sufficient technical personnel and the State should take the responsibility to collect the money through meters or by any other method that may be acceptable. Then they would be in a better position to maintain the schemes. In the initial stages it would be better for the State to take over the public health activities of the Municipalities including water supply and other amenities.

For the maintenance of rural water supply systems, the Chief Engineer was having an Assistant Engineer at the District level, one Overseer at the Sub-divisional level and 2 mechanics and 4 helpers at the Thana level comprising one or two blocks. The entire maintenance was attended to by the Public Health Engineering Department of State. There was no contribution from the rural population for maintenance. Even when old tube wells have to be taken out and driven against, the local officers decide if and how much the villagers should contribute for the repeat work. They had no piped water supply in the rural areas except in Darjeeling.

The discussion then centered round the water supply position in Calcutta and sub-urban areas. The Health Secretary explained the proposal to have a Metropolitan Water District covering about 275 Sq. miles to include the Greater Calcutta area. They have roughly estimated that it would cost them some Rs. 100 crores to place Calcutta's water supply on a satisfactory footing. The survey was undertaken by the W.H.O. in consultation with the State Government and it had also been agreed that a blue-print of the entire project will be prepared by a Consulting Team of Engineers whose cost will be met partly from U.N. Special Funds and partly by the State Government.

The Chief Engineer explained that in Calcutta the problem was not one of quantity but of the quality of available supply. During certain periods of the year, the water becomes saline by the creep of tidal influence up the Hoogly due to low flows carried by the river. They had to increase the quantity of flow into the river or else seek some other source. Any augmentation of supply from local tube wells was not a satisfactory solution as the sub-soil water is saline and also carries iron in certain areas. The W.H.O. Team had also observed that they could not depend on underground water for this area. Towards the south-end of Calcutta, the sub-soil water gets more and more saline. In Calcutta, especially along the river banks, water was saline, hard, contains iron and is unsatisfactory for domestic use. But beyond a 20 mile zone of the river as in Neihati, Kalyani, Triveni etc. the water is potable, is not so hard, does not contain chlorides, or iron in several cases. There is copious water as far as deep wells are concerned in this lower valley, the depth ranging from 400' to 750'. In Dholpur they struck a good supply of 20,000 gallons per hour at a depth of 1100'.

Down below in the Sunderban areas, because of the reported bad quality, there was no tube well before 1951. But subsequently they have been sinking wells up 750'—1200' deep. The water is hard but safe. No piped supply was provided as the pipes got incrustations. Uptodate some 75 per cent of the Sunderban area has got water supply.

In Midnapur, however, conditions are worse. They are depending on very shallow tanks.

Shri Rajagopalan wanted to know the prospective populations that will be served by the proposed Rs. 100 crores scheme for Greater Calcutta and the pattern of financing contemplated for the scheme. Was any Government subsidy expected? The Chief Engineer explained that the scheme would serve, 5 million population in the first stage and 7 million population in the second stage including Calcutta. The capital cost would work out to roughly Rs. 50 per capita for water supply and Rs. 100 per capita for sewerage. The Health Secretary then explained that they wanted to make this a self-supporting scheme and that consumers would have to pay back capital and interest themselves.

Shri Rajagopalan pointed out that all the consumers in the urban areas have already been trained to look to a 2/3rd subsidy for all their schemes so far. Could they switch over to a new concept? The Secretary replied to say that this will be a new Act and the project will be taken up as a sort of an Industrial endeavour just like an Electricity Undertaking. There was an element of rationalisation in the attempt in that where they had several agencies running their water supplies a single authority would now take charge. Theoretically at least it would reduce the establishment and running costs and economy was possible that way. It was however very premature to decide on the exact financing pattern of this big scheme. But whatever was being paid by the consumer for the water he would have to pay it either to the Municipality or the Metropolitan Water Board which may contract with the Municipality for bulk supply and payment. The matter was all in the very initial stage.

Shri Rajagopalan said that opinion has been gaining ground of late that sewerage projects should receive a higher priority. The Chief Engineer pointed out that unless the community had water supply which is a primary need, a sewerage scheme cannot be given priority. It may be ideal to deal with them together but it may not be practical under the present conditions and water supply must precede sewerage projects.

Out of 87 Municipalities, they will have 43 provided with water supply by the end of the Second Plan, 3 of them would have insufficient supplies such as Asansol, 7 were constructed out of Municipal funds. They had all adequate supply.

According to the Chief Engineer conditions of insanitation have not got accentuated in Municipal towns where there is water supply but no sewerage yet. According to him there is some kind of a surface drainage system which can look after the waste water from houses and it was the inadequacy of storm-water drainage which mostly created insanitation in these towns.

Drainage waters usually get discharged into the streams. They have no sewage farm yet except a small one at Bashpara.

Filaria is not much of a problem except in a small belt. The State has got 2 Control Units to tackle the problem. According to the State officials, the problem is more lack of water than lack of drains.

Q. Have you made any approximate assessment of the total workload?

A. Yes. But it is based on a rough assumed per capita cost only. No advance investigations or survey work has been done for assessing the future workload.

The approximate assessment of the future workload is about Rs. 8 crores for water supplies excluding Calcutta and about Rs. 54 crores for sewerage projects in all the Municipalities. The biggest problem is Howrah Water Supply Scheme to be followed by Howrah Sewerage project.

Q. What would be your workload for each public health engineering division ?

A. For each division, it should be about Rs. 10 or 15 lakhs. For the whole Department, a minimum of Rs. 1 crore per year would be the minimum.

Q. Would you justify the creation of an independent public health engineering department on the basis only of a specified workload ? Some States put forward the absence of a heavy workload as the reason for not creating an independent Department.

A. That is a wrong approach. Public Health Engineering is not merely a construction department. The investigation, design, execution, maintenance and promotion of all Public Health Engineering activities is an integrated function and can be discharged efficiently and effectively only by a public health engineering department with qualified personnel and not by a mere construction department. The workload is no doubt relevant, but it should not be the material factor to decide the issue.

That small Departments do not offer prospects for the personnel is also an individual point of view and should not be stressed as a major objection to the setting up of an independent Department.

The Secretary, Health intervened to say that it is not possible to get the P.W.D. to carry out water supply and sanitation projects effectively and that it is far better to have an independent Department for the purpose.

Q. Do you think the public health engineering department can work better under the L.S.G. Ministry or the Health Ministry?

A. The L.S.G. deals only with the Municipal towns. What about the rest of the area which is 80 per cent?

The L.S.G. Secretary intervened to say that better coordination and a more intimate linking with the L.S.G. Ministry is necessary at all stages of the implementation of the Programme since the capacity of the Municipality to finance a scheme, the quality of collections and other factors have to be decided by the L.S.G. Department while a scheme is initiated. They had also the State Development Corporation. As far as the L.S.G. is concerned, it would be better if the Development Corporation or the public health engineering department get a closer link with the L.S.G. before any pipe supply is considered for any of these Municipal areas.

The Tribal Welfare Department then explained the progress made. The population to be covered was 15 lakhs distributed over some 2,000 villages scattered through out the State.

In the First Plan they had provided 299 sources and during the Second Plan 2,011 sources, either wells or tube wells, so far. Roughly one source for every 150 was aimed at. It is anticipated that 10,000 more wells would be needed to complete the programme.

Q. Can it not be integrated with the general programme?

A. No. The people are not expected to pay any contribution. Moreover, there are special factors bearing on this problem depending on the customs and prejudices of the tribal people. These wells however cost more or less the same as the other wells under the general programme.

The Chief Engineer also explained the board features of the proposed comprehensive water supply scheme for the Asansol Coal Field area estimated to cost Rs. 4.22 crores.

Item (II) above—

On the morning of the 25th Oct., the Committee first met the Chairman and Chief Engineer of the Howrah Municipality who explained to the Committee the present unsatisfactory position in regard to the Howrah Municipal Water Supply Scheme. The present population was roughly 7 lakhs. Filtered water supply from the Howrah Head Works 14 miles distant from the town, was conveyed through a very old pumping main. Its carrying capacity had become much reduced because of the age and the pumping had to be reduced in order to keep down the pressure in the main. The daily filtered supply was only 4.5 million gallons or roughly 6.5 gallons per capita. This is supplemented by 1,600 tube wells within the Municipal area by a total of about 4.2 million gallons. The distribution system was old and many areas were ill-served or unserved.

The Municipality has now prepared a comprehensive improvement scheme estimated to cost Rs. 2.8 crores which included additional treatment plant at the Head Works, a new pumping main and a redistribution system from the town. Under an Improvement Scheme recently carried out they had installed high capacity pumpsets at the Head Works which would fit in with the comprehensive improvements. But until the Rs. 2.8 crores scheme is completed, the pumpsets will be over sized and form part of an idle investment although they had been procured at a cheaper rate than current prices.

The Committee then made an inspection of the areas within the Municipality and gained first hand knowledge of the poor conditions of the water supply and the very poor level of sanitation. Even the roads were all in a bad state of repair and maintenance.

The Committee also inspected a water softening plant to deal with the supply from a local tube well. The plant was in a bad state of repair and was not being worked as designed. The tube well water was merely made to pass through the plant without any addition of chemical or any treatment whatsoever. It was explained that the running of the plant as designed and the cost of chemicals involved was beyond the financial resources of the Municipality.

Side by side with the off-take works of the Howrah Municipal Water Supply could be seen a small off-take intended for the Sirampore Municipality with its own settling tank, filter plant and pumping sets and force-main for conveying the supply to Sirampore. The Committee Members felt curious why Sirampore could not be served from a common scheme both for Howrah and Sirampore Municipalities. It was explained that as the Howrah Water Works were inadequate even for Howrah Municipality, Sirampore had to go in for its own scheme without waiting for the Improvements to the major scheme.

The Committee also inspected the tube-well sources, over-head tanks and distribution system for the small Municipalities of Balli, Konnagar and Uttarpara on the way.

Item (III) above—

On the afternoon of 25th October, the Committee inspected the rural water supply arrangements for Mallikpore in the Bauripore Community Development Block where a windmill (obtained through Australian help) has been installed to lift the supply from a tube well. It was understood that while the supply available from the well was sufficient to meet the needs of the local village, difficulty was experienced whenever the windmill got into repairs, minor or major.

A water-seal latrine provided under the Rural Sanitation Programme of the Community Development was also inspected. The latrine seat and enclosure and the leach-pit was all reported to cost Rs. 40.

On the way the Committee inspected the Ganguli Bagan Colony where self-contained housing, lighting, roads, water supply and sanitation had all been provided for the Refugee Colony. The sewage from the colony was being treated in a clarifier and trickling filters located right in front of and close to the residential flats.

Item (IV) above—The following officials and others were present on behalf of the West Bengal Government.

1. Shri R. Sinha, Chairman, Howrah Municipality.
2. Shri P.R. Mukherjee, Chief Engineer, Howrah Municipality.
3. Shri A. P. Basu, Health Officer, Howrah Municipality.
4. Shri S. Chatterjee, Chief Engineer, Howrah Improvement Trust.
5. Shri A.K. Sen, Chief Engineer, Calcutta Corporation.
6. Shri S. Mukherjee, Deputy Chief Engineer, Calcutta Corporation.
7. Shri S.K. Kabasi, Project Engineer (Water Supply), Calcutta Corporation.
8. Shri A.N. Mukherjee, Project Engineer (Planning), Calcutta Corporation.
9. Shri P.C. Majumdar, Commissioner, Calcutta Corporation.
10. Shri A.K. Roy, Chief Engineer, Calcutta Development Corporation.
11. Lt. Genl. D.M. Chakravarti, Secy. to Govt., Health Department.
12. Shri P.C. Bose, Chief Engineer, P.H. Engg. Department.
13. Shri S.K. Majumdar, Dy. Chief Engineer, P.H. Engg. Department.

The Committee met officials of the Corporation, Howrah Municipality, Howrah Improvement Trust and the Calcutta Development Corporation. The Health Secretary explained to the Committee that the Calcutta Development Corporation was outside the Calcutta Corporation. It will have responsibility to provide water supply and sewerage facilities to 4 Municipalities and 1 non-Municipal area. It has been created recently and the idea was that the Corporation would raise its own loans backed by the State Government. As the smaller Municipalities cannot stand on their own legs and as it was not practical to have different agencies pursuing parallel activities, a common Authority has been created to expedite matters.

Q. What part do these Municipalities play at present?

A. They have to take the initiative first and then the Department concerned takes action as may be required.

Q. What is the relationship between the Government and the Development Corporation?

A. The Government decides which Municipalities should be brought within the purview of the Development Corporation. It is a sort of an Improvement Trust for the State. Its main job will be the construction of a New Calcutta on the southern side. The Corporation can issue shares and raise loans and provide water supply, sanitation, roads, lighting and land development etc.

Q. What is the size of the work of the Development Corporation?

A. The provision against water supply will be nearly 60 lakhs and against sewerage projects will be Rs. 1 crore.

Q. Would the Development Corporation employ a separate staff for Public Health Engineering works?

A. Yes. As a matter of fact some of the schemes suggested by the State Chief Engineer (P.H. Engg.) have been taken over by the public health engineering staff under the Development Corporation. The Corporation and the Public Health Engineering department work in close collaboration so that there is no duplication.

Q. Have you thought of a comprehensive Master Plan for Greater Calcutta?

A. We are expecting the arrival of the U.N. Team to prepare the Master Plan for Calcutta for which purpose \$324,000 has been allotted by the United Nations. The Team will remain for 2 years and work out all the necessary details of the project and phase the programme also. The Greater Calcutta area including the Calcutta Corporation will extend over 257 Sq. miles, and include all the Municipal areas on both sides of the river. In fact, we have already started work on survey and delimitation of the area. There are additional teams working on the job.

Q. Are the Municipalities under the Development Corporation going to get any subsidy for their schemes?

A. It is the idea that they will not get the 2/3rd subsidy as heretofore. The Second Plan and Third Plan patterns of financing will differ.

Q. But the Development Corporation should have been given certain instructions whether they are to get subsidies, loans or some such assistance?

A. So long as we can entrust the Corporation with a scheme, they are prepared to take it up purely on the understanding that they will be able to get contributions from the local bodies. They are only executive agencies for the purpose. The grant of 2/3rd subsidy and 1/3rd loan applied to Municipalities where the Municipality was to finance the entire scheme itself. Some of the major Municipalities are yet to secure their water supply schemes. When they initiate such schemes, the required water rates can be imposed as a new entity. But Municipalities which already have water supply schemes cannot impose any such new rates and have therefore no new source of income available.

Q. But can they not levy water rates?

A. No. The existing rates cannot be increased. The tax structure is different as between Calcutta Corporation, Howrah Municipality and the other Municipal areas. In the Calcutta Corporation, it is a consolidated rate of 25 per cent on the valuation of property, whereas in the Municipalities there is a slab system with the tax based on the annual value of land and property; bigger holdings paying about 23 per cent and smaller holdings about 14 per cent. A consolidated rate is not the same as a rate on rental values. In Howrah Municipality, because of a special enactment everybody has to pay 25 per cent on the holdings irrespective of the size, unlike Calcutta Corporation.

Q. Is the Calcutta system the more advantageous?

A. The pressure on the people is greater in Howrah, especially on the smaller holdings. They pay 25 per cent compared to the 14 per cent in sister Municipalities. The Calcutta system cannot apply very well because of the large disparities in property holdings within the Corporation for which the consolidated rate works satisfactorily.

The Howrah Municipal Chairman then explained the great urgency for executing the Howrah Water Supply Improvements scheme and the sewerage scheme for the Municipality as otherwise the existing unsatisfactory conditions would be perpetuated.

Q. Why not merge Howrah Municipality with Calcutta Corporation?

A. I do not know whether they would be able to do it.

Q. If you were told that Rs. 2.8 crores needed for your water supply improvements scheme may not be available from the Central loan, have you any alternative for proceeding with this scheme?

A. So far as our administrative position is concerned, we are governed by the Bengal Municipal Act. We cannot issue debentures and the like, like the Corporation of Calcutta. Our only financier is the State Government and unless the Government gives us subsidy or loan the Municipality will be unable to find the necessary finances.

Q. But if it is a loan, do you not have to repay it?

A. It is absolutely impossible for the Howrah Municipality to pay both the interest and the loan. So far as 1/3rd loan is concerned, we have to pay it back. Many farms, open places and the like are gradually disappearing. Valuation of land is steadily rising. Local rates also are likely to rise. That is why we can afford to pay a portion of it but not the full. It is an industrial area no doubt, but they are all mostly small industries.

Q. So unless this money comes about in the form of grant either from the State or the Centre your Municipality will not be in a position to execute this water supply improvement?

A. No. Unless a substantial portion is given as a subsidy and some portion as a loan, we will not be able to pursue this scheme.

Q. Could you not increase the water supply so as to include the other 2 or 3 Municipalities en route?

A. That is the idea of the Metropolitan Board. A 57" dia. main is being proposed. Then we require the filtration plant. We could certainly supply water outside the Howrah Area. That is the objective of the Metropolitan Water Supply under contemplation.

Q. Could you not have done it by mutual cooperation instead of these fragmented schemes?

A. If we have a comprehensive picture, it would be much easier and much better. All the existing schemes were taken up piecemeal and came in by stages in a small way each time. A comprehensive Master Plan will no doubt solve many of these defects and deficiencies.

The Chairman, Howrah Municipality, then explained that the most important object of the Howrah Improvement Trust was to fulfill the water supply and sewerage schemes for the Municipality. Unless the Sewerage Scheme was also there, they were not fulfilling their obligations. If we are not going to give water, say within the next 10 years, we will have to decide what to do with the Improvement Trust or whether we should try to give any priority to the other areas. Howrah Water Supply can be linked up with the Metropolitan Water Supply, but it will take time. The Rs. 2.8 crores scheme will brook no further delay. All the components under the scheme can be utilised at least for the next 50 years and will fit in with the comprehensive Metropolitan Scheme of Improvements.

The Commissioner, Calcutta Corporation, then explained the several proposals for improvements to Calcutta Water Supply and Sewerage under contemplation. They require for the Third Plan an amount of Rs. 11.32 crores for water supply and Rs. 30 crores for drainage with which they would have completed the requirements anticipated upto 1981. At present while Calcutta has a population of nearly 40 lakhs, the amenities are available for only 26 lakhs of people and that too in an inadequate manner. Certain parts of the town are very congested. Some 25 per cent. of the population lives in about 10 per cent. of the area. The Corporation Commissioner explained the procedural and administrative bottlenecks in the processing of Improvement Schemes on water supply and sanitation with the Standing Committees and Corporation Council and Government Departments. So much so, an amount of Rs. 90.2 lakhs received from the Centre towards the Corporation water supply schemes (Rs. 20.2 lakhs in 1958, Rs. 70 lakhs in March 1960) was still not spent and had been invested elsewhere pending the processing of the schemes for consideration. The total estimated cost of sanctioned works was Rs. 427.6 lakhs, but expenditure was only Rs. 271.95 lakhs.

Q. It is found that the income for Calcutta Corporation is only Rs. 8 crores from revenues whereas Bombay Corporation's income is about Rs. 20 crores. Is there so much disparity?

A. Here we do not get any revenue from road, transport, electricity undertaking etc. The consolidated tax yields a total revenue of Rs. 4.5 to 5 crores and the total income is about Rs. 8½ crores including Government contribution.

