

205.40 99WA



Water supply and sanitation



in peri-urban areas
and small centres



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and small centres" programme**

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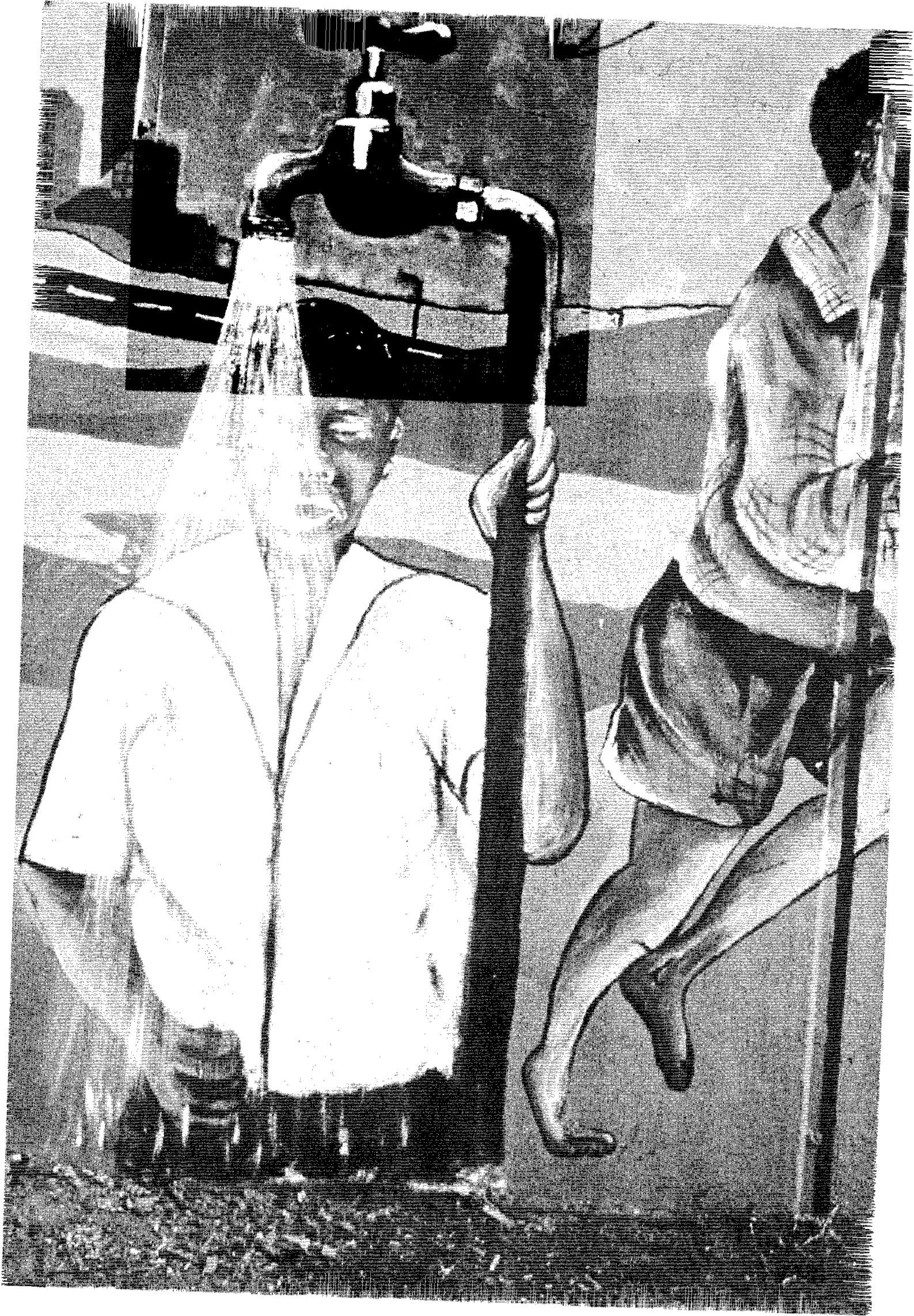
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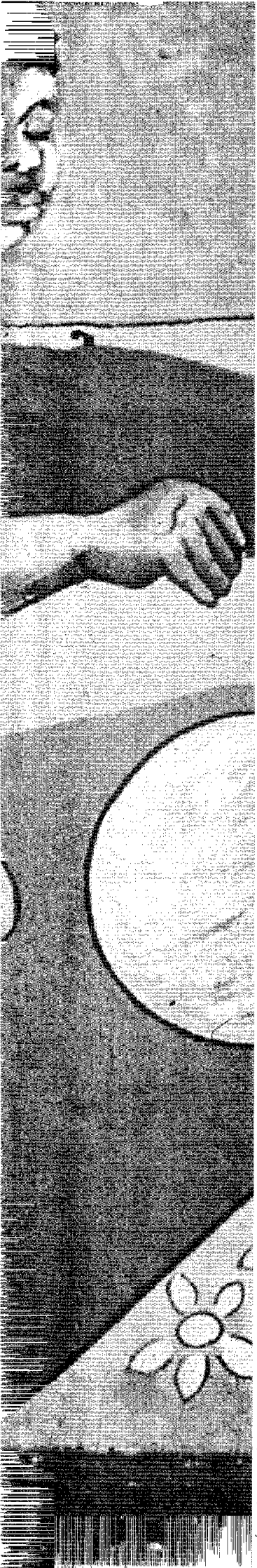
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Programme Solidarité Eau





PREFACE

Access to water: a major challenge for the very poor

Where there is life, there is water...

Since time immemorial almost all human activities – economic, social or cultural – have used water, devising often highly sophisticated hydraulic systems. Man himself cannot live without consuming enough water of adequate quality several times a day. And yet, on the eve of the third millennium, one in five of the world's inhabitants has no access to this life-giving force, clean water, and one in two has no adequate means of sanitation. According to the World Health Organisation (WHO), each year more than five million people die of illnesses caused by drinking water unfit for human consumption.

In developing countries the rate of urbanisation is accelerating; large numbers of destitute population groups are pouring into the "informal" suburbs of major cities, which have their own acute water supply problems.

It is imperative also to address the needs of this most vital of services in intermediate urban centres, which are capable of providing permanent settlements and of ensuring a balanced approach to land use, with a view to sustainable development.

"Water supply and sanitation in peri-urban areas and small centres" was precisely the objective of this programme of study and applied research, conducted mainly in sub-saharan Africa, and steered by the Water Solidarity Programme (pS-Eau) with funding from French cooperation.

For over two years, teams have thus been mobilised to analyse, to test and to explore, with great verve and skill, the various technical, socio-economic, institutional and cultural aspects of the thorny problems which remain unresolved in the field.

