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CAMEROON: RURAL WATER SECTOR

A Preliminary Study

BY

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PART ONE

I N T R O D U C T I O N

Cameroon is a land of contrasts and paradoxes. Within its borders can be found both some of the wettest and some of the driest places on earth. Inhabitants of both, for differing reasons, need a change in their water supply.

Whether they feel that need, what structures exist for them to meet it, what kinds of problems they encounter while doing so and what different agencies are doing to support them are the subject of this report.

This study reflects the fact that a water supply is a small part of a much larger social system, and that while there may be general agreement on what should be done, there is often general confusion on how to do it.

The work was commissioned by USAID Yaoundé as part of the preliminary research for a two year project for National Planning for Community Development in Cameroon (NPCD). The need for such planning has been increasingly keenly felt since the transfer of the Community Development Head Office to Yaoundé, the extension of Community Development activities into francophone provinces, the amalgamation with animation rurale, and the evolution of Cameroon's self-reliant development policies since the 1975 Douala Congress of the Union Nationale Camerounaise.

PART ONE consists of the following elements:

- The current situation of the Rural Water Sector, which suggests the numbers of people with reasonable access to safe water at present and the prospects of increasing that number in the future.
- A review of Cameroon's Rural Water Sector Policy and various obstacles to its implementation.
- A consideration of financial questions and suggestions for strengthening Cameroonian structures to take full advantage of the increased availability of funds that the International Water and Sanitation Decade will probably bring.
- An investigation of potential and actual health benefits from water supply activities and proposals for bringing the two closer together.
- General suggestions about training and project selection criteria.
- Presentation of alternative roles for the Community Development Department in the future.

PART TWO is devoted to an introductory profile of some of the agencies presently active in the Rural Water Supply Sector in Cameroon.

The final part of the study summarizes the main recommendations of the report.

Most of the ideas and suggestions are derived from a two-month period of reading, and interviews with people active in rural water supply. Responsibility for any errors or misrepresentations is of course my own. My thanks are due to the many people who have given up valuable time to talk with me.

My special thanks go to Andrew Ndonyi for his unique kind of help and guidance, and to Ian Hopwood, for his hospitality, transport and constructive criticism, all of which probably go to show that when it comes to contact between an Englishman and a Welshman, the former usually benefits more than the latter.

Tom Franklin, Yaoundé, 31st May 1979

THE CURRENT SITUATION OF THE RURAL WATER SECTOR

Information and statistics on the percentage of the rural population with reasonable access to safe water are difficult to find. The feedback of information from the field is far from adequate. As the information subsystem is of crucial importance to planning, the NPCD will have to find ways of improving it. At present it is not possible to establish what conditions are really like from the top-down position of Yaoundé. The present arrangements for information gathering and control, where each level of the hierarchy reports upwards to the next highest level, are subject to the major weakness that nobody likes telling his or her superiors that things are not as they should be. Evidence of failure or breakdown is thus concealed as long as possible from superiors. Reports passing mechanically up the hierarchy are liable to become optimistic assessments. If a more effective system of supervision and control of field agents is established, there will be less reliance on such reports.

This profile of the current position of the rural water supply sector is based generally on material listed in Annexe I. The documents with the most information on the current position are :

1- BIRD/AID/OMS : Cameroun - Etude Sectorielle: Approvisionnement en Eau et Assainissement. June 1975.

2- WHO : Rapport du Gouvernement du Cameroun : Approvisionnement en Eau et Assainissement : Evaluation Rapide du Secteur. 1978.

3- Hans Peter Muller : Die Helvetas Wasserversorgungen in Kamerun : Eine Ethnologische Evaluation. 1978.

The WHO 1978 report evaluates the population with "more or less satisfactory access to safe water" at 35% for urban areas and 22% for rural areas, giving an average figure of 25% for the whole country. Muller's figure for the rural population in the North West and South West Provinces with piped water is 14%, but this is not comparable with figures for satisfactory access to safe water. Other parts of this report mention the need for a clearer definition of 'reasonable access to safe water' which is the internationally accepted target for water supply programmes.

SOURCE OF WATER

Further information on the situation in the rural areas of Cameroon is provided by the General Census of April 1976.

TABLE 1. SOURCE OF WATER SUPPLY:

Percentage	Total	Urban Sector	Rural Section
House Connection	6.1	10.8	4.3
Public Standpipe	16.0	47.8	4.0
Well	19.6	18.8	19.9
Spring	33.3	16.9	39.7
"Marigot"	22.9	5.3	29.7
Other	2.1	1.1	2.4

The National Nutrition Survey of 1978 gives evidence of the situation province by province as follows:

TABLE 2. SOURCE OF WATER SUPPLY PROVINVIAL BREAKDOWN.

Percentage.	River	Well	Protected Source	Pump	Private Connection	Other
Centre South	51.9	20.2	14.9	13.2	0.6	
East	46.1	23.2	19.8	11.1		
North	46.7	25.9	0.9	23.9	0.9	1.0
North West	71.6	2.5	12.3	11.7	1.9	
West	66.0	0.0	8.0	23.3	2.7	
South West	43.2	8.3	0.0	41.2	3.1	4.2
Littoral	56.6	0.7	4.2	35.7	2.8	
Douala/Yaoundé	5.9	6.4	1.5	57.2	29.0	

The same survey also gives figures for the average length of time of the water-carrying journey.

EXISTING INFRASTRUCTURE:

Figures for existing infrastructure for rural water supply are less detailed and comprehensive. Edimo (1975) gives statistics suggesting that in Cameroon as a whole there are 2,856 "water points". This is a generic term which covers wells, protected sources, and water supplies. He suggests that these serve a total of 1.100.000 people

The regional breakdown is as follows:

- 1,665 wells in the North Province.
- 621 water supplies and water points in the North West and South West Provinces.
- 520 water supplies and water points in the rest of the country. These figures reflect both the major areas of Genie Rural and CD/SATA♦ intervention and the GURC's stated policy of priority for the North and the plateaux of the West. They must be considered however as a conservative estimate, as they take no account of the contributions from missions, autonomous community initiatives, inputs from private voluntary organisations, and areas too sparsely populated to attract attention from GURC statisticians.

The same is true of the World Bank/WHO 1975 figures presented below:

NORTHERN PROVINCE: 2,000 wells serving 1.100.000 people (70% of population. Half are dry due to drought.)

ANGLOPHONE PROVINCES: 122 Water supplies and water points serving between 84,000 and 130,000 people.

REST OF THE COUNTRY: Logone et Chari : 214 cemented wells for 120,000 people

Mifi	: 1 source for 4,000 people
Lekie	: 27 sources for 14,000 people
Dja et Lobo	:17 sources
Wouri + Sanaga Maritime	: 6 sources
Diamare	: 345 wells functioning out of 670, for 400,000 people.
Nde	: 15 cemented wells and sources for 22,000 people
Bamboutos	: 17 sources, dams and wells for 15,000 people
Haut Nkam	: 8 sources for 20,000 people.

The above is a survey of existing information on the actual position of the rural water sector. There is room for questioning its adequacy. The major need here is to go and find out what is really happening in the rural areas and to find out how many water supplies are working.

♦ SATA - Swiss Association for Technical Assistance.

This information is needed before the size of the task facing rural water supply agencies can be realistically assessed.

INVESTMENT IN RURAL WATER SUPPLY:

Detailed investment figures are hard to find and the task is made more difficult by Cameroonian definitions of what is 'rural'. All settlements of over 3,000 inhabitants, all administrative centres, and all places where agro-industrial development is envisaged are classified as urban. From a sociological point of view or from the point of view of a rural water supply engineer, such settlements might well in other circumstances be classified as rural.

The 4th National Plan envisages a five-year investment figure of 2.2 billion francs CFA for rural water supplies. Of this total, 1.4 billion was to come from Cameroonian sources, and 800 million from foreign sources. This compares with 13.5 billion francs CFA for water supplies for the urban sector over the same period. This total of 15.7 billion francs CFA represents less than 3% of the national investment budget. The WHO 1978 report suggests the percentage should be higher when provincial and local programmes are taken into account.

Whatever the exact percentage is, 14% of the total investment in the Water Sector is going to the rural areas, which contain 66% of the present population. This does not include a large amount of investment made outside of Government programmes and the ratio of 14%/66% must be modified by the fact that a considerable proportion of the population lives in low density areas where investments in water supplies are not a viable proposition. In spite of such qualifications there is an imbalance in the priority accorded to urban and rural water investment, and therefore a need to make sure that what investment is going into rural water supply is effectively used.

THE FUTURE:

The World Bank 1975 Report makes the following predictions:

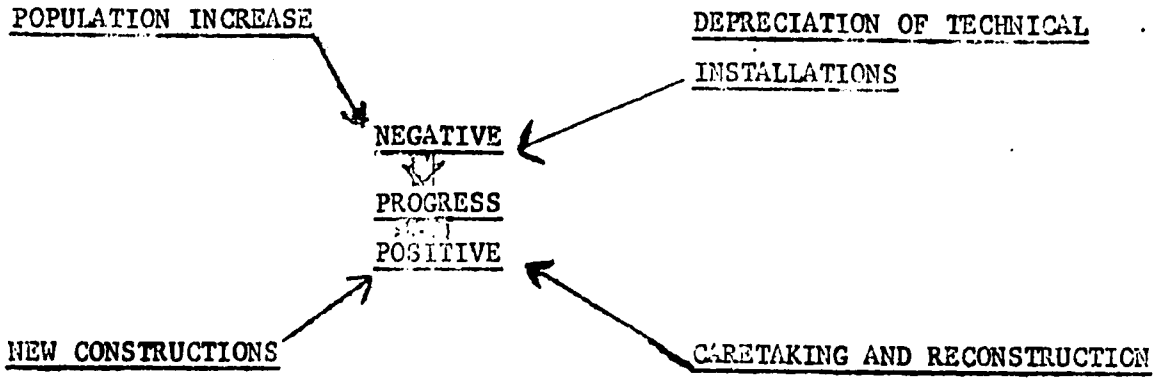
TABLE 3. FUTURE WATER SUPPLY FOR RURAL AREAS:

Millions.	1974	1976	1981	1986	1991	1996
Total Rural Population	4.6	4.6	4.7	4.8	4.9	4.9
Rural Population Served	1.0	1.3	2.1	3.6	4.9	4.9
% served	23%	28%	45%	73%	100%	100%

These calculations are based on 1975 investment figures of 160 Million F CFA per annum for rural water supplies. With per capita investment estimated at 1250 F CFA, the World Bank estimates 150,000 new consumers of safe water per year. 100% cover is calculated as a result of doubling the investment budget after 1980.

The NPCD project needs to look again at the bases of such calculations. The World Bank states that [illegible] is satisfactory, at [illegible] of investment".

Muller schematizes the factors which bear on progress thus :



Within such a framework, if reasonable access to safe water is to be constantly available to all rural inhabitants, the following questions need to be considered:

1/ WILL ADEQUATE MAINTENANCE AND REPAIR BE CARRIED OUT ?

At present evidence of maintenance is as follows:

- In 1972 Bungener suggested that 5% of CD/SATA Water Supplies were irreparable, and 50% in need of repair.
- In 1974 the Director of Genie Rural told the meeting on the creation of a national water committee that out of 2,300 stand pipes and water points constructed over a period of 20 years by his agency, 'la plupart de ces ouvrages ont été abandonnés'.
- In 1975 the World Bank suggested that only 68% of wells in the North were in working order.

The continuous functioning of a large proportion of rural water supply installations from now to the year 2000 is seriously threatened by a neglect of maintenance and a lack of adequate funds for it.

2/ WILL PLANNED PROJECTS BE IMPLEMENTED EFFECTIVELY ?

- The World Health Organisation in 1978 suggested an implementation rate of 30% for rural water supply projects during the period of the 3rd National Plan.

3/ WILL ADEQUATE FUNDS BE ALLOCATED TO WATER SUPPLY AGENCIES ON A REGULAR BASIS ?

- Long term planning is rendered extremely difficult by the inconsistency of GURC Grants to the CD Department. For the Financial Years 1976, 1977, and 1978 these grants were for 60, 80 and 40 million francs CFA respectively. Manpower development, rational capital investment, and project planning are scarcely possible in conditions of such uncertainty and instability.

- Neither Génie Rural nor the C.D Department receive the full amount of their budgetary allocation.

4/ WHAT IS THE LIKELY SIZE OF THE RURAL POPULATION ?

The general census of 1976 has undoubtedly contributed to a more realistic picture than that assumed in 1975. WHO 1978 figures for 1990 target are :

TABLE 4. (Figures in millions)	Total Pop.	Urban	Rural
1- Population in 1978	7.5	2.5	5
2- Population not adequately served	5.53	1.63	3.9
3- Population growth 1978/90	2.3	2.3	
4- Population needing cover	7.83	3.93	3.9

- The question of the size of the rural population and future demographic trends is not overly important except insofar as 1975 projections have already been shown to be inadequate.
- The other question of providing reasonable access to safe water for those people living in settlements too small to warrant government investment has not been dealt with in this report.