Q. Can you not raise additional loans in the market?

A. No. The loan raising capacity of the Calcutta Corporation is limited and has almost reached the breaking capacity.

Q. Is the supply of water in Calcutta metered?

A. No.

Q. Have you no separate account for water supply and drainage?

A. No. We have no separate account. The total rate is consolidated, but we do not know what portion is for water supply and drainage. We know only the expenditure under these 2 heads. Other Municipalities have separate accounts, but in Calcutta and Howrah it is different.

Re. next meeting of the Committee—

The Committee fixed tentative dates between 16th and 23rd December to visit Delhi and Punjab areas and authorised the Secretary to draw up a programme and finalise the details in this behalf.

S. RAJAGOPALAN
Member-Secretary

NATIONAL WATER SUPPLY AND SANITATION COMMITTEE—MINUTES OF THE FIFTH MEETING HELD IN THE MAYOR'S ROOM—DELHI MUNICIPAL CORPORATION ON 17TH DECEMBER 1960.

The following were present on behalf of the Corporation—

- (1) Shri Sham Nath, Mayor.
- (2) Shri R.R. Bahl, Commissioner.
- (3) Shri Rao, Deputy Commissioner.
- (4) Shri R.S. Mehta, Chief Engineer (Water).
- (5) Shri M. Tirunarayan, Dy. Chief Engineer (Water).
- (6) Shri Jain, Water Works Supdt.
- (7) Shri Bhairadwaj, Chairman, Water Supply and Sewage Committee.
- (8) Shri Moti Ram, Member.
- (9) Shri Balraj Khanna, Member—and others.

At the outset, the Chief Engineer (Water) explained the salient features of the Delhi water supply. He said the Delhi water supply is solely dependent upon the quantity of water available in River Jamuna. The Punjab and U.P. Governments, through whose territories the river passes, release insufficient quantity of water to meet the requirements of Delhi. There is no other source for Delhi except this river. The river Jamuna used to flow near Delhi, for the past 100 years. They had put a dam at Tajewala. The Irrigation Department have now monopolised the river. The Jamuna water flows either into the Western Jamuna Canal into the Punjab or the Eastern Jamuna Canal into U.P. There is no water escaping into the river at Tajewala. The water coming now to Delhi is regenerated water. Here in Delhi, for instance, at Okhla, theoretically the supply let down towards Agra is nil, but even then Agra and Mathura get some water. This is due to the regeneration of water. This was alright when the demands were less, but now we have a great demand. Till the year 1941, there was a demand of 18 million gallons and 12 million gallons in winter months in Delhi. We are now supplying about 80 to 90 million gallons.

Dr. R.S. Singh—What about the quality of the water?

Shri R. S. Mehta—The quality of the water at Wazirabad is the same as that of any alluvial rivers. When the water is not coming from Tajewala, the quality does not deteriorate. This is a sort of regenerated water. This comes from the layers of the sand.

Shri N.V. Modak—What happened to the Ramaganga project water?

Shri R.S. Mehta—The Uttar Pradesh Government's feeling is that there is no water. An agreement was signed alright, but later on they said they cannot spare any quantity.

Shri R.S. Singh—Is there any proposal to have more tube wells etc.?

Shri R.S. Mehta—This is not a tube well area. We have neither the quality nor the quantity from the sub-surface. We have tried so many tube wells. It is not at all successful.

Shri N.V. Modak—The recurring expenditure will be much more in the case of tube wells, we have discussed it many a time.

Chairman—Suppose we take the water from Tajewala?

Shri R.S. Mehta—This irrigation system has been functioning for the last so many years. As it is committed, naturally there will be lot of opposition from the ryots in Punjab and U.P.

Q. You mean to say there will be great difficulty?

A. In summer, we have great difficulty and they also will have very great difficulty.

Q. What about the feasibility of connecting the river with Bhakra Nangal?

A. If the Bhakra system is connected to the western Jamuna system, the position is bound to improve. There are two stages. (1) Stabilisation of what we get now. (2) Eventual augmentation.

Shri H.C. Mathur—So far as drinking water supply is concerned, does it materially affect irrigation?

A. The Punjab Government and U.P. Government say that they have given priority to irrigation. It must have preference over drinking water.

Commissioner—When a new scheme is sanctioned, then it comes to the Government of India (Planning Commission). At that time the allocations of waters may be indicated. Similarly the Ramaganga scheme should have passed through the above condition. Money is given for these projects with the express condition that the benefits will be utilised according to the agreement. Then the State Government has to agree.

Dr. R.S. Singh—What do you propose to augment the supply now?

Shri R.S. Mehta—When the Bhakra system is connected to the Western Jamuna Canal from its own source, or connected with the bigger system, there will always be a perennial flow of water in the river Jamuna, not actually for us, but specially because they have also got to give irrigation water to the agriculturists of Gurgaon. The Government of Punjab has now finalised the scheme. They want to pass more water because they want to give more water to Gurgaon. In that way, they will accommodate us also and supply water.

The population of Delhi is 2.5 millions, and in 1981 it is expected to be 5.5 millions, according to the Master Plan. On that basis we have got out our total requirements of water. If our supply is not committed now, then in future there is no chance of getting any new source. So we have given our final requirements on the basis of the 1981 needs. On that basis they have worked out the Western Jamuna Feeder scheme.

Mayor—To satisfy our present requirements, we want 190 ml. gallons or roughly 400 cusecs. Cost of water (Punjab Government)—Rs. 1-8-0 per 2,500 cubic ft. of water now—Previously it was Rs. 1-8-0 for 6,000 cft.

Chief Engineer—What we have worked out was, we wanted water from (1) Ramganga source, (2) Gurgaon Tunnel and (3) the new source. The recommendation of the Committee was that for stabilisation of our present requirements, we should put up about 100 tube-wells in the Sonapat area. The Corporation's opinion was that if we were to develop 100 tube-wells in the Punjab area, it would be a fairly long distance, about 25 to 30 miles, and the chances of the conduit being contaminated by the villagers or broken up are great. This scheme of tubewells will be run only for the purpose of stabilisation, may be for a month or two, and all the machinery would be remaining idle for the remaining part of the year. It is also true that there is no need for sinking up so many tube wells, which is not an easy thing. For the augmentation, they have also recommended Gurgaon Tunnel and the Ramganga. There are two other recommendations, one for the Shahadra area on either side. They have fairly valuable tube wells. In Shahadra, we are getting water supply entirely from tube-wells.

Chairman—Are you not supplying the entire Corporation area?

A— No. Rural areas are supplied separately.

The Chief Engineer continued that they are running the water supply on a no-profit-no-loss basis. The Corporation, he said, is considering whether they should ask the Government to give the assistance for the initial capital cost, distribution, means of augmentation etc. as aid and not as loan. They had to divert Rs. 1,30,000 to the water supply account from the general account which is not encouraging. Moreover, under the Corporation Act, the Corporation is required to supply water on a no-profit and no-loss basis to the Military area and the N.D.M.C. There are several localities where there is shortage of water. Due to the interest we are already paying to Government of India, it is very difficult for the people to pay the increasing cost day by day.

Shri H.C. Mathur—But you can charge for the water supplied to the Military area and the N.D.M.C.?

A. Yes. But that is a bulk supply.

Shri H.C. Mathur—They are no liabilities on you because the formula adopted by the Government of India is no profit and no loss, and when you supply to the Military as well as the N.D.M.C. it will certainly increase your load and the cost and there should be no difficulty. There is another question. There is a general feeling that the tax structure in the D.M.C. is much lower than at any other place, say compared to Bombay. Only day before yesterday there was a question in Parliament about this. There were two points raised. One was that the Home Minister himself suggested to the Corporation for levying of certain taxes. On an overall picture, possibly this year you are putting up with the *status quo*. As compared to the other Corporations also, we find that the taxation level here in Delhi is the lowest.

Mayor—I do not know whether it is a general feeling or based on general facts.

Shri H.C. Mathur—It is the data of the Central Government.

A. The Central Government itself have examined the overall picture and has suggested certain modifications. I only wish the Central representative should have come and consulted us. The Corporation as such was not consulted at any stage by an Expert Officer. In case he had consulted us, the thing should have been different.

Shri H.C. Mathur—What is the actual cost of water?

A. Rate of bulk supply is 45 nP.; and the rate of distribution is 63 nP. and we charge with surcharge 75 nP. The average cost is 63 nP. We supply free water to various localities and the cost of supplying this works out to Rs. 12 lakhs. But this is increasing.

Shri H.C. Mathur—90 million gallons is the supply alright. Could you give us a break up of the supply, viz., for domestic use, bulk supply etc.?

A. A Note will be prepared and sent to the Committee.

The Chief Engineer continued—We cannot depend entirely on one scheme, i.e., water supply from Punjab. We have to put into force both these schemes. The present supply of 90 million gallons can cater a population of about 23 lakhs only, whereas we are visualising a population of 55 lakhs at 50 gallons per head. The per capita consumption is also likely to increase. Now that the Canal Water supply dispute is settled, I do not see any reason why we should not find some water for our drinking purposes from the Punjab Government.

Q. Do you think it would be worthwhile to resort to 2 sources when sufficient water is available in one source?

A. (1) We have considered that depending upon 2 sources would be better and more flexible.

(2) Due to geographical location, e.g., Shahadra, and areas lying to the south of Delhi, it would be more economical from the point of view of distribution to have two sources.

Q. The idea I gathered was it is because of inadequacy.

A. That is also true. A single source will really not be able to meet the requirements. If you spread it over a number of years, you tap one source in the beginning and then the other to advantage.

Q. To give a satisfactory supply, what is the estimated cost of each of these 2 sources?

A. About the scheme from Punjab and U.P. no final figures are available. It was worked out in a preliminary stage. The Punjab Government scheme will be some Rs. 2.5 crores and Ramaganga scheme will be Rs. 2.00 crores. It would be something of the order of Rs. 30 crores for water supply to Delhi. We have submitted our Third Five Year Plan. It is about Rs. 19 crores. But that does not take care of the total requirements.

Shri H.C. Mathur—What would be the working position? Suppose it will cost you Rs. 20 crores. You must have a certain idea also as to the cost of supply, the source of revenue and all that.

A. If you spend money on water works and supply lot of water, the rate is controlled. But revenue are likely to improve only after working the water supply for 7 or 8 years.

Q. At the most, your case would be either there should be no interest or a very reasonable amount of interest in the initial stages.

A. Firstly, the Rs. 0.8-0 is not workable. If the rates are increased and if deferred payment schemes are put into action, we can then work out the number of years when we will be able to repay the loan.

Shri H.C. Mathur—Then we should definitely have a complete picture. A note would be helpful.

Q. What are the possibilities for the Corporation itself to raise a loan?

A. We have tried it out. We were able to raise some Rs. 1.20 crores. I think there is not very great difficulty.

Shri Bharadwaj—Under Article 285 of the Indian Constitution every local-body has to exempt from taxation all the Government properties. In the Taxation Enquiry Commission Report they have suggested a workable solution that the Government must pay to the local bodies some amount in the shape of subsidy for the above exemption. The Government also have accepted this recommendation. But, we should get the same amount which we are getting from the people. The Government also should provide adequate funds in the shape of grants or subsidy in order to compensate the local body to run all their undertakings.

Shri H.C. Mathur—There is a great force in what you say. This will go into our Report.

Shri Bharadwaj—This is not only our demand. This is supported by the Taxation Enquiry Commission also.

Q. What is the distribution set up?

A. We have got Chandrawal old and new works. From there the water is pumped to some 16 major reservoirs at different places.

Q. What is the area which is covered by this filtered water, leaving aside the rural portion.

A. Well, about 20 to 21 lakhs of people.

Q. How is it that the supply of water is not uniform in the City?

A. Because of the distribution system. There are a number of areas where adequate pressures are not there because of inadequate pipes.

Shri H.C. Mathur—One is a long-range problem alright. What are your immediate problems which should be attended to?

A. (1) The immediate problem is stabilisation first, (2) then the augmentation in the next 5 or 7 years, (3) improvement of distribution system for both larger mains and smaller mains, we should immediately improve the larger trunk mains as lot of Government quarters are coming up and their first demand is that we should supply water. That scheme costs Rs. 80 to 90 lakhs. For that we have ordered pipes—3", 4", 6" pipes. These they will supply only in 1964. In large sizes, the pipes are available, but specials are not available. The position is improving now.

Shri H.C. Mathur—If the position is so much difficult, the Ministry of Commerce and Industry should be co-ordinated for setting up factories. We must know the volume of work. If we know these are the likely bottle-necks, we can suggest to the Government of India what steps should be taken to improve the position.

Shri R.S. Mehta—We are lacking in Water Meters too, though two firms in Bombay and Bangalore are supplying them. Their supply is far below the demand of the country. Same is the case of larger sizes of sluice-valves.

Q. How is it that there is uneven distribution?

A. It is not that they are suffering from quantity, but because of uneven pressure.

Q. Are people prepared to take connections?

A. Yes. Last year we have given 5,500 connections. I think the people are in a position to make use of the facility.

Q. What is the number of public fountains you have put up last year?

A. Not more than 300 during the past 2 or 3 years. When the rehabilitation colonies were put up, naturally they were given public fountains. Out of 65,000 connections, some 40,000 are without meters. We are charging at a flat rate and that is nominal. Only 3 per cent of the ratable value of the property is levied as the actual water tax. That comes to only a nominal value.

SEWERAGE

Shri R.S. Mehta—On the sewage side, the financial position is much worse. All that we are collecting from the population is just 1 per cent of the ratable value as scavenging tax. Of the water supply side, we have a revenue of about Rs. 43 lakhs. On the sewerage side, there is no income at all. Now we have to go in for modern treatment processes also. We are using just 6,000 acres of land for irrigation purposes out of the sewage effluent and we collect some tax. But that is not much.

A councillor—In Shahadra area, there is no sewer system at present and we have already provided in the budget to provide at least 2 septic tanks. For everything we have to run after getting loan from the Government. This sewage department is running in almost 100 per cent deficit. We have already prepared a scheme and that is also very expensive. For Shahadra alone it costs Rs. 2.5 lakhs. The Government has sent that scheme to the Corporation.

Shri R.S. Mehta—We are supplying some gas also. But that is most insignificant.

Q. How are you meeting the deficit?

A. It is covered in the consolidated loans.

Shri Bharadwaj—Delhi has got a special case for consideration being the seat of the Central Government and we are to provide BETTER amenities. We have to implement some costly schemes also. In that way, we deserve special consideration for either subsidy or special grants.

Dr. R.S. Singh—What about Okhla water?

A. The source is actually of a doubtful nature. But we take meticulous care. We supply water after pre-chlorination and super-chlorination. The quality of water that goes out from Wazirabad is no good. But we do not like that source. The difficulty all through has been that we have no other source also. That is why there is so much of time lag at every stage. The total of sillage and sewage flowing into the river before Okhla would be something like 35-40 cusecs. They had to resort to the source when the Refugees Camp had been constructed in Kalkaji and other places.

Q. How soon you will be able to replace it?

A. It is a vicious circle.

Q. What about the Government of India's thinking?

A. According to the Augmentation Report of the Government, the U.P. Government has agreed to supply water from Hindan river provided Delhi Administration arranges to supply the water through tube wells. There is one more source—Moradnagar, which is about 22 miles from Delhi between Shahadra and Meerut and from that place the main Ganga Canal passes through. If it is possible to get water from that canal, I think that will be helpful. In that way West Jamuna Canal is nearer.

Shri H.C. Mathur—Has this matter gone to the Zonal Committee?

A. Yes. It has gone.

Shri H.C. Mathur—This Committee will take full note of it.

RURAL WATER SUPPLY

Chairman—What about Rural water supply?

Shri R.S. Mehta—We have divided this into 4 categories. (1) City Water Supply. (2) There are towns like Shahadra where the water supply is through tubewell sources. (3) In villages like Mehrauli, we supply water through old wells and we have put in pumps to elevated reservoirs. At present we are giving water through public fountains, at 15 gallons per capita. (4) The fourth category which is of course the biggest is Sanitary wells—wells covered and provided with hand-pumps. We have put in about 100 wells of each with 2 hand-pumps. Side by side, we are also going in for rural latrines, some 300 to 400 to start with. Health education has to be done first in order to make this programme successful. Where the water supply of the wells has deteriorated due to these sewage effluents, we consider that it would be better to provide all these villages piped water supply when our urban augmentation schemes are improved. The approximate population of the 5 villages is about 10,000. There are certain urban villages which are very near the City. People are not naturally satisfied with the existing sources of water supply and they clamour for piped supply on a par with the city people. In rural areas, we do not charge anything for water.

Q. Is there any follow up for further maintenance of rural schemes?

A. It is there. The experience is not quite satisfactory in the sense that the villagers spoil the pumps and if they are not repaired in time, the pumps themselves will disappear.

Shri Bharadwaj—When the Government has included many villages in the Corporation, the villagers themselves expect the same amenities as for the City people. That is another special reason for giving special consideration to Delhi Corporation.

Shri R. S. Mehta—Regarding Madanpur village, there was originally a tube well. That was successful. We are extending the water supply and it will be completed next year. Rs. 3 lakhs is the capital expenditure.

MINUTES OF THE SIXTH MEETING OF THE NATIONAL WATER SUPPLY AND
SANITATION COMMITTEE, MINISTRY OF HEALTH

I. INSPECTIONS IN VISAKHAPATNAM BETWEEN THE 30TH JANUARY TO 1ST FEBRUARY 1961—
GOSTHANI (BONI) WATER SUPPLY SCHEME

The Committee inspected the Head Works site and studied the details of the scheme. With the aid of the Central loan of Rs. 116 lakhs in the First Plan period, the infiltration gallery scheme was executed whereby a daily supply of 42 lakhs of gallons was expected to be available from the infiltration gallery and which was to be conveyed to the town through a 26" dia. C.I. pipe line for about 25 miles long.

Soon after completion of the work, however, it was found that the original expectations regarding the yield from the gallery were too optimistic. Except for 2 days on 2 occasions, the gallery work had not been subjected to any full power test continuously in order to verify whether it was capable of yielding 42 lakhs of gallons per day under continuous pumping operations. The actual draw from the gallery was found to be varying from 10 to 15 lakh gallons in the summer months to about 25 lakhs of gallons in the remaining periods of the year when the river bed was saturated by surface flow.

Pumping during summer months was maintained for about 20 to 22 hours in the day, alternating the bigger pumping set (3000 gallons per minute) for 2 to 4 hours and the 2 smaller pumping units (600 gpm) either singly or together in order to suit the actual subsoil water level in the gallery area from day to day. During the non-summer period of the year, although the gallery is said to be capable of yielding very near the expected quantity of 3000 gallons per minute, pumping hours had to be restricted to about 10 only in the day because the town distribution system was not in a position to absorb any larger quantity, even if available at the source and could be conveyed through the 26" main. It was understood that the town distribution system which had been originally designed for a daily supply of 6 lakhs of gallons had not received any large scale additional expansion subsequently. So much so, the inadequacy of the distribution system remained a serious bottleneck for equitable supply of any larger quantities brought into the town. It is unfortunate that in the phasing out of the scheme, adequate priority had not been allotted to the expansions to the distribution system to receive an increased supply contemplated under the scheme.