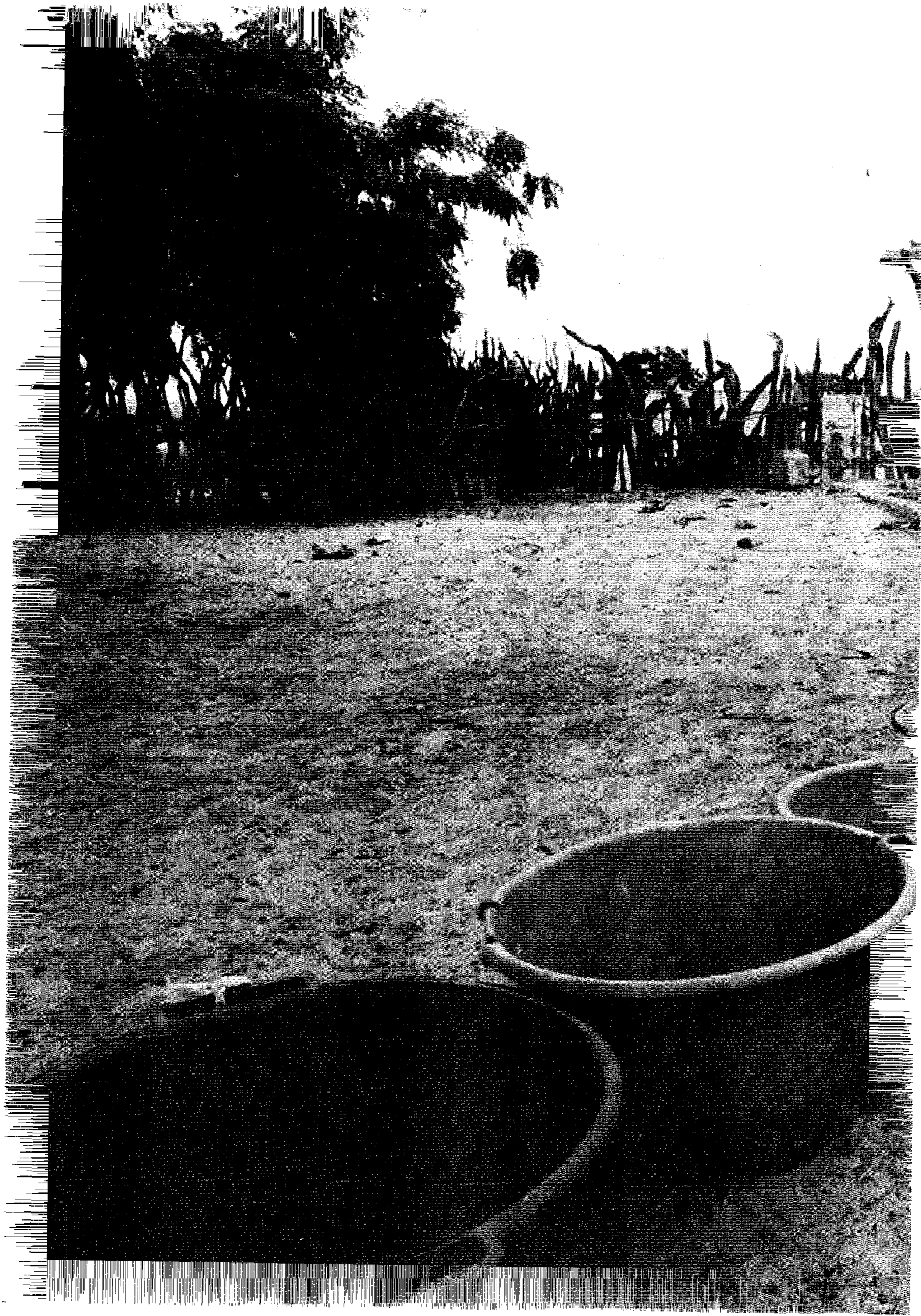
The fruits of their efforts and discussions, enriched by three days of presentation and debate in Ouagadougou (Burkina Faso) in May 1998, are now brought together in this comprehensive document.

Our warmest thanks go to all who have contributed to this original work of multi-disciplinary, joint expertise!

We now wish to share this fascinating experience more widely with the many stakeholders and partners involved, in both the North and the South, so that together we are able to achieve substantial improvements in the living conditions of these very poor communities.

Jean-Louis Oliver

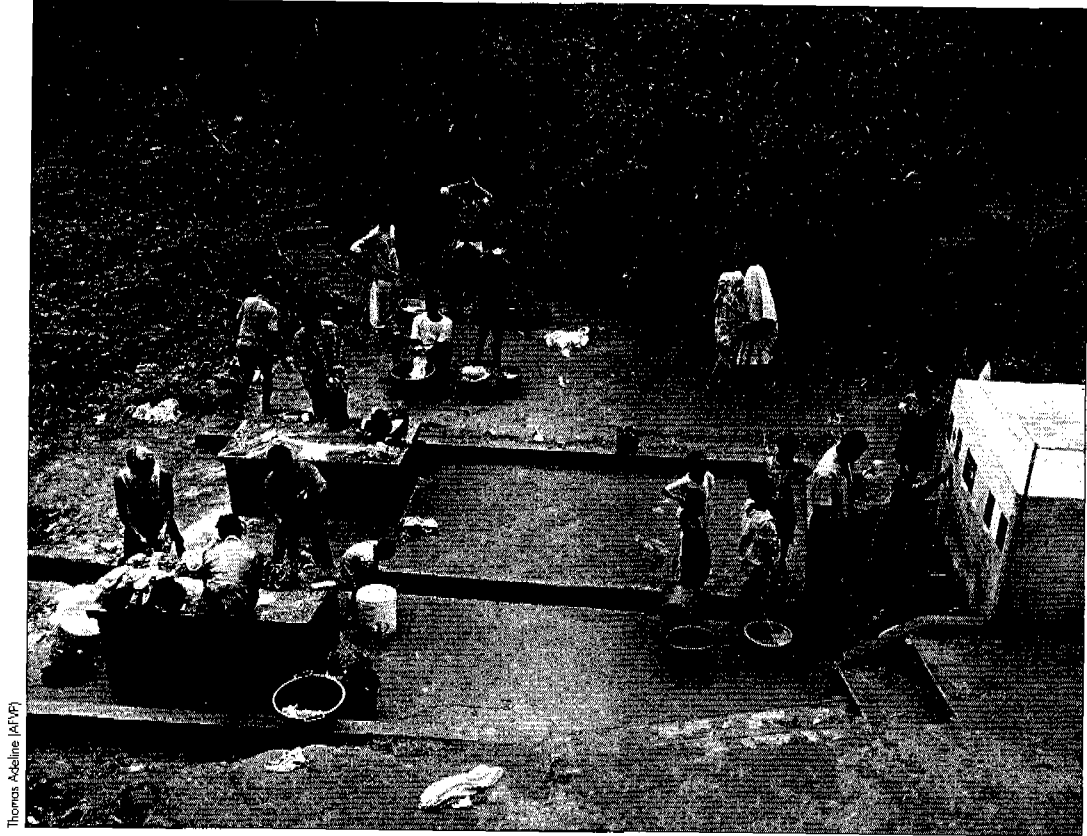
Chairman, "Water supply and sanitation in peri-urban areas and small centres" programme





Water supply and sanitation in peri-urban areas and small centres

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Thomas Adeline (AFP)

The programme: background and organisation

THE FACTS

Drinking water distribution

Supplying drinking water to Africa's major urban centres and to those of their inhabitants who can afford it has long been the focus of numerous research activities, and research methodologies for this are well established and regularly updated. There have also been major programmes in Africa for village water systems and supplying dispersed populations. In West and central Africa, however, attention has only recently been turned to the ways in which drinking water is supplied in:

- **small urban centres** which prove too small to utilise a viable classic water distribution system, but too large to use the usual village water system approaches;
- **secondary urban centres** corresponding to areas where the cost of collective investment in supplying drinking water is high because only a small number of the potential subscribers can afford it or are interested, bearing in mind that other sources of individual supply may compromise their profitability;
- **informal neighbourhoods**, i.e. areas which are occupied and built upon, but over which the authorities have little control, and where the complex urban fabric makes it difficult to install large collective networks;
- **peri-urban areas**, or areas where extending the central distribution network poses problems of viability, given the distance from the city centre and the dispersed nature of the housing.

What makes such areas different is that they are intermediate spaces, falling somewhere between the rural and the strictly urban context. They do not figure on institutional diagrams, and as such, fall under the responsibility of either urban management bodies, or civil service departments in charge of rural areas. A significant proportion of those living in these areas do not receive the same services as city centre inhabitants and have no adequate access to drinking water from the public service networks. To ensure greater equality in access to drinking water, we must therefore now pay greater attention to these particular areas.

The water distribution systems currently in place in the major cities of Africa achieve – or aim to achieve – a fairly high standard, approaching that to be found in Europe a few years ago. Because it is too expensive for most families, in reality the intended service is reflected in very low and stagnant connection rates. In addition to supplying their subscribers, these networks indirectly supply a significant proportion of the population through resale or, more marginally, from water standposts. A large proportion of households are therefore not supplied and resort to traditional

water supply points: wells, springs and seasonal streams or ponds. Such water supply points are not looked after by public services, nor monitored by health departments. The quality of the water is therefore unreliable. Far from being static, the four contexts outlined above are in a state of constant change, and the manner in which they are changing is all the more difficult to monitor because they form the amorphous link between the rural world and urbanism, growing at an accelerating rate.

Protecting the resource: gaps to fill and systems to improve

There is a great deal of catching up to do as far as wastewater and excreta sanitation are concerned: two thirds of the population of sub-Saharan Africa at present have no suitable sanitation.

In urban areas, wastewater sanitation networks cover only limited areas (city centres and sometimes "luxury" residential estates). Because they are too old or have deteriorated through lack of maintenance, they rarely work. The few rare treatment plants are generally not very suitable and suffer from serious operational flaws.

Most housing plots therefore use their own autonomous systems. Despite some projects which build individual or collective latrines and the efforts of the inhabitants, people generally complain about the poor quality of the service provided by these kinds of installation and effluents are only rarely treated. The public authorities are incapable of meeting the demand for emptying septic tanks, and sludge and discharged matter are generally eliminated without checking either the location, or the way in which they are disposed of which is most often in ponds left by seasonal streams, in drains or on wasteland.

This results in badly polluted ground water, which is moreover still used as a source of drinking water supplies. It is also unwholesome and degrades both the environment and urban living conditions. This is particularly apparent in popular neighbourhoods, where it is increasingly difficult to reconcile traditional disposal practices from rural areas, with the sometimes high population densities; and where householders' financial resources make it very difficult for them to gain access either to a sanitation network or to individual installations.