5/ HOW MUCH WILL MAINTENANCE COST IN THE FUTURE AND IS ENOUGH MONEY BEING BUDGETED FOR IT ?

- The net result of poor maintenance now is much heavier maintenance cost in the future.
- Muller assesses the maintenance costs for SATA/CD water supplies in 1978 at 291,000 francs CFA for each completed project. He goes on: "This is a very important figure for a rational planning on a long term basis. I am convinced, and I want to emphasize the point, that if the amount of nearly 10,000,000 francs each year, starting from FY 1978/79 cannot be made available for repairs, the average costs of working water supplies and taps will increase considerably".

In conclusion, reasonable and regular access to safe water for all Cameroonians in rural areas cannot be expected by the year 2000 unless and until:

1/ Better feedback, supervision and control structures for construction and maintenance activities are established.

2/ Better arrangements for the uninspiring routine tasks of maintenance and repair are devised and implemented.

3/ Investment in new constructions is accomplished by adequate budgetary and manpower provisions for maintenance and repair.

4/ A crash programme of repair of the considerable backlog of broken down or dried out installations is embarked on.

In the absence of these, Muller's conclusions may be all too plausible: "There are no reasons to have us believe that by the year 2000 less people in rural areas will suffer from a lack of clean water in their villages".

The rest of this report contains some suggestions which may be of use in preventing these predictions from coming true.

CAMEROON'S RURAL WATER SECTOR POLICY:

1. AIMS AND OBJECTIVES:

A. The long-term final goals of the rural water sector are reasonable access to safe water for 100% of the rural population by the end of this century. It is calculated that by doubling investments from 1980 this target will be reached by 1991, the end of the 6th National Plan.

B. The mid-term or intermediate goals (i.e. for the end of the 5th National Plan) for the sector are:

1. 100% cover for the most underprivileged regions.
2. Water supply systems for small administrative centres (sous-préfectures).
3. Water supply systems for growth pole villages ('villages centres') and for regions covered by area development and resettlement schemes.

C. The short-term goals or project activity targets for 1981 (the end of the Current National Plan) are:

1- Water supply systems for main administrative centres (préfectures)

2- Adequate water supply for 50% of the rural population.

3- Implementation of all other ongoing programmes.

These aims and objectives reflect stated government priority for the Northern Plains, resettlement schemes and the plateaux of the West. The above summary of aims and objectives is culled from a variety of the sources listed in Annexe 1, and it has not been possible to find a government document explicitly stating these aims and objectives.

Adequate cover is considered to consist of one protected water point (source, well, or water supply) per village or one collection point for 300-500 people in larger villages.

2. IMPLICATIONS:

The achievement of these aims and objectives represents a significant amount of construction, and an even greater financial commitment to running costs.

Operation and maintenance of a rural water supply scheme is much more difficult than its construction, as the large number of out of use installations all over the world suggest. Not only is the post contruction life of a water supply more problematical than its construction, it is much more expensive, and much less appealing as a task to villagers, staff, governments and aid donors. It relies for its success on routine and regular organisational, technical and financial inputs. There is evidence that in Cameroon, structures which should carry out these routine tasks are short of regular and adequate sources of finance, means of transport and proper supervision and control. Nor are the responsibilities for the different tasks involved defined clearly enough at a central level. The MPCD will have to examine the above issues and make detailed proposals for action at all levels of the C.D. Department structure if previous, current and future constructions are to function continuously in the long term.

The Aims and Objectives for the rural water sector are explicit at the national level. But in the context of Cameroon's rapidly changing administrative structures, and the comprehensive uncertainty about budgets, manpower, and training possibilities, there is a possibility of unrealistic target setting, a lack of adaptability to the wide range of local conditions in the country and a great need for the translation and interpretation of global objectives to show what they mean for different people at different times and in different places. Many schemes in Cameroon at the present time are being constructed without a clear assessment of the funds and manpower needed to keep them running, or of the logistical problems involved. Government and foreign donors are contributing a large part of initial construction costs. Financial arrangements at the present time are not adequate to meet recurrent costs, and this is the major obstacle to the achievement of national aims and objectives.

3. POLICIES:

Another obstacle to the achievement of these objectives is the lack of clarity in Government policy on such questions as quality, quantity, costs, institutional arrangements for local organisation, local participation, and for the sector as a whole.

a) QUALITY, QUANTITY, AND COST:

Present policy on quality is to enforce the W.H.O International Water Quality Standards.

Policies on per capita quantity per day range over the following amounts: (l/c/d = litres per capita per day)

- Urban standpipes	22 l/c/d
- SATA/CD NW and SW Provinces	50 l/c/d for twice the present population.
- SNEC* Douala	33 l/c/d
- SNEC Yaoundé	30 l/c/d

Policy on accessibility is for one water collection point for five hundred people.

The wide range of physical conditions in the country prevents a national policy on per capita costs.

* SNEC - Société Nationale des Eaux du Cameroun.

The above policies have low priority in most programmes, the major emphasis being on new construction. For quality control, the Institut Pasteur in Yaoundé and other laboratories in the country have facilities for analysing water quality, but the decision on what is safe to drink and what is not is left to the agency requesting the analysis. At the Ministry of Health Service d'Hygiène et d'Assainissement, quality control amounts to closures of water points at the time of epidemics and of other major threats to public health from pollution The other instances of quality control are closures or community action to clean sources following irregular visits by researchers interested in establishing the impact on water quality of water supply, health education and sanitation programmes.

Before starting construction SATA carries out chemico-physical analyses of water hardness, dissolved oxygen and carbon dioxide. SATA, the Practical Training for Health Education project, INADES, and CEPEC also take samples of water from proposed sources to check the number of faecal coliforms. However, in terms of water quality, it is safe to assume that the majority of village communities are drinking water which by government standards is not safe. This is in fact the major weakness of sticking to WHO international norms. At current levels of environmental hygiene, health education, rural curative facilities, and rural water supply, they are unrealistic and thus unenforcible. Such a policy is only used negatively and is not the positive tool for improving water quality that it might be. Pacey (1977) suggests that rigid enforcement of WHO standards "would lead to the condemnation of the vast majority of existing water supplies in low-income communities". This is the situation in Cameroon at present. As long as unrealistic policies are in force, planning and budgeting for effective management of scarce resources will be difficult. An unsatisfactory quality policy may mean expensive treatment stations, which in the final analysis do little to improve the quality of water consumed in the home (see Edimo and Feachem in the Water and Health Section).

Water quality also has engineering implications, in that soft water with high acidity levels attacks both cement and iron. It may well be that some of the low-cost schemes (e.g, CEPEC and INADES) are making false economies by reducing to a minimum the amounts of cement for construction, when marginal increases could prolong the effective life of a protected source significantly.

It is worth considering whether CD/SATA's current practice of construction for a very high quality of water is one which Cameroon can at present afford, and whether, in view of the need for sanitation, changes in excreta disposal practices, health education and curative health facilities in the rural areas, such a policy pays for itself in improvements in health. Both Edimo and Feachem point to pollution frequently occuring after the moment of water collection. Nor are the policies of other agencies entirely satisfactory. Many rely on other services to carry out quality control after construction is finished. The weakness of this arrangement is that both responsibility and the facilities for such control are centralised in provincial capitals. Severe difficulties of communication and transport make effective and regular control difficult. A more promising alternative might be to establish structures within the village for controlling quality, carrying out necessary cleaning in the case of minor problems, or making a call for help from specialists in the case of major problems. This seems to be a task particularly suited to the various women's programmes, in view of the fact that water collection and cooking are women's work in Cameroon.

As far as quantity is concerned, the figure of one water point to five hundred people will not be appropriate either in sparsely populated areas where it is not adequate, or in densely populated areas where it may well be able to serve more people. The WHO report (1978) points out that in practice one water point at the present time serves upwards of 250 people according to the density of population. Furthermore it is clear that the SATA figure of 50 litres per capita per day will not be feasible or desirable in the much harsher water conditions of the North. What is needed is an interpretation of the national average target figure of 1 water point to 500 people into specific local norms for quantity and accessibility. An unrealistic quantity policy may result in the choice of a source further away from the village than is strictly necessary. The community, the government, or foreign aid donors will then be called upon to finance much greater quantities of expensive imported materials than is strictly necessary.

The NPCD project must therefore take steps to investigate, area by area, appropriate levels of quality, quantity and accessibility. In view of the wide range of local conditions in Cameroon the standards to be established should be not only a function of geographical, hydrological, social and economic conditions, but also of the different agencies' capacities for construction, control and maintenance.

Opinions of course vary on what is appropriate. The World Bank is categorical: "Since higher levels of service result in greater health benefits, they should be encouraged whenever villagers feel the need and are able to pay for them". SATA/CD's policy follows this line though it anticipates the felt need and circumvents the question of ability to pay by drawing heavily on foreign donors. Muller comments perceptively on the implications of this policy for truly self reliant development.

These considerations will enter into the discussions of what is appropriate. The need is for policies on what is appropriate for each area. Once such policies are established, appropriate cost estimates for wells, water points and water supplies will be possible. These could lead to a rational use of scarce community, government and donor resources and to a greater chance of achieving health benefits from rural water supply activities.

b) INSTITUTIONAL ARRANGEMENTS FOR LOCAL ORGANISATION, AND LOCAL PARTICIPATION:

Institutional arrangements for the GURC's stated policy of self-reliant development would benefit from clarification. The 4th National Development Plan stipulates that :"Les différentes interventions en milieu rural s'appuyeront sur le comité de développement du village... qui mettra au point un programme de développement intégré et fera appel aux organismes techniques selon ses besoins". The institutional framwork for promoting self reliant development is thus explicit. However, Decreee No. 77/89 of the 24th March 1977, regarding the creation of development committees makes no provision for such village development committees. The lowest level of committee is at the Arrondissement and District level. Popular participation in planning is not encouraged by the fact that the committees are to meet in camera, and are to be composed only of administrative, political, technical, and traditional authorities. There are arrangements for the cooption of any individual required by the committee, but these do not constitute a guarantee of a voice for ordinary citizens.

The NPCD should therefore investigate the possibility of a clarification of these institutional arrangements, and seek ways in which to increase the public credibility of such committees by introducing a democratic element into them. It may well be possible to establish a legal basis for village development committees with a high proportion of elected members, some of whom would have places on the arrondissement committee where low-level representation is less desirable or possible in view of the political sensitivity of decisions on which projects to support and which to drop.

Decisions and arrangements regarding popular participation in rural water supply are central to the future roles of Genie Rural and Community Development, the two operational agencies responsible for implementing government rural water supply programmes.

Whereas C.D has up till now worked on the basis of the felt needs of the community and local participation in meeting those needs, Genie Rural is an agency for direct government intervention in the construction of technical installations with a heavy agricultural bias. The contrast here is between development from below and development from above.

As Bungener (1972) points out: "The aim of C.D is not primarily to build water supplies but to bring out interest and dynamism accompanied by greater control of the situation and a high level of understanding of available technologies. The water supply in this sense is only the first stage in a process of education and social change".

Génie Rural on the other hand does not encourage local problem solving and project implementation but relies on rural engineers who "prefer to undertake projects in a centralised way and to implement them with modern technological inputs wherever possible" (Charlick, 1979).

The WHO 1978 report on the water sector in Cameroon asserts that the fusion of these two directorates within the Ministry of Agriculture is presently being studied, and this harmonisation is becoming urgent for the following reasons:

-It is impractical and unfair to expect some communities to contribute both cash and labour for water supplies while others in the same area may not be asked to contribute anything, and may even be employed as labourers on water supply schemes.

-The present situation represents a wasteful duplication of scarce financial administrative and manpower resources, overlapping responsibilities liable to lead to rivalry or at least to a lack of co-ordination between the two directorates.

- The continued existence of two rural water supply agencies with such differing modes of operation poses a threat to the applicability of government policies on quality, quantity,costs and local participation.

The theoretical advantages and disadvantages of the two models may be summarized as follows :

COMMUNITY DEVELOPMENT:

a) Advantages:

- Saves scarce government resources.
- Emphasizes community participation.
- Is an appropriate model for "développement auto-centré".
- Sees water as one aspect of an integrated rural development.
- Attempts to ensure community maintenance.
- Is attractive to foreign aid donors.
- Promotes intervillage rivalries.

b) Disadvantages:

- Makes planning difficult.
- Is slow at implementation.
- Fits uneasily into a centralised administrative system.
- Sometimes adds fuel to intervillage rivalries.
- Creates new structures.

GENIE RURAL:

a) Advantages:

- Makes planning easier.
- Is adapted to a centralised administrative system.
- Is fast at implementation.
- Is technically efficient.
- Works through existing structures.

b) Disadvantages:

- Is expensive for central government.
- Does not create community commitment to maintaining installations.
- Does not encourage popular participation.
- Creates long term dependency on central resources.

These are the theoretical advantages of the two models, the results in practice may of course be very similar.