It was also brought to notice that the log-book entries at the Head Works in regard to daily pumpages were based on the meter readings. The meter which had been installed as part of the 3000 gallons per minute discharge from the pump-sets was not registering accurate discharges for the smaller pumpages during the summer months as could be seen from the large disparity noticed in the discharge figures by actual displacement at the town service reservoir compared to the meter readings during such seasons. This again throws an element of doubt on the accuracy of the daily pumpage records from the Head Works based entirely on the meter readings. If as is to be presumed, the meter readings exaggerate the supply figures during the periods when the pump discharges are smaller than the optimum for which they are designed, it would mean that the yield from the gallery is even poorer than has been disclosed by the log-book entries so far.

In order to augment the poor yield from the Gosthani infiltration gallery, the State Government had launched on yet another scheme in order to supplement the supply from the Gambhirangedda reservoir. Under this scheme, water from the irrigation reservoir would be conserved for the Municipal scheme for the 4 months in the summer when the Gosthani gallery yields the minimum of supply. According to the State Government, the Gambhirangedda is designed to supply a daily quantity of 18 lakhs of gallons during the 4 months of the year, the scheme remaining idle for the remaining 8 months. The work is estimated to cost about Rs. 13 lakhs which includes preliminary treatment and filter plants at the reservoir site and a rising main of about 8,000' of 18" dia. C.I. pipe which would discharge the supply into the 26" main from Gosthani at a point some 5,000' from the service reservoir.

Here again, the Committee, on an inspection of the Gambhirangedda reservoir site, felt that data should be collected on a reliable basis in order to ensure that the expected daily yield of 18 lakhs of gallons would be available during the 4 summer months. The actual level of the reservoir at the commencement of summer and the computed storage based on actual levels including for necessary losses through the period should give a correct indication of what would actually be available. These figures have not been observed so far.

It would appear as if the Gosthani gallery scheme had been completed without adequate and complete investigation on the potentialities of the source and the optimum size for the conveying main on any justifiable basis. Because of the disparity between expectations and realities, the subsidiary Gambhirangedda source has had to be resorted to, with the utility of the scheme restricted to just 4 months in a year which is rather an unusual feature again.

The Technical Members of the Committee could not help forming the impression that major schemes of this nature had been rushed through without careful and adequate investigation and without a proper analysis of all factors from reliable data.

Discussions—

The Committee met in a Conference the following representatives of the Municipality, the Port Authority, Railways and the Caltex Refinery (list at page 113)

The representative from the Caltex Refinery made a pointed reference to the fact that the Company had been given a specific promise of a daily supply of 5 lakhs of gallons of a satisfactory quality and at a reasonable rate and that while the quantity supplied was only of the order of 2 lakhs of gallons, the rate demanded was rather high. Because of the inability of the Municipality to fulfil its earlier promise of a daily supply of 5 lakhs of gallons, the Caltex had been compelled to fall back on their own resources and develop a supply of an inferior quality of water from a local gallery within their compound and also build up a ground-level storage reservoir of 38 million gallons capacity, all these works involving them in an expenditure of Rs. 25 lakhs. The Caltex Refinery also represented that in recent months several Industrial Agencies had approached them for advice in regard to the local facilities for starting a Fertiliser Plant, Paper Manufacturing Plant etc. The Municipal authorities also said that there is a chance of a Cement Manufacturing Plant being established provided adequate water supply is available. The Port Authority complained likewise that shipping facilities at the Port would receive almost twofold expansion if they could undertake a guaranteed supply up to 4 or 5 lakhs of gallons per day. The Railways' requirements would be of the order of 4 lakhs of gallons.

There was a unanimity of opinion that provided adequate water supply facilities were guaranteed there was possibility of several Industrial Plants getting established at Visakhapatnam and that the absence of an adequate water supply in the area was a deterrent to the industrial expansion of the town. Those present urged the immediate necessity for augmenting the town's supply and bringing in an assured additional quantity of water for meeting all the possible industrial demands now and in the future.

Accordingly, the Committee inspected the Thatipudi dam site which has been proposed by the State Government for a comprehensive augmentation scheme for Visakhapatnam water supply. It was explained that with a dam thrown across the Gosthani river at Thatipudi, some 20 miles higher up the gallery point, the town would be able to draw a daily additional supply of 10 million gallons from the reservoir. This quantity will have to be conveyed by a 40 mile long pipeline (partly by pumping and partly by gravity) to the south-western part of the town for distribution to the several industrial plants and also to augment the town's supply. The scheme is estimated to cost roughly Rs. 4 crores.

The Committee was interested to note, however, that the estimate included centage charges of 15 per cent, amounting to nearly 53 lakhs. Since the bulk of the cost estimate comprises the cost of the pipe-line, the Committee felt that the levy of Rs. 53 lakhs centage on the scheme was unjustifiable. It was felt that the State Government should recover centages on the scheme only based on the actual expenditure.

While the need for the augmentation scheme from the Thatipudi dam was appreciated, the Committee felt that the scheme should at least now be phased out properly so that investments are not incurred far ahead of utility on any component.

The present population of Visakhapatnam was reported to be 1.68 lakhs which may reach the figure of 2 lakhs in the next few years. An ultimate figure of 3 lakhs to be reached in 1991 was suggested by the State authorities and the Municipality. A per capita rate of supply of 25 gallons was to be aimed at so that the Municipal demand for domestic supply immediately would be of the order of 50 lakhs of gallons and ultimately 75 lakhs of gallons. The State Public Health Engineering Authority was reckoning on a total daily supply of 150 lakhs of gallons all the year round from the Thatipudi source, Gosthani gallery source, Gambhiramgedda source and Mudasarlova source all together. It was necessary, however, to verify if and how far their expectations of a daily total supply of 50 lakhs of gallons from the latter 3 sources will actually be realised all through the year.

It was felt, however, that improvements and expansions to the City's distribution system must receive the highest priority in the next stage of improvements. It was explained that the Thatipudi dam and improvements to the distribution system will be taken up simultaneously. The Committee was told that the Thatipudi dam might cost about Rs. 80 lakhs while the City's distribution improvements has been estimated roughly at Rs. 35 lakhs. Until the 40 miles of conveying pipeline from Thatipudi was completed, water from the Thatipudi reservoir should be let down to saturate the river-bed layers upto Boni village so that the gallery could be made to yield 42 lakhs of gallons all the year round as originally contemplated. This will only be a temporary measure since saturation of the gallery 20 miles lower down the Thatipudi reservoir was not an economical proposition.

The Committee impressed on the Municipality and the State Government the need for augmenting the Municipal supply and placing the distribution system on a satisfactory basis without any further delay. The Committee also equally stressed the need for the Municipality taking up the Sewerage Scheme for the town which can bear no further postponement. The Committee was told that the sewerage scheme for the town is expected to cost Rs 1.5 crores and that plans and estimates are being got ready therefor.

The financial commitments involved would require special consideration. The Municipality has already been made to shoulder the total capital outlay of Rs. 116 lakhs on the gallery scheme. In addition, another Rs. 11 lakhs or so would be involved on the Gambhirangedda scheme. The Thatipudi scheme would involve a further outlay of Rs. 4 crores. Added to this, the Sewerage Scheme would mean yet another investment of Rs. 1.5 crores. *Prima facie*, the Municipality is unequal to the financial burden. Nor does the Committee see much logic in saddling the Municipality with a major water supply where bulk of the supply brought in was to be earmarked against industrial needs, present and future. It was also felt that the funds required for this major scheme should not be secured under the National Water Supply and Sanitation Programme except in so far as the Municipal supply augmentation was concerned. It was felt that the necessary finances required for the scheme should be secured from the different agencies likely to be benefited and the concerned Ministries sponsoring such industries in the area.

Rural Water supply—

The Committee also inspected certain rural water supply schemes under the National Water Supply and Sanitation (Rural) Programme where piped supply from local wells (either new wells or old wells) was given to the villagers under the Programme. It was gathered that the rural water supply scheme was found to be popular and utilitarian to the local people, the cost per capita varying from Rs. 12 to 20.

The Committee also inspected the work in certain Community Development block areas and had discussions with the Block Development Officers who explained the activities under the Community Development Programme with particular reference to the new pattern of Panchayat system and Zilla Parishads brought into being recently.

II. VISITS IN HYDERABAD

The Manjira Water Supply Scheme—

The Committee visited the Manjira Head Water Works proposed under the comprehensive water supply improvements to Hyderabad Corporation. The scheme is estimated to cost Rs. 3.75 crores and includes putting up a dam across the Manjira river near Sangareddi and conveying a supply of 18 m.g.d. over a distance of about 30 miles partly by pumping and partly by gravity. The State Engineering Authority had proposed to pump the water from the dam over a distance of 18 miles to Pattancheruvu where the raw water was to be put through a filtration plant, the filtered supply being pumped over a distance of 7 miles to a reservoir at the ridge at Lingampalli from where it will gravitate to Secunderabad, diverting bulk supplies en route at Sanat Nagar etc. to meet the requirements of industries expected to be developed in this area including the Synthetic Drug Factory, Tej Glass Factory, Jay Engineering Works, etc. The scheme envisages a first stage under which 18 m.g.d. will be conveyed out of which 11 m.g.d. will be diverted to industries en route and 7 m.g.d. to meet the demands of Secunderabad City and Cantonment areas, with another bulk supply to Chikkadapalli. The State Authorities had arranged already to procure the Cast Iron pipes for the pumping and gravity mains. The work on the dam was in progress as also that on the filter plant and the pump-sets.

On a review of the details of the scheme, it was felt however that the filtration plant for the scheme should preferably be located at Sangareddi instead of 18 miles away from the Head Works. Such a course would enable the filtered supply being given to Sangareddi town from out of the scheme without the need to go in for a supplemental scheme for the purpose. It would also avoid the need to pump raw water of the order of 4 lakhs of gallons over 18 miles against a total lift of 320' up to Pattancheruvu to be wasted there as wash water.

The details of the project were accordingly reviewed with the State Chief Engineer (PH) and after a detailed discussion of the pros and cons it was decided that the scheme would be modified on the following lines :

- (i) The first stage of the scheme would be designed to convey a supply of 20 m.g.d. instead of 18 m.g.d. leaving the second stage to convey a further supply of 20 m.g.d. This was better than 18 m.g.d. under a first stage and 22 m.g.d. under a second stage. The former proposal would facilitate complete duplication of the pumping and gravity mains, pump-sets and filterplants, so that interchangeability of parts between the different first and second stage would always be possible. It would also enable a better utilisation of certain components as between the reaches of the pumping main already procured for the first stage.
- (ii) The filtration plant would be located at Sangareddi instead of at Pattancheruvu.

- (iii) A low lift pump would be installed at the dam to lift the supply up to the filter plant at Sangareddi. High lift pumps already ordered would be installed at Sangareddi to lift the filtered supply up to Pattancheruvu. The next stage of pumping from Pattancheruvu to Lingampalli would also be modified suitably in order to get the best hydraulic arrangement for the pumping for the 2 different reaches between Sangareddi and Lingampalli.
- (iv) The gravity main from Lingampalli would be suitably redesigned in order to divert expected possible supplies for industries on route at necessary residual pressure.

It was explained that in case the Heavy Electrical Plant Industry was also to be located in the Industrial Area at Hyderabad, that industry would require a supply of 10 m.g.d. either as raw water or as filtered water at as cheap a rate as possible. It was understood from the State Engineering Authority that the supply of raw water under this scheme would actually cost of the order of 54 np. per thousand gallons whereas the filtered supply might cost 59 np. the difference being only 5 np. per thousand gallons. It was therefore considered unnecessary to locate the filter plant at an intermediate point which might facilitate giving the raw water supply to the Heavy Electricals at the location assumed for it at present.

Here again, the Committee gained the impression that in an endeavour to expedite the scheme in order to secure maximum advantage for the industries likely to develop round about Hyderabad, the technical features of the scheme had not received a complete and thorough scrutiny, including an examination of all possible alternatives with a view to selecting the most suitable and economical one. This has resulted in modifications being found necessary for the scheme, even after it was taken up for execution.

Discussions with State Officers—

The Committee met the State Government Ministers for Planning and Health in a Conference where the concerned Secretaries to Government and officers of the Engineering Departments were also present. The Secretary, Health Department explained to the Committee the urgent need for the 2 major projects for augmenting the water supply schemes for Visakhapatnam and Hyderabad because of the several factors involved, and requested that the Centre should allot a larger assistance for the State's schemes. As against their demand of Rs. 16 crores in the Third Plan for urban water supply and sanitation projects, the Centre had given them only Rs. 6.8 crores out of which 2 crores each had to be diverted for the Visakhapatnam and Hyderabad water supply projects, with another Rs. 1.2 crores reserved for spill-over schemes, leaving just Rs. 1 crore to meet new schemes which was very inadequate, to meet the pressing demands of several local bodies which have been clamouring for their water supply and sanitation projects. The State Government was thus in a very difficult predicament and it urged the Committee to impress on the Health Ministry and on the Planning Commission for increased allotments for such plans. It was also explained to the Committee that because industrial needs also form a considerable part of the water supply augmentation projects at Visakhapatnam and Hyderabad, the State Government had decided to ask these Local Bodies to float loans in the open market in order to supplement the financial allocation from out of the National Water Supply and Sanitation Programme.

In regard to the rural phases of the scheme, the Secretary to Government, Planning Department and the Engineering Officers explained that under the National Water Supply and Sanitation Programme, schemes had been making very good headway and the Organization was equipped to pursue the programme in the Third Plan but the omission of rural water supply from the National Water Supply and Sanitation Programme will operate as a severe handicap in this regard. To a question from the Committee, they admitted, however, that schemes completed under the National Rural Water Supply and Sanitation Programme had to be maintained by the Government only, as the villagers concerned were either unwilling or unable to shoulder the financial commitments even for the maintenance of such schemes. The State Government Secretary also explained that the provisions made under the Community Development Programme would not be adequate to meet the water supply needs of the rural areas. He pointed out that out of Rs. 50 crores allotted for the Third Plan under this head which included water supply, sanitation, buildings, roads etc., only Rs. 4 crores had been allocated for the first year of the Third Plan from out of which Andhra Pradesh would hardly get Rs. 38 lakhs. He wondered what the State Government could do with this meagre sum in order to further rural water supply facilities in the State. He also explained that contribution from the villagers against water supply schemes, was difficult to secure as they could not give Shram Dan or materials for these costly schemes, building a well being a special job in which a villager could not participate. In the case of building roads or even schools, they could contribute their share either in cash, labour or materials. This factor, again, was an additional handicap.

The Committee agreed that rural water supply deserved to be continued under the National Water Supply and Sanitation Programme and that the Planning Commission was already seized of the matter. They pointed out, however, that to continue rural water supply scheme as a

full charity work subsidised by the Centre and State Government might operate as a handicap in the long run as it might sap the initiative of the villagers seeing that schemes executed wholly as charity by the State and Central Governments were not even taken over by the beneficiaries (the villagers) for maintenance.

The Committee then went into certain details of the Gosthani water supply scheme and expressed the opinion that inasmuch as the scheme was intended to cater the Municipal and Industrial requirements on a 50-50 basis, it would be appropriate to secure finances for the scheme from the several agencies who would be benefited thereby, the Municipality being one of them, the Port Authority, the Caltex Refinery, the Fertilizer Industry, Paper and Cement Industries, all coming in for their proportional share in the development and management of the project. The State Secretary said that they would welcome any suggestion for securing the necessary finances required for the full scheme.

It was also discussed as to why the financial burden of the entire scheme should be placed on the shoulders of the Municipality when bulk of the supply from the scheme was to meet Industries. The financial resources and income of the Municipality as at present was apparently unequal to the burden imposed by this major scheme and although adequate return may be expected by the sale of water to the consumers after the scheme was completed and the full load was developed as contemplated, the time-lag involved before the Municipality could realise such revenues as would make the scheme self-supporting was bound to be large and indefinite. It was understood that in such a case the State Government might have to devise measures in order to see that the financial obligations under the project were met as anticipated.

The Secretary of the Committee then raised the issue regarding the tapping of the private sector for raising additional funds for water supply and sanitation schemes. He pointed out that on a rough estimate, the total cost of urban water supply and sanitation schemes awaiting accomplishment was placed at Rs. 1300 crores and that when the present rate of allocations under the Five Year Plans is of the order of Rs. 80 crores, it might take several decades for the completion of all urban projects. If such schemes were to make rapid headway in the future depending entirely on the Central Government and Planning Commission for financial allocations for each Five Year Plan may not solve the problem and it would be necessary for the State Governments to find additional moneys by raising loan from the private sector for such purpose. The Panel of the Planning Commission which had studied this subject had made specific recommendation that it was necessary and urgent that Regional Water Supply and Drainage Boards should be established in each State charged with the function of raising loans, planning water supply and sanitation projects as a self-paying industry and selling water in bulk to the constituent Municipalities at suitable tariffs so that the whole programme may receive adequate impetus. This would involve the floating of debentures and sale of shares for the purpose of urban water supply and sanitation schemes by Statutory Bodies set up by the State Governments for the purpose. Certain quarters had raised the question that inasmuch as the Five Year Plan of the country embraces all activities in the public and private sector and is based on a totality of resources assumed for the purpose, it may not be practicable to raise additional funds from the private sector from outside the Plan, since if this was possible it would mean that the Plan assumptions had been deficient to that extent. The Secretary wanted the reaction of the State Government on this question. The State Health Secretary replied to say that it was his impression that tapping additional funds from the L.I.C. reserves might not upset the Plan assumptions as the Five Year Plan did not take into account this factor. He agreed, however, that it may not be possible to raise any large scale loans for these schemes from outside the Plan provisions, but it may be possible to raise limited funds from local areas likely to be benefited by such schemes. The Health Ministry and the Secretary agreed, however, that this venue was worthwhile exploring in order to see that these schemes could be pushed through more vigorously in the future.

The State Government also explained that all activities in regard to the rural water supply schemes in the States were under the charge of the Public Health Engineering Department and only a few schemes coming in the non-Block areas were still managed by the Revenue Department with the assistance of the Minor Irrigation staff. The Deputy Secretary, Union Health Ministry suggested that it should be possible for these schemes also to be brought under the purview of the State Public Health Engineering authority. He explained that the absence of a unitary agency for the execution of such schemes in several States have resulted in paucity of data in regard to the progress of the schemes under the several agencies and no assessment was possible in regard to the work already executed or the work yet remaining to be done. The State Government said that the matter was worth examining.

The State Health Minister raised the specific issue whether the terms of reference to the Committee included any authority to revise financial allocations to the State Governments to meet their special needs and special circumstances and whether the Committee would place on record their view-point in regard to Andhra Pradesh. It was explained to him that the Committee's terms of reference were comprehensive and included specifically the financial implications relating to the entire programme and that the Committee would be happy to make positive recommendations in regard to the subject after studying the conditions in the other States also.