Significant socio-economic and political implications

Caught between the countryside and the city, between the traditional and the modern world, peri-urban areas are characterised by the following:

- an often poorly defined social structure: the urban population has lost most of the traditional structures which bind rural societies together. In particular, it is much more difficult to mobilise human inputs (i.e. users' voluntary labour);
- a more monetarised economy: unlike a rural economy which tends to be based on self-sufficiency, the urban economy, which is more highly monetarised, makes it easier to collect the amounts needed to maintain installations;
- greater epidemiological risks: the health risk is linked to housing density and to poor quality housing, and is aggravated by the lack of public service sanitation;
- a denser entrepreneurial network: cities provide a network of private operators (tradesmen, shopkeepers, businesses, professional consultants) which is far richer and more dynamic than in rural areas; this makes it easier to implement more complex technical solutions and increases the diversity of the goods and services available (e.g. the range of sanitation systems, water selling, etc.);
- significant political stakes: the increasing demographic weight of urban populations and their proximity to decision-making centres, clearly place them high in the political stakes.

KEY ISSUES

In the light of these facts, a research-action programme was launched in 1995, focussing on drinking water mobilisation, distribution and protection in the peri-urban areas, informal neighbourhoods, secondary centres and small towns of the countries of West and central Africa. The programme, which is steered by the Water Solidarity Programme with funding from French aid, has brought together researchers, managers, civil service departments, NGOs, local authorities, and consultants, in both Africa and in France.

The broad subject area – “drinking water mobilisation, distribution and protection in peri-urban areas and secondary centres” – was structured around four main research focuses:

1. Analysing the economic parameters of water distribution for low-income urban populations.
2. Shared management of drinking water services and user participation.
3. The impact of drinking water supply and sanitation conditions on public health.
4. Institutional and inter-relational issues.

Research focus 1: Analysing the economic parameters of water distribution for low-income urban populations

A large proportion of the inhabitants of underprivileged neighbourhoods and small centres have too low an income for them to bear the costs of a water connection to their homes. They therefore turn to alternative systems, which they can more easily afford.

To better meet the needs of these population groups, it is important to fully understand what they require from a water service, to evaluate the costs of the distribution systems to be introduced, and also to take into account the large number of existing systems over a given area and the various actors within the “informal” economy.



Élisabeth Delly-Aulicourne (Ostorn)

■ **Theme 1.1: Tools for contingent evaluation of the demand for improved water services**

Demand from low-income population groups tends to be poorly understood. Those promoting water supply projects therefore have to make do with very broad indicators to calculate the size of hydraulic infrastructures. Our understanding of this demand could be improved by using suitable operational tools. Such tools for contingent¹ evaluation of demand should enable operators to assess the size of built structures more accurately in the light of the demand from population groups and to evaluate recurrent costs in the light of the end-users' willingness to pay.

EXPECTED RESULTS

- What methods of contingent evaluation already exist?
- How relevant are they?
- Proposed methods suited to operators' needs and which take into account:
 - households' monetary income, and how much of this is spent on water;
 - households' actual consumption, using various water collection points;
 - variations in demand over the year;
 - how water is used, in terms of quality and quantity.

■ **Theme 1.2: Standard cost analysis prediction models for the various water distribution systems in peri-urban areas and small centres**

The water systems found in peri-urban areas and small centres vary greatly and very often co-exist in the same area:

- individual connections;
- standposts;
- autonomous water supplies;
- tubewells with hand-operated pumps;
- wells, both traditional and modern;
- springs;
- house to house water vendors.

Although some of these systems have been studied, at present there are no analytical models enabling their standard cost to be estimated.

EXPECTED RESULTS

- Design of prediction models to analyse the standard cost, both in terms of investment and of recurrent costs, of various water distribution systems in small centres and in the underprivileged areas of large cities. The models should include an analysis of the impact of the various distribution methods on local practices and the local economy.
- Using these models to draw up comparative tables showing the investment and operating costs of the various systems, taking into account their reliability and regularity. For each type of system, a detailed description of the equipment used and the services provided is expected.

¹ Evaluating demand for a hypothetical service.

■ ***Theme 1.3: Evaluating the social and economic significance of private water distribution operators***

Most of the private operators in urban Africa form part of the informal sector and as a result little is known about them. At the same time they play a very important part in water services, since they supply a large proportion of families. Evaluating their social and economic significance would enable them to be more closely associated and included in improved water distribution services.

EXPECTED RESULTS

Carrying out a comparative socio-economic analysis of "private informal" and "private contracted" service providers, with particular emphasis on their relative significance in water distribution.

Research focus 2: Shared management of drinking water services and user participation

Water distribution companies generally perform satisfactorily in major city centres. Conversely, they prove to be poorly suited to water distribution in small centres or in the underprivileged areas of large cities, because their centralised and formal structure results in high operating costs. They are in fact unable to meet the extremely fragmented and financially not very viable demand for water in these areas.

Various alternative management methods, better suited to water distribution among low-income groups, have been introduced. These have been widely tested in the village environment; they are, however, less well understood in the urban context. Some experiments have, however, already been conducted on a scale sufficient to enable them to be properly evaluated.

■ ***Theme 2.1: Comparative analysis of the performances of various delegated management systems for communal water collection points***

Between rural and urban hydraulic systems, "intermediate" water supply systems, such as stand-posts or autonomous water collection points, today provide one possible response for improving living conditions in the peripheral areas of large conglomerations or in semi-rural centres. This is because in these contexts, financial and urban-related constraints preclude, in the short and medium term, a mains water supply with individual connections. In the wake of classic village hydraulics programmes, this type of installation has spread widely in recent years.

As far as managing these distribution points is concerned, several operators may be involved at national, local, public or private level. This may be organised in various ways co-existing within the same region, or even within the same conglomeration, and be akin to both the urban model (involving the national water distribution company) or the rural model (involving water collection point committees). Management is generally shared between these operators, with distribution being delegated to water vendors in a wide variety of ways.

Despite the importance of what is at stake and the great number of different experiences, little factual information is available on the way in which these various forms of management actually work.

EXPECTED RESULTS

Identification of the strengths and weaknesses of the various delegated management systems at existing water collection points in various countries, using a comparative analysis of their performances (technical, financial, and quality of public service).

■ ***Theme 2.2: The legitimacy and the strategies of new actors in the water sector claiming to be representative***

Most funding agencies and development operators concede that the "State or nothing" approach fails to provide a satisfactory response to water distribution problems for the inhabitants of small centres and the underprivileged areas of major cities. They have therefore looked for new actors, to whom a certain number of public service roles can be delegated. One of the major difficulties which then arises is identifying such actors and evaluating both the extent to which they are representative at present and their potential to mobilise end-users.

EXPECTED RESULTS

- A classification of new water sector actors claiming to be collectively representative, by selecting some clearly representative examples.
- An analysis in the field of how these actors emerge, the way they work and perform, the links that exist between them, and users' opinion of them.

■ ***Theme 2.3: How these new actors emerge and how local dynamics and initiatives spread***

Many water distribution initiatives in underprivileged urban areas and small centres occur thanks to local groups, NGOs and local authorities. Such initiatives emerge in various ways, but these have not been clearly identified.

EXPECTED RESULTS

- To determine, on the basis of existing experiences, the conditions necessary for alternative management projects in the provision of drinking water to actually emerge and to meet their objectives (i.e. genuine access to water for the majority; the sustainability of the mechanisms introduced in institutional, economic and technical terms).

The analysis should clarify the following points:

- Who initiates these projects and what links do they have

with institutional partners on the one hand, and with the community on the other?



CAUS

- What links are there between these initiatives and other existing neighbourhood services (sanitation, etc.)?
- What kind of local skills can be exploited?
- What jobs does this type of initiative generate?
- What are the criteria for replicability of such projects?
- How are contractual arrangements made between the different actors?
- To design tools intended for operators active in the field.

Research focus 3: The impact of drinking water supply and sanitation conditions on public health

Better access to water has the secondary effect of increasing the volume of wastewater being discharged by users. Moreover, the absence or malfunctioning of water disposal systems results in greater pollution of water resources, a phenomenon further aggravated by the relative density of urban housing. When the use of this resource is decentralised, it becomes self-evident that protecting ground water and surface water resources is of primary concern in ensuring that the water supply is of adequate quality. Sanitation costs are very high, but a broader analysis of the context should enable evaluation of savings in terms of improved public health and productivity.