Both directorates will have to adapt and harmonize in the true sense of the word, in order that the positive aspects of the historical backgrounds of both can be shared for the mutual benefit of both. The issue, of course, touches on all sorts of political and historical sensitivities which the NPCD will have to be aware of. Statements such as Bungener's that: "La méthode de travail de SATA est largement facilitée,n'est peut-être même possible que grâce à l'organisation des anciennes colonies britanniques" are no longer valid in the Cameroon of 1979. There is ample evidence of Community Development working in Francophone countries, and Charlick's report is a useful guide to previous experiences in francophone Cameroon. Flexibility, adaptability and willingness to change are preconditions for success. One of the major tasks of the NPCD is to work out the practical details of this, but the major task of both agencies is to find a Cameroonian solution to ensure that both agencies become more effective forces for water supply development in all parts of the United Republic.

c) INSTITUTIONAL ARRANGEMENTS FOR THE SECTOR AS A WHOLE:

The arguments of the preceding section all seem to point to the need for the creation of a coordinating body for Rural Water Supply in Cameroon. The question of the creation of a National Water Authority has been under consideration for some time now. The International Water and Sanitation Decade, and the increased availability of funds for rural and urban water supplies and sanitation, provide an ideal opportunity for the creation of such a body, initially as a focal point for the activities of the Decade, and later to carry out some of the activities suggested in this report.

The many and varied activities of the various agencies for rural water supply in Cameroon could benefit enormously from better collaboration and coordination. It is not a question of designating one single agency as the only one to carry out rural water supply: with proper coordination and leadership, variety and diversity can be an advantage.

The World Bank suggests three possible models for such a body:

1/ The promotion of a national or regional water authority to cover both urban and rural areas.

2/ The creation of an independent body to coordinate rural water supply programmes.

3/ The integration of rural water supply into multi-sectoral rural development projects.

Before taking the major decision on which model is appropriate to Cameroon, what is perhaps needed in the short term is a consultative council, where all agencies can be represented. It is important that such a body have the financial means, the administrative and legal power, a decentralised structure, and thus the credibility to ensure that future government policies will be implemented and that the rural water sector will be able to absorb, efficiently manage, and make the best use of the increased investment it needs and has such a good prospect of receiving.

FINANCIAL QUESTIONS:

All readers of this report will share two common attitudes: firstly that they pay far too much for their water, and secondly that they do not earn enough money. Villagers, too, feel that they have been far too heavily charged for their water supplies, although their contribution to total costs has been estimated for CD/SATA projects at 18%. Likewise all water supply agencies feel they are not receiving enough money to carry out their tasks.

The most obvious solution is, of course, to increase the amount of money available to the water supply sector for rural areas, and this would probably make things much easier for all concerned. However, an increase of this kind, though undoubtedly useful, would by no means solve all the financial problems of the sector, and needs to be accompanied by a structural modifications specifically for financial management and the clarification of GURC financial policies. These are needed to ensure an increase in the absorbtive capacity of the water sector as a whole.

Thus, while it is useful to look for new sources of funds, ways should be found of improving the exploitation of current sources. There are five possible sources of finance:

a) Central budgets.

b) Local budgets.

c) Foreign technical assistance.

d) Institutional in-country lenders.

e) Villages.

- CENTRAL BUDGETS:

Issues:

- Arrangements for the flow of credit may lead to delays which will put government subsidies out of synchronisation with the rural water sector peak activity periods when cash is most needed.
- Government investment is not accompanied by a sufficient provision for maintenance and depreciation of existing supplies. The NPCD should estimate the optimal ratio of running costs to capital investment.
- Both Génie Rural and the C.D. Department state that they are not receiving their full budgetary allocations.

- LOCAL BUDGETS:

Issues:

At present rural councils are financially responsible for employing and paying caretakers and subsidizing major repairs. Bégert says that although the Councils accept this responsibility when they give their approval for a project, they often find, too late, that their budgets do not allow them to fulfill their responsibilities.

- The legal and financial control mechanisms governing revenue raising activities at the local level should be investigated to ensure that they do not constitute a disincentive to such self reliant activities.
- The legal and administrative power of authorities presently charged with imposing sanctions against non-contributors under present arrangements for money collection should be investigated to ensure that they are adequate.
- The question of a water tax or rate for villages with 'completed' water supplies was proposed by CD/SATA engineers in August 1978. These draft regulations have not yet passed into law. Taxes and rates are extremely sensitive politically. Governments which have to be seen to be serving the interests of the people do not take kindly to increased impositions on the population. Given Cameroon's colonial history of taxation and forced labour, extreme caution is needed in imposing community contributions in cash and kind. Muller estimates the average per capita amount at 500 francs CFA for SATA supplies. Though a water rate of this amount is one solution to the problem, its political repercussions may be far reaching. Alternatives to such water rates are suggested below.
- Anticipated new allocations of funds under the title of 'special rural equipment' might be a source of regular funds for the payment of caretakers the maintenance and repair of water supplies. The NPCD should investigate other sources for this as the fragile financial base of many local councils makes it difficult for them to ensure adequate maintenance.

- FOREIGN TECHNICAL ASSISTANCE:

Foreign sources of finance at present account for over 50% of the funds going to the rural water supply sector. Moreover, with the advent of the Water and Sanitation Decade more foreign money is likely to be available. The task of the water supply sector is to ensure that it can make the best use of such resources. Present trends are for the Cameroonian share of rural water supply costs to decrease, although in absolute terms they are increasing. The growing predominance of foreign assistance may not be compatible in the long term with self reliance. The considerable financial power of most donors, and the way in which they raise money in their own countries, combine to allow for a neglect of upkeep and maintenance. A new construction is better evidence of well-spent money than a balance sheet showing costs of repairs and maintenance. Both are nevertheless necessary. A policy should be formulated to ensure that grants for new construction are accompanied by provisions for maintenance costs, which are often more onerous. The NPCD should make suggestions to ensure that foreign technical assistance money leads to the establishment of viable institutions and structures capable of ensuring the continuous functioning of new constructions, and organised and controlled by Cameroonians.

The details of the issues involved in imposing an upper ceiling on the percentage of total costs of a project to be borne by foreign aid donors should be investigated. This would avoid the danger of uncontrolled new construction placing heavy maintenance costs on beneficiaries in the long term, without adequate Cameroonian structures to assure technical and financial management.

- INSTITUTIONAL BI-COUNTRY LENDERS:

The granting of loans for the construction of village water supplies is worth investigating. It seems likely that a water supply brings no immediate increase in economic productivity and regular additional expenditures are sure to follow. As long as this is clearly explained to the beneficiaries of the water supply, and there is a likelihood that this is not being done at present, there would seem to be no reason why they could not take out a loan and pay it back by raising funds from other activities. This kind of fund-raising is explained at greater length below. The loan approach would seem to encourage the taking of full responsibility by the village and lead to an initial understanding of the financial implications of the water supply.

- VILLAGES:

At present, Muller estimates the villagers' contribution to total costs of CD/SATA water supplies at 18%, and the village share of Cameroonian costs at 44%. This figure is higher for CD/SATA programmes than for other programmes with high capital costs.

Evidence from Lesotho suggests that many villages feel that the initial payment, which is often a substantial sum out of a household's budget, is their contribution to the supply, and they resent having to meet calls for further payments. Further, it may well be that in the same way as a village will build a primary school in order to secure a teacher from the Ministry of Education, or to compete with a rival village, water supplies are undertaken on the assumption that the government will take them over at a later date.

Another section of this report queried whether Government policy is being made clear to the population and this is a case in point. There are real frustrations and delays when contributions are not shared by all households or when there is no agreed way of making sure that the burden of sorting problems out is equally shared. In Lesotho the system of regular voluntary contributions often degenerated into sporadic house collection from the minority of particularly enthusiastic people.

Nevetheless, villagers can and do pay for a substantial proportion of the costs of rural water supplies. But the questions which need clarification by the NPCD are:

1- How aware are the villagers of the full long-term costs of water supply projects at the initiation stage ?

2- How conscious are they of their own long-term responsibility for the maintenance of such supplies ?

3- Are sanctions being imposed effectively against those that don't pay?

4- Will villagers who are now contributing up to 44% of the Cameroonian share of costs be willing to continue doing so when news spreads of others in the same area paying nothing or even being paid for labouring on similar projects ?

All of the issues raised above would seem to constitute arguments in favour of the creation of some kind of body to ensure detailed consideration and resolution at the national level.

Another major issue is whether, as a matter of national policy, villagers should be called on to meet some or all of the initial and recurrent costs. International comparisons are that 20% of countries require a village contribution to capital costs and 70% require a village contribution to all or part of operating and maintenance costs.

In Cameroon the policy is that the Government makes its contribution to capital costs, in conjunction with the village and overseas aid donors, but the maintenance costs are seen as a purely local responsibility, shared by local councils and the population. As things stand, maintenance is the weakest point of the arrangements for rural water supply, and therefore present financial arrangements may need changing. One alternative is to impose water rates. Another is to improve the current practices for collecting voluntary contributions without changing the policy. But Feachem and Muller both conclude that in the long term voluntary contributions for the upkeep of public services, simply do not work. In view of the unsatisfactory nature of the present arrangements and the political difficulty of the suggested alternative, are there any other solutions ?

The NPCD should investigate two :

1- The possibility of guiding national policy on maintenance towards the view that water, like schools and hospitals, is a social service. In quantitative terms the recurrent costs may be of greater significance than the capital costs. If, therefore, government and foreign aid donors contribute to capital costs on the grounds that villagers need financial support, they should also be willing to contribute to recurrent costs for the same reasons.

There are valid social reasons why such public services should be subsidised, especially in view of government's contributions to health services. Perhaps the most pressing argument is that the present arrangements of total local responsibility do not seem to be working. The NPCD should investigate ways in which central government funds could be used to give the Councils the financial resources to carry out their responsibilities. It may be desirable to impose the ratio of local to central and foreign contributions both for construction and for maintenance costs.

2- The other possibility is to investigate ways in which C.D. can help communities to generate income for the maintenance of supplies. Many cooperatives and Produce Marketing Organisations have funds for community projects. C.D. should seek closer cooperation with these and other bodies to see whether they can be of use in avoiding the lengthy and divisive financial arrangements currently in force. The tradition of the cornmill societies and traditional savings clubs may provide other alternatives. If communally raised and owned funds can be channelled more systematically into community projects, the process of local contributions to maintenance and repairs will become quicker and smoother.

The aim of all these measures is to ensure an effective Cameroonian contribution to a sector where present trends are for foreign money to become increasingly available, but where its absorbtion is far from optimal. The implementation rate of the 3rd National Plan for the Water Sector rural activities was 30%. Without an adaptation of present procedures, and the strengthening of Cameroonian structures, the sector may not be in a position to take full advantage of the increased availability of much needed funds.

WATER AND HEALTH

Critical differences in perception between the staff of water supply agencies and the villagers intervene very strongly in the achievement of health benefits from improved water supplies. The village level worker and other staff may be convinced of the necessity of clean water, excreta disposal and improved hygiene, but the/'La saleté de l'eau ne tue pas le Noir'/proverb (Dirty water never killed an African) is common in many areas of Cameroon. Perhaps in the area of health more than else where, 'The essential problem of development is to make people want what they need' (Pitt, 1976).

In the meantime, the failure of measures to ensure health benefits from improved water supplies, and the slowness and complicated process of changing deeply rooted attitudes towards the use of water and the disposal of excreta, continue to impose heavy costs on both the villager and the government. Backey (1977) estimates that in the Sangmelima area, the average family spends 9.2% of its budget on health care, and this takes no account of the decrease in labour productivity resulting from ill-health. For the government the costs of therapy and curative facilities remain high. Bungener suggests that in Cameroon most doctors spend 50% of their time combating water-related diseases. Statistics do not exist for water-related infant mortality, but the World Bank/WHO Sector Study of 1975 gives the following statistics for water-borne disease morbidity:

TABLE 5.	1970	1971	1972	1973
Cholera		2411	362	195
Typhoid	149	81	90♦	46
Paratyphoid	2	13	♦	-
Polimyelitis	51	5	65♦	33
Amoebiasis	10607	1223	2811♦	3302
Bacillary Dysentery	772	321	1441♦	2407
Malaria	221988	61124	82927♦	111816

♦ ten months.

The reliability of the above statistics in giving a true picture of the water related disease morbidity can be assessed by a comparison with figures from 1978 National Nutrition Survey, which showed that between 17% and 32% of the 3-23 month old children surveyed had been ill the previous week and that significant proportions of these had had diarrhoea or fever.

TABLE 6. 3-23 Month old Children: Symptoms of the previous week

Province	% Sick	% with Diarrhoea	% with fever
Centre South	20.1	13.0	21.9
East	17.1	16.8	16.0
North	17.3	14.4	19.0
North West	22.4	18.1	24.7
West	22.8	24.0	25.1
South West	31.8	22.4	34.4
Littoral	17.1	11.4	10.0
Yaoundé/Douala	22.0	16.4	24.5

In Western Europe, the spectacular decline in mortality and morbidity was due to changes in sanitation, agriculture, marketing and general attitudes to life, much more than to the curative interventions of doctors. It seems clear that in Cameroon an improvement of the standard of living is a precondition for a lowering of mortality and morbidity. This gives particular importance to the integrated development approach favoured by the C.D Department, and its role in capitalising on investments in the health sector.