A list of those present is given below :—

1. Smt. Lurdhammal Simon, Chairman, N. W. S. S. Committee.
2. Shri M. K. Kutty, Member, N. W. S. S. Committee.
3. Shri K. S. Krishnaswamy, Member, N. W. S. S. Committee.
4. Shri N. V. Modak, Member, N. W. S. S. Committee.
5. Dr. N. N. Kailas, Member, N. W. S. S. Committee.
6. Shri S. Rajagopalan, Member-Secretary, N. W. S. S. Committee.
7. Shri P. V. G. Raju, Minister for Health, Andhra Pradesh.
8. Shri P. Ranga Reddy, Minister for Planning, Andhra Pradesh.
9. Shri L. N. Gupta, Secretary, Health, Housing and Municipal Administration Department, Andhra Pradesh.
10. Shri R. Vithal Rao, Joint Secretary, Health, Housing and Municipal Administration Department, Andhra Pradesh.
11. Shri C. Narasimham, Secretary, Planning Department, Andhra Pradesh.
12. Shri N. Veeraswamy Naidu, Additional Joint Secretary, Board of Revenue, Andhra Pradesh.
13. Shri R. Bala Pershad, Chief Engineer (Buildings, and P. H.), Andhra Pradesh.
14. Shri K. Subba Rao, Superintending Engineer (L. A. and P. H.), Andhra Pradesh.
15. Shri R. R. Thimmaji Rao, Dy. Chief Engineer (P. H.), Andhra Pradesh.
16. Shri S. A. Quader, Additional Secretary to Government of Andhra Pradesh, Public Works Department.
17. Shri S. K. Badrinath, Superintending Engineer, Investigation and Designs (P.H.).
18. Shri L. Venkatakrishnaiah, Irrigation Adviser and Consulting Engineer to Government of Andhra Pradesh.
19. Shri M. V. Suryaprakasam, Executive Engineer, M. W. S. Const. Divn. No. 2.
20. Shri D. Rajendra Kumar, Executive Engineer, Hyderabad W. W.
21. Shri Veenai Rai, Superintending Engineer, Headquarters Circle.
22. Shri G. S. Borgoankar, Superintending Engineer, Headquarters Circle.
23. Shri C. N. Sastry, Commissioner, Municipal Corporation of Hyderabad.

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1. Mr. J. J. V. Wilson, Actg. Garrison Engineer, Visakhapatnam.
 2. Mr. D. Berdine, Caltex Oil Refinery, Visakhapatnam.
 3. Mr. P. N. Trachy, Caltex Oil Refinery, Visakhapatnam.
 4. Mr. H. R. Tittsworth, Caltex Oil Refinery, Visakhapatnam.
 5. Shri Koppula Subba Rao, Superintending Engineer (L. A. and P.H.), Andhra Pradesh.
 6. Shri R. R. Thimmaji Rao, Dy. Chief Engineer (PH), Andhra Pradesh.
 7. Shri K. V. Subba Rao, University Engineer, Andhra University.
 8. Shri A. V. Bhanoji Rao, Chairman, Visakhapatnam Municipality.
 9. Shri P. S. Vasudevan, Commissioner, Visakhapatnam Municipality.
 10. Shri C. R. Reddy, Port Administrative Officer, Visakhapatnam.
 11. Shri J. B. Sastry, Hindustan Shipyard, Visakhapatnam.

MINUTES OF THE SEVENTH MEETING OF THE NATIONAL WATER SUPPLY AND
SANITATION COMMITTEE DURING ITS VISIT TO ASSAM

Details of inspection—20th to 24th April, 1961

(a) During its inspection in Assam State, the Committee went through the programme as under:

21-4-1961 —Leave Gauhati.

Arrive Dudhnoi.

Inspect water supply scheme at Dudhnoi area
Inspect Water Supply scheme at Mornoi and
Krishnai areas.

Back to Gauhati.

22-4-1961 —Inspect Gauhati Water Supply Scheme (8-30 hrs. to 10-30 hrs). To Shillong by 2nd Gate and arrive at Shillong at 14-30 hours. Discussions with Minister and other State Officers in the afternoon.

23-4-1961 —Inspect Shillong and Mawlai Water Supply Schemes—Visit rural areas. Upt Chirapunji and back.

24-4-1961 —Shillong to Gauhati by 1st Gate.

Inspect Water Supply Scheme at Bhoi area on way.

Arrive Gauhati—Forenoon.

Leave Gauhati—Afternoon.

All the Members of the Committee were present except Dr. Ram Subhag Singh, Shri H. C Mathur and Shri N. V. Modak who regretted their inability to attend the meeting.

(b) Details of inspections made:

(i) *Gauhati Water Supply Scheme*—A comprehensive water supply Improvements scheme for Gauhati estimated to cost nearly Rs. 1 crore is under execution. The scheme has been approved under the National Water Supply and Sanitation Programme and a loan of Rs. 45 lakhs has so far been sanctioned by the Union Ministry of Health.

The Committee inspected the site of the intake works on the Brahmaputra river and the treatment plant works under execution. It was noticed that the lay-out of the treatment work has been unduly cramped in an endeavour to retain a portion of the park area unutilised. This is a departure from the sanctioned plans and estimates. Greater elbow room should have been provided between the different components instead of crowding them all together as has been done.

The flocculator paddle arrangements seem to be based on certain arbitrary assumptions. The efficacy of the flocculator in operation will have to be examined.

Similarly the efficiency of the hydro-clarifier against a highly turbid influent during the monsoon season may call for close observation.

The location of the clear water tank in 2 chambers of rather shallow depths (4' and 7') under the filter-beds is neither a satisfactory nor an economical arrangement.

Generally the quality of workmanship and the finish of reinforced concrete work would admit of improvement.

The distribution system is still under design but bulk of the pipes required therefor has already been arranged for.

The general design features of the distribution system and the proposed zones thereunder were discussed on the spot and certain suggestions were offered for a readjustment of the different zones to effect greater economy in cost and efficiency in operation of the scheme. For this purpose it was suggested that the existing size for the ground-level service reservoir within the D. C.'s compound should be utilised to maximum advantage by providing a greater depth of storage, with a roof slab at ground-level to receive a lawn on top. The State Public Health Engineer has agreed to recast the entire distribution system on the lines discussed and adopt the suggestions made during the inspection.

This is a major scheme intended to serve an ultimate population of 5 lakhs at 30 gallons per head per day. The Treatment Works under progress at present will have a capacity of 10 m.g.d.

It was felt that with the present pace of expansion, Gauhati may assume major importance in the coming years to justify the magnitude of the water supply scheme now in progress.

(ii) *Rural Water Supply*—On the 21st, the Committee inspected rural water supply works in the Dudhnoi, Mornoi and Krishnai areas. In certain cases existing wells had been repaired and improved and covered over and provided with hand-pumps. In the Mornoi area, supply from a tube-well was pumped by an oil engine set into an overhead steel tank and distributed to the outlying villages through a limited distribution system. Only stand-posts have been provided to serve the villagers. It was understood that the cost of the piped water supply worked out to about Rs. 18 to 20 per capita.

As such piped water supply systems have been completed only recently, the State Public Health Engineering authority has not yet come face to face with the practical difficulties in the maintenance of such systems.

(iii) On the 22nd and 23rd, the Committee inspected the Mawlai and Shillong water supply systems.

The Mawlai local Committee presented a welcome address to the Committee Members on the 22nd evening setting out their difficulties in getting adequate and satisfactory supplies from the limited scheme already completed and praying for the Committee's good offices to persuade the State Government to relieve the shortage in many of the wards and to overcome the existing difficulties in the division of water between Bara Bazaar and Mawlai areas.

The meeting brought out the welcome feature that the local community is acutely aware of its water supply problem and is anxious to do its best to improve the situation. There was a representative gathering at the meeting and popular interest and enthusiasm was displayed in regard to the local water supply problem.

The Shillong water supply improvements which are in progress under the National Water Supply and Sanitation scheme include the construction of additional service reservoirs and improvements to the distribution system. The Committee felt that the site of the service reservoirs at Bara Bazaar could be kept in a more sanitary and presentable condition, with a fence thrown around the site. The quality of workmanship, as noticed from the reinforced concrete reservoirs completed, would also admit of improvement.

It was represented to the Chairman of the Committee by local citizens that North Gauhati though so near to the flourishing city of Gauhati, still suffers from an acute dearth of drinking water and that it was necessary that effective measures should be taken to provide this area with a satisfactory and safe water supply.

(c) *Discussions*—On the 22nd afternoon, the Committee met the State Health Minister Secretary to Government, Health and L.S.G. Department, and other Officials at a Conference.

The present status of water supply and sanitation projects in the State, both urban and rural, the magnitude of the problem, and their future plans were all discussed informally, with a view to exchange ideas on these important subjects. The following is a summary of the discussions held:

Proformae data—The proformae sent out by the Committee have all been filled in an incomplete manner by the State Public Health Engineering Authority as they have not adequate information in regard to many of the points on which information was sought. The details furnished in respect of the rural water supply and sanitation programme are neither correct nor complete as there is no coordination with the other Departments handling this programme. The quantum of work carried out so far has been based on some rough approximation assumed after a discussion with the department in charge of the Community Development and Health Programmes. It was explained also that inspite of repeated reminders to these several authorities to furnish the information, they had not complied with the request and so the proformae had to be filled as best as was possible in the absence of authoritative data. The Committee felt that this was not quite a satisfactory procedure and desired that the State Government should furnish more complete and upto date data in regard to the proformae.

Urban—There are 41 urban units in the State comprising 19 Municipal Boards and 22 Town Committees. Their total population according to 1961 census is about 3.9 lakhs.

Out of these 41 towns only 11 towns have some sort of public water supply systems. Excepting in 3 towns, the existing systems in the other 8 towns are hopelessly inadequate to meet current and future demands.

None of the towns in the State has any sewerage or drainage system.

Rs. 10 crores is the rough estimate of cost by the State Public Health Engineering authority to provide adequate safe water supply and sanitation facilities in all the towns.

The State Government advances only loans to the Municipalities for their water supply schemes. Loans are sanctioned only after examination of the Municipal finances and after getting their concurrence to maintain the schemes. The Government also examine if the scheme can be self-supporting and if additional connections will fetch any sizeable revenue or if general revenues can subsidise the Municipal water supply scheme. All the same, Municipalities do default in the repayment of their obligations. Municipal revenues being inelastic, the State

Government Secretary and the Minister consider that some help is necessary to enable Municipalities to prosecute their water supply and sanitation schemes. But the State Government is not in a position to give any such help from its own resources. The State Government feel that if Municipalities are to be given grants for such schemes, it would be reasonable to give a 50 per cent grant for communities of less than 20,000 and a 25 per cent grant for communities greater than 20,000 population.

The State Government have not made any assessment of the size of the problem. Out of a total urban population of 8.9 lakhs, they estimate that only a population of 40,000 has an adequate water supply at present. A further population of 2.13 lakhs may be said to have a partial water supply system, a smaller population of 5,300 is said to have a skeleton water supply whereas some 6.5 lakhs of urban population is yet to be provided with water supply systems altogether.

Assuming that water supply and sewerage facilities would cost about Rs. 120 per capital a sum of Rs. 7.5 crores would be necessary to provide the 6.5 lakhs of population with water and sewerage systems. In addition, about 2.1/2 crores will be required further, to provide sewerage facilities for the remaining 2.4 lakhs of people apart from improving their existing water supply systems. The total forecast of Rs. 10 crores to indicate the magnitude of the problem has been based on these premises.

Municipalities at present have to initiate and prepare their own schemes. They are given the freedom to utilise the services of private Consulting Firms also for the purpose. There have been instances of Municipalities getting some water supply schemes prepared through the agency of Private Firms who deal with water treatment plants. The State Public Health Engineering Department is now gradually taking over these functions.

Applications from Municipalities for loans to execute their schemes are scrutinised by the State Government. The State Public Health Engineer carries out the technical scrutiny if any other agency was employed to prepare the schemes. The loan applications are then published by the State Government for eliciting any objection from the public thereto. The loan repayment capacity of the Municipal budget is also examined by the Government before a loan is sanctioned. The execution of the schemes is either entrusted to the Public Health Engineering Department or to other agencies under the supervision of the Public Health Engineering authority.

Many of the Municipalities do not have Municipal Engineers. The State Health Minister and Secretary agreed in the suggestion of the Committee that a separate Public Health Engineering Design Wing under the Public Health Engineering Department would be useful for advance preparation of municipal schemes. Referring to the urban workload of Rs. 10 crores awaiting accomplishment, they expressed the opinion that under a planned programme it would be desirable to complete all urban water supplies within a 10 year period and all urban sewerage systems within a 20 year period. The concept of water supply and sanitation schemes being undertaken as a self-supporting industry has not been given much consideration yet in the State. But the State Health Minister and the Secretary said that the State Governments cannot raise the loans and that the Centre would have to play a leading role in the matter.

Rural—The Rural population according to the 1961 census was reported to be roughly 101 lakhs distributed over some 25,000 villages.

Prior to 1959 the rural areas were under the orbit of the district boards and the local boards under the L. S. G. Act.

Panchayats have now taken their place, "Mahakumas" as they are called.

Block Panchayat committees are the successors of the local board panchayats. 10 per cent of the land revenue as well as moneys realised through cycle tax, cart tax, markets, small ferries, restaurants, etc. form the only financial resource for the panchayat.

For each Community Development block, the money available for a water supply is just Rs. 10,000 per year and Rs. 5,000 for sanitation. Additional funds of a limited nature are also available from Local Development funds and Tribal Welfare allotments, but all these cannot meet even a fraction of the total needs in regard to rural water supply and sanitation facilities.

Only 84 blocks are now covered out of the 162 Community Development Blocks envisaged for the entire State. The status of rural water supply in these 84 Community Development Block covered areas could be furnished but it will be difficult to furnish any information in regard to the non-Block areas.

The State wants roughly Rs. 15 lakhs for piped water supply in certain rural areas other than the spill-over schemes. But no funds have been provided in the Third Plan for rural water supply under the National Water Supply and Sanitation Programme. The State Government was advised to make out a case for additional allotments for piped water supply under the Third Plan.

It was understood that Block level panchayats (Anchalik Panchayats) can afford to shoulder the responsibility for maintenance of piped rural water supply schemes.

A central maintenance staff, however, was needed to think out details of requirements before hand and to arrange for spares to manage routine inspections and to ensure proper maintenance as also to undertake special water supply and sanitation facilities for markets, fairs and festivals, bus-route main stations etc.

About 3,500 hand-pumps have been installed so far and all of them are reportedly in working condition.

According to the Secretary in charge of Development and Planning, roughly 70 per cent of the rural population is yet to be provided with any satisfactory safe water supply leaving alone sanitation facilities. It is estimated that the total cost of rural water supply yet to be expanded is roughly of the order of Rs. 14 crores. The problem posed before the State Government is how to get Rs. 4 crores for urban water supply, 6 crores for urban sewerage and 14 crores for rural water supply required to cover the entire State.

Would a water cess be feasible? But people may not pay a cess unless there was a piped water supply in return. It is a difficult problem according to the State Government.

The Committee wanted the State Government to have a comprehensive picture prepared for the entire requirements—urban and rural—and indicate within how many years the rural water supply should be covered. A proper phasing out the programme should be indicated. Proper selection and promotion of such schemes will invoke popular enthusiasm. In fact, it was pointed out that in Gujarat and Maharashtra, people are now coming forward with 50 per cent of contribution against the cost of water supply systems, which is an indication of the popular support such essential facilities are likely to receive if the proper approach was made by the authorities in charge of the programme.

Organisation—The Committee stressed the need for setting up the Public Health Engineering Department as a permanent entity extending to its officers all concessions and privileges enjoyed by other Departments so that the service conditions would be the same throughout. Unless this is done the Public Health Engineering Departments may not be able to attract and retain the pick of men.

There should be Municipal Engineering Service integrated to the Public Health Engineering Department. Rural water supply and sanitation would also come under its wing. Advance survey, investigation and preparation of plans and estimates should form an important function of the department and there should be always a progressive forward planning to achieve set targets under a planned total programme.

Committee's future itineraries—On the 24th the Committee discussed the question of the further work remaining to be done, the inspections yet to be made and the desirability of submitting a report before the 31st December, 1961. The following programme was tentatively decided upon for the remaining inspections to the States.

May	..	..	..	Jammu and Kashmir
June	..	..	..	Mysore or Himachal Pradesh
July	..	..	..	Bombay and Gujarat
August	..	..	..	Bihar
September	..	..	..	Orissa
October	..	..	..	Uttar Pradesh
November	..	..	..	Punjab and Rajasthan
December	..	..	..	Madhya Pradesh

During the Committee's proposed visit to Kashmir in May or June, it was decided to have interim discussions for tentative ideas so that the Secretary might take up the drafting of the Report. The Committee also took note of the fact that from October onwards the Union Health Ministry and the State Governments would be busy in New Delhi for discussions regarding the Plan provisions for the next year.

MINUTES OF THE EIGHTH MEETING OF THE NATIONAL WATER SUPPLY AND SANITATION COMMITTEE DURING ITS INSPECTIONS IN JAMMU AND KASHMIR BETWEEN THE 6TH AND THE 11TH JUNE, 1961.

The Committee arrived at Srinagar on the 6th afternoon. The following was its itinerary during its stay in Srinagar.

6-6-1961.

Afternoon—Preliminary discussions with the State Development Minister and his officials.

7-6-1961.

Morning—Inspections of Srinagar Water Supply system—Chashmashahi, Nishta, Harwan Reservoir and Drapahama.

Afternoon—Ganderbal, Tulamulla, Manshbal Lake water supply systems.

8-6-1961.

Morning—Inspection of Rural water supply systems at Pampore, Awantipore springs, Bijbehara, Anantnag, Achhabal, Akingam Villages, and Kokarnag springs.

Afternoon—Mattam Karewa, Bawand and Pahalgaoon villages.

9-6-1961.

Inspection of water supplies at Tangmarg, Gulmarg and Narbal.

10-6-1961.

Water Supply systems at Sumbal, Shahgund, Sadurkur, Bandipur, Sanderbani, Watlab Sopore and Baramulla.

11-6-1961.

Morning—Inspection of Srinagar City Drainage and Sewerage system including Saraibala, Khudbal, Nawabazaar and Nalarang areas.

Forenoon—Discussions with the State Government officials and the Development Minister.

Afternoon—Return to Delhi.

I. The following is a summary of the details noted during the several inspections :

(1) *Nishta Treatment Plant*—Supplies water to Srinagar City. The Candy's old filter plant was designed for 2 m.g.d. There were two filters each 470 sq. ft. receiving water direct from the irrigation canal, with a dose of alum feed and passed through a baffled channel before entry into the filters. The arrangement is crude and not conducive to floc formation and effective sedimentation, ahead of filtration. The filter launder is at one end of the length of the filter which again is not a satisfactory arrangement. There was no basis on which alum dose was added and its efficiency observed. The clear water reservoir receiving the filtrate is not apparently maintained in a satisfactory condition judged by the unclean condition of the ventilators and the unkempt nature of the garden over the reservoir site.

(2) The recent additions to augment the treated supply was completed by about 1959. Candy's have put up a battery of 4 filters of the same size to deal with 4.8 m.g.d. The rate of filtration is reportedly 120 gallons per sq. ft. The Hopper type settling tank ahead of the filters receives the water from the closed masonry conduit, with alum solution pumped up. It is not clear why the alum dosing arrangement should have been located at a lower level and pumping of the solution resorted to. The Operator in charge of the plant stated that the alum dosing is 1.5 to 1 grain per gallon. But there was no basis on which he would judge and assess the dosage, much less observe the results. As such the maintenance of the plant leaves very much to be desired.

3. The Department have received tenders for a new filter plant for 6 m.g.d. from the Sindh Nallah source (proposed North western plant). The site for the filter plant has been selected on an elevated mound near the raw water canal from the Sindh. It was observed that the water at the forebay and in the canal is very turbid with a high content of settleable fine while silt. Obviously pre-sedimentation and pre-conditioning of the water before chemical dosing and coagulation at the new treatment plant site is indicated. The Chief Engineer said that he would bring up the details for consultation before a decision is taken on the new treatment works.