■ Theme 3.1: Preventive methods

Improving hygiene conditions depends not only on improving the quality of the water distributed or sanitation, but also on a series of interrelated factors. Amongst these, the inhabitants' own practices and habits are of primary importance.

There exist many methods of awareness-raising, but the various actors involved in improving public health and hygiene fail to use them in a concerted way. There is still a very clear demarcation between those responsible for "technical" aspects of water distribution and health agents who focus on maintaining the best possible quality of water by attempting to modify people's behaviour. Similarly, educating children encourages the acceptance of new hygiene practices, but teachers are ill prepared for this and above all do not have the teaching aids they need.

EXPECTED RESULTS

- To evaluate existing hygiene awareness-raising activities.
- To determine what is required to develop health education methods common to both hygiene specialists and to water agents.
- To define how teachers could be more closely involved in preventive health campaigns.

■ Theme 3.2: Analysing the costs and health benefits of preventive actions in the water, hygiene and sanitation sector

The various ways of combating "faecal danger" all require a certain degree of investment, at family or at local level (e.g. latrines, improved water collection points, soak pits, drinking water standposts), which in turn entail operating costs (purchase of soap and bleach, pump and

masonry maintenance, emptying septic tanks). Although these costs are often minimal and subsidised, families and communities find it difficult to meet them, partly because of their limited financial capabilities, and partly because the results are not immediately apparent to inhabitants or even to technicians.

There are very few studies comparing the costs and benefits of preventative actions. And yet, these allow the intrinsic value of a programme to be calculated and its sustainability to be assessed. They also enable comparison between programmes which may be very different in nature, since the results are expressed in monetary terms.

EXPECT RESULTS

Develop a method of cost/benefit analysis (in terms of finance and health) specially adapted to faecal danger prevention programmes in developing countries, thus providing operators with a tool for evaluation, decision-making and promotion purposes.

■ *Theme 3.3: The impact on human health of current wastewater and effluent disposal practices – protecting water resources*

Current sanitation programmes in peri-urban areas and secondary centres focus mainly on domestic excreta and wastewater disposal systems based on a soil infiltration principle: dry pit latrines, cesspools, sometimes septic tanks with drainage. Methods using sealed pits are less common; when the tank is full, it is emptied and the contents are returned to nature, in locations not adequately prepared for this purpose.

Whether spontaneous or promoted by development activities, such practices lead to significant levels of microbiological and chemical pollution. These contaminants alter the quality of both the surface water (as a result of run-off) and the subterranean water (as a result of infiltration) which people use as their water supply and constitute a potential danger to public health.

And yet there is no analytical framework enabling decision-makers to assess the health risks linked to current practices and to guide their choice of future sanitation systems.

EXPECTED RESULTS

To build up a methodological framework for evaluating the health risk of certain practices, paying particular attention to the following:

- the ways in which latrines and effluent disposal systems are used, operated, and commercially exploited under real conditions in African cities;
- evaluating the public health risk of current wastewater and effluent disposal practices;
- the location of water collection points in relation to sources of pollution;
- guidelines for protecting the area immediately surrounding water collection points;
- protective boundaries for water collection points.

Research focus 4: Institutional and inter-relational issues

At a time when underprivileged urban populations have access to water and to sanitation thanks to numerous "make-shift" practices, when experiments and innovations continue to multiply, often giving an impression of discordance, it is important that the institutional framework keeps pace. This framework extends well beyond links between public and para-public institutions, and

consists rather of an evolving inter-relational framework connecting the large number of organisations which are gradually becoming involved (private organisations, community groups, non-profit associations, public organs, local authorities, etc.).

In this context, it seems necessary:

- to clarify the links between various partners involved in an activity of mutual benefit;
- to mobilise the impetus, the funding and the ideas needed in an organised and efficient manner;
- to ensure that lessons learnt and successful innovations are sustainable.

■ ***Theme 4.1: The nature of the services provided and classification of contractual and institutional links between suppliers and consumers***

The notion of “public service”, the term itself, as well as the obligations this implies, are not self-evident. Using the term to denote a given service, which is then enshrined in national legislation or local by-laws, has a specific meaning and precise consequences in legal, social and administrative terms, and therefore in technical and financial ones also.

■ **EXPECTED RESULTS**

- What is meant by terms such as “public service”, “mutual benefit service”, or similar, with regard to the obligations these imply or what they mean in the eyes of the end-users, in different legislative and regulatory contexts?
- What are or might be the consequences of the existence or absence of national, legal clarification in this area?
- What deviations and dangers result from the use and deliberate misinterpretation of these notions, in the field and in social practices?

■ ***Theme 4.2: Sustainable and negotiated coexistence of multiple systems within the same urban area: links between municipal, community and private activities***

Deciding to offer certain urban services to the entire urban population, with levels of service corresponding to people's genuine needs and financial capabilities, often means introducing a number of different systems simultaneously.

If these various systems are to work in harmony in a given area, negotiations must first take place between the various actors in order to achieve a planned and contractual structure between the partner-actors. Such partners might be municipal, community or non-profit bodies, individuals or private enterprises, or national water or sanitation sector institutions.

■ **EXPECTED RESULTS**

- To analyse practical experiences of negotiation, planning and contractualisation enabling the sustainable coexistence of multiple urban service management systems.
- To highlight the mechanisms enabling the sustainable coexistence of such multiple systems.

■ **Theme 4.3: Strengthening local capacities for contracting or delegated contracting of infrastructure services and commercial exploitation**

Decentralisation in Africa is completely transforming (or will completely transform) the institutional landscape and this is already partly apparent where water and sanitation are concerned. Until now, the State was the contracting party, often the sub-contractor and sometimes also played an entrepreneurial role. Although State withdrawal from its entrepreneurial role is now very frequent, delegating its contracting role to autonomous and responsible service bodies is still very rare and occurs only in capital cities. In the case of secondary centres and small centres, the emergence of a capacity for local contracting must be envisaged or consolidated.

EXPECTED RESULTS

- To identify, on the basis of experiments carried out on contracted services, the strengths and weaknesses of the process through which local bodies assume responsibility in the water and sanitation field.
- To identify the ways in which financial resources are transferred from the State to local authorities, and which go hand in hand with decentralisation measures.

THE LAUNCH OF THE PROGRAMME

Objectives

The ultimate objective of the programme is:

- to meet the needs and expectations of field practitioners and to achieve an operational end-result;
- to design intervention methodologies suited to the specific characteristics of peripheral urban areas and small centres;
- to improve evaluation tools in order to make results clearer and more comprehensible;
- to encourage greater mobilisation and better targeting of non government aid operators (NGOs, decentralised aid, professional operators, etc.) in these subject areas.

To meet these objectives, pilot projects and research activities have been conducted.

Research activities

These have helped to conduct investigations intended to gain a better understanding of the key issues defined by a scientific committee. Their task specifications were as follows:

- to validate, complement or amend our existing knowledge and understanding;
- to provide a firm basis for collaborative links between researchers and operators;
- to enable appropriation by the various field operators;
- to move towards improving evaluation tools.

LIST OF RESEARCH ACTIVITIES

N°	TITLE	COUNTRY	PARTNERS	RESEARCH FOCUS
RA 1	Local sub-contracting and the complementary nature of different forms of water supply systems in a small town, taking the example of Kindia	Guinea	Dominique Romann (ACT Consultants) Ibrahima Barry, Mahmoudou Baldé (KI.AM.) Nicolas Martin (Guinée 44) M. Dramé (Mayor of Kindia) M. Bha (APEK Laboratory) Soriba Yansané, Sékou Konaté	1.2 2.1, 2.2, 2.3 3.3 4.2, 4.3
RA 2	Comparative analysis of the performances of various delegated management systems for shared water collection points	Benin, Burkina Faso, Guinea, Guinea Bissau, Namibia, Niger, Senegal, Zambia	Janique Etienne , Yves Vailleux (Alfa-Burgeap) Alain Morel à l'Huissier (Cergrene) Hervé Conan (RéA) Michel Tamiatto Henri Coing (LATTS), Sylvie Jaglin (IFU-ITMU) Bocar Sy - Luc Hoang Gia (Semis) Amadou Diallo (Latorêt consultancy)	2.1 4.1
RA 3	Tools for direct evaluation of improved drinking water distribution services Factors affecting the cost of various collective drinking water supply services in peri-urban areas and secondary centres	Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Guinea, Mali, Mauritania, Niger, Rwanda, Senegal	Alain Morel à l'Huissier (Cergrene) Bernard Collignon (HydroConseil) Janique Etienne et Serge Rey (Burgeap) Annie Manou Savina (GREA-AO) Amadou H. Maïga (EIER)	1.1, 1.2
RA 4	Techniques used in the peri-urban areas of Yaoundé for the disposal of wastewater and human excreta and proposed appropriate systems	Cameroon	Nestor Bemmo (ENSP Yaoundé) Thomas Njine (University of Yaoundé I) Dieudonné Ngamga (University of Dschang) Moïse Nola (Faculty of Sciences) Commune of Yaoundé	3.3
RA 5	The legitimacy and strategies of new water sector actors, and how they emerge; conditions necessary for success and for the spread of shared water management methods	Cameroon, Haiti, Senegal, Mali	Isabelle de Boismenu (Gret) Sylvaine Bulle, Sarah Mathieusand Christophe Hennart (Gret Cameroon) Malick Gaye (Enda Rup) Seydou Diakité (Alphalog) Adonis Touko, Joseph Kemmegne, Louis-Pierre Ngalie Ngeuleu (Focap) Sabah Abouessalam (Cecod)	2.2, 2.3
RA 6	The impact of drinking water supplies, whether combined with sanitation activities or not, on health spending and on children's state of health in tropical peri-urban areas	Burkina Faso	Loïc Monjour (East) Clément Zidouemba, Yaya Ganou (Ministry of Health, Ouagadougou, Burkina Faso) Amadou Wangre (Muraz Centre - Boba-Dioulasso) Armande Sawadogo (CNRST) Alain Kaboré, Damien Ouedraogo (Paul VI medico-social Centre - Ouagadougou) Bruno Denis Bonkougou, Hervé Koné, Jean-Marc Bamogo, Bienvenu Noël Ouedraogo (East Ouaga) Annick Datry (Pitié-Salpêtrière hospital) Sylvie Mougat (C.Clin - Paris-Nord)	3.1, 3.2