Conventional Cameroonian water sector responses to what can be described as a dramatic picture of endemic ill-health much related to the poor quality of water supply fall into two categories:
1/ To try to improve the population's access to safe water, both in quality and in quantity. There is a general agreement that the provision of larger quantities of safe water is the single most important activity to improve the health of people in the rural areas.

2/ To try to accompany and support water supply activities with comprehensive programmes of health education, latrine building, and improved rural health care facilities. The World Bank/WHO 1975 Sector Survey suggests that 'L'impact le plus marqué sur les problèmes de salubrité rurale sera obtenu grâce à une éducation sanitaire continue du public.'

All but one of the agencies questioned during the course of this survey listed improved health as a direct benefit of their water supply programmes, even when they themselves did not organise the accompanying health education or excreta disposal programmes. The one exception stated that it felt that there would be no health benefits without health education and a latrine building programme.

What then is the true position ? Should one assume that health benefits do accrue from rural water supply programmes or not ? Current health statistics in Cameroon do not constitute adequate baseline data for measuring the impact of rural water supply improvements. The establishment of such baseline data is outside the scope of most water supply agencies, but should be established once rural curative facilities are improved. This will ensure that action can be taken to improve the situation revealed by the baseline data.

Even without such statistical data, there is evidence of too much wishful thinking in Cameroon about the health benefits of water supply and not enough action to ensure their delivery to a rural population chronically in need of them. Water supply agencies are claiming to have a direct impact on health, and then leaving the complicated task of capitalising on water supply construction to other people. There is adequate evidence from other countries of the need for much greater attention to slow and laborious detail if health benefits are to follow new village water supplies.

The World Bank Paper on Village Water Supplies says 'It is nevertheless difficult to predict exactly to what extent an improved water supply will reduce the number of diseases or their incidence'. This is especially true in Cameroon where there is no systematic bacteriological or chemico physical analysis of water quality before, during, or after the water supply construction stage. Some agencies do carry out analyses before construction, but few carry out regular controls afterwards.

There are three studies of the bacteriological quality of the water in improved village water supplies. All of them are related to the OCEAC* project which used only local materials to protect springs. They are:

1/ Raymond Isely: Assainissement des Sources d'Eau par des moyens locaux. No date.

* OCEAC - Organisation pour la Coordination de la Lutte contre les Endémies en Afrique Centrale.

2/ Samuel Ngalle Edimo: Evaluation préliminaire d'une Action d'Assainissement conduite dans certains villages de la Mefou. Ministry of Public Health. No date.

3/ Drs Timsit, Dubille and Carrie: Etude sur les verminoses humaines dans cinq villages du Département de la Mefou. OCEAC March 1976.

The samples for these studies were very small, but they are the only evidence on which a judgment can be made. They do not show conclusively that the OCEAC activities were at the time of the studies having a significant impact on water related diseases.

1- Isely carried out bacteriological analyses on 48 sources in 11 villages. Out of 15 'improved sources' only 7 (49%) were found to give 'drinkable water'.
Out of 33 unprotected sources only 3 (9%) were found to give 'drinkable water'.

2- Edimo's study was smaller. Out of 5 'protected' sources, 3 (60%) were drinkable. Out of 6 'unprotected sources' 2 (33%) were 'drinkable water'.

More significantly, Edimo analysed the water quality in six private houses and found that only 2 (33%) of the houses contained 'drinkable water'. This is ample evidence of contamination after water collection. Edimo's conclusion is that the improvement of a source is not enough to ensure safe water.

3- The three OCEAC doctors also conclude that 'au total on trouve peu de différence entre les villages assainis et non assainis'. The conclusion is qualified by the nature of some worm infections which can never be eliminated until total cover of all the population is assured.

Of course these studies refer to low cost installations, but even the high cost agencies should be aware that : "The availability of safe drinking water is not sufficient to bring about the expected health results. It is necessary that the behaviour of the rural populations be changed. Several studies have shown that perfectly safe drinking water at the tap is polluted at the moment of consumption (conditions of handling and of storing). Moreover most water-related diseases are transmitted not only by polluted water but also by a lack of hygienic conditions. Thus safe drinking water is only beneficial if :

- the population understands the link between health and clean water ;
- the population perceives the link between hygiene and health."

This points to the need for health education and, as mentioned earlier, real improvements in the quality of life. These could be promoted by specific action-be[illegible]rammes of the kind which CD is interested in.

CD should consider the possibility of cash-generating activities, and should not hesitate to capitalise on their water supply construction activities to do this and health education as well. There is evidence of widespread problems for health educators, and part of this may be due to the fact that they are working outside of an integrated structure. Much fuller use could be made of radio and schools. Some health hazards could be reduced by identifying the points where pollution and contamination occur, and the practices which are unhealthy, and then organizing education around such practices.

As far as the CD Department is concerned, the NPCD should investigate whether the Women's programme places sufficient emphasis on educating women about the benefits that a newly installed water supply can bring. In 1974/75, out of 34 women's courses organised by the department, there was only three health campaigns. The women's programme syllabus, though covering hygiene and washing, does not make provision for a systematic exploitation of the work of the technical section. Out of the sixteen sections listed there is no complete one devoted to the dangers from water-related diseases and how to avoid them. They are undoubtedly covered within the syllabus, but it might give the department's activities more coherence and impact if the women used the prestige of the technical section as a focus of their health education activities.

Here Robinson (1972) has some interesting and practical suggestions for an outline syllabus for incorporation in Environmental Studies in Primary Schools. His suggestions could be incorporated both in the women's programmes and in the schools.

He suggests the following topics, among others:

- DANGERS FROM DISEASE:

  Why it is important to cook food and boil water.

  Danger from unclean water. How to prevent it.

  Danger from dirty food. How to prevent it.

  Danger from cuts. How to make and use disinfectant.

  Danger from animals, insects and snakes.

  Danger from not wearing shoes. How to make sandals.

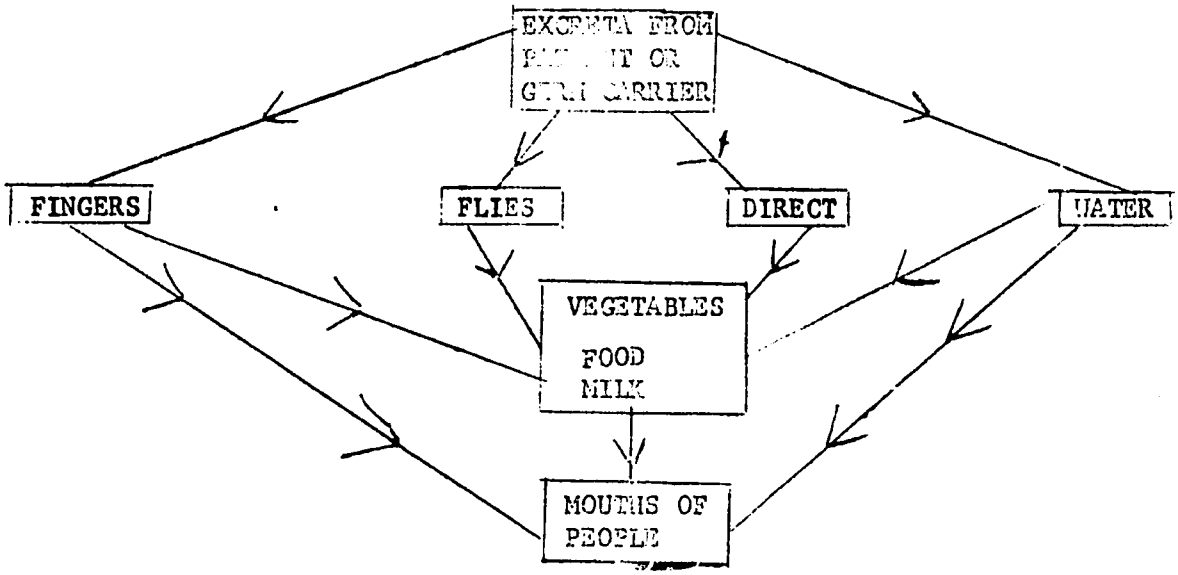
  How to keep the body in good working order.

  How to make a filter and latrine.

  How to keep a house clean.

An integrated, systematic attack on health problems does not seem to be ensured by the current activities of the various water supply agencies or the present organisation of the sector. The NPCD should therefore investigate ways of introducing a more systematic attack on health problems, first by better coordination between water and health education agencies, and secondly, by the realisation that water is not the only way in which diseases such as diarrhoea, typhoid, and dysentery pass from one person to another.

How the germs of bowel diseases pass from one person to another:



SOURCE - ROSS INSTITUTE OF TROPICAL HYGIENE.

TABLE 7. CLASSIFICATION OF INFECTIVE DISEASES IN RELATION TO WATER SUPPLY:

Category	Examples	Relevant Water Improvement
Water-Borne Infections		Aim for maximum
a) Classical	Typhoid◆ Cholera◆ Bacillary Dysentery◆ Amoebic Dysentery◆	microbiological quality of water
b) Non classical	Infective hepatitis◆ Gastroenteritis◆	Improve microbiological quality of water
Water-Washed Infections		IMPROVE QUANTITY
a) Skin and Eyes	Skin Sepsis and Ulcers Trachoma Conjunctivitis Scabies Yaws Leprosy	Provide a greater volume of water, facilitate acc and encourage use
b) Diarrhoeal Diseases	Bacillary Dysentery◆ Amoebic Dysentery◆ Infective Hepatitis◆ Gastroenteritis◆	

Water-Based infections		
a) Penetrating Skin	Schistosomiasis	Reduce contact with infested water
b) Ingested	Guinea worm	Protect water source
INFECTIONS WITH WATER RELATED INSECT VECTORS:		
a) Biting near water	Sleeping sickness	Clear vegetation
b) Breeding in water	Onchocerciasis Yellow fever	Avoid need to visit source Provide reliable supply
INFECTIONS PRIMARILY OF DEFECTIVE SANITATION		
	Hookworm	Provide sanitary faecal disposal
	To some extent diseases in previous categories also.	

◆ These diseases may be spread by any process which allows material from human faeces to be ingested, i.e., they may spread either as water-borne or as water-washed infections.

SOURCE: ARNOLD PACEY: WATER FOR THE THOUSAND MILLIONS.

If water supply agencies are to improve health conditions in the rural areas, they must pay much greater attention to the water improvements suggested above and also to non water-borne routes of faecal oral transmission. While improved quality and quantity of water are a necessary condition for the elimination of the diseases above, they are not sufficient alone, and thus the health improvements from water will not be real unless and until improved sanitation and improved understanding of disease transmission and hygiene are assured.

Feachem's (1978) conclusions on Lesotho may be instructive here: "Diarrhoeas and typhoid are not primarily water-borne in Lesotho. We therefore postulate that most faecal-oral transmission in Lesotho is by non-water-borne routes, and therefore is susceptible to improvements in personal and domestic hygiene and excreta disposal, and not to improvements in water quality per se". He goes on to suggest that the following complementary inputs are necessary before any marked reduction in disease takes place:

1- Personal body-washing and clothes washing facilities.

2- Major changes in excreta disposal practices and latrine construction.

3- A programme of health education large enough to improve personal and domestic hygiene.

4- A programme of health education to encourage improved food hygiene.

There may be a much more positive and practical role for the CD women's programme in all this. The NPCD project should work out practical details and action programmes at the local level to ensure increased cooperation with other agencies in health and income raising activities. Such programs might include the possibility of organising hygiene courses for urban and rural food handlers and market sellers, constructing water points for urban and rural markets and drainage and waste disposal programmes in the low income areas of some towns. The demonstration effect of the urban areas should not be overlooked. As long as urban sanitary conditions remain unsatisfactory, it is unlikely that rural areas will improve as fast as desirable.

Conclusion: It seems likely that village water supplies have not as yet led to reductions in diseases in Cameroon, but they are a necessary condition for such reductions in the future. Village water supply agencies should not only concentrate on construction but also investigate ways of collaborating with other agencies to reduce ill-health in rural areas, and educate the public on the potential benefits of their water supplies.

The NPCD should investigate ways in which the CD Department can improve its use of its limited resources, specifically the Women's section, to promote the health benefits of water supplies.

TRAINING

Basic, though far from complete, information on the training facilities of the CD Department and other water supply agencies can be found in Part Two.

There has recently been considerable research into the manpower training needs of the water sector as a whole. UNICEF is studying its future contribution, and the World Bank and WHO will shortly be responding to GURC manpower training needs assessments from all ministries concerned with the International Water and Sanitation Development Decade.

The C.D Department at present has 6 Cameroonians, 7 Swiss, and 2 CARE engineers, 10 Supervisors, and 93 skilled workers (masons, plumbers, carpenters, and draughtsmen). In addition to these there are the CD staff, and approximately 30 German, Dutch, and American volunteers.