4. *Pampore*—Population—6,000 to 7,000. Water from Jhelum is drawn through 3 different level pipes into a sump-cum-sedimentation basin and pumped up again through centrifugal pumps housed in a depressed basement pump-house on to sedimentation basins of 40,000 and 50,000 gallons capacity masonry tanks at and below ground-level (with side-walls supported by buttresses), the settled water drawn into a ground-level coagulating basin with alum solution dropped into an influent channel. The clarified effluent is drawn on to a pair of slow sand filters

with a complete tiled roofing on top; the filtrate is drawn into a clear water reservoir with a clear water pump-house located on the roof slab. The whole arrangement is very expensive and can lend itself to better efficiency and greater economy.

5. *Bij Behara*—Population 3,000 to 4,000. Inspected an existing stand-pipe in the village. The water source is a spring. The spring is about 2 miles from the village, enclosed in a masonry house surrounded by an earthen embankment to protect against floods from the adjacent branch of the Pahalgaoon river. The spring is surplused out through a sluice in the protecting bund. The spring water is drawn and pumped up through 2 centrifugal pumps. The pump-chamber and the pumps and the entire premises suffered from indifferent maintenance.

6. *Anantnag*—Population 15,000+Khanabal Population 3,000. Draws its supply from oozings along the foot of the hillock which are tapped by a conduit on the lower periphery leading the supply into shingle-filled filter chambers from where the supply is drawn into a ground-level service reservoir and gravitated to the town. The oozings are probably inadequate and so they are extending the length of their intercepting conduit along the base. The supply is proving to be inadequate for the town, of late, with industrial estates springing up and so the demand even at the head of the distribution system is increasing, so much so, Khanabal village which is some 2 to 3 miles north and at the tail-end of the Anantnag distribution, is experiencing water scarcity. They are thinking of augmenting the supply at Anantnag source as also harnessing oozing sources at Achhabal which will be some 6 miles from Khanabal, which will be a gravity supply, though the head available may not be much. As an alternative, they have only the canal water supply, non-continuous throughout the year in Khanabal or River Jhelum from which they will have to filter and pump. The Chief Engineer prefers gravity supply from a distant source because of the initial purity of the water, and lower maintenance costs.

7. *Anantnag Spring*—There are copious springs in Anantnag itself, in the heart of the town, but the water is not being utilised for developing a potable supply, for fear of interfering with existing rights. Anantnag springs are said to be famous throughout the country.

8. *Akingam*—Village between Achhabal and Kukarnag draws its supply from a tank constructed under the Community Development work for water supply. The Department built up a tank for storing water and to distribute it through a few taps. The tank dries up in summer and is heavily algae-laden. The people, it is reported, demand tap-supply from the Bringhi Nallah higher up the mountain. The Chief Engineer proposes to gravitate the supply from the Kokarnag springs in the mountains and supply the villages *en route* over 6 miles. The Achhabal springs will supply the water for the local town and up to Anantnag, 6 miles lower down and possibly upto Khanabal.

9. *Kokarnag*—16 miles from Achhabal has natural springs issuing out of the mountains. The spring waters attract quite a number of visiting population. The proposal is to harness the spring waters and gravitate the supply to the villages lower down upto Achhabal.

10. *Narbal village water supply scheme*—It was reported that a population of about 5,000 is resident in a number of villages within a mile square area. Local water supply at present is an open channel tributary from an irrigation system liable to very heavy pollution. A few tube wells with hand-pumps installed in the village have not proved successful partly because of unsatisfactory quality of supply and of the pumps getting into disorder. The Chief Engineer agreed that it might be worthwhile developing a safe supply from the major irrigation canal which flows nearby about 1/2 mile from the village by throwing an infiltration gallery in the river-bed, providing a pumping station with a conveying main, and distributing the supply to the village populations at suitable points. He also said the same idea could be developed for similar groups of villages scattered about in the same area.

Sanitation is in an unsatisfactory state. People are invited to defecate in wooden enclosures put out into the field by interested owners the feacal matter collecting on the ground below the structure for use on the fields by the owner. During winter the matter is allowed to accumulate for months before it is taken out as manure.

A crude open well had been put up adjoining a pond for drawing a supply for a local Mosque in the village. The source and the well are liable to heavy pollution.

11. *Shah Gund*—Village with a population of roughly 1,000 is typical of several similar villages bordering the Wullar lake. It is reported that 80,000 is the population of these villages in the entire area, of which some 60 per cent is said to be without any safe or satisfactory water supply. Wells in the area are reported to yield brackish water. The villages bordering the lake are also put to difficulty when the lake water recedes by 3 to 4 miles when the water level goes down. The Community Development block comprising this area gave first priority to food and agriculture dealing with a water-logged areas as well as dry lands.

The potentialities of tube wells in these areas to serve a number of villages are yet to be explored. All the same, extensive exploration with the tube wells would be desirable before this alternative is to be ruled out.

A second alternative is that adequate storage could be drawn into separate tanks constructed for each village in which fresh water from the Wullar lake would be stored to tide over the scarcity area. A safe supply from these storage tanks could be developed by throwing a gallery at a corner with a collecting well and handpumps. The Chief Engineer agreed that this idea would be worth trying.

11. *Hajan village*—is one of the typical villages on the Jhelum river for which a safe supply could be made possible by an infiltration well or gallery in the river-bed.

2. *Ajas village*—is supplied with spring water from nearby springs at the slope of the mountains and pumped up.

13. *Nadihal village*—with a population of 2,000 could be served by pumping a supply from a spring lower down at the foot of the hills or by gravitating a supply from the Nallah 2 miles distant after providing a filter basin.

14. *Bandipore*—village with a population of about 5,000 gets the supply from the springs higher up, through a gravity main, the supply is less than 5 gallons per head per day.

15. *Sopore town*—with a population of about 15,000 has its supply gravitated from the Watlab hill springs through cast iron mains 7 miles long.

16. *Baramulla* has about 4 to 5 gallons per capita supply drawn from 4 different springs on the hills. It is reported that about 17,000 population get this meagre supply while over 5,000 are unserved yet. River Jhelum flows near the town.

II. DISCUSSIONS ON THE 11TH JUNE 61 WITH STATE OFFICERS.

Public Health set up in the State—There is a Director of Health Services in charge of Medical and Public Health. There is no separate public health department. The Chief Engineer, Irrigation, is in charge of urban and rural water supply in the Kashmir valley while the Chief Engineer, Mechanical and Electrical, is in charge of water supplies in the Jammu area. Minor public health engineering works under the Community Development programme are being carried out with the help of an engineering sub-division loaned by the Irrigation Department for the purpose. There is no Public Health Engineering Department or Wing or Unit yet established in the State. The only M.E. (PH) trained Engineering Officer in the P.W.D. is on an irrigation assignment. An Executive Engineer of the P.W.D. with civil engineering qualifications and irrigation experience has been placed in charge of a special division to draw up a drainage and sewerage scheme for Srinagar City. The Irrigation Divisions under the Chief Engineer carry out both irrigation and water works execution.

Srinagar City—A Municipal Committee is functioning. A Municipal Health Officer and an Engineer carry out the health and engineering functions in the Municipality. The Health Officer has under him 9 Ward Officers, 9 Sanitary Inspectors, 61 Sanitary Supervisors and 951 Scavengers. Night soil collection, conveyance and trenching as also composting to a small extent, is being done with this scavenging staff. There is a Compost Officer and Compost supervisors also detailed for the purpose. Sullage from houses is allowed to collect through street drains discharging to local cess pools for each Mohalla. Several Mohallas have large cess-pools receiving sullage without adequate outflow arrangements. Night-soil from houses is also allowed to be collected by villagers to keep it for about 4 months in the field for use as manure. It is stated that this arrangement is also under the supervision of the Municipal Health Officer.

Guinea worms is said to be endemic in certain areas. In 1930, a drainage scheme was started for investigation and a sullage cum storm water sewer was laid for about a length of 2-1/2 miles. The idea was to pump this sullage across the river Jhelum for land irrigation but before the work was executed, the Organisation was wound up. The sullage from the sewer is now pumped into the river.

The investigation of a comprehensive drainage scheme for Srinagar City has now been sanctioned and a special division has been put in charge for the purpose.

The epidemic of Cholera in November '60 was said to have been traced to a boathouse in the river. The epidemic was carried up to Baramulla and beyond.

The Municipality is not in charge of the water supply system in the City, but it is the Irrigation Department who maintain the scheme and also collect house service charges and carry out improvements to the scheme. There is no tax levied for the water supply and drainage. The State Government seems to feel that the people should not be taxed for the purpose.

Industrial wastes flow into the river. All waste waters and effluents find their way into the river without any check or control. For the starting of new industries, there is no need to consult the Health Department; in fact there is no Health Department to consult with.

There is no coordination between the different authorities in the Municipality and in the Government—Health, Irrigation, Buildings etc. The officers, however, are reportedly holding mutual consultation on problems.

III. DISCUSSIONS WITH THE DEVELOPMENT MINISTER :

The Chief Engineer, Irrigation, Chief Engineer, Electricity, Municipal Engineer, Executive Engineer-Special Division, Director of Health Services, and Secretary, Development Department were present. The Minister explained that Srinagar water supply as at present existing was not adequate, and serious shortage was felt in different areas. A new scheme is under way and the main difficulty is not want of funds but difficulty in procurement of pipes. In the interests of the country and to attract foreign tourists, priority for pipes should be given by the Centre. It was explained that certain pipes required for the improvements scheme will not be delivered till 1967. The State Government cannot afford to wait until such time.

Jammu has certain improvements schemes in progress, but Srinagar is still in slums. It is proposed to request the Centre to lend a Public Health Engineering Expert to draw up a Master plan for Srinagar Water and Sanitation projects. An Executive Engineer has been entrusted with the work now under the Chief Engineer Irrigation to draw up the improvements schemes. The State Government is trying its best to prepare a Master Plan and to develop, but the State Government needs direct central assistance.

In 1947, the State Government's income was 450 lakhs, it is now about 1,750 lakhs. They had only 250 schools in 1947 which is now increased to 2,500. So, the State Government have a problem in grappling with around developmental activities and need Central assistance to help them out.

According to them, if Calcutta could not be developed on its own resources, Srinagar can hardly do it without Central assistance.

Shri H. C. Mathur stated that although water supply and sewerage have to be treated as a single problem theoretically, sewerage has been neglected because of several limitations. Taking the water supply for Srinagar City, it is stated that the entire City except 25 per cent of the area is now covered by water supply. The per capita rate ruling at present is about 25 gallons per day which is fairly high. In regard to the augmentation of the supply, one would say that the present position is not very alarming but probably the defect lies in the unequal distribution of the available supply. The urgency therefore may be to redesign the distribution more than to give any additional supply.

The Chief Engineer explained that large demands have come up at the tail-ends of distribution system and so redesigning the entire system is no doubt required. All the same, he thought that a 25 gallons supply would not be sufficient for Srinagar and that the comprehensive scheme should be designed at least on a 50 gallons basis.

The Member-Secretary pointed out that in most of the North Indian towns, schemes were designed on the basis of 30 to 40 gallons per capita, and it may be over-liberal to provide a 50 gallon scheme for Srinagar, particularly when a large percentage of the City population draws its supply from stand-posts in the crowded areas of the City. Barring some houses, it would be impractical to expect a 50 gallon supply being drawn by the inmates of each house. A liberal supply would be practical only when improved housing conditions and higher standards of living make it possible for the consumer to draw all his requirements through his own tap, and utilise the full quantity through his plumbing fixtures as intended.

It was felt that a 40 gallon supply was more than sufficient for a comprehensive scheme and any reserve capacity required could be provided in the presumed future population rather than on the per capita rate of supply.

The Committee agreed that central technical advice can be given whenever sought in regard to allocation of steel and pipes, the demands for the scheme being phased so that there is no idle stock held for any scheme holding up progress of more urgent schemes elsewhere.

The Minister agreed that the existing sanitary conditions in the City were not satisfactory. The topography of the City is like a cup and everything finds its way into the City and into the Jhelum. A Master Plan is under the active consideration of the State Government. The State Government is considering the question of a Public Health Engineering Organisation.

Shri Krishnaswamy pointed out the need and desirability for having a designing unit under the Chief Engineer. He also suggested the desirability of coordinating the Public Health Engineering Works now being done under the P.W.D., Electricity Department and others.

Col. Barkat Narain suggested that the Director of Health Services should be more closely associated with the Municipal and other agencies in charge of health and public health engineering works, both at the State and at the district level, so that responsibility for health aspects can be better shouldered.

Shri Krishnaswamy also suggested that the Director of Health Services could be associated with the Municipal Committee as also the Chief Engineer (Irrigation) and others. The Minister said he would have this matter examined.

Dr. Kailas said that it is better to devise measures before hand to control the quality and discharge of industrial and trade effluents in public water courses. The Public Health Engineering Organisation should be invested with powers for the purpose.

The Development Secretary repeated that the State Government wanted an Expert Public Health Engineer from the Centre on deputation to draw up a Master Plan for the sewerage scheme and other improvements scheme for Srinagar.

The Member-Secretary drew attention again to the lack of an adequate nucleus or unit of Public Health Engineering trained staff to deal with water supply and sanitation projects and suggested that engineers and subordinates in the different grades should be got trained every year systematically until an Organisation could be built up of trained men with competence and experience to deal with public health engineering problems in an increasing magnitude in the future years. He also pointed out that it was highly desirable that an advance investigation unit is detailed to make a total water resources survey and utilisation programme for the rural and the semi-urban areas in the whole State, so that future schemes could be drawn up on a more satisfactory and reliable data than hitherto, and so that schemes could also be proceeded with as part of a comprehensive programme instead of in piecemeal stages, without a complete picture. The State had enough facilities by way of water resources for all the urban and rural areas, but what is required is an advance investigation in order to make a full and correct inventory of all available resources and the present needs and future requirements, for urban and rural water supply and sanitation projects.

The Minister and the Secretary to Government agreed to look into this aspect of the question.

The discussion then centered round the high cost of haulage that the State Government as to pay on material for their transport from Pathankot to Srinagar which adds to the cost of schemes and affects the resources available under the programme. It was understood that the construction of a Cement Factory is in progress which may go into operation some 4 years hence. In the smaller schemes, it may be worthwhile to have spun concrete pipes made locally, instead of transporting cast iron pipes at a high cost. The Chief Engineer agreed that comparative costs of haulage will have to be worked out in order to decide on the most economical arrangement needed for each case.

The Committee was requested to visit the Jammu area for a couple of days in September or October, so that the different nature of the problem in that area could be understood and appreciated.

33618

APPENDIX III

PROFORMA 'A'

PROFORMA FOR URBAN WATER SUPPLY ASSESSMENT

	Corporation Towns	Municipal Towns	Panchayat Towns
1. (a) No. of units
(b) Population
2. Towns having both water supply and sewerage*			
(a) Number
(b) Population
3. Towns with adequate water supply only†			
(a) Number
(b) Population
(c) Per capita rate of supply
(d) Per capita cost
4. Towns with partial water supply‡			
(a) Number
(b) Population
5. Towns with skeleton water supply §			
(a) Number
(b) Population
6. Towns without any organised water supply||			
(a) Number
(b) Population
7. Existing schemes under improvement and expansion			
(a) Number
(b) Population to be served
(c) Estimated cost (Rs. lakhs)
(d) Expenditure incurred (Rs. lakhs)
8. New schemes in progress			
(a) Number
(b) Population to be served
(c) Estimated cost (Rs. lakhs)
(d) Expenditure incurred (Rs. lakhs)

*The information sought is about the number of towns with both water supply and sewerage, even if they are in need of improvements.

†Indicate under (c) different per capita rates of supply if obtaining and under (d) the average per capita cost of schemes.

‡Indicate towns where the water supply serves a part and not the full town area.

§Indicate towns where an advance or pilot scheme is in operation in the absence of a full-fledged scheme.

||Indicate towns without any protected piped supply.

PROFORMA 'A'—contd.

	Corporation Towns	Municipal Towns	Panchayat Towns
9. Schemes for which preliminary surveys and estimates are available			
(a) Number
(b) Population
(c) Estimated cost (Rs. lakhs)
10. Remaining schemes yet to be investigated*			
(a) Number
(b) Population
(c) Estimated cost (Rs. lakhs)
11. Rate of subsidy, if any, by State Government†			
(a) For new schemes as at present
(b) For improvements to existing schemes as at present
(c) Any suggested change
12. (a) Expenditure incurred during I Plan			
(b) Expenditure incurred during II Plan
(c) Funds proposed for III Plan
(d) Funds required to complete remaining water supply schemes

*The figure under (c) may be based on per capita cost derived from similar schemes.

†Under (c) suggest any changes advocated for future schemes.

PROFORMA 'A'—contd.

PROFORMA FOR URBAN SEWERAGE

	Corporation Towns	Municipal Towns	Panchayat Towns	
1. (a) No. of units
(b) Population
2. <i>Towns with complete sewerage</i>				
(a) Number
(b) Population
(c) Average per capita cost of the schemes
3. <i>Towns with partial sewerage</i>				
(a) Number
(b) Population
4. <i>Towns with open drains and intercepting sewers</i>				
(a) Number
(b) Population
5. <i>Towns with Open Drains only</i>				
(a) Number
(b) Population
6. <i>Towns without any drainage system</i>				
(a) Number
(b) Population
7. <i>Existing schemes under Improvement and expansion</i>				
(a) Number
(b) Population to be covered
(c) Estimated Cost (Rs. lakhs)
(d) Expenditure incurred (Rs. lakhs)
8. <i>New Schemes in progress</i>				
(a) Number
(b) Population to be covered
(c) Estimated Cost (Rs. lakhs)
(d) Expenditure incurred (Rs. lakhs)

PROFORMA 'B'—contd.

Corporation Towns	Municipal Towns	Panchayat Towns
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9. Schemes for which preliminary surveys and estimates are available.

(a) Number
(b) Population	..	..	..	..
(c) Estimated Cost (Rs. lakhs)			..	..

10. Schemes yet to be investigated

(a) Number	..	..	..	..
(b) Population	..	..	..	..
(c) Estimated Cost (Rs. lakhs)			..	..

11. Disposal of sewage by mechanical treatment Plant

(a) Partial	..	..	..	..
(b) Complete	..	..	..	..

12. Disposal of sullage and sewage on sewage farms

(a) Partial	..	..	..	..
(b) Complete	..	..	..	..

13. Disposal of sullage and sewage by discharging into drainage courses, sea etc.

(a) Number	..	..	..	..
(b) Contributing population			..	..

14. Rate of subsidy, if any, by State Government

(a) For new schemes as at present	..	..	..	..
(b) For improvements to existing schemes as at present	..	..	..	..
(c) Any suggested change	..	..	..	..

15. (a) Expenditure incurred during I-Plan	..	..	..	..
(b) Expenditure incurred during II-Plan	..	..	..	..
(c) Funds proposed for III-Plan	..	..	..	..
(d) Funds required to complete the remaining drainage schemes	..	..	..	..