N°	TITLE	COUNTRY	PARTNERS	RESEARCH FOCUS
RA 7	Community mobilisation for drinking water distribution and protection in an underprivileged urban environment	Chad, Senegal	Philippe Bachimon (University of Avignon) N'Diekor Yemadji (University of N'Djaména) Ignacio Packer, Kaspar Wyss (ITS) Mamadou N'Diaye (Enda-Graf)	2.2, 2.3
RA 8	Water management and protecting the resource	Cameroon, Chad	Émile Tanawa , Henri Bosko Djéuda Tchapnga, Emmanuel Ngikam, Jean Siakeu, Moïse Tsayem Demaze, Joseph Wethe, Louis Soh, Bernadette Ngo Massana, Paul Tchawa (ENSP Yaoundé) Moumtaz Razack (University of Poitiers) Abdelrhmane Bintou (University of N'Djaména) Thomas Adeline et Philippe Amirault (AFVP)	2.1, 2.2, 2.3 3.3
RA 9	Evaluation of the present role, the potential and the limitations of private water distribution operators; are they complementary to or in competition with the large public operators: – in the secondary centres of the three countries of the Senegal River Basin? – in the informal housing areas of the major cities of the third world?	Burkina Faso, Cape Verde, Mali, Mauritania, Senegal and Haiti	Bernard Collignon , Bruno Valfrey (HydroConseil) Denis Dakouré (Regional hydraulic department of the upper river basins - Burkina Faso) Alexandre Brailowsky, Patrick Vilaire, Alain Pamphile, Alice Conte, Gasner Bonhomme (Gret Haiti) Moussa Dao, Thierry Vercauteren, Jean Kis (GRDR Kayes) Thierry Vallée (GRDR Paris) Bernard Gay, Rodolphe Carlier (Gret) Sidi Aly Ould Moulouye Zeine (Gret Mauritania) Mohamed Ould Tourad (Tenmiya) Tidiane Koita (Epureh) Séverine Champetier, Philippe Durand, Cédric Estienne (AFVP) Youssouf Guissé (Ifan Senegal)	1.3
RA 10	Anthropological analysis of the institutional and inter-relational questions raised by water distribution in three small Malian towns (Bandiagara, Koro et Bankas)	Mali	Jacky Bouju (Shadyc) Tinta Sidiki (Laboss) Poudiougo Binet	4.1, 4.2, 4.3

Pilot activities

These served to test certain hypotheses relating to people's future patterns of behaviour and to test new methods of intervention.

The task specifications for these were as follows:

- the pilot activity should involve partners from the North and the South;
- the way in which the pilot activity is introduced should draw upon local skills.

In each case (both pilot and research activities), it was requested that researchers, managers, civil service departments, NGOs, local authorities, and consultants from both Africa and France be jointly involved.

LIST OF PILOT ACTIVITIES

N°	TITLE	LOCATION(S)/ COUNTRY	PARTNERS	RESEARCH FOCUS
PA 1	Rehabilitating popular water collection points in a large metropolis	Yaoundé, Cameroon	Thomas Adeline (AFVP Cameroon) Laurent Girard (AFVP) Francis Kammogne, Jean-Pierre Tanga, Mirabelle Damse, David Nembot, Sophie Mbelle (Cass) Émile Tanawa (ENSP of Yaoundé) Thomas Njine (University of Yaoundé I) Jules Mbarga Bekono Zamba (Mayor of Yaoundé 4) Denis Morand (FCIL) Christian Szersnovicz, Arnaud Rayar (MCAC)	3.1 4.2
PA 2	Community management of piped water systems in secondary centres of the Senegal river region	Medium sized rural centres in the Senegal river region of Senegal	Cédric Estienne , Abdoulaye Diallo (AFVP Matam) Séverine Champetier (AFVP Dakar) Laurent Girard (AFVP) Régis Taisne (ISF) Bruno Valfrey (HydroConseil)	1.3 2.2, 2.3 4.1, 4.3
PA 3	Introducing a franchised water distribution system in Gabú and São Domingos	Gabú and São Domingos in Guinea Bissau	Janique Etienne , Jacques Altherre (Burgeap) Hervé Conan (RéA) MM. Cassama et da Mata Mauricio Correia de Matos (Natural resources department)	2.2, 2.3 4.1
PA 4	Training neighbourhood youth committees to promote drinking water, hygiene and sanitation in peri-urban areas	Sig-Noghin neighbourhood of Ouagadougou in Burkina Faso	Loïc Monjour (East) Bruno Bankoungou, Alain Kaboré, Bienvenu Noël Ouedraogo (East Ouagadougou)	3.1, 3.2
PA 5	Standpost management: a comparative study and evaluation of completed or current projects	Kayes, Ségou & Mopti in Mali	Ricardo Hinojosa (Action Mopti) Demba Traore (SAN d'Évry in Kayes) Sylvain Segal (Action Mopti in Mopti) André Van Horebecke (Angoulême - Ségou twin town committee) Bruno Guerin (SAN d'Évry) Patrice Scarzello (Angoulême twin town committee) Alain Morel à l'Huissier (Cergrene)	2.1, 2.2, 2.3 4.3
PA 6	Introducing a local body for dialogue on water and sanitation	Bamenda in Cameroon	Christophe Hennart (Gret Cameroon) Isabelle de Boismenu (Gret) IDF, ENSP M. Mandjeck, M. Acha M. Timnou (University of Yaoundé) Thérèse Dameni Oussematou (IDF) Yacob Donmeza (Snec) Sylvester Fundoh Tanyi (Development Animation Committee) Sanjou Tadzong Abel Ndeh (Bamenda Urban Council)	4.1, 4.2, 4.3

Programme organisation

Responsibility for the programme rests with the DEV/ILU office of the French Ministry of Foreign Affairs, directed by Claude Praliaud. Until late 1997, Corinne Etaix, who was on the staff of this office, was directly in charge of monitoring the programme. The DEV/ERN office, which comes under the same Ministry and which is directed by Pierre lcard, is also very actively involved in this programme. Jean-Louis Oliver (DAEI, Ministry of Public Works) chairs the programme, and the Water Solidarity Programme (pS-Eau) is responsible for co-ordination and the programme secretariat.