For the technical section, which is the most often cited area of need as far as training is concerned, the Department's expressed aim is to evolve from the current situation (see Table 8), which amounts to one engineer, two supervisors, and roughly ten skilled workers per province, to a position of one engineer, two supervisors, and eight skilled workers per department. The aim is thus for a skilled workforce of 40 Engineers, 80 Supervisors, and 320 skilled workers. This is probably the number of people needed to ensure the proper functioning of water supplies once all villages have reasonable access to safe water. The NPCD project will have to propose feasible incremental targets, tied to the department's budget for new construction work, maintenance of existing supplies and, most importantly, running costs. There is no point in having skilled manpower confined to offices, with no transport, equipment, or cash flow, especially if the department cannot provide supervision and support. Training programmes must be tied to budgets, not to the total amount of work to be accomplished.

However, the greatest need at present is for the training of C.D staff in CD philosophies and methods. Highly skilled technicians are expensive to train (especially engineers) and there is a possibility of wastage from the department on account of poor working conditions and uncompetitive salaries for higher qualifications.

TABLE 8. C.D. Department Water Supply Technical Personnel.

	PROVINCES:						
PERSONNEL	N.W.	S.W.	Litt.	C.S.	W.	E.	N.
Engineers	2	2		1	1	1	
Supervisors	2	7			1		
Technicians	12	13	3	7	2	2	4
Designers	2	2					
Plumbers	12	10					
Masons	7	7		1			
Carpenters	6	3					

OVERALL TOTAL : 110.

C.D.C.s, C.D.A.s and all francophone cadres will need thorough training in C.D. philosophy and methods if the department is to make what should be its most significant contribution in all areas of the country: the confident introduction of the C.D approach to self-reliant development.

Training should reflect this approach. Resources devoted to training should be shared as equitably as possible between professionals and lay people. NPCD should investigate the possibilities of training and information courses for administrators, policemen, food handlers, market women, butchers, traditional health practioners and birth attendants. Such short courses have the advantage of cheapness and a large multiplier effect. They do not require expensive equipment. They do not even need to be held in buildings belonging to the C.D Department, but could be staged in primary schools or community halls, most of which in both francophone and anglophone provinces have been constructed by C.D. methods.

Another approach to training which NPCD should investigate is the revamping and revitalisation of C.D.'s information service. Ways of increasing and improving the use of radio should be sought, as it has the potential of reaching many more people than formalised high-cost training courses.

In this way, practical proposals should be made to ensure that training is open to as many people as possible, and not just to professionals from the Department's staff. The Department should continue to promote, skill and train for practical achievements, and not contribute unnecessarily to the expensive and at times wasteful pursuit of paper qualification. What is needed is skilled and motivated people rather than highly trained diploma holders.

PROJECT SELECTION CRITERIA

The World Bank points to 'a general lack of methodology for project selection' in the rural water [illegible]. Though this is not yet a major problem in Cameroon, it is likely [illegible] the expansion of the C.D. Departme into the francophone areas and the possibility of a more important coordinat role for the department in rural water supply, a more systematic approach to project selection will be needed [illegible] aspects:

a- to ensure fairness and [illegible] be felt ;

b- to balance demand on C.D.'s limited resources and its capacity to respond promptly ;

c- to resist pressures from influential quarters for water supplies in 'home' villages ; and

d- to ensure a more rational use of scarce resources.

At the present moment many different selection criteria are applied by the different agencies, outside donors and regional development programmes. The following are examples

A. SATA follows the department's final recommendations but itself uses the following criteria:

- Maximum cost of 15 million francs CFA for the whole project.
- Preference for small rural villages.
- Technical feasibility.
- Evidence of village commitment through target cash contributions and target amounts of local materials.

B. GENIE RURAL abides by the needs and priorities established by political and administrative authorities, outside donors, and regional develop programmes.

C. The Mandara Mountains Small Dams Project chooses sites according to.
- The number of households within a fixed radius.
- The cost per cubic meter of water (maximum $6.00).
- The distance construction materials have to be carried.

D. It has been recommended that UNICEF should support water supply projects according to the following criteria :

- existence of a current programme.
- areas most deprived of water.
- areas with chronic water-related health problems.
- priority for markets, schools and health centres.
- evidence of commitment to popular participation.
- possibility of effective maintenance.

E. Most of the smaller programmes with low capital costs and minimal inputs from outside the community base themselves solely on the dynamism of the rural population.

In general these criteria are fair, though some may be criticised for ignoring the important condition of concrete evidence of desire for and commitment to the water supply project. This may have serious consequences for long-term maintenance, especially if the project design stipulates that the community will be responsible.

Others may be faulted for being so wide that they do not constitute an effective tool for fitting demand to responsive capacity. They may therefore lead to frustration and long delays in implementation at village level.

SATA's criteria are not aimed at, nor are they suited to, a systematic exploitation of resources department by department on a programme basis. This can lead to time wasting, high transport and administrative costs, and disregard for planning priorities. The Cameroonian C.D. Department may not be able to afford these. Further, if the government is to use C.D. as a central coordinating agency for rural water supply and for the achievement of its stated objectives, this will not only bring increased grants to C.D. but increased pressure for a more rational allocation of resources, and a greater respect for politically and administratively defined planning priorities than at present.

There will be less time to wait for villagers to organise themselves, less possibility of turning down water supplies for growth centres and large villages, and more pressures to cut corners on the slow process of community decision-making, education and animation.

The task of the NPCD project will be to examine the current project selection criteria and to adapt them in the light of the above pressures. There is always a tension between a strict C.D. "process" approach and the dictates of rational planning. Project selection criteria will have to strike the right balance between the two, without compromising either disastrously.

THE POTENTIAL ROLE OF COMMUNITY DEVELOPMENT

"The Department should guard against a certain tendency to assume that it must play the leading role, and that its staff will automatically act as the medium through which the entire work of the development of the community has to be carried through".

Bégert.

The role of the C.D. Department has evolved considerably over the years since the original 1959 impetus, which was to organise and co-ordinate existing self-help activities as old as African society itself. The initial activities of the division, as it was then called, were road construction, literacy classes, cooperative corn-mill societies for women, and training courses for village voluntary workers. Four years after its creation, the Division of Community Development was engaged in 55 construction projects. Later, a major part of the program was in schools construction, and, with the arrival of the first Helvetas (SATA) engineers, village water supply.

At present, the Department's activities are mainly in water supply, the construction of roads, bridges, community halls and health centres, and programmes for rural women.

With the transfer of C.D. Head Office to Yaoundé, the extension of activities into francophone provinces, the amalgamation with animation rurale, and the evolution of development policies in Cameroon since the 1975 UNC congress in Douala, the Department is analysing and assessing its role in changed and changing conditions.

CD/SATA's wide popularity in the area of its previous activities is in large part due to its [illegible] of specialisation and considerable success in water supply and [illegible] construction. One of the courses open to the department is to build on this solid foundation of achievement, and to continue with the same kinds of activities in the areas of the country where it has no previous experience. This would give the department a clear identity, a high degree of credibility to the rural population, the political and administrative authorities, and to foreign aid donors. Roads, bridges and water supplies are visible and tangible evidence of the usefulness of Community Development.

But one of the drawbacks of this specialisation in water supply and general construction is that the community development approach is based on felt needs, and specialisation means that one will only be able to respond to requests from communities in need of water or general construction projects. In a sense, then, this is an option to concentrate on the quality rather than the quantity of one's activities, to limit the department's scope, and this is always a difficult decision for any organisation. Nevertheless, even if the department takes this option, there are enough issues to be resolved for it to represent a significant challenge. The existing program needs adjustments, modifications and improvements, and there is scope for putting a lot of out-of-use water supplies all over the country back into service.

The other option is to diversify as well as to expand. NPCD will be called upon to look into possible roles for the CD Department in this wider type of programme. At present, possible areas of involvement include the following:

1- Rural and Urban low-cost housing/sites and services schemes.

2- Cash-generating programmes through agricultural demonstration and extension, and through closer collaboration with the cooperative movement.

3- Participation in integrated rural development programs. e.g., C.D.F at Doukoula ; ZAPI de l'Est ; Sodenkam.

4- Community education programs along Santa lines nationwide.

5- Providing a support and coordinating facility for private voluntary agencies in Cameroon.

6- Diversified programs through private voluntary agencies.

The option to diversify is of course appealing: it corresponds with C.D.'s self-image as an agency responding to any felt needs expressed by a community. It provides variety and interesting work for staff and transforms C.D. into a force for integrated rural development. The NPCD will have to investigate whether the Cameroonian C.D Department is suited to this kind of role, or whether the challenge of improving its current service to the public is a more realistic goal in the short term. It will have to consider whether the anticipated level of funds, manpower resources, expertise, political credibility and administrative capacity are adequate to allow for the option of diversification. To take on a larger role in rural development without adequate resources may be to promise villagers things which one cannot deliver, and to run the risk of frustrating expectations and destroying enthusiasm at both village and staff levels.

Whatever option is taken, the NPCD will have to ensure that the Department is capable of delivering the goods. Even if the Department takes the option of continuing its traditional activities, Muller suggests that covering the francophone provinces will best be done by starting in specific and limited areas with a heavy concentration of resources and obvious economies on manpower and overheads. He rejects the option of installing a C.D. superstructure in all departments in the shortest possible time. He does however overlook the tensions between political balance and technical efficiency. To choose a concentration of scarce resources is to lay oneself open to charges of favoritism, a risk which the administration cannot take. On the other hand total coverage will lead to the danger of no one area having enough resources to be effective. What may seem ideal to the planner will not be acceptable to the administrator.

The NPCD will therefore have to find the modalities of a compromise acceptable to both, bearing in mind that:

1/ Both the specialised and the diversified option will need to be proportionate to the size of the GURC grants and the administrative capacity of the department.

2/ C.D. is not the only agency in the field. It has no monopoly on water supply expertise, and even less so on activities being considered as appropriate for a diversification of C.D.

3/ Concrete tangible projects in working order three years after 'completion' are appealing to villagers, governments and donors.

Whatever the potential role of C.D. turns out to be, it will have to work with, and as Charlick suggests, through other agencies, and must not try to develop new areas of activity on its own. The approach should be based on concrete project achievement leading to community education for self-reliant development. Specifically in francophone areas it would be a useful achievement to establish structures allowing greater and growing popular participation in development. Ultimately C.D. will succeed or fail according to whether it finds a C.D. model applicable in all areas of the United Republic of Cameroon.

PART TWO

AN INTRODUCTORY PROFILE OF WATER SUPPLY AGENCIES PRESENTLY ACTIVE IN CAMEROON

The rural people of Cameroon are used to what Charlick calls the complexity of structures and organisms and the multiplicity of methods which characterize rural water supply activities in the country. They may also be confused by them.

The following profile of water supply agencies was compiled after three and a half years of contacts with some of the organisations mentioned below, interviews (listed in Annexe II) in Yaoundé based on a simple set of questions, and a reading of documents listed in Annexe I.

It is far from being a comprehensive list of all the agencies active in the field of rural water supply, and it inevitably reflects both the viewpoint of the national capital, where people are often out of contact with the realities of the rural areas, and an inevitable Southern bias to the information. Its weakest point is in its cover of the water situation in the North where water needs are often dramatic at the end of the dry season.

It does, however, outline a considerable number of agencies according to the following classification:

1- MINISTERIAL STRUCTURES

- Ministry of Economy and Plan.
- Ministry of Mines and Energy, and Société Nationale des Eaux du Cameroun, (SNEC).
- Ministry of Equipment and Housing.
- Ministry of Agriculture.

2- RURAL WATER SUPPLY AGENCIES WITHIN THE MINISTRY OF AGRICULTURE

- Direction du Génie Rural at de l'Hydraulique Agricole.
  - Fonds Spécial d'Actions Rurales (FSAR).
  - USAID Mandara Mountains Project.
  - ZAPI de l'Est.
  - Fonds Européen de Développement.
    - --North East Benoue Resettlement Scheme.
    - --North West Province Integrated Rural Development.
  - SCANWATER Health Centres Project.
- -Department of Community Development.
  - Swiss Association for Technical Assistance. (SATA).
  - CARE Cameroon.
  - Community Development Foundation/Save the Children Fund.

3- UN AGENCIES

- UNDP.
- UNICEF.

4- HEALTH AND SOCIAL AFFAIRS

- Ministry of Social Affairs.
- Practical Training for Health Education.
- Catholic Relief Services.

5- VOLUNTEER AGENCIES

- German Volunteer Service (DED)
- Volontaires du Progrès (French Volunteers)
- Organisation of Netherlands Volunteers (ONV)
- U.S. Peace Corps.

6- EMBASSIES

- Project Funds in the Embassies of the U.S., Canada, and the Netherl

7- PRIVATE VOLUNTARY ORGANISATIONS

- Bureau des Activités Socio-Economiques (BASE)
- Institut Africain pour le Développement Economique et Social (INADES)
- Centre d'Education à la Promotion Collective (CEPEC)
- Fédération des Eglises et Missions Evangéliques du Cameroun, Commission pour le Développement. (FEMEC)

MINISTRY STRUCTURES

The Ministry of Economy and Plan (MINEP) is responsible for planning investment for,and execution of,all projects and programmes within the Water Sector. It is also responsible for attracting foreign investment.