PROFORMA FOR FINANCING OF URBAN SCHEMES

PROFORMA 'C'

I.—WATER SUPPLY POSITION

1. Name of Town
2. (a) 1951 census population
 (b) Population served by protected water supply
 (c) Additional population to be covered by schemes in progress, or yet to be taken up.
3. *Per Capita* rate of supply
 (a) as designed
 (b) as operating
4. Cost of :
 (a) Works already installed
 (b) Works in progress
 (c) Works yet to be taken up for which preliminary surveys and estimates are available.
 (d) Works yet to be taken up for which no data is available.
 (e) Total capital investment for complete schemes [total of items (a) to (d)].
5. Rate of subsidy by the State Government and suggested change, if any, for future works

II.—DETAILS OF SEWERAGE AND SEWAGE DISPOSAL

6. Population covered by :
 (a) Area, if any, with a complete sewer system
 (b) Area with a partial sewer system (open drains and intercepting sewers).
 (c) Area with open drains only
 (d) Area without any drainage system
7. Cost of :
 (a) Works already installed
 (b) Works, if any, in progress
 (c) Works yet to be taken up for which preliminary surveys and estimates are available.
 (d) Works for which no data is available
 (e) Total capital investment for complete scheme [total of items (a) to (d)].
8. Treatment and disposal of sewage :
 (a) Details and capacity of mechanical treatment Plant
 (b) Extent of sewage farm and sewage treated
 (c) Other methods of disposing sewage if practised
 (d) Composting and trenching—percentage of contributing population
9. Rate of subsidy by the State Government and suggested change, if any, for future works

III.—PARTICULARS OF FINANCE

10. Year of installation :
 (a) Water Supply system
 (b) Sewerage system
11. Total capital investment involved on :
 (i) Water Supply
 (ii) Sewerage
 [vide items 4(e) and 7(e) above].

PROFORMA 'C'—CON

12. Annual recurring charges, as under for (i) Water Supply (ii) Sewerage
 (to be based on actuals if schemes are in operation and on probables if schemes are yet to be installed).
- | | | |
|--|-----|------|
| (a) Annuity and interest on capital investment | (i) | (ii) |
| (b) Operation and maintenance costs on plant | (i) | (ii) |
| (c) Operational staff | (i) | (ii) |
| (d) Supervisory staff | (i) | (ii) |
| (e) Sinking fund for repairs and renewals .. | (i) | (ii) |
13. Number of:
- | | | |
|---|----|----|
| (a) Assessed houses | .. | .. |
| (b) Houses with water connections | .. | .. |
| (c) Houses with sewer connections | .. | .. |
14. Number of:
- | | | |
|-------------------------------|----|----|
| (a) Street taps | .. | .. |
| (b) Public conveniences | .. | .. |
15. Percentage of population served by :
- | | | |
|---|----|----|
| (a) House taps | .. | .. |
| (b) Street taps | .. | .. |
| (c) Other water sources, if any | .. | .. |
| (d) Individual latrines (flush out) | .. | .. |
| (e) Public conveniences | .. | .. |
16. Tariff for :
- | | | |
|----------------------------------|----|----|
| (a) Metered water supply | .. | .. |
| (b) Unmetered (flat rates) | .. | .. |
| (c) Sewer rentals, if any | .. | .. |
17. Total annual income from :
- | | | |
|--|----|----|
| (a) Water revenues (domestic and non-domestic) | .. | .. |
| (b) Sale of sewer gas | .. | .. |
| (c) Sale of sludge | .. | .. |
| (d) Sales from sewage farm, etc. | .. | .. |
18. General property tax :
- | | | |
|---|----|----|
| (a) Maximum permitted under the Municipal Act | .. | .. |
| (b) As actually levied | .. | .. |
| (c) Amount realised | .. | .. |
| (d) Total revenue from all sources | .. | .. |
19. Incidence of :
- | | | |
|--|-----------------------------|----------------------------------|
| | (i) Water and Drainage tax. | (ii) Scavenging conservancy etc. |
| (a) Maximum permitted by the Act | (i) | (ii) |
| (b) Percentage actually levied | (i) | (ii) |
| (c) Amount realised | (i) | (ii) |
20. (a) Total annual income from water revenues, water and drainage tax, scavenging tax etc.
- (b) Approximate annual expenditure on preventive health measures against water and filth borne diseases on populations not served by protected water supply and/or sewerage, e.g., anti malarial, filarial and mosquito measures, preventive measures against cholera, typhoid etc.

PROFORMA 'C'—contd.

- (c) Approximate amount of municipal medical expenditure (based on assumed percentage of total expenditure) on hospitals and dispensaries to meet water borne and filth borne diseases on populations left without water supply or sewerage facilities.
 - (d) Total annual expenditure on scavenging staff, maintenance of sullage drains and on night-soil conservancy, transport and disposal (in the absence of a sewerage system).
 - (e) Total income and savings accruing from water supply and sewerage [total of items (a) to (d)].
21. Total annual commitments on water supply and sewerage [total of items 12(a) to (e)].
 22. Gap between receipts and commitments *i.e.*, items 20 (e) and (21) above and suggested additional sources for income, if any, to make the schemes self-supporting.
 23. Suggested pattern for future financing of Corporation schemes.

IV.—DETAILS OF ORGANISATION

24. State the organisational unit employed for

	(i) Investi- gation	(ii) design	(iii) exe- cution	(iv) main- tenance
(a) Water Supply schemes	(i)	(ii)	(iii)	(iv)
(b) Sewerage schemes	(i)	(ii)	(iii)	(iv)
(c) Refuse and garbage collection and disposal	(i)	(ii)	(iii)	(iv)
15. (a) Status of Public Health Engineering in relation to other branches of engineering in the Corporation or Municipal Engineering Organisation.
 - (b) Extent of technical control exercised by the State Public Health Engineering Department.
26. Number of officers trained in Public Health Engineering.

PROFORMA 'D'

PROFORMA FOR RURAL WATER SUPPLY

A. General Data

- I. Name of State.....
- II. Total Rural Population (1951 Census).....
- III. A. Approximate Rural Population in
- (a) Coastal Areas.....
- (b) Deltaic Regions.....
- (c) Plateau Areas.....
- (d) Mountainous Regions.....
- (e) Arid Regions.....
- (f) Semi-arid Regions.....
- (g) Mining Areas.....
- (h) Saline Tracts
- (i) Other Regions.....
- B. Position of Rural Water Supply as on 31-3-1960 under the following programmes :
- (1) National Water Supply and Sanitation Programme.....
- (2) Community Development Programme.....
- (3) Local Works Programme.....
- (4) Development of Backward Areas Programme.....
- (5) States' Own Programme
- (6) Any other Programme.....

Note.—The proforma to be filled separately for each programme.

	Population Groups				
	Less than 500	501 to 1000	1001 to 2000	2001 to 5000	Over 5001
	1	2	3	4	5
1. Number of villages					
2. Total population of each Group ..					
Number of villages having satisfactory water supplies.					
(a) Piped					
(b) Wells with power pumps ..					
(c) Wells with hand pumps ..					
(d) Draw wells					
(e) Conserved Tanks					
4. No. of villages with potable but inadequate supply in need for expansion.					

Legend :—In items 3(b), 3(c) and 3(d), one well for every 500 people may be considered as satisfactory.

PROFORMA 'D'—contd.

	Population Groups				
	Less than 500	501 to 1000	1001 to 2000	2001 to 5000	Over 5001
	1	2	3	4	5
5. Number of villages :					
(a) with step wells					
(b) without any local potable supply					
6. No. of villages in which water supply schemes are in progress—					
(a) Piped.. ..					
(b) Others					
7. No. of villages for which schemes are ready but not yet taken up. ..					
8. No. of villages for which schemes are under investigation					
9. No. of villages yet to be investigated					
10. Expenditure incurred :					
(a) During I Plan					
(b) During II Plan					
11. No. of villages covered upto 31-3-60					
12. No. of wells and other sources provided upto 31-3-60.					
13. Approximate per capita cost of scheme—					
(i) Average for State					
(ii) For representative regions in the State as in III : page 131—					
(a)					
(b)					
(c)					
(d)					
(e)					
(f)					
(g)					
(h)					
(i)					
14. Approximate per capita rate of supply in gallons per day—					
(i) Average for State					
(ii) For representative regions in the State as in III : Page 131—					
(a)					
(b)					
(c)					
(d)					
(e)					
(f)					
(g)					
(h)					
(i)					

PROFORMA 'D'—cont

	Population Groups				
	Less than 500	501 to 1000	1001 to 2000	2001 to 5000	Over 5001
	1	2	3	4	5

15. *Approximate cost of Schemes :*
- (a) Investigated by Engineering staff and ready for execution.
 - (b) Schemes yet to be investigated.
 - (c) Total.
 - (d) Proposed workload for III Plan.
16. *Agency employed :*
- (a) for Design
 - (b) For execution
 - (c) For maintenance
17. *Existing pattern of financing :*
- (a) Central assistance
 - (b) State assistance
 - (c) Villagers contribution
 - (d) Maintenance and repair charges met by.
18. *Suggested modification, if any for future financing*

QUESTIONNAIRE—I

ORGANISATIONAL SET-UP

1. Which State Ministry in charge of Public Health Engineering?
What are the views of the State Government on this subject?
2. Which is the agency in-charge of Public Health Engineering ?
 - (a) an independent Public Health Engineering department with separate order and service rules working directly under the Ministry.
 - or*
 - (b) an independent Public Health Engineering Department as above but placed under the Directorate of Health.
 - or*
 - (c) a separate Public Health Engineering Department but having common cadre and service rules with Irrigation, Buildings and/or High ways branches of the P.W.D.
 - or*
 - (d) the Public Works Department, with a Public Health Engineering Wing forming part of it and having common cadre, service rules and interchangeability of staff.
 - or*
 - (e) the general Public Works Department (specify Buildings, Irrigation or Highways) without any special Public Health Engineering Unit.
3. What is the rank of the head of the Public Health Engineering Department or Wing as the case may be ?
4. Give the number of—
 - (i) Public Health Engineering circles,
 - (ii) Divisions; and
 - (iii) Sub-divisions.

in the State Public Health Engineering Department.
5. What are the agencies in-charge of the rural water supply and sanitation works under the different programmes ; at State, District and Block level ?
6. How and through what agency are the actual field results under the different programmes evaluated.
7. Staff strength and trained personnel in the State Public Health Engineering Departments.

	<i>Employed</i>	<i>Trained</i>
(a) Engineers.		
(b) Supervisors and Overseers.		
(c) Sanitary Inspectors.		
8. Average annual expenditure during the 2nd Plan.

(a) Urban schemes under the National Water Supply and Sanitation Programme.	(i) Water supply.	(ii) Drainage.
(b) Urban schemes outside the Programme.	(i)	(ii)
(c) Rural water supply.		
(i) Under the National Water Supply and Sanitation Programme.		
(ii) Under other Programmes.		
9. What is the normal workload (in lakhs of rupees) assigned to each construction division incharge of—
 - (i) Urban schemes.
 - (ii) Rural schemes.
 - (iii) Urban and Rural schemes conjointly.

QUESTIONNAIRE I—contd.

10. Staff strength and trained personnel in the Municipal Engineering Service, if any—

<i>Class or Grade</i>	<i>Number employed</i>	<i>Number trained</i>
---------------------------	----------------------------	---------------------------

- (a) Municipal Engineers.
- (b) Subordinate Technical staff.
- (c) Water Works and Sewage Plant Operators.

11. Are the services of Municipal Engineers—

- (a) Provincialised;
- (b) Integrated with the Public Health Engineering Department;
- (c) Manned by Officers loaned from the Local Administration Department, Local Self Government Department, or Public Works Department; or
- (d) Separate and independent for each Municipality, Corporation or District Board.

12. Are there any proposals to reconstitute the Municipal Engineering and Municipal Subordinate services.

13. Number of Water works and Sewage Plant Laboratories in the State:

- (a) at State level;
- (b) at Regional levels;
- (c) in Municipal Stations.

QUESTIONNAIRE—II
RURAL SANITATION

1. What steps would you advocate in order that rural sanitation receives equal priority with rural water supply?
2. Should rural sanitation be confined to provision of water-seal privies and Community latrines? Or should it include—
 - (a) individual house sullage disposal;
 - (b) Community sullage drains and disposal;
 - (c) Sewers and sewage disposal;
 - (d) Sanitary refuse collection and disposal; and
 - (e) Scientific composting.
3. What steps would you suggest for popularising provision of waste stabilisation ponds in rural areas?
4. What pattern of financing would be successful for implementing Rural Sanitation Programme to include one or more of the facilities listed under item 2 above?
5. To what extent is the programme of Rural Sanitation impeded by—
 - (a) lack of health education;
 - (b) lack of finances;
 - (c) lack of any coordinating agency and planning; and
 - (d) procedural bottlenecks.
6. How best can the villagers participation be stimulated?
7. What are the agencies now in charge of Rural Sanitation?
8. What are the physical achievements up-to-date on:
 - (a) Individual house latrines;
 - (b) Community latrines;
 - (c) Rural drainage including sullage drains, sewers and sewage disposal.
9. What is the total expenditure incurred so far and the population served?
10. What is the approximate estimated cost of completing Rural Sanitation work in the entire State?
11. Has any organised industry been set up to manufacture—
 - (i) Water-seal latrine pans;
 - (ii) Squatting slabs;
 - (iii) Earthenware and stoneware pipes.

Is any part of it subsidized by the State Government under any Programme?

APPENDIX IV

MUNICIPAL CORPORATION OF DELHI

A note on the Urban and Rural Water Supply and Sewerage of Delhi to be placed before the National Water Supply and Sanitation Assessment Committee.

Population of Delhi

The population of Delhi varied from time to time. The following figures will indicate the abnormal increase in the population of Greater Delhi especially after the partition of the country in 1947—

Year	Population (in lacs)
1891	1.93
1901	2.10
1911	2.33
1921	3.05
1935	4.47
1941	6.95
1951	14.37
1960	23.00

An intensive study of the probable population growth has been carried out by the Town Planning Organisation on detailed scientific lines and the projected population in 1971 is expected to be 35 lacs and in 1981 to be 55 lacs.

Water Supply

(1) *Demand of Water*—With the increase in the population the demand of water has also been constantly going up. The following figures show the average daily quantity of filtered water in million gallons supplied to the citizens of Delhi since the year 1941—

Year	Average daily water supply of the year in M.G.D.
1941-42	16.60
1942-43	18.20
1943-44	20.61
1944-45	20.75
1945-46	23.90
1946-47	24.63
1947-48	28.41
1948-49	30.05
1949-50	32.72
1950-51	34.00
1951-52	42.00
1952-53	43.02
1953-54	45.98
1954-55	49.10
1955-56	50.70
1956-57	56.60
1957-58	57.80
1958-59	58.53
1959-60	65.07
1960-61	72.00

The latest figure gives us a per capital consumption of 34 gallons. Our future schemes are based on a figure of 40 gallons to start with and it is expected that with the improvement in the living standards of the people of the Capital and laying of more sewers in the Town, the per capita consumption will also increase to 50 gallons per day. The demand of water on the basis of these assumptions would be 175 M.G.D. in 1971 and 275 M.G.D. in 1981.

(2) *Present Water supply and Arrangements*—At present there are three water Works in Delhi.

(i) *Chandrawal Water Works*—Here water is drawn from River Jamuna at Wazirabad two miles up-stream and treated in rapid gravity filters. The capacity of this plant is 90 million gallons M.G.D. per day. This Plant supplies water practically to the entire city.

(ii) *Okhla Water Works*—Here water is drawn from River Jamuna at Okhla and treated in rapid gravity filters. The capacity of this plant is 6 M.G.D. and water is supplied to Refugee Colonies in South Delhi like Kalkaji, Malviya Nagar, Friends Colony, Lajpat Nagar etc.

(iii) *Shahdara Water Works*—From this water works about one M.G.D. water is supplied from tube-wells after chlorination.

(3) *Inadequacy of the present source of water*—In the past Delhi always depended for its drinking water requirements on the only available source i.e. River Jamuna and as the requirements of filtered water prior to the year 1953 have been considerably small no serious shortage of water in the river was felt. It is only since the summer of 1953 that a very serious difficulty is felt during the summer months as river does not carry sufficient discharge and water is required to be escaped in the river from the Western Jamuna Canal of the Punjab State from Indri or Munak escapes. The following are the number of days on which water was released each year since the summer of 1953 and the amounts paid to the Punjab Government towards the cost of this water—

Summer of the year	Total days	Amount paid Rs.
1953	6	29,700
1954	18	83,808
1955	21	92,361
1956	30	73,245
1957	3	No claim received.
1958	34	Rs. 1,53,986
1959	33	No claim received.
1960	59	Rs. 6,44,861 Bill not yet paid.

Previously Punjab Government used to charge us at the rate of Rs. 1-8-0 per 6000Cft. of water released. However, since the summer of 1959 they have increased the rate to Rs. 1-8-0 per 2,500 ft. of water. This new rate is about 2½ times higher and is very much on a high side.

There is shortage of water in River Yamuna, because the river water is being diverted for the first several decades to use it for irrigation upstream of Delhi. For this purpose a diversion weir was put up at Tajewala across River Yamuna about 180 miles up-stream of Delhi and due to this weir no water is allowed to go into the river after floods as all water at Tajowala is diverted into Western Jamuna Canal in Punjab and Eastern Jamuna Canal in U.P. The water that comes to Fazirabad intake is due to regeneration in the River during its travel and also due to seepages from the canals. It would thus be seen that to meet the increased demand of the drinking water of the Capital, Delhi has now to pay for getting water from Punjab and U. P.

The Government of U. P. utilizes the water of Yamuna River 17 miles down stream of Fazirabad also for irrigation purposes. At place called Okhla a diversion weir exists across the river Yamuna to divert entire water in the Agra Canal. Water is allowed to go down stream of Okhla weir only when it is surplus to the irrigation requirements. By our drawing more water at Fazirabad, the flow in River Yamuna also goes down and the U. P. Government is therefore contemplating to charge us for waters drawn by us over and above 60 M.G.D. It would thus be seen that the irrigation needs are being given importance over drinking water needs of the Capital and the adjoining States.

(4) *Augmentation of the Source*—The population of Delhi has now grown so much that it is no longer possible to depend on River Yamuna and tapping of alternative sources is the only alternative. Several Committees were appointed in the past and many new schemes have been thought of. The recent Technical Committee was the one appointed by the Government of India Ministry of Health in 1958 for the consideration of the stabilization of the drinking water supply in Delhi and its augmentation. The report of the Technical Committee was ready early in 1959 and their main recommendations were as follows :—

(1) *Stabilization*—

- (a) Sinking of 100 Tubewells in the Sonapat Area and bringing this Tubewell water to Delhi by a carrier channel.
- (b) Supply of 15 cusecs of water at Okhla from the Hindon River and compensating the U.P. Government with an equivalent quantity of water through tubewells.

(2) *Augmentation*—

- (a) Supply of 200 cusecs of water from the Gurgaon Tunnel Scheme to serve the needs of West Delhi.
- (b) Supply of 200 cusecs of water to South Areas from the Ramganga Scheme.

(3) *Water Supply to Shahdara*—

- (a) Supply of 15 cusecs of Water to Shahdara from the wells in the Loni Area.
- (b) Supply of further quantity of 15 cusecs of water to Shahdara to meet the additional requirements upto 1981 by sinking more tubewells in Loni Area.

The above measures were to assure for Delhi a total supply of about 275 M.D.G. which is the estimated requirements by 1981. Some allowance for water required for washing filters and clarifiers has been made.