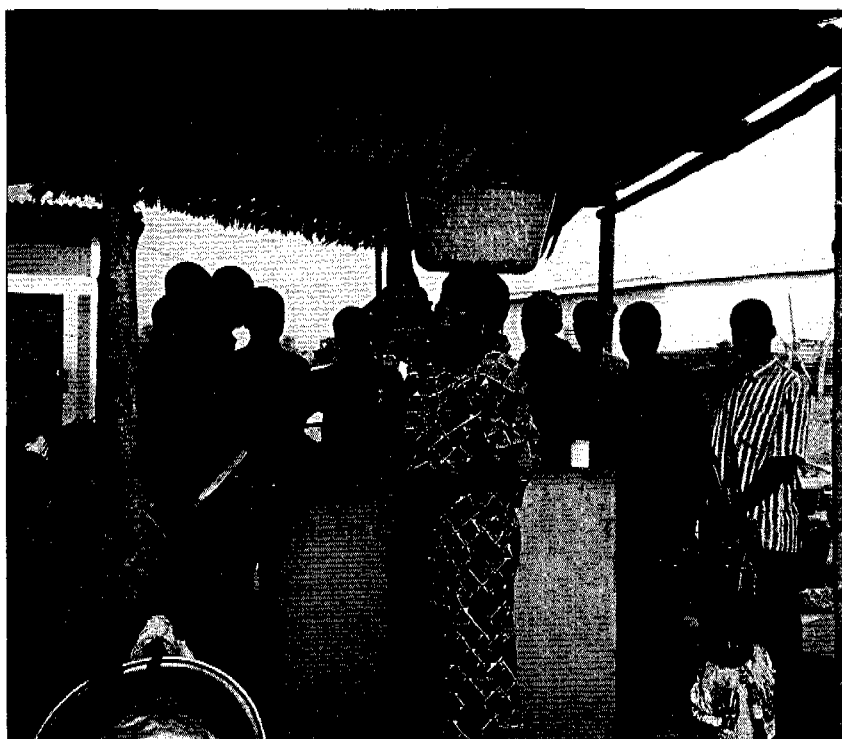
For its practical implementation, the programme relied upon:

1. **A select committee**, consisting of Jean-Louis Oliver, the representatives of the Ministry of Foreign Affairs and the Water Solidarity Programme (pS-Eau). The role of this committee was to run the steering committee and the scientific committee and to ensure co-ordination between the two.

It also drew up the terms of reference for the call for research proposals, and short-listed and analysed submissions in response to this consultation in order to present a summary of these to the scientific committee for their examination.

2. **A steering committee**², chaired by Jean-Louis Oliver, was formed in June 1995. This includes representatives of the Ministry of Foreign Affairs, NGOs, local authorities, consultants and researchers. This helped to define research areas and suggested pilot activities which should enable hypotheses commonly accepted but not yet validated in the field to be tested. Its main role was to monitor the pilot activities, and to ensure that they remained linked to the research being undertaken.

3. **A scientific committee**³, chaired by Rémi Pochat (Cemagref), was formed in November 1995. This finalised the call for research proposals, examined the responses and selected the successful teams. Its role was also to monitor research activities from a scientific point of view and to assess the scientific value of the research teams' intermediate and final reports.



Isabelle de Bourneau (Cetef)

² The members of the Steering Committee are listed in Annex 2.

³ The members of the Scientific Committee are listed in Annex 3.

4. **A team responsible for preparing a summary of the lessons learnt**⁴, led by Emile le Bris, and including Alain Morel à l'Huissier, Xavier Crépin, Bernard Collignon, Jean-Paul Duchemin, Ta Thu Thuy and representatives of the French development agency and of *Cités Unies France*⁵, was formed in October 1997.

The role of the four programme pole co-ordinators (Alain Morel à l'Huissier for Research focus 1, Xavier Crépin for Research focus 2, Jean-Paul Duchemin for Research focus 3, and Ta Thu Thuy for Research focus 4) was to prepare a summary highlighting the lessons learnt from the activities undertaken for each research focus and to prepare the workshops for the presentation and debate seminar.

The overall co-ordinator had responsibility for the following tasks: to reposition the proposals contained in these summary documents in relation to the key issues of the programme; to compare these issues and any solutions to wider issues of urban management.

Programme timetable/progress

The programme began in June 1995 with the setting up of the steering committee.

October 1995:	The scientific committee is set up.
November 1995:	The scientific committee validates the terms of reference and the call for research proposals, and distributes these. The steering committee members suggest pilot activities.
January 1996:	The steering committee selects six pilot activities.
March-June 1996:	The pilot activities are launched.
April and July 1996:	The scientific committee selects ten research activities.
July-December 1996:	The research activities are launched.
25 October 1996:	A co-ordination meeting is held in Paris.
May 1997:	Intermediate reports are submitted on the pilot and research activities.
June 1997:	The intermediate reports on the pilot and the research activities are examined.
June-December 1997:	Assistance and advisory missions to certain activities take place.
October 1997:	The team responsible for preparing a summary of the lessons learnt from the programme by theme is formed.
Dec. 1997/Jan. 1998:	Final reports on the pilot and the research activities are submitted.
Dec. 1997/April 1998:	The team prepares a summary of the lessons learnt from the programme.
April 1998:	The scientific committee and the steering committee examine the final reports of the research and pilot activities.
26-28 May 1998:	Workshop days of summary presentations and debate are held in Ouagadougou (Burkina Faso).
June 1998/Dec. 1998:	The results of the seminar are disseminated.
January 1999:	Final results are released at a meeting in France.

⁴ The members of this team are listed in Annex 4.

⁵ An association of French local authorities.

Lessons learnt from the programme: a summary

ANALYSING THE ECONOMIC PARAMETERS OF WATER DISTRIBUTION

Research focus 1: Summary of the lessons learnt from the programme, by Alain Morel à l'Huissier (Cergrene), with contributions from Barthélémy Gbemade (Crepa) and Souleymane Bouaré (DNHE-Mali)

Why carry out research on this subject?

■ *Cost and demand: two issues central to the programme*

The underlying assumption of our research and pilot action programme relates explicitly to a key economic problem. Small centres and peri-urban areas were selected as priority research areas because they have been identified as “intermediate” spaces in which the technological models of both urban and village hydraulic systems are stretched to the limits of their application: the former because of their cost (urban network type systems with individual connections are not profitable enough), and the latter because of the nature of the demand (expectations from the service outstrip what can be provided by improving traditional, shared water collection points in rural areas).

Technological solutions do not necessarily depend on technical innovation, since they are already well-known (standposts, small, simplified piping systems, autonomous water collection points with storage facilities and distribution pipes with taps, etc.). The difficulty and the innovative approaches that need to be found relate more to the way in which a system within which differentiated levels of service exist alongside one another, and which furthermore meet types of demand which themselves differ; can be planned and managed in a consistent manner.

■ *Contrasting attitudes within the profession to the economic approach*

Is **economic analysis**, i.e. comparing the costs and the advantages or benefits resulting from choices such as investment decisions or price-setting policies, actually **necessary**? To answer this question, we must explore certain side issues.

In reality, although millions of francs a year are spent on drinking water supply projects, these investments are very rarely subject to strict economic analysis. Most funders and national governments exempt them from the economic evaluations commonly required for investments made in other sectors such as transport or housing. Why?

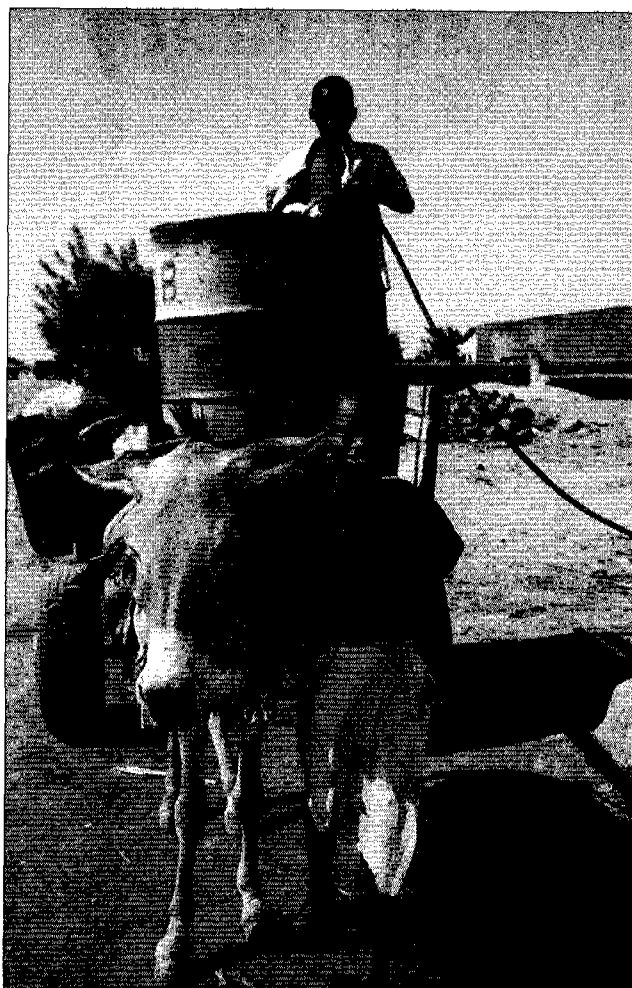
Certainly not because they do not raise economic questions: financial resources are limited, and priorities need to be set and judgements made to reach a decision to invest in one sector rather than another, or to fund this rather than that drinking water supply project. The question of what level of service to adopt in the context of a given project regularly arises, and whether the additional cost of choosing a higher level can be justified. Similarly, choices relating to charging are as critical in the water sector as in other public commercial services, since cost recovery is one of the manager's chief objectives, and water is a limited resource which has to be shared between different users who find themselves in competition with each other.