The Ministry of Mines and Energy (MINMEN) is responsible for the construction of most new urban water supplies, which on completion are handed over to SNEC (Société Nationale des Eaux du Cameroun) who then manages them. Eight urban water supply systems in the North West and South West Provinces are run and managed by MINMEN's Direction de l'Eau et de l'Energie. This is because they were constructed before 1975, the date of a Presidential instruction to the effect that SNEC would take over the running of all urban water supplies once they were completed. Since 1975, the Direction de l'Eau et de l'Energie has undertaken the construction of 20 urban water supplies with Italian Technical Assistance, and a further eight are being undertaken with an 800 million DM loan from Germany. The CURC is financing water supplies for a total of 2 billion francs for 9 centres with over 3,000 inhabitants along the line of rail, and the MINMEN has also been in charge of the water supply for Mokolo with financial assistance from the FAC. It is also planning urban drainage and sewerage systems for Douala, Yaoundé, Victoria, and Maroua.

Most of the above projects are contracted out to private contractors. The Direction de l'Eau suffers from a shortage of highly trained personnel, having recruited only 5 new engineers since 1975. Training is carried out at the Ecole Nationale de Technologie, the Polytechnique, and for higher levels, overseas.

By 1982 the above projects will serve a population of 2,279,000 for a total cost of 30.3 billion francs CFA. This total figure gives per capita costs for urban water supplies of 13,300 F CFA. For the 9 centres along the line of rail, per capita costs range from 25,000 to 80,000 F CFA.

After construction of the water supplies, SNEC is responsible for their financial viability. It is planned that by 1980 SNEC will be running water supplies for 47 urban centres, and for a total of 72 urban centres by 1982.

In Douala the SNEC system supplies 12,000 private subscribers, and 225 public standpipes. It provides 24,834 m3per per day, and a third of this is consumed by large industries. Per capita provision for Douala is 33 litres per capita per day.

In Yaoundé 13,000 private subscribers are supplied, as well as 87 standpipes. The Yaoundé system is growing at the rate of 12% per annum. Provision is for 66 litres per capita per day. It is estimated that there is approximately 20% leakage from the system.

In both Yaoundé and Douala the trend is away from public standpipes both for financial and for sanitary reasons. Many households in the low-income area are devising systems for installing a SNEC meter at a central point and then either providing their own meters or sharing the monthly electricity and water bill. CEPEC's urban animation team plays a prominent part in organising such activities in Yaoundé.

SNEC personnel up to 1977 was as follows:

	Degree Holders	Supervisory + Skilled	Office and Labour	Total
Dec 1974	21	53	317	391
June 1977	28	81	452	561

This represents an increase of 57% over three years. SNEC is able to offer better salaries and inducements than the rural water supply sector, and this may be a problem for rural water programme recruitment.

Training is carried out at the Polytechnique and the Ecole Nationale de Technologie in Yaoundé and at a Training Centre in Douala where the company's head office is situated.

The company has receipts of 2.5 billion CFA per annum, in theory. For various reasons 1 billion of this remains unpaid.

The cost of delivering water in the urban areas is 94 francs per cubic meter. The average selling price is 80 francs per cubic meter (95 francs for private subscribers and 76 for public).

Water is chemically treated and quality control is carried out regularly.

The other Ministries involved in the water sector are the Ministry of Equipment and Housing, who carry out some construction and are responsible for rainwater drainage, and the Ministry of Health, whose Service d'Hygiène et d'Assainissement is overall responsible for ensuring WHO International Quality Water Standards for water supplies in the country.

For Rural Water Supplies the Ministry of Agriculture has two directorates:

1- La Direction du Génie Rural et de l'Hydraulique Agricole

2- La Direction du Développement Communautaire.

1- LA DIRECTION DU GENIE RURAL ET DE L'HYDRAULIQUE AGRICOLE

This directorate is the largest rural water supply body in Cameroon and consists of two Services : a) Service de l'Hydraulique Agricole et des Aménagements Ruraux and B) Service du Machinisme Agricole. Thus rural water supply is not the sole activity of Génie Rural, but it is the main one.

Génie Rural has branches in all provinces, and since 1977 has extended its branches down to Department level. It is the largest well-digging agency in the North, but also does spring catchments and water supplies in other parts of the country.

In 1976/77, which is the latest date for which statistics have been compiled, the directorate received funds for a programme of

- 102 spring catchments.
- 5 repairs and maintenance of spring catchments.
- 45 new well-digging operations.
- 87 Repairs and maintenance of wells (redigging).
- 26 Drinking water supplies.
- 3 Installations of pumps for wells.

The regional distribution and implementation of this programme was as follows:

Province	Aménagement Source	Réaménagement	Puits	Recreusement	Water Supply	Pompe
North	-	-	25	41	-	-
Centre South	9	1	2	0	11	-
East	20	-	1	-	-	-
Littoral	9	2	-	-	-	-
West	27	2	1	-	3	-
North West	6	-	-	-	4	-
South West	5	-	3	-	3	-
TOTAL	76	5	32	41	21	0

This represents an implementation rate of 65% on the normal programme. 60 additional projects were carried out:

- 1 maintenance of a spring catchment,
- 30 spring catchments,
- 29 Wells.

Génie Rural Personnel

Approximate figures for staff are:

20 Ingénieurs du Génie Rural and 10 Ingénieurs de Travaux.
20 Techniciens Principaux, 41 Techniciens, 12 Agents Techniques.
16 Agents techniques adjoints. 23 Techniciens contractuels.

In addition 21 cadres were detached from Génie Rural to special projects (ZAPI, e.g.)

Masons, mechanics and other skilled workers were employed on a temporary basis.

Génie Rural Equipment

In 1976/77 Génie Rural received 50 million francs CFA for equipment investments, as compared with 80 million for 1975/76. The largest part of these sums was devoted to the purchase of vehicles and the repair of equipment and machines.

Génie Rural has garages and workshops in Maroua, Garoua, Yaoundé, Bertoua and Bafoussam.

In 1976/77, it had the following equipment at its disposal:

- 51 light vehicles.
- 28 lorries.
- 13 Compressors.
- 12 Water pumps.
- 14 Air pumps.
- 6 Hoisting structures
- 7 Hooks
- 37 Derricks
- 32 Moulds
- 76 Sets of Equipment for form work.
- 35 Pneumatic and other drills
- 2 Concrete mixers.

Génie Rural Budget: (for water supplies)

Million CFA	75/76	76/77	77/78	78/79
FONADER	58.5	60	80	105
STATE	100	50	30	30

This budget in 76/77 was spent in the following way:

- North 45,000,000
- Centre South 20,397,290
- East 10,000,000
- Littoral 9,000,000
- West 12,000,000
- North West 8,000,000
- South West 8,000,000

This does not, however, represent the total financial arrangements for Génie Rural projects : the Directorate is the Agency for the FSAR project in the North, the Scanwater Danish loan of 800 million francs CFA for water supplies for 24 Health Centres, and it also receives significant financing from the ONCPB, rural communes, Socoopeds, Semry II, as well as implementing the Water component of ZAPI de l'Est. They receive equipment from UNICEF. It is also active in the World Bank Hauts Plateaux de l'Ouest project.

Training Facilities

The Directorate uses two main institutions for the training of Engineers and Technicians:

1- The Ecole Inter-Etats d'Ingénieurs et des Techniciens Supérieurs at Ouagadougou, Upper Volta.

In 1976/77 there were 14 staff members in training at the Ecole d'Ingénieurs d'Equipement Rural in Ouagadougou, and 12 in training at the Ecole des Techniciens Supérieurs de l'Hydraulique et de l'Equipement Rural.

The first of these courses leads to the diploma of Ingénieur du Génie Rural. Admission is by competition at the end of the 2nd year of a first degree, and the course lasts for three years.

The second course leads to the Diplôme de Technicien Supérieur de l'Hydraulique et de l'Equipement Rural. Admission is by competition for Baccalauréat holders. The course lasts for 2 years.

2- The Ecole Nationale de Technologie in Yaoundé, where 26 staff members were in training either for four-year or for two-year courses for technicians.

Cost Factors: The following are approximate figures.

27,000 F CFA for a vertical metre of wide diametre (1.25m) well in the South.

35,000 F CFA for a vertical metre of wide diametre (1.25m) well in the North.

280,000 F CFA for a spring catchment (300,000 in North West and South West.)

Community Participation

Estimated at 20% in the Provinces of the North West, the South West and the West, less than 20% in the Centre South, and at virtually nil in the North.

Technology - Génie Rural uses the following types of pump:

VERGNET, NEPTA-BRIAU, ABI (Abidjan Industries), and Japy. They have also experimented with wind pumps.

As far as the appropriateness of the technology is concerned, the high percentage of dried out or out-of-service wells and spring catchments suggests a problem both of a technological and of an institutional nature. Génie Rural is interested in increased community participation in its programmes for this reason, and CD could be of use in providing community education programmes for this.

Maintenance: The World Bank suggests that 1,500 wells out of 2,200 in the North are in working order. In 1974, the Director of Génie Rural suggested that over 50% of Génie Rural installations built since 1954 had been abandoned.

10-20% of Génie Rural's budget is devoted to maintenance, which is programmed in the North with large redigging projects. As yet there is no such programme for the South.

Quality Control on Génie Rural installations for testing the purity of water is the responsibility of the Ministry of Health.

WORLD BANK -FONDS SPECIAL D'ACTIONS RURALES (FSAR)

Génie Rural collaborates closely with the water component of this integrated rural credit project. The 4 billion francs CFA project has necessitated the creation of a special section of the National Rural Credit Institution FONADER. Operational headquarters are in Maroua and the five-year water programme aims to take part in :

- 50 small dams in the Mokolo Area.
- Redigging 600 wells.
- Digging 430 boreholes (50 completed May 1979) with handpumps
- Digging 60 wide diameter wells with handpumps.
- Irrigation systems for agriculture and animal husbandry.

50% of the total budget of 4 billion francs CFA will be devoted to the water component in the 4 Departments of the extreme North: Logone et Chari, Margui Wandala, Diamaré, and Mayo Danay. Financial management will be through FONADER.

The water component has recruited 3 water engineers and 2 agricultural engineers from overseas. There is a Cameroonian Director, and the project uses Génie Rural personnel on detachments.

The project is bringing in a substantial amount of equipment and spare parts both for construction and maintenance, as well as prospection. Details can be found at the FSAR Office in Yaoundé. Vergnet footpumps and Briau handpumps for installation at boreholes and wide diameter wells are currently undergoing testing for reliability.

The project has no facilities for training, higher level personnel having already been trained and lower levels receiving on-site training.

The cost of redigging a vertical metre of wide diametre well is estimated at 25,000 francs CFA. The cost of a vertical metre of borehole is estimated at 120,000 f CFA. Boreholes aim to yield 25 litres per capita per day.

Labour for construction is paid. Maintenance and upkeep of dams will be by voluntary labour (perhaps using the CD Department). A unit for the repair and maintenance of pumps is being established and will have an adequate stock of spare parts, and facilities for supervision and control. Water quality control will be the responsibility of the Ministry of Health.

USAID MANDARA MOUNTAINS PROJECT

This is a five-year programme for the construction of 35 small dams and wells. USAID's contribution is 6.7 million U.S $, which represents 75% of total costs. The GURC is committed to a 25% contribution in kind.

Project personnel consists of 4 teams of 1 engineer backed up by skilled and unskilled workers. The head of the project is also an engineer. The project will receive backup from Ministry of Agriculture personnel and Peace Corps volunteers. All unskilled labour is paid.

Equipment for the project inludes a bulldozer, a Power Breaker, as well as trucks, concrete mixers and hand tools.

The project recruits trained personnel, and unskilled labour receives on-site training.

The project aims at a ceiling figure of $6 per cubic meter of water, and 10 litres per capita per day for the population served within radii of 2.5 and 5 kilometres.

The project aims to use machines only when necessary, the major part of the construction will be by hand.

As far as maintenance of the installations is concerned, caretakers will be trained in cleaning filters and the protected area around the lakes created by the dams. Health education will be assured by ongoing USAID programmes. The second phase of the project may be a Mandara Mountains Area Development Programme. The Ministry of Health will be responsible for water quality control and elimination of dangers associated with surface water.

ZAPI DE L'EST

The aims of the water component of this area development programme which covers large areas of the East Province are the construction of 82 water points at spring catchments, 6 wide diametre wells, and feasibility studies for 13 water supplies with distribution networks. The water component is budgeted at $240,000 per annum from the World Bank, plus a 20% contribution from GURC.

Personnel for the water projects includes 1 Ingénieur du Génie Rural, 3 Techniciens du Génie Rural, 5 masons, and 15 skilled workers. These will be divided into five-man teams who will carry out a total of 20 spring catchments per year up till 1982. Equipment includes 6 trucks, one Land Rover and basic hand tools. Training is the responsibility of other services within the ZAPI project, which use both CESAO in Upper Volta and the Institut Panafricain pour le Développement in Douala. Most of the water personnel are on detachments from Génie Rural.

A spring catchment is estimated to cost between 100,000 and 200,000 francs CFA, a 12 metre wide diametre well to cost on average 265,000 francs CFA, and a full village water supply between 6 and 7 million francs CFA. Village labour is not paid and a village contribution of 300 man days or 60,000 francs CFA is required for spring catchments.