The Delhi Municipal Corporation accepted the recommendations of this Committee⁶ regarding the augmentation. As regards stabilization the scheme of sinking 100 tubewells in Sonapat area to supply 125 cusecs of water was not accepted because the running of tubewells only for two months would be very un-economical and secondly because the Villagers on the way would utilise the water from the carrier channel for all sorts of purposes and thereby aggravating the chances of Pollution. The Municipal Corporation of Delhi, therefore, requested the Punjab Government to increase the supply from Western Jamuna Canal to 325 cusecs instead of 200 cusecs i.e. the total quantity required for stabilization as well as augmentation. The Corporation has also requested the Punjab Government to continue to release water in the Jamuna River during the hot weather months till increased supply from the Western Jamuna canal is made available.

The Ministry of Health, Government of India also agreed with the views expressed by the Delhi Municipal Corporation and wrote to the U. P. and Punjab Governments to implement the schemes with the utmost possible expedition. The following is the present position of U.P. and Punjab Schemes—

U. P. Schemes (a) Certain estimates were received from Irrigation Department of U. P. in connection with the carrying out, of detailed survey and appointment of certain staff for the preparation of the projects for water supply to Shahdara and Okhla. The estimates were accepted by the Corporation and funds for carrying out surveys deposited with the U.P. Government. No detailed schemes have been received from them up till now.

(b) The Government of U. P. have informed us that they are not in a position to make any commitment at this stage to spare any water from Ramganga Project but if on the completion of the Project they find any water surplus to their State's requirements they would then consider releasing it for Delhi.

Punjab Schemes—(a) In view of the acute shortage of water in Western Jamuna Canal in summer months, the Punjab Government refused to release any water in the River Jamuna during the summer 1960. However, with the intervention of Government of India they released the water.

(b) Since the Government of Punjab have now dropped the Gurgaon Tunnel Scheme, they proposed to supply water for augmentation from Western Jamuna canal source from a Project known as "Western Jamuna Canal Feeder Project". This project will connect the Bhakra Canal from Narwana to Munak and will drop the water in the Jamuna River at Munak and this water would flow into River past Wazirabad. This water will be picked up by the Punjab Government and utilized to irrigate the Gurgaon District.

The permanent solution for the water supply problem of Delhi i.e. stabilization as well as augmentation is the construction of this Feeder Canal. It is possible for the entire project to be completed before the summer of 1963. This project was also discussed in a meeting in the Government of India where representative of the Punjab Government was also present. He informed in the meeting that at present the Punjab Government were releasing water every summer from Western Jamuna Canal from Indri or Munak Escapes at a great sacrifice to the Punjab cultivators at a time when they needed this water most. He further stated that the Punjab Government would be in a position after the completion of the Western Jamuna Canal Feeder project to supply during the summer months 200 cusecs from the said project subject to the approval of the Bhakra Control Board and 100 cusecs from the share of U.P. from the Yamuna River and also increase this supply to meet the future demands for the drinking water requirements of Delhi after the completion of the Beas-Sutlej Link Project.

It would thus be seen that action on Technical Committee's recommendations is very necessary as the population of Delhi is constantly increasing. It is necessary to finalize the Schemes for—

- (a) Augmentation of water to Shahdara from Loni Tube Wells.
- (b) Augmentation of water at Okhla from Hindon River.
- (c) Continuation of the present practice of escaping water from Munak or Indri Escape till such time as the Western Jamuna Canal Feeder Project is completed.
- (d) Completion of the Western Jamuna Canal Feeder Project on a very high priority basis and get a firm commitment from the Punjab Government for supplying 200 cusecs of water at Wazirabad, over and above the water required for stabilisation during the summer months.
- (e) For further augmentation a firm commitment from the U.P. Government for making available 200 cusecs of water for the fast expanding south of Delhi. The crossing of the Road Bridge could not be a problem as the Ministry of Transport have already agreed to allow pipe line in the new Project.

Unless some firm decision is taken at this stage it would be very difficult to cope up with the problem later when the entire water resources of the northern rivers would have been earmarked for other purposes. If necessary, the question will have to be taken up with the Planning Commission whom State Governments approach for loans for the execution of Irrigation Schemes.

Till the above commitments are not made no orders for importing materials like Pumps Filter Plants, Pipes etc. can be placed nor can the land be acquired.

(5) *Future Schemes*—With the finalisation of the source of augmentation of water supply, it will be necessary to increase the capacities of existing plants, mains and reservoirs. Present capacity of water works which is about 97 M.G.D. is proposed to be increased as under—

	M.G.D.
End of the Third Five Year Plan— (1961—66)	150
End of the 4th Five Year Plan— (1966—71)	175
End of the 5th Five Year Plan— (1971—76)	210
End of the 6th Five Year Plan— (1976—81)	275

The following table shows the amount that will have to be sent during each of the future Five Year Plans to cope up with the increasing demand of water—

Amount required to be spent in lacs of rupees till the Year 1981

	Third Five Year Plan (1961—66)	Fourth Five Year Plan (1966—71)	Fifth Five Year Plan (1971—76)	Sixth Five Year Plan (1976—81)
1. Stabilisation and augmentation of Source	854.40	..	..	..
2. Improvements to existing works	130.00	..	..	200.00
3. Augmentation of Plants	113.00	60.00	100.00	200.00
4. New Reservoirs, Rising Mains, and Venturi Meters	210.90	440.00	500.00	500.00
	1,308.30	500.00	600.00	900.00

(6) *Cost to Bulk Production of Water*—The cost of Bulk Production of Water, which was only Rs. 21.87 nP. per 1000 gallons in the year 1950-51 has increased to Rs. 41.92 nP. per 1000 gallons during the year 1960-61. This increase is mainly because of the fact that many new expensive schemes are required to be taken up for augmenting the capacities of water works. These schemes are financed by taking loans from the Government of India at 4½ per cent compound interest repayable in 30 years. This is why the Standing Charges are constantly increasing. The Revised Budget Estimates of 1960-61 of Bulk Water supply stood at Rs. 109.00 lacs out of which about 46.0 lacs are the Standing Charges. The Percentage of expenditure in the cost of various heads is as follows—

	Per cent
Establishment ..	13.9
Electricity and Fuels ..	25.5
Repairs and Maintenance ..	7.8
Chemicals ..	6.4
General Stores ..	3.2
Superintendence ..	2.1
Standing Charges ..	41.3
TOTAL ..	100.00

With the completion of the Schemes provided in the Third Five Year Plan and subsequent Five Year Plans, the Standing Charges would further increase very much. The following table shows the approximate figures of annual expenditure as well as the Standing Charges and the cost of Bulk Production of Water—

Probable expenditure figures in Rs. lacs of the years given below :

	Year 1966-67 i.e. after the completion of the Third Five Year Plan	Year 1971-72 i.e. after the completion of the Fourth Year Plan	Year 1976-77 i.e. after the completion of the Fifth Year Plan	Year 1981-82 i.e. after the completion of the sixth Five Year Plan
Capacity of Water Works	150 MGD	175 MGD	210 MGD	275MGD
Average quantity of Water supplied daily during the year	100 MGD	140 MGD	170 MGD	210 MGD
Expenditure on Establishment	22.00	31.00	37.5	46.0
Electricity and Fuels	40.0	57.0	70.0	86.0
Repairs and Maintenance	11.00	15.0	19.0	23.0
Chemicals	10.0	14.0	17.0	21.0
General Stores	5.0	7.0	8.5	10.5
General Superintendence	3.5	5.0	6.0	7.5
Standing Charges	127.0	157.0	194.0	249.0
Total—Budget of The Water	218.5	286.0	352.0	443.0
Cost of Bulk Production of Water in nP. per 1000 Gallons	61	57	59	59

In the above table the figures for expenditure on Establishment, Electricity and Fuels, Repairs and Maintenance, Chemicals, General Stores, General Superintendence have been increased in the proportion of the average quantity of water supplied during the year and the Standing Charges have been calculated on the basis of the annual instalment which will have to be paid by the Corporation when the loans during the 3rd and subsequent Five Year Plans as proposed above are received and works completed. The loans will be at 4½ per cent interest repayable in period of 30 years.

The average quantity of water supplied during any year will always be less than the total plant capacity because the plant has to supply the maximum quantity of water during the summer months and also has to have some stand-by capacity. From the last line of the table it can be seen that the cost of bulk production of water would increase from 42 nP. to as much 61 nP. If, however, the Government of India gives 1/3rd amount of loan as grant and only 2/3rd as loans, the cost of bulk production would come down only to 53 nP. per thousand gallons. It would, therefore, be necessary that in addition to 1/3rd grant the Government should give the 2/3rd loan on deferred payment basis so that the cost of bulk production of water does not increase.

The above table is based on the present cost of materials, chemicals, power etc. and it has also been assumed that for renewal and replacement of plants etc. we will continue to get loans from the Government of India as at present.

(7) *Distribution of Water*—At present the Corporation is supplying water in bulk to New Delhi Municipal Committee and Delhi Cantonment and during the year 1960-61 out of an average total quantity of 72 M. G. D. the following quantities were supplied in different areas:—

	M.G.D.
In Corporation Area	50
In New Delhi Municipal Committee Area	19.6
In Delhi Cantonment Area	2.4
Total ..	72.0

With the increase in the population of Delhi, the demand of New Delhi Municipal Committee and Delhi Cantonment would not increase as rapidly as the demand of Corporation Area because the areas of the above two constituent bodies are limited and not many new developments are proposed in these areas. The following would be the approximate break-up of the quantity of water supplied after 3rd and subsequent Five Year Plans—

Statement of average quantity of water to be supplied in M. G. D. during the year under review

	DURING THE YEAR			
	1966-67	1971-72	1976-77	1981-82
Corporation Area ..	71.5	106.0	130.5	165.0
N.D.M.C. Area ..	25.0	30.0	35.0	40.0
Delhi Cantonment Area ..	3.5	4.0	4.5	5.0
TOTAL ..	100.0	140.0	170.0	210.0

Many new Schemes of laying distribution lines and remodelling existing smaller lines are also proposed during the III and subsequent Five Year Plans. The following amounts will have to be spent on such schemes till the year 1981—

Third Five Year Plan (1961-66)	Fourth Five Year Plan (1966-71)	Fifth Five Year Plan (1971-76)	Sixth Five Year Plan (1976-81)
Rs. 150.96 lacs	Rs. 350.00 lacs	Rs. 250.00 lacs	Rs. 200.00 lacs

(8) *Cost of distributed water*—The Revised Budget Estimate for 1960-61 of the internal distribution of water in Corporation Area stood at Rs. 101.582 lacs. The total break-up of this expenditure is as follows—

	Rs. lacs
General	10.282
Collection of Water Charges	2.984
Cost of Bulk Water Supply	76.300
Debt Charges	11.380
Contribution to General Account for the collection of Taxes	0.636
	101.582

Since the water was consumed in Corporation area at the rate of 50 M.G.D. during this year, the cost of distributed water works out to 55.66 nP. per thousand gallons.

With the completion of the Schemes provided in the III and subsequent Five Year Plans, the following will be the position of expenditure:—

Year	1966-67	1971-72	1976-77	1981-82
Average Daily Quantity of water consumed in M. G. D.	71.5	106	130.0	165.0
General	14.5	23.0	30.0	35.0
Collection of Water Charges	4.2	6.0	8.0	10.0
Cost of Bulk Water Supply	156.2	216.5	271.0	347.0
Debt Charges	21.0	42.0	57.0	70.0
Contribution to General Account for the collection of taxes	1.0	1.5	2.0	2.5
Total	196.9	289.0	368.0	464.5
Cost of Water distributed in nP. per thousand gallons	75	76	78	79

From this total it is seen that the cost of distributed water would increase from the present 55.66 nP. per thousand gallons to 79 nP. per 1,000 gallons. In calculating the above figures, it is assumed that the entire quantity of water supplied in bulk would be distributed without any losses in the distribution system. In practice, however, this is not possible as our past experience shows that about 15 per cent water is lost on the way. The cost of distributed water would, therefore, be higher by 15 per cent.

During the year 1960-61 the expenditure on the internal water supply arrangements in the Corporation area was met from the following sources—

	Rs. laos
Income from Water Tax	4.500
Income from Water Charges	44.500
Other Receipts	6.00
Contribution from General Account of the Corporation	41.582
Total	101.582

With the completion of the Water Supply distribution schemes provided in the III and subsequent Five Year Plans no doubt the income of the Corporation from Water Tax and Water Charges would also increase; however, in view of the increase in the rate of distributed water as calculated above the amount of contribution from General Account would increase very much. It is, therefore, necessary that the Government of India gives us 1/3 grant and 2/3 loan on deferred payment basis for the financing of the new distribution schemes.

The water supply has not been found self supporting because the Corporation has to supply lot of free water through public Hydrants. The following is the approximate break-up of 50 M.G.D. water supplied during the year 1960-61

	M.G.D.
By Meter Measurement	22.5
By Free Supply	7.8
By 15 % losses in the distribution system	7.5
Balance assumed to be supplied through unmetered connections	12.2
Total	50.0

(9) *Requirements of Materials—(i) Pipes and Specials*—At present there is a network of about 300 miles of distribution pipe lines spread all over the Corporation area out of which about 250 miles are C. I. Pipes between 3" and 12" in diameter. At this rate for the implementation of new Schemes about 700 to 800 miles length of C. I. Pipes in sizes 3 to 12 would be required. At present there are only a few factories manufacturing these pipes and their deliveries specially of smaller sizes for 3" to 12" are 4 to 5 years. If pipes are not received earlier than this, several works would be held up. Suitable arrangements to increase the capacity of factories manufacturing these pipes will have to be made. If this is likely to take time then imports of these smaller pipes would have to be allowed.

The firms manufacturing C. I. pipes do not manufacture C. I. Specials such as tees, bends, tail pieces, tapers, etc. at the same rate as pipes. Thus their deliveries of specials are much longer. Straight lengths of pipes cannot be used without specials. It would, therefore, be necessary to allow the import of Specials if water supply schemes are to be expedited.

(ii) *Water Meters*—There is acute shortage of water meters also in the country. There are only three firms who manufacture these meters and their output is not large enough to meet the requirements of the entire country. Our present requirements of meters are about 10,000/year and future requirements would be very much more. Imports of meters would also have to be allowed or more meters manufactured in India.

10. *Cost of Land*—In the past the Government had always given land for the construction of Water Works and Reservoir etc. at a very nominal rate. However, of late the Government has decided to charge market rates. As large areas would be required for installation of new plants and for storage facilities, if the same policy is adopted the schemes would be prohibitive. Land at nominal rate should be made available for public utilities.

SEWERAGE

(1) *Present Arrangements*—In addition to internal sewers, out fall sewers, sewage pumping stations, and rising mains, there are three sewage treatment plants in Delhi.

(1) Complete Activated Sludge and Biofilter Sewage Treatment Plant at Okhla for South Zone.

The capacity of this plant is 36 M.G.D. and is being increased to 66 M.G.D.

At this plant sludge gas is utilized for the generation of electricity, dried sludge is used as manure and treated sewage effluent is used for irrigation.

(2) Complete Biofiltration Sewage Treatment Plant at Coronation Pillar for North Zone.

The capacity of this plant is 100 M.G.D. Here dried sludge is used as manure and treated effluent for irrigation. At present sludge gas is not being utilized.

(3) Complete Activated Sludge Treatment Plant near Keshopur village for West Zone having a capacity of 12 M. G. D. This plant has recently been completed and here sludge gas will be utilised for the generation of power, dried sludge will be used as manure and treated sewage effluent for irrigation.

(2) *Future Proposals*—There are still several areas where the capacities of sewers are to be augmented and also areas where new sewers are to be laid for the first time. Capacities of Sewage Pumping Stations and Sewage Treatment Plants would also have to be increased and new plants put up if the overflows which discharge into Yamuna River are to be stopped.

The following amounts will have to be spent during the III and subsequent Five Year Plans:—

III Five Year Plan (1961-66)	IV Five Year Plan (1966-71)	V Five Year Plan (1971-76)	VI Five Year Plan (1976-81)
Rs. 720.00 lacs	Rs. 300.00 lacs	Rs. 300.00 lacs	Rs. 400.00 lacs

In addition to above a sum of about Rs. 6.00 crores will have to be spent during the III and subsequent Five Year Plans in laying internal sewers and drains.

(3) *Finances*—The Delhi Municipal Corporation at present treats sewage from Corporation as well as New Delhi Municipal Committee areas. The amounts spent on the maintenance of Outfall sewers and Sewage Treatment Plants is recovered from N. D. M. C. and Corporation in the ratio of water consumed in those areas. The budget of Sewage Disposal during the year 1960-61 stood at Rs. 69.45 lacs and it was shared as follows:—

	Rs.	lacs
N.D.M.C.	19.29	
Corporation	50.16	
Total ..	69.45	

At present Corporation does not receive sewage from the Cantonment Area. This area is also expected to have water-borne sewerage system and when the sewage of this area is treated in the Corporation Plants they will be charged in the ratio of water consumed in their area.

The capacities of Sewage Treatment Plants would be 80 per cent of the water plant capacities as 20 per cent would be losses on the way.

The budget of Internal Drains and Sewers in the Corporation for the year 1960-61 stood at Rs. 90.418 lacs as follows—

	Rs.	lacs
A. Cleaning of Drains and Sewers	24.180	
B. Pumping Stations	3.090	
C. Upkeep of Vehicles	0.310	
D. Share of cost of bulk sewage disposal	50.160	
E. Contribution from General Account for Latrines and Dalaos	1.77	
F. Cost of water used for Sanitation	2.50	
G. New Works	0.12	
H. Debt Charges	8.00	
I. Contribution to General Account for collection of Taxes	0.288	
Total ..	90.418	

This expenditure was met from the following sources:

	Rs. lacs
A. Scavenging Tax	5-500
B. Miscellaneous Receipts	0-100
C. Contribution from General Accounts	84-818
Total ..	90-418

It would thus be seen that sewerage side has very little source of revenue and a heavy amount is being contributed from the General Account of the Corporation. Suitable higher grants would also have, therefore, to be considered for sewerage works.

D. Rural Water Supply and Sanitation—

Delhi Municipal Corporation has to supply water to 300 villages and 3 small towns of Mehrauli, Najafgarh and Narela over and above the urban supplies.

The Rural Water Supply and Sanitation Scheme envisages piped water supply in villages and towns having population of 1,500 (1951 census). In smaller villages it is proposed to protect some of the existing sweet water wells by raising parapets, covering tops, improving drainage around the wells and providing hand pumps, windmills or hand-operated persian wheels. Work in the town of Mehrauli and about 35 villages has already been completed. There are, however, a number of villages both large and small which are situated in Okhla sewage farm and Badli Dumping ground where well water is contaminated. It is proposed to provide piped water supply schemes in such areas by grouping the villages. Estimate for villages situated in Okhla sewage farm has already been prepared and work is likely to start in two to three months. There are also several villages where sub-soil water is saline. Detailed investigations have not yet been carried out as the Municipal Corporation has only a skeleton staff for Rural Water Supply Scheme.