In fact, the reasons for the absence or superficiality of economic analyses are inextricably linked to the attitude of water sector professionals and decision-makers, and the way they present their arguments. Most of them in fact share the view – to varying degrees – that applying economic analysis to water supplies is a fruitless exercise. This opinion is based on two main arguments:

1. The first relates to an **ethical conviction**: many in the sector consider that access to drinking water is a fundamental right for all individuals and that supplying clean water to all is an obligation that no economic analysis should need to justify. This principle underlies declarations which have been long and widely broadcast such as "water is the source of life", "one cannot put a price on water", etc.

2. The second, which is apparent more in a certain degree of scepticism than in a rigid position, is that of the professionals, who doubt that the economic benefits of an improved water supply can be sufficiently accurately assessed to justify choices made in practice. For these, the problem lies not in finding out if it would be **useful** to measure people's preferences for an improved service, but rather if this is **feasible** given project constraints.

Both these arguments, although they rest on different principles, basically point to the same real difficulty: how to measure **non-perceived health benefits**. By definition, the economic advantage an individual gains from the consumption of given goods or services comes down to the value he or she attributes to it. It is generally agreed, however, that the future beneficiaries of a drinking water supply are not aware, until they have experienced its advantages, of the impact of water on their health. And if they are not perceived, these benefits cannot be included in the **individual economic benefits** capable of being directly measured. Professionals in the sector using the first argument outlined above, and notably health specialists, take it for granted that health advan-



Véronique Versell

tages heavily outweigh all others. Unfortunately, as previous research has shown and further research carried out within the programme has confirmed, the alternative, which consists in measuring this kind of impact indirectly, also poses serious methodological problems, so that **this issue cannot be definitively resolved**. Thus, given our inability to assess with any accuracy the individual or collective advantages of an improved water supply on health, we are unable to judge **the relative importance of these compared to overall economic advantages**.

Nevertheless, whether to convince themselves or to convince others that a given project or given water policy decisions are well-founded, most professionals in the sector clearly expect some answers on water economics.

■ *Two needs and three priority areas for investigation*

In order to meet this operational need on the part of operators and decision-makers, the programme set itself the objective of promoting research and pilot activities capable of working towards developing **tools to aid economic decision-making and management**. Pursuing this objective implied conducting investigations in two directions: filling a certain number of perceived gaps in our knowledge and designing operational tools integrating this improved knowledge and understanding in the form of models, methodologies and recommendations likely to help planning and management.

Gaps in our knowledge in the field of economics often result from a lack of horizontal studies that use the comparative analyses of several case studies to move beyond merely amassing monographs, to systematically organising our knowledge. Three areas are considered to be priorities:

1. Understanding the **determinants of demand for improved water supply services** (a field relating to theme 1.2).
2. Understanding the **mechanisms shaping the costs of these services using various technologies or ways of providing them** (a field relating to theme 1.2).
3. Understanding the significance of **private, often informal, operators**, who supply small centres and informal city areas with water (the macro-economic approach), as well as the ways in which their enterprises work (the micro-economic approach) (a field relating to theme 1.3).

It was decided to concentrate on developing certain operational tools based on these three layers of understanding. These are respectively:

- tools for evaluating demand for improved water services (theme 1.1);
- predictive models and tools to assist the cost analysis of these services using various technologies or ways of providing services (theme 1.2);
- recommendations on what policy to adopt *vis-à-vis* private operators, the relevance of a strategy to integrate their activities and the possible ways of achieving this (theme 1.3).

The two main research activities selected within this research focus of the programme (RA 3 and RA 9) pursued these two avenues.

What can we learn from demand analysis?

■ *A competitive market*

The key feature of the water market in the particular context of “semi-urban” areas (popular areas of cities, secondary centres) lies in the existence of **competitive and complementary links** bet-

ween various forms of supply. Some of these are derived from “modern” supply services, often qualified as “improved” (household connections and shared water collection points); others are provided by traditional “free” water supplies, such as wells, springs, rainwater, rivers or seasonal ponds; yet others are supplied by operators (often informal) in the form of house-to-house delivery of water which they themselves have obtained in various ways.

The failure of the supply to meet the demand, however, has serious repercussions on the sustainability of built structures, on whether the population will accept responsibility for them, on the efficiency of a health policy, as well as on the financial security of water distribution companies or the delegated managers of shared water points. Operational tools, which are simple and cheap to use, would therefore be needed to assess people's willingness to pay for various levels of service, and to assess the consequences of this information on the choices of systems to be introduced, of the investments to be made and of the charges to be adopted.

■ *Two possible approaches to evaluating demand*

The ability to attribute an economic value to environmental resources is a key issue in sustainable development in both industrial and developing countries. A lively and contradictory debate on the relative merits of two opposing approaches has been raging for the past twenty-five years (Cergrene, RA 3):

- The **indirect approach** consists in collecting data on current observable behaviour (how much water is taken from different sources of supply, how long is taken to collect it, the costs borne) and then to infer from these, using models based on consumer demand theory, how much the latter would be prepared to pay for an improved service.

- The **direct approach**, or “contingency evaluation method”, consists in surveying a representative sample of potential users and asking them what they are prepared to pay for various types and levels of hypothetical services. In addition, the whole debate is complicated by the question of the transfer of economic benefits to the environment, which attempts to transpose by analogy one population group's evaluations in order to estimate how a second would evaluate the same resource.

To what extent are the direct and indirect methods for evaluating demand reliable tools? Which should preferably be used, and what are their respective advantages and disadvantages? What precautions should one take when using them and what credence can be given to predictions based on their results?

These are the kind of questions the research steered by Cergrene (RA 3) addressed by carrying out a “state of the art” review of these methods. This research showed that the indirect approach has so far hardly produced any models on the basis of which the field of application can be extended beyond the actual context of the site in which they were based, and that they tend to fail the test of time: behaviour patterns modelled on a town or small centre cannot be transposed to other sites, and are not even applicable in reliably predicting the choices which will prevail in the same town or the same centre a few years later.

■ *A promising model of demand*

The most promising demand models – and amongst the most robust – are those which were developed during Cergrene/Burgeap's research (RA 3) using a holistic approach. Using the re-

sults of surveys carried out in fourteen towns or secondary centres in four countries (Niger, Benin, Guinea and Mali, i.e. over a thousand households surveyed in total), this research modelled the rates of utilisation of standposts by inhabitants not connected to a mains supply and their specific consumption at these water collection points. Using standposts for drinking water in the dry season is too widespread to allow a robust model, but the price of water being sold at standposts and the availability of wells (rare or frequent) explains to a great extent the fluctuation in the rate of utilisation of standposts for laundry water in the dry season. In the rainy season, the utilisation rate of standposts for drinking water correlates strongly to the same two variables, and to the distance to be covered: price and distance explain approximately two thirds of the fluctuation in consumption.

■ *How to conduct “willingness to pay” surveys*

Amongst the direct methods, only “willingness to pay” surveys have been **scientifically validated**. Research conducted by the World Bank’s Water Research Team¹ showed, in one specific case, that predictions of household choice based on a willingness to pay survey could achieve great accuracy, provided, however, that certain methodological rules were rigorously followed. Until now, most willingness to pay surveys carried out have in fact been seriously flawed.

The research steered by Cergrene was based on a bibliographic review and on the recorded experience of analysts, sociologists and researchers involved in implementing these innovative techniques. It formulates detailed recommendations likely to help achieve this good level of predictive performance, particularly by avoiding – or by knowing how to test for and correct – the main sources of bias which often flaw the results of such surveys. Bias can result from the questionnaire, the survey staff, the information of those being surveyed, and it may be hypothetical, strategic and compliant. The main limitation of the indirect method rests in the fact that willingness to pay for improved services is highly sensitive to how much the potential users know about these beforehand (informational bias).

From a strictly financial point of view, the high costs of contingent evaluation surveys (between 150,000 and 200,000 FRF) could be avoided if efforts to develop behavioural models were pursued until they achieved a predictive power at least equal to direct methods. However, contingency evaluation surveys encourage a dialogue process, whereas the use of predetermined models on the contrary encourages the concentration of decisional powers by alienating the users and those locally responsible for the planning process.

What can we learn from cost analysis?