NORTH EAST BENOUE RESETTLEMENT SCHEME

The water component of this area resettlement scheme is to provide a total of 70 wide diameter wells for families moving to North East Benoue from the overpopulated and agriculturally difficult mountainous areas of the North Province. In 1975 French Cooperation financed the digging of 20 wells in the area by Génie Rural. The Resettlement scheme is financed by the FED, and the construction is carried out by mobile teams from the Mission d'Etude de projets and the Service Hydrogéologique, both of which have offices in Garoua. Villagers contribute labour and sand where possible; average costs per meter of wide diameter well are 50,000 francs CFA. Well depths vary between 10 and 60 metres. The project is using 3 Vergnet and Briau hand and foot pumps.

NORTH WEST PROVINCE INTEGRATED DEVELOPMENT

The FED is also involved in the financing of the Integrated Rural Development Project for the North West Province, due to start in 1980. The project is still in the design stage, but initial plans are for 3,000 water points and coffee washing places to be constructed by 1990. The target for the first five years is for 200 of such installations, using CD/SATA methods. The cost of each installation is calculated at 1.5 million francs CFA.

DANISH SCANWATER SUPPLIES PROGRAMME FOR HEALTH CENTRES

The GURC has received a loan of 800,000,000 francs CFA for the installation of water supply systems manufactured to a standard adapted design in Denmark. 20% of the loan will be for equipment for water supply and 80% for health education equipment. The first stage of the project is for 18 pilot health centre water supplies.

Génie Rural collaborates with most of the above projects either by seconding personnel or by executing the water programmes. The list of projects is by no means exhaustive, and further research is needed to establish details of other resettlement schemes, area development authorities and other large scale projects mentioned in the National Plan. Examples of these are SEMRY II, UNVDA, Projets Babimbi and Ombessa, WADA, SODEMKAM, Plan Directeur Région de Kribi, Bertoua-Batouri project, the Ambam project, and projects for the Nkam valley, the Baigon plains, the Ndé, and the Central North. (Fourth National Plan, pp. 108-111).

The other Directorate within the MINAGRI for Village Water Supply is

THE COMMUNITY DEVELOPMENT DEPARTMENT

Water Supply activities within the Department are carried out by the Technical Service, of which SATA is an integral part. CD/SATA works in the South-West, North West, Centre South, and West Provinces. Project construction time stretches over several years, and in any one year between 15 and 20 projects for water supplies with taps are in the construction stage. By [illegible] 1979 CD/SATA had completed 39 water supply projects over a period of 14 years. Figures published by the department in 1979 were as follows.

	Water Supplies	Water Points	Population Served
North West	21	3	92,665
South West	14	4	139,630
Centre South	10	5	19,700
West	6	6	47,020
TOTAL.....	51	18	299,015

These figures include completed and ongoing constructions.
SOURCE: Décennie Internationale en Eau et Assainissement - CD Dept.
Figures for population served are in fact for the future capacity of the water supply, anticipating an increase in present population.

Personnel: SATA personnel of Swiss nationality are:

- 6 Field Engineers (2 in North West Province, 2 in South West Province, 1 in West Province, and 1 in Centre South).
- 1 Director and 1 Administrator in Yaoundé.
- 4 tutors at the Building Training Centre, Kumba.

Cameroonian personnel in the Technical Service are as follows:

- 10 Building Supervisors.
- 7 Engineers
- 43 Foremen
- 4 Draughtsmen
- 22 Plumbers
- 15 Masons
- 9 Carpenters

The CD Department itself is staffed by 11 Senior Civil Servants, 45 Contractual Agents, and 121 Agents de l'Etat.

Equipment

In 1974 the equipment pool consisted of :

Heavy equipment:	3 Graders	1 BDT 20
	3 D-4	2 Traxcavators
	1 D-6	
Light Equipment:	4 Vibrators	2 Compressors
	2 Water Pumps	4 Lorries

Since then, other equipment has been donated by UNICEF , a Special Grant from the President and other sources. The light equipment is used for the construction of water supplies, bridges, health centres and community halls, while the heavy equipment is used for the construction of roads.

Each engineer from SATA has a four-wheel drive vehicle and basic instruments. Where SATA has installed pumps, which is not very often, they have used Blake Hydram and Africa Pumps.

Finance:

SATA's current annual budget is for approximately 195 Million francs CFA, which covers the salaries, vehicles, travel, running costs for engineers, and certain small project grants from time to time as necessary. This sum comes 70% from the Federal Swiss Government and 30% from private donors to Helvetas in Switzerland.

SATA attracts a substantial amount of aid from overseas private voluntary agencies. These include Bread for the World, Miserior, NOVIB, Oxfam, DAFOD, ICCO. They also receive project grants from the American, Canadian and Dutch Embassies, CARE, and a large quantity of materials, equipment and transport from UNICEF. Approximate annual figures for this are :

In millions francs CFA :

72/73	73/74	74/75	75/76	76/77	77/78
2m.	35m.	32m.	74m.	77m.	66 m.

The CD Department received the following grants for Projects from State and FONADER: (Source Bilan d'Action, and Annual Budgets)

	74/75	75/76	76/77	77/78	78/79
STATE	40m.	40m.	50m.	50m.	10m.
FONADER			30m.	30m.	45m.

Training facilities:

The Community Development Department and SATA collaborate in the running of the Building Training Centre at Kumba, which has the capacity for training 35 students at any one time. This centre offers four main courses :

-1/ The basic 2-year Mason's course leading to Trade Test III. Entry is for Primary School Leaving Certificate Holders, and 35 students are trained every two years.

-2/ Successful candidates can then continue on courses in Building Construction, Plumbing, or Woodworking. These are two-year courses leading to the Certificat d'Aptitude Professionnelle. There are up to 20 students for Building Construction every two years, and up to ten every year for the other two courses.
Those who have completed a native apprenticeship are also eligible for this course.

-3/ There are shorter courses for foremen, draughtsmen, and caretakers for village water supplies. These are organised according to demand.

-4/ The Building Supervisor course has the highest theoretical level of the courses run at the Centre. It lasts for two rainy seasons, with a practical component between them, ten months in all. The main subjects taught are: Site Organisation and Administration, Building Construction, Earth Works, Technology, and Academic subjects.

Manuals for both the Masons and the Building Supervisors course [illegible] compiled by SATA. Future recruitment will attempt to include francophone students with a sufficient level of English.

The Department also has training facilities for training staff at the Community Development Training Centre in Kumba, the Community Development Leadership Training Centre in Santa, and Centres de Formation pour le Développement Communautaire. Plans for the future training programmes of the C.D. Department are being discussed at the moment of writing.

The Department has staff in training overseas, notably engineers in Training at Yaba College of Technology in Lagos Nigeria (4) and 3 Senior C.D Staff members in higher level training in the U.K. Possibilities for other overseas training are being investigated in such countries as Ghana, India, the U.S., Germany and so on.

Cost factors

CD/SATA calculates that in 1974 the average per capita cost for a full scale water supply with distribution network was 2,500 francs CFA for the anticipated population (normally calculated at twice the actual figure) and 4,333 francs CFA per capita for the actual population. Indications are that this figure is rising rapidly with inflation and rising costs.

Per capita quantity provision is for 50 litres per day, and systems are built to cater for twice the actual population.

A spring catchment with a sedimentation basin, storage tank, taps and a wash place was priced at 200,000 francs CFA in 1974. 1979 figures are in the region of 500,000 francs CFA for the same quality of installation.

Technology

CD/SATA's standard design for village water supplies consists of a spring or river catchment, a treatment station consisting of a sedimentation basin and (sand) filtration if necessary, pumping station if required, storage tanks and distribution net of standpipes, wash places and shower houses. On an average, water is distributed through seventeen taps.

Other parts of this report question the appropriateness of this technology, from a cost and health point of view. This level of service is appropriate for large villages, but the cost is prohibitive for smaller ones, which are more common in the francophone area. There is also evidence of a need for more concentration on health practices if the health benefits of such supplies are to yield the anticipated reduction in mortality and morbidity.

In general the SATA position seems to be expressed by Bungener 'Il est évident que dans la technique de l'eau on ne peut pas se contenter d'improviser: l'impératif technique existe'. The experience of other countries and other organisations in Cameroon suggests that improvisation is an alternative, unless one is building supplies to last for over 20 years.

Maintenance

Caretakers for water supplies are trained at the Building Training Center at Kumba, and responsibility for maintenance and repairs is shared between the local Council and the village. The unsatisfactory nature of this arrangement means that maintenance is CD/SATA's major problem. SATA Engineers have proposed a Water Supply Maintenance Act, suggesting among other things a water rate of 500 francs CFA per capita per annum and the establishment of Water Supply Maintenance Committees.

Muller suggests that maintenance will cost 291,000 francs CFA for each completed water supply, that the caretaker works on average 10 hours per week, and that 50% of CD/SATA water supplies are unsatisfactorily maintained.

The Community Development Department is organising its pilot activities in the Eastern Province through the medium of the American private organisation CARE.

CARE

CARE has two major water programmes:

1- for the construction of 150 wells in the North, starting in May 1979.

2- for the construction of spring and stream catchments, with sedimentation tanks, and a distribution network of standpipes in the areas of Bertoua, Doumé and Abong-Mbang.

Qualified personnel are 2 Civil Engineers,(one from CARE and one from the Organisation of Netherlands Volunteers), and two Community Development supervisors. Skilled personnel from both Génie Rural and C.D. Staff are expected to collaborate on both programmes, which have only recently gotten under way.

Equipment envisaged for the project includes 1 Bulldozer, 10 Cinvaram Presses, one 18-Ton Truck, two 4-wheel drive vehicles, hand tools, well moulds, and a compressor. CARE will also be buying pumps and is considering the following designs: Vergnet, ABI, Dempster, and Myers.

The budget for the 3-year wells programme in the North is $500,000. $100,000 per annum has been budgeted for water in the East.

Training will be carried out through CD training centres, and will include seminars in the East for 60 village workers, and short workshops for village leaders.

Though similar in design to SATA models, CARE hopes to cut costs by not providing shower and washing facilities. They are aiming at per capita costs of between 1,000 and 2,000 francs CFA.

Maintenance of supplies will be assured by caretakers, trained by CARE. CARE will also provide spare parts for pumps. Local Councils and Génie Rural will also be involved in maintenance. A programme of latrine construction and health education will accompany water supply constructions. In the Northern Province the C.D. Department is cooperating with another American Agency: The Community Development Foundation, (Save the Children Fund).

THE COMMUNITY DEVELOPMENT FOUNDATION

CDF has recently spent a year investigating possibilities for an integrated rural development project in the Doukoula, Mar Hay area, near Yagoua. 5 pilot villages have been proposed, and the first year's programme is planned to include 10 wells, dug by hand, the hollowing out of artificial catchment ponds for surface water, and a programme of health education and primary health care through health subcommittees.

Personnel on the programme include an agro-economist and two Cameroonian 'animateurs'. Equipment will include a truck, a 4-wheel drive vehicle, a pump and compressor, well moulds and hand tools. The first year's budget for this three-year programme amounts to 15 million francs CFA. The main training input will be through the formation of village development committees in the pilot villages, staff training, and education activities connected with health.

CDF will also participate financially in training courses for village blacksmiths organised by Centres de Formation de Jeunes Agriculteurs (IUCW). Wells of an average depth of 30 meters are expected to cost 13,000 francs CFA per metre. CDF's interest in appropriate technology is shown by its hand dug method for wells, and by the proposal to design an implement using animal traction to clean out silt and débris from existing artificial catchment ponds. Maintenance will be the responsibility of the village development committees.

UN AGENCIES

UNDP The UNDP's major involvement in the water supply sector ended in 1977 with the handing over of the 18 billion francs CFA Subterranean Water Project to GURC authorities. This project surveyed underground water resources in Cameroon and compiled hydrological maps.

UNDP's involvement in the future is not clear, though it may be important in view of the fact that UNDP is a member of the Water and Sanitation Development Decade Committee.

UNICEF

UNICEF's contribution to rural water supply is in the form of a 3-year (1978-80) project for providing $700,000 for equipment and training through the CD Department, SATA and Génie Rural.

The equipment includes trucks, Land Rovers, motorcycles and mobylettes, breakers, compressors, and drilling equipment, and quantities of cement, pipes and metal bars. The training component will follow the lines suggested by Edimo, Mbepi, and Nkonabang in their 1975 report, that is to say training for:

- masons, plumbers, and carpenters.
- specialists for chemical analysis at CUSS.
- Health workers and Community Development Assistants.

UNICEF provides funds and equipment to CDTC, Kumba, and BTC Kumba, and contributes to the maintenance of water projects through equipment grants to CD/SATA workshops in Kumba and Bamenda.

Its interest in appropriate technology will shortly lead to the publication of a study of appropriate technology in francophone Africa, one of whose authors, Professor Langley, is currently working at the Panafrican Institute for Development in Buea.

UNICEF also provides cement and transport to Ministry of Social Affairs animatrices and the Practical Training for Health Education project.