The Corporation is also providing sanitary latrines in Rural areas, comprising of a special pan and trap with a water seal and a kutchra soak pit. This latrine is easily flushed with a little water normally used for ablution. The Corporation has provided 200 latrines in individual houses in a few villages around Najafgarh on subsidy basis with a view to popularise these latrines. The villagers' contribution was Rs. 10 in cash and 500 Nos. of bricks for each latrine. In addition to that such latrines are being provided in all the schools in urban and rural areas at an estimated cost of Rs. 1.09 lacs. Only cost of pans and traps has been charged to Rural Water Supply and Sanitation Scheme in case of latrines provided in the schools.

In Third Five Year Plan, schemes costing Rs. 50 lacs have been included to improve Water Supply and Sanitation in Rural Areas of Delhi. The problems of rural areas under the Delhi Municipal Corporation are special and have to be treated as such and grants made available for these works.

After giving a careful consideration to the note of the Chief Engineer, Water Supply, the Water Supply and Sewage Disposal Committee would like to stress the following points:

1. In view of the large number of visitors coming to Delhi for exhibitions and other national and international congregations as well as the large number of schemes for housing of government servants, the Delhi Municipal Corporation deserves special treatment. The quality and quantity of water as well as sewage treatment processes have to be maintained at a very high standard as compared to the whole country. It is, therefore, essential that the Corporation gets grants and subsidies for implementation of these schemes.

As Delhi cannot be self-sufficient from its own sources of water, the same has to be arranged from the Governments of Punjab and U. P. and the Government of India should give special grants for some of these large schemes of augmentation of supplies which would be bringing the returns after several years but for which the Corporation would have to incur expenditure at this stage. If the Corporation does not commit for these water supply schemes for the needs of Delhi, in future irrigation requirements would not enable any more water to come to Delhi.

2. The Delhi Municipal Corporation has faced special problems due to the urban villages which have come within its jurisdiction and for which the Committee has to provide for basic amenities. These urban villages situated on the periphery of the Town have to be provided with amenities on the pattern of the Town and that entails large expenditure and uneconomic lengths of pipes and sewers. For this special case also the Committee feels that a special case of grant and partial subsidies be made out. If the Committee has to take loans from the Government and pay interest at government rates as well as pay equated instalments for the loans the cost of water would be prohibitive and beyond the reach of house owners.

The Committee endorses the view of the Engineer regarding the difficulty of small-sized cast iron pipes, specials, valves, meters etc. and requests the Government to take early and effective measures for their timely supplies.

Regarding the land, it also feels that unless land at nominal rate is made available as was done in the past, the schemes would be uneconomic and beyond the reach of the Tax Payers

APPENDIX V
URBAN WATER SUPPLY—PROFORMA "A"

Name of State	No. of Units	Population 1951	Total Population 1961	Towns having both W.S. & Sewerage			Towns with adequate water supply only			Towns with partial Water Supply	
				No.	Population	No.	Population	Per Capita Rate of Supply (Gals.)	Per Capita Cost (Rs.)		No.	Population
1. Andhra Pradesh	C	1	12,47,529	1	12,47,529	—	—	—	—	1	12,47,529
	M	62	23,81,985	62,61,130	—	10	3,76,003	..	..	22	13,27,339
	P	119	11,82,321	—	—	3	33,800	..	..	NH	—
2. Assam	C	—	—	—	—	—	—	—	—	—	—
	M	41	4,13,313	8,89,080	—	3	38,800	12	36	8	2,13,048
	P	—	—	—	—	—	—	—	—	—	—
3. Bihar	C	1	2,83,479	—	—	1	2,83,479	30	..	—	—
	M	76	21,03,001	39,15,300	3	..	20	10,55,848	20	40	—
	P	—	—	—	—	—	—	—	—	—	—
4. Gujarat	C	1	..	—	—	1	..	—	—	1	..
	M	101	..	52,80,450	7	..	24	7,15,142	10 to 40	50	13,74,083
	P	101	3,34,827	—	—	14	1,01,267	8 to 15	40	69	1,22,237
5. Jammu and Kashmir	C	—	—	—	—	—	—	—	—	—	—
	M	2	2,62,000	6,01,958	—	2	2,62,000	25	..	—	—
	P	19	1,20,000	—	—	—	—	—	—	9	78,000

3. Kerala	M	1	18,575	22	9,15,000	4	2,57,582	165.70	..	3	4,47,000	212.00	..
		P	..	16*	24,00,000	..	..	..	..	..	..	..	..
7. Madhya Pradesh	C	..	..	..	..	2	6,38,100	82.50	10.00	..	..	..	..
		M	Most of the Towns have skeleton W.S.	85	9,12,000	10	1,62,000	..	..	16	3,25,000	185.00	60.00
8. Madras	C	..	..	..	..	1	14,16,056	147.77	93.01	..	..	..	..
		M	12	4,73,016	21	6,34,242	20	19,35,973	591.11	353.17	14	4,60,981	244.17	163.59
9. Mysore	C	..	..	..	..	..	..	..	..	13	2,00,598	126.42	85.59
		M	3	..	4	..	92	19,63,007	977.39	717.65	..	4,79,382	224.52	39.16
0. Orissa	C	..	..	..	..	..	..	..	..	..	..	..	..
		M	3	30,000	31	4,05,800	6	2,97,000	196.00	4.50	5	1,15,000	92.17	7.54
1. Punjab	C	..	..	..	..	..	..	..	..	..	..	..	..
		M	12	1,86,000	139	10,65,000	15	10,93,000	440.00	61.00	16	4,96,000	350.00	61.0
2. Rajasthan	C	..	..	..	..	..	..	..	..	..	..	..	..
		M	15	1,87,301	100	10,17,110	13	9,90,861	487.94	192.54	30	4,09,371	197.39	37.09
	P	1	5,348	51	3,18,593	..	..	..	..	3	22,052	10.82	2.00

URBAN WATER SUPPLY—PROFORMA "A"—contd.

(Proforma Replies not received from other States)

Name of State	Schemes for which prely. Surveys & Est. are available			Remaining Schemes yet to be investigated		Rate of Subsidy, if any, by State Govt.			
	No.	Population	Estimated Cost (Rs. lakhs)	No.	Population	Estimated Cost (Rs. lakhs)	For New Schemes as at present	For improve- ment to existing schemes as at present	Any suggested change
1. Andhra Pradesh	{ C	—	—	—	—	—	—	—	Grants to offset Centage Charges are given to small Municipalities and Panchayats.
	{ M	18	4,02,900	15	2,81,900	356.00	249.00	—	
	{ P	2	11,660	184	12,44,650	2.00	814.00	—	
2. Assam	{ C	—	—	—	—	—	—	—	No Data.
	{ M	2	75,000	23	5,00,000	33.00	200.00	—	
	{ P	—	—	—	—	—	—	—	
3. Bihar	{ C	1	80,000	—	—	50.00	—	—	50% Grant.
	{ M	18	3,03,694	26	3,31,506	174.96	132.75	—	
	{ P	—	—	—	—	—	—	—	
4. Gujarat	{ C	—	—	—	—	—	—	—	33-1/3 subsidy for Borough Municipalities, 50% subsidy for District Municipalities,
	{ M	39	8,20,961	7	2,23,842	361.41	95.71	—	
	{ P	8	45,249	10	45,579	15.81	53.24	—	
5. Jammu & Kashmir	{ C	—	—	—	—	—	—	—	..
	{ M	—	—	—	—	—	—	—	
	{ P	3	27,000	10.50	8	30,000	—	—	

URBAN WATER SUPPLY—PROFORMA "A"—*concl'd.*

(Proforma replies not received from other States)

Name of State	Expenditure incurred during I Plan (Rs. lakhs)	Expenditure incurred during II Plan (Rs. lakhs)	Funds Proposed for III Plan (Rs. lakhs)	Funds Required to complete the remaining W.S. Schemes (Rs. lakhs)	Remarks
1. Andhra Pradesh	204.93	290.65	506.14	..	C—Corporation Towns. M—Municipal Towns. P—Panchayat Towns.
2. Assam	Nil	45.00	125.00	196.00	
3. Bihar	18.80	23.52	50.00	..	
	185.54	257.95	370.00	36.91	
4. Gujarat	..	..	..	..
	..	88.75	323.65	233.00*	*Does not include all the Municipalities & Panchayats.
	..	..	..	..	Details furnished—incomplete.
5. Jammu & Kashmir	18.09	18.97	35.61	..	
	(14+8.00)	25.50	30.00	15.50	

6. Kerala	{ C M P }	24.85	322.69	909.00	5000.00
7. Madhya Pradesh	{ C M P }	—	32.90	130.90	..
		62.44	330.00	534.95	316.21
		—	—	—	—
	{ C M P }	—	118.23	339.86	2500.00
8. Madras	{ C M P }	135.26	532.42	608.45	3500.00
		—	54.08	179.33	2200.00
9. Mysore	{ C M P }	356.93	422.14	565.96	1670.00
10. Orissa	{ C M P }	—	—	—	—
		65.01	67.04	100.00	800.00
		—	—	—	—
11. Punjab	{ C M P }	—	—	—	—
		19.00	121.00	270.00	1700.00
		—	—	—	—
		—	—	—	—
12. Rajasthan	{ C M P }	—	—	—	—
		46.00	326.58	400.00	707.82
		—	2.00	25.00	129.02

URBAN SEWERAGE—PROFORMA "B"

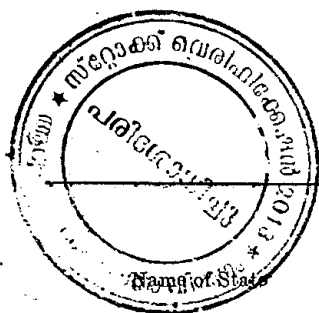
Name of State	Classi- fica- tion	No. of Units	Population 1951	Population 1961 (Total)	Towns with Complete Sewerage			Towns with Partial Sewerage		Towns with open drains and inter- cepting Sewers	
					No.	Population	Average per capita cost of the schemes	No.	Population	No.	Population
Andhra Pradesh	G	1	12,47,529	—	—	—	1	12,47,529	—	—	
	M	62	23,81,985	62,61,130	—	—	—	—	3	3,74,510	
	P	119	11,82,321	—	—	—	—	—	—	—	
Assam	G	—	—	—	—	—	—	—	—	—	
	M	34	4,13,313	8,89,080	—	—	—	—	—	—	
	P	—	—	—	—	—	—	—	—	—	
Bihar	G	1	2,83,479	—	—	—	1	2,83,479	1	2,83,479	
	M	76	21,03,001	39,15,300	—	—	3	—	—	—	
	P	—	—	—	—	—	—	—	—	—	
Gujarat	G	1	—	—	—	—	—	—	—	—	
	M	101	27,01,646	52,80,450	—	—	—	—	—	—	
	P	101	3,34,827	—	—	—	—	—	—	—	
Jammu & Kashmir	G	—	—	—	—	—	—	—	—	—	
	M	—	2,02,000	6,01,958	—	—	—	—	—	—	
	P	19	—	—	—	—	—	—	—	—	

URBAN SEWERAGE—PROFORMA "B"—concl.

Name of State	Classi- fication	Rate of Subsidy, if any, by the State Govt.				Expenditure incurred during	Funds proposed for	Funds Required to comp. the Remaining Schemes (Rs. Lakhs)	Remarks
		For new Schemes as at present	For improve- ments to Existing Schemes	Any suggested change	I Plan II Plan III Plan (Rs. Lakhs)				
Andhra Pradesh	C	—	—	—	—	—	—	C—Corporation Towns	
	M	Grants to Match Centage Charges paid to Local Bodies by State Govt.	—	Nil	2.82	33.19	93.83	M—Municipal Towns	
	P	—	—	—	—	—	—	P—Panchayat Towns	
Assam	C	—	—	—	—	—	—		
	M	..	..	..	NH	NH	40.00	620.00
	P	—	—	—	—	—	—		
Bihar	C	75% Grant	75% Grant	..	11.00	35.67	94.33	..	
	M	Do.	Do.	..	..	..	123.00	1285.00
	P	—	—	—	—	—	—	—	
Gujarat	C	—	—	—	—	—	—	—	
	M	50% subsidy for Dist. Municipalities.	—	..	—	4.79	38.03	157.64*	
	P	33 1/3% subsidy for Borough Municipalities.	—	—	—	—	—	..	
Jammu and Kashmir	C	—	—	—	—	—	—	—	
	M	..	..	..	..	..	50.00	..
	P	..	..	..	..	..	..	..

*Does not include all
Municipalities.
Information furnish-
ed incomplete.

State	50% Grant by State Govt.			Nil	40-52	972-00	2000-00
	C	M	P				
Kerala							
Madhya Pradesh	No Subsidy given by Govt.					264-00	225-00
	C	M	P				
					44-33	250-00	..
Madras	Subsidised 50% by the State Govt.						
	C	M	P	5-46	36-23	138-34	7000-00
						13-88	4400-00
Mysore							
	C	M	P	..	..	13-88	4400-00
				7-13	24-67	104-29	1040-00
Orissa							
	C	M	P	..	..	..	..
				15-955	22-99	129-00	1900-00
Punjab	2/3rd Grant						
	C	M	P				
Rajasthan	100% Subsidy						
	C	M	P				
Rajasthan	In exceptional cases 25% Increase in grant is given by the State Govt.						
	C	M	P	2-43	82-65	270-00	2400-00
Rajasthan	50% Subsidy and Rest as Loan.						
	C	M	P				
				1-01	75-00		1606-76
			..	..	..	194-50	



RURAL WATER SUPPLY—
(Proforma Replies from other States)

Name of State	Total Rural population 1961 Census	Position of Rural W.S. as on 31-3-60 under the following programmes		
		N.W.S. & S. P.	Com. Deve-lopment	Local Works
Andhra Pradesh	2,97,17,860	..	..	..
Assam	1,09,70,979	..	..	..
Bihar	4,25,41,742	..	..	..
Gujarat	1,53,40,833	89	4	142
Jammu & Kashmir	29,81,627	Under Progress	..	..
Kerala	1,43,39,625	Work in Progress	2 schemes completed	50 draw wells completed
Madhya Pradesh	2,77,65,099	500 Villages served with W.S.	..	..
Mysore	1,83,59,976	15	767	520
Orissa	1,64,54,587	..	..	..
Punjab	1,62,19,051	100 schemes covering 350 villages completed	..	..
Rajasthan	1,69,12,958	..	..	..

FORMA "D"
(received)

Position of Rural Water Supply as on 31-3-60 under the following programmes			No. of villages having satisfactory water supplies				
Develop- ment of Backward Areas	State's own	Any other	Piped	Well with power pump	Well- with hand pump	Draw well	Conserved Tank
..	128	..	544	..	..
..	No data	..	..	..
..	541	..	..	..	..
..	..	92	62	..	..	..	..
..	22	..	..	..
..	25	50	125	50	..
..	Grant given for 1,500 wells	..	200	200	850	6,300	675
41	850	1,111	248	175	8	4,570	614
..	2,000	..	..	..	..
..	30	..	..	..	..
..	1	..	..	516	..

RURAL WATER SUPPLY—
(Proforma Replies from other States)

Name of State	No. of villages with potable but inadequate supply in need of expansion	No. of Villages		No. of Villages schemes in progress	
		With step wells	Without any local potable supply	Piped	Others
Andhra Pradesh	Villages in Telengana area have no potable W.S.	Villages in Telengana area have step wells	..	46	308
Assam .. ..	.. ..	No data	..	151	410
Bihar	354	..	..	2	..
Gujarat	70	..	61	..	74
Jammu & Kashmir	All	..	..	..	13
Kerala .. ..	..	15	4,345	45	..
Madhya Pradesh	23,875	1,200	12,451	100	500
Mysore	1,253	420	599	157	307
Orissa .. ..	..	..	..	..	..
Punjab	120	..	10,000	200	..
Rajasthan	15,035	..	..	26	..

PROFORMA "D"—*contd.*
not received)

No. of Villages for which schemes are ready but not taken up yet	No. of Villages for which schemes are under investigation	No. of Villages yet to be investigated	Expenditure incurred during		No. of villages covered up to 31-3-60	No. of wells and other sources provided upto 31-3-60	Per capita cost of schemes average for state	Per capita rate of supply average for state
			I Plan (Rs. lacs)	II Plan (Rs. lacs)				
31	22	980	41.27	119.00	1,012	1,020	20	10
289	..	..	4.00	68.70	1,890	3,729	12 to 15	7 to 10
354	..	..	32.46	76.24	541	9	20 to 102	15
72	24	898	13.85	33.35	578	71	40 to 57	5 to 15
17	..	..	33.54	24.07	79	26	15	1
45	100	4,200	6.26	25.00	350	210	25	10
<i>Nil</i>	<i>Nil</i>	12,451	30.38	73.01	2,200	1,500	20	10
313	112	442	9.86	41.57	1,974	2,519	3 to 40	5 to 20
..	..	..	129.48	205.60	..	21,529	..	..
500	1,000	8,500	5.15	75.07	150	28	70	7½ to 15
7	20	30,700	25.00	119.00	54	..	30	10

RURAL WATER SUPPLY—
(Proforma Replies from other States)

Name of State	Approximate cost of schemes				Agency employed	
	Investi- gated & ready for execu- tion	Schemes yet to be investi- gated	Total	Proposed work load for III Plan	For Design	For Execution
Andhra Pradesh	Nil	750	750	..	State P.H.E. Dept.	State P.H.E. Dept. Thro, contractor
Assam .. ..	..	..	..	..	P.H.E. Orgn.	P.H.E. Orgn.
Bihar	66.95	—	66.95	66.95	P.H.E. Dept.	
Gujarat	11.59	15.89	48.43	16.88	Govt. Dept.	
Jammu & Kashmir	50	2,000	2,050	..	Water Works Dept.	
Kerala	100	2,900	3,000	225	PHE Orgn.	PHE Orgn.
Madhya Pradesh	Nil	1,135	1,135	1,135	PHE Dept.	PHE Dept. Jana- pada Sasna
Mysore	189.03	54.67	65.47	28.53	(P.W.D. Dept.)	
Orissa .. ..	..	..	..	..	Engg. Dept.	Gram Panchayat
Punjab	300	5,700	6,000	240	PWD (PHE)	PWD (PHE)
Rajasthan	70	25	95	200	(P.H.E. Dept.)	

33618

167

PROFORMA "D"—concl'd,
not received)

Agency employed	Existing Pattern of Financing				Suggested Modification for future financing	Remarks
	For Maintenance	Central Assistance %	State Assistance %	Villagers contribution %			Maintenance and repair charges met by
Panchayats		50	25 to 50	..	Panchayats Dist. Boards Local Bodies.	Contribution from Panchayat may be waived.
PHE Orgn.		50	25	25	Gram Panchayats.	50% of Maintenance costs to be subsidised by State Govt. P.H.E. Dept.
P.H.E. Deptt.		50	50	—	State Govt	— Only details of N.W.S. & S. P. Schemes included (in complete data).
Local Body or Panchayat		50	50	—	Panchayat	Nil Data furnished incomplete
Water Works Dept. Panchayat	
		50	50	Nil	Pan. hayat	75% of cost may be given by Central Govt. as Grant.
Gram Panchayat		50	25	25	Gram Panchayat	For Maintenance 50% should be provided by the State Govt. as Grant (PHE Dept. to maintain)
Local Body		50	25	25	Villago Panchayat	Govt. to give 100% subsidy
Gram Panchayat		50	25	25	State Govt. and Villagers.	
P.W.D. (PHE)		50	38	12	Panchayat	No change
Panchayat		50	45	5	Panchayat	Nil