MINISTRY OF SOCIAL AFFAIRS

This Ministry currently has animatrices (Total 60) working in pools in various parts of the country. These animatrices are trained at 4-month refresher courses at Bétamba. CEPEC participates in the training. The animatrices have received 50 mobylettes from UNICEF and some cement. They organise cleaning and repair work on existing spring catchments as well as general animation in line with the Ministry's priorities.

PRACTICAL TRAINING FOR HEALTH EDUCATION

This project works in Kadey and Mefou, and its main interest is in creating village health committees. PTHE originated in the OCEAC project in 1973 and since then it has created 41 village health committees in its area of operation. These have organised the following achievements.

- 361 new latrines - 489 redug latrines 129 latrines under construction - 20 spring catchments. -22 spring catchments under construction.

The 41 health committees represent 11,500 people.

Personnel on the project include a staff in Kadey of 5 mobile health workers and 13 generalist Peace Corps Volunteers, and in Mefou 3 mobile health workers and 9 generalist PCV's. They also have a sanitary engineer from the Service d'Hygiène et d'Assainissement at the Ministry of Health.

Most of the materials for spring catchments are provided by the villages, though UNICEF has donated some cement for demonstration catchments.

As its [illegible] title suggests, the main input of the project will be in training. Through refresher courses it aims to integrate Practical Training for Health Education at various levels of the Health Service. These courses will over the next four years affect :

- 100 chief nurses.
- 420 Agents Itinérants.
- 160 village health workers.

The costs of PTHE catchments with local materials and a minimum of cement are for 100-200 francs per capita. Local materials are used as a first step, and the catchments are then upgraded with piping and cement at a second phase. Spot tests on water quality are carried out, though not systematically.

The other Health-based programme is that of

CATHOLIC RELIEF SERVICES

CRS's programme is in Rural Health Education in the Maroua, Mokolo and Yagoua areas of the North Province. They emphasize the training of aides-soignants, agents itinérants, and low and middle level health workers. The budget of this programme is for $469,000 over 7 years, accompanied by $250,000 for medicines. Part of this money will go to financing wells for mission dispensaries and villages in the impact area. Estimated costs for these range from 10,000 to 15,000 francs CFA per vertical metre.

CRS also finance some of the activities of an Italian volunteer couple at Mden in the Sangmélima area. 50 wells in this area have apparently been dug, using a technique of one village showing the next how it is done. Average costs for wells of this sort are 12,000 francs CFA.

VOLUNTEER AGENCIES

- DEUTSCHER ENTWICKLUNSDIENST (GERMAN VOLUNTEER SERVICE)

The German volunteer Service has project funds and has financed a Génie Rural well at Mora and a CD/SATA project in the North West.

Its main contribution is in qualified personnel. At present it has a total of 21 volunteers serving in the Centres de Formation pour le Développement Communautaire, and one at the CDLTC in Santa. The volunteers are either agriculturalists, home economists, or nurses. DED is organising and financing a seminar on the future form of CD Training at the present moment.

-VOLONTAIRES DU PROGRES: (FRENCH VOLUNTEERS):

The VP have no systematic programme in CD or Water Supply, though two new volunteers are currently in training with the CD Department. VP has also provided a sanitary engineer to INADES, and financed a mobile team of masons, materials and transport for low cost water supply.

- ORGANISATION OF NETHERLANDS VOLUNTEERS

The ONV were the main overseas source of personnel for the Women's Service of the CD Department. It has been suggested in other parts of this report that the Women's Service should base its programme more systematically on the activities of the Technical Service. ONV has cut down its involvement with CD until the priorities of the Women's Service are more clearly defined.

- PEACE CORPS

Currently has 22 volunteers in the PTHE project and 20 in a new project with the CD Department.

EMBASSIES

The U.S., the Canadian and the Dutch Embassies all have funds to support small scale self-help projects in the water supply and other sectors.

PRIVATE VOLUNTARY ORGANISATIONS

Charlick suggests PVO's as an important element of CD's future activities. The information assembled here is of a very sketchy nature for the reason that it can only be gathered at field level.

There are two main coordinating bodies for church activities in development:

1- BUREAU DES ACTIVITES SOCIO-ECONOMIQUES

BASE coordinates Catholic church and Mission activities. BASE is in the process of decentralising to diocesan level, where health committees will be set up to coordinate activities in the water supply sector. Catholic missions have carried out a large amount of activity in water all over the country. Records and statistics do not, however, exist in Yaoundé, and it will be up to the MPCD project to establish the extent and the success of these activities.

Two other agencies within the Catholic structure are carrying out low cost spring catchments:

A/ INSTITUT AFRICAIN POUR LE DEVELOPPEMENT ECONOMIQUE ET SOCIAL

For its water activities, INADES has one French volunteer Sanitary Engineer, and one health Educator with a diploma in Health Education and Public Health. It is carrying out simple low cost spring catchments using predominantly local materials in the Centre South, the East, the Littoral, the West, and in future in the North. Per capita costs are 100-300 francs CFA. It also organises short health education courses which deal predominantly with water and hygiene for up to 250 people per year,

The main interest of INADES, however, is its role in training the people of the agricultural areas, by correspondence course and follow-up visits. At present 500 farmers, 393 agricultural extension workers and primary school teachers are enrolled on these correspondence courses, which are well adapted to Cameroonian conditions and published in French and English. There are three courses: -Initiation au Développement (?1 students)
-Agriculture (631 students,
-Vulgarisation Agricole (? students)

INADES is looking for more students, especially for the 1st and 3rd courses above. They would seem to be an excellent way of training and motivating both CD village level staff and the rural populations in villages where CD activities are being carried out, especially as INADES takes part in a regular radio programme : "Réveil du Monde Rural" on a Wednesday evening, and publishes an eminently readable and stimulating journal: Agripromo.

B/ CENTRE D'EDUCATION A LA PROMOTION COLLECTIVE: (CEPEC)

CEPEC was founded in 1970 on the initiative of the Archbishop of Yaoundé, and works in the four departments within the Archdiocese: Méfié, Nefou, Mfoundi, and Haute Sanaga. It has a field training staff of 12 (Cameroonian), and only provides training for collective action. It trains village amateurs chosen by village groups, and promotes collective fields, collective chicken farms, and any other collective needs defined after a long process of needs analysis and definition by the groups in question. It receives 17 million francs CFA per annum from Catholic Development agencies in Europe and Canada. It also has an urban team of animators doing similar work in low income areas of Yaoundé.

Its interest for the NPCD lies in its scrupulous attention to the "process" of community development, stripped down to its purest essence by the refusal to 'donate' anything to village communities, and thus, in theory, to reduce dependence. It also plans to disband in 1.83, by which time it hopes to have formed a strong enough structure of well motivated 'animateurs' for the work to continue on its own momentum. It is instrumental in training animateurs for the Ministry of Social Affairs, and would be a useful resource for future training in CD methodology in the Francophone areas.

2- FEDERATION DES EGLISES ET MISSIONS EVANGELIQUES DU CAMEROUN - COMMISSION POUR LE DEVELOPPEMENT

FEMEC is the coordinating body for development projects of the Protestant churches in Cameroon. Details of the substantial activities in well digging and water supply of the Protestant churches are not available in Yaounde. Projects of interest to the NPCD will be found in many of the rural areas where both Catholic and Protestant churches play a prominent role in rural development.

FEMEC publishes 'Bloc Notes du Monde Rural', similar to AGRIPROMO and of use to CD in the way it presents important issues in rural life in a readable, stimulating, and comprehensible way to rural dwellers.

CONCLUSIONS TO PART TWO AND SUGGESTIONS FOR FURTHER RESEARCH

1/ This profile serves merely as an introduction to the large number and enormous variety of agencies active in water supply in Cameroon. Details for different organisations are often for different years or calculated on such different bases that they are by no means comparable without further research. Above all the situation is changing so fast in Cameroon at the present time that the picture will never be complete or completely up to date. Extreme caution should therefore be exercised before using information presented in Part Two as a basis for far-reaching conclusions.

2/ More research must be done in the rural areas by NPCD. The aim should be to find other successful models for water supply development and to learn the lessons of the long years of practical field experience of the many kinds of people not yet contacted by this study, not least among them villagers. The NPCD staff will have to spend at least one month, if not more, in each province if the issues mentioned in the first part of this report are to be tackled with the necessary insight and confidence.

3/ Further justification for NPCD spending extended periods of time in villages in each of the seven provinces is as follows:

- One of the most often mentioned problems of local level development in Cameroon in 'integration' or 'coordination', either within the administration, or between sectors, or between different services within the same ministry.
  The dynamics of the process in each of the seven provinces need exploring.
- Charlick suggests that because no single C.D. methodology will be capable of producing good results among the many diverse people of this country, NPCD should investigate ways of working through private voluntary agencies as well as responding to some of their needs. This can only be done province by province.
  Only in this way will NPCD be able to make realistic plans for practical action compatible with the administrative, and social realities of rural Cameroon.

4/ The evidence of Part Two of this report points convincingly to the desirability of some kind of National Water Authority. Such a wide range of organisations, each with its own bias and methodology, can lead to overlapping of responsibilities, rivalries and the duplication of scarce resources for administration and management. What is needed is some body to provide facilities for coordination and strong leadership so that the potentially damaging aspects of the present situation turn the variety and diversity presented in this report into a positive asset for accelerating progress towards the provision of safe water in sufficient quantity to all Cameroonians in the shortest possible time.

SUMMARY OF MAJOR PROBLEMS

1/ A LARGE PROPORTION OF VILLAGE WATER INSTALLATIONS ARE OUT OF WORKING ORDER, THE CONTINUOUS FUNCTIONING OF EXISTING AND FUTURE CONSTRUCTIONS IS BY NO MEANS ASSURED.

2/ ARRANGEMENTS FOR MASS LOCAL PARTICIPATION IN SELF-RELIANT DEVELOPMENT APPLICABLE IN ALL PARTS OF THE COUNTRY ARE SEEN TO BE ELABORATED AND GIVEN A FIRM LEGAL AND ADMINISTRATIVE BASE.

3/ A HIGH PROPORTION OF RURAL PEOPLE IN CAMEROON DRINK WATER WHICH IS NOT SAFE AND MANY OF THEM DO NOT UNDERSTAND THE CONSEQUENCES OF THIS FOR HEALTH AND WELL-BEING.

4/ THE DYNAMICS AND PROCESSES OF COLLABORATION BETWEEN MINISTRIES, WATER SUPPLY AGENCIES, AND VILLAGES ARE, IF NOT CAREFULLY ORGANISED, CONSTITUTE AN OBSTACLE TO COMMUNITY DEVELOPMENT.

The task of the National Planning for Community Development project is to address these problems in the knowledge that they are all intricately related. The repair of a water supply installation will only be of benefit in the long term if it is supported by:

- changes in attitudes to water.
- a functioning village development committee.
- adequate technical supervision.

The following recommendations will hopefully be studied and ways in which they can be implemented proposed:

MAINTENANCE.

National level:

- That central government makes regular funds available for maintenance and repair.

S.D. Department level:

- that the department should not undertake new constructions unless manpower and finance are assured for long term maintenance.
- that the department should undertake a crash programme of repairs.

Local level:

- that income generating community projects be initiated to increase villages' capacity to pay for the maintenance of completed water supplies.

LOCAL PARTICIPATION

National Level:

- that the possibilities be explored for establishing legal and administrative basis for village development committees with a high proportion of elected members.

Department Level:

- that all staff be trained in Community Development philosophy and methods.
- that ways be sought to educate the public about the possibilities and responsibilities of Community Development.

HEALTH ASPECTS:

Department Level:

- that the women's service be organised to focus its activities around the activities of the technical section.
- that greater collaboration be sought with health education and agricultural programmes.
- that the Information Service of the Department be revitalised.

Local Level:

- that specific local norms for quality be worked out and that village women be trained to carry out quality control and act on the results of such controls.

COORDINATION:

National Level:

- that a National Water Authority be established.

Department level:

- that the Community Development Department and Génie Rural be harmonized.

These recommendations amount to the details of a Community Development model applicable of all areas of Cameroon so that the unique historical background of the country can be capitalised upon to establish structures which will encourage a growth in popular participation in self-reliant development. The model will be based on 20 years of solid achievements which now have to be adapted to a rapidly changing situation if the target of access to safe water for all Cameroonians is to be reached by the year 2000.

ANNEXE I

SOURCE AND LOCATION OF INFORMATION:

The following documents contain most of the ideas expressed in this report, and have been cited, sometimes verbatim without quotation marks. This was done in the hope of making the document easier to read and less academic in style. Acknowledgement is hereby made to the authors of the following documents, as well as apologies for misrepresentations that may have occurred under the pressure of deadlines and not intentionally.

It had been envisaged to provide a plain man's guide to the various libraries in Yaoundé and their resources in water supply materials. Time was, however, too short for visits to all libraries, and enthusiasm waned on finding that most water resource material in the libraries visited was exclusively technical in nature, and therefore outside the scope of this report.

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ANNEXE II

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M. NKONABANG Félix	- Directeur Adjoint, CD.
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M. Garret	-Engineer, FED.
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M. Samake	-Representative, UNICEF.
Mr. Norman Green	- USAID.
Mr. Andrew Ndonyi	-Director, CD department.

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