■ *Modelling costs: insurmountable hurdles*

Using the large amount of data collected from a wide range of case studies (essentially those produced in the context of research steered by HydroConseil: RA 9), the research steered by Cergrene (RA 3) showed that **modelling the costs of investment and operation** of various water distribution systems for predictive purposes faces insurmountable hurdles.

¹ Cf. The World Bank Water Demand Research Team, 1993, “The demand for water in rural areas: determinants and policy implications”, in *The World Bank Research Observer*, vol. 8 n° 1, pp 47–70.

The costs of producing and distributing water include too many parameters to meet the specifications of modelling which can be used for predictive purposes: our research shows that the various elements making up the cost of water vary widely depending on the technical choices made, that calculating depreciation or provision for renewal are closely dependent on national policy in this area, that certain parameters do not lend themselves easily to economic analysis, but at the same time they play a key role in ensuring the financial break-even of commercial agents.

Finally, our research shows that some of these parameters are difficult to evaluate accurately. Modelling using "main headings" is still, however, possible and is of major benefit for technical services or research consultants required to work in this sector, both from an economic point of view (to encourage commercial agents to improve their performance) and from an educational point of view (to raise awareness amongst contracting bodies of the consequences of their technical choices).

■ ***A tool to aid cost analysis and predictive management***

Based on a critical analysis of the accounting records of comparable centres or neighbourhoods in which a water distribution system has been in operation for several years, good estimates of the cost of water do exist and can provide a useful management tool for those commercially exploiting drinking water supply systems or for local authorities. To this end, the research steered by Cergene (RA 3) has developed a **computerised system to assist cost analysis** using a common database programme which can easily be adapted to any country.



Céler - Estienne

What can we learn from economic analysis of the private sector?

■ ***Complementarity and duality***

Past research (notably by Morel à l'Huissier – 1990) had shown that activities related to "**water redistribution**" (people re-selling water in their neighbourhood, frequently found in peri-urban areas; water delivery-carriers, motorised or not; standpost managers, etc.) are not the by-product of the misfortunes befalling the growth in drinking water distribution systems. On the contrary, they reflect the form of production peculiar to the poor, urban economy system which is suited to the economic and social constraints which burden the agents concerned – both producers and consumers. They do not merely fill the **gap left by the absence of a supply** which should be provided by the distribution system (the "modern system"), but form a genuine **dual system** which – although closely linked in terms of **structural dependence** to the modern system – nevertheless has its **own consistency, dynamics and rationale**.

The research steered by HydroConseil (RA 9) within the programme is the first on this scale to focus systematically on studying the micro and macro-economic aspects of private enterprises active at different levels of the water supply chain, not only in the popular neighbourhoods of large cities, but also in small centres.

This research allowed the initial hypothesis according to which "some of the tasks of the commercial exploitation of drinking water supply systems is delegated to private operators under contract, but **the vast majority of these operators are in the informal sector**" to be both validated and criticised. It shows that pump maintenance, which is vital to the sustainability of the service, continues most often to be provided by State technical services, that there is generally a public monopoly in this area, as there is in the commercial exploitation of urban networks, but that privatisation is seen as one possible avenue here, given the increasing difficulties States face in subsidising the service. Private service operators therefore only occupy market "niches" which correspond to services that State or municipal services cannot provide, through lack of material means, availability or staff (small repairs to pipes and engines in small centres, redistribution of water from mains supplies).

Our research confirms that such operators are indeed for the most part in the informal sector (they have no legal status, they pay no taxes, they have no formal contract and have had no vocational training, etc.), but that the tendency is for them to be moving towards a more formal status (e.g. franchise, concession or delegated management contracts for certain tasks, such as maintenance, commercial management of tubewells, or indeed the commercial exploitation of the entire water distribution management system).

■ *Considerable macro-economic weight*

The research showed that the macro-economic weight of private operators in the urban activity of the "water" production and distribution chain is considerable. In the five centres studied, they accounted for **between 21% and 84% of the total added value of the chain** and, in line with the highly labour intensive nature of "informal" activities, the proportion of jobs created by these enterprises is even higher than in licensed enterprises (**three to fifteen times more**), although such jobs are often insecure or temporary.

Finally, on the basis of this diagnostic study, the research formulates a number of recommendations, notably on the potential and the feasibility of projects tending to encourage the promotion and the involvement of private operators, as well as on ways of safeguarding or encouraging beneficial and complementary competition between various categories of operators.

The contribution made by the Ouagadougou workshop

Some thirty participants from various backgrounds (State hydraulic departments, consultants, research centres or universities, etc.) attended this workshop which was devoted to research focus 1 of the programme. The days of presentation and debate held at Ouagadougou from 26 to 28 May 1998, allowed a debate to evolve around the central issues raised by the themes addressed in research focus 1, in the light of the reports made by those involved in research or pilot activities.

■ ***Water supply systems are over-sized***

A consensus emerged amongst the participants that the excessive size of installations is the cause of the failure of most drinking water supply projects, and that there are two main reasons for this:

- poor estimation of individual demand;
- poor estimation of the total number of inhabitants to be supplied.

The workshop recommended that everything possible should be done to make all actors aware of this fact and for them to agree to **devote the resources necessary to a careful and realistic assessment of demand** (rather than of needs, a term which all too easily implies more or less external and unsuitable pre-suppositions or norms). Three methodological recommendations were formulated to help achieve this objective:

1. carefully check and monitor **demographic data** and changes to them;
2. using the "state of the art" guidelines which have now been established, **implement methods for measuring people's willingness to pay for an improved water supply**;
3. use **participatory approaches** in order to ensure that demand will be taken into account at the various stages of project design, from identification to implementation.

■ ***Attitudes and strategies to adopt towards traditional water collection points***

Several case studies, notably those carried out in Kindia (Guinea, RA 1) and Yaoundé (Cameroon, PA 1), highlighted the pre-eminence of traditional supply systems (mainly wells and springs) in popular practices. They also showed that some of these sources do not necessarily supply water unfit for consumption, in terms of use for laundry or washing purposes, and that moreover households rate different sources of water according to their supposed quality. This rating comes fairly close to reality: thus, mains water is preferred to water from other sources, that of improved springs to that of non-improved springs and wells. The resulting hierarchy dictates the order of preference of various sources in the light of the uses to which the water extracted from these sources is put.

The quality attributed to drinking water (water which "doesn't make you ill"), is an ongoing concern for the great majority of the inhabitants of urban areas. For this "higher" purpose, mains water is preferred (even if this means buying it sometimes at high prices at standposts or from neighbours with a mains connection, or going further afield to acquire it), but water from improved springs, or, in the rainy season, directly harvested rainwater, is also used for this purpose.

All the indications are that the "drinkable" quality of mains water is therefore now favourably perceived by inhabitants, who are increasingly aware of the health implications of water consumption. These results unquestionably come as a welcome surprise. The seminar participants consequently recommended that when conducting preliminary studies, there should be a systematic examination of the extent to which traditional water collection points could be integrated into the overall improved drinking water supply system, and how, (e.g. rehabilitation, boundary protection, quality control and public information), and the uses for which they might form an alternative source, complementing the water distribution network, probably on an occasional basis.

The limitations of the research carried out and possible avenues for further exploration

■ *In-depth case studies we can learn more from*

Although it was decided to focus the call for submissions for research and pilot activities in fairly precise subject areas, we believe the results of the programme are far from having answered all the questions raised. Indeed, it may even have raised more new questions than provided answers. At first sight this might seem somewhat frustrating, but it is on the contrary a hopeful sign. Several pilot activities (notably those in Yaoundé – PA 1 – and in Kayes, Ségou and Mopti – PA 5), and the research steered by ACT Consultants (RA 1) have provided case studies rich in material which has to a large extent not yet been fully exploited from the point of view of the subject areas addressed in this research focus of the programme. The same is true of the many case studies resulting from RA 2 research activities (steered by Burgeap) and RA 9 (steered by HydroConseil).

Each of these case studies is undoubtedly of interest in itself, particularly thanks to the range of angles of approach and analysis chosen (technical, financial, institutional and management aspects), but including them in **comparative and horizontal economic analyses** would be of even greater benefit.

■ *Demand evaluation: studying other techniques*

Research into evaluating demand shed little light on the relevance of a certain number of **techniques available as alternatives to surveys**, despite these being probably better suited to running small-scale projects in one (or more) urban area(s) or secondary centre(s). This is notably the case for techniques commonly used in village hydraulics projects at their information and awareness-raising stages. These should be considered for possible use within iterative methods, encouraging on the one hand less expensive and less constricting ways of expressing and measuring demand than willingness to pay surveys, and on the other taking account of this demand at various stages of the project development, from identification to implementation.

■ *How can changes in demand be taken into account?*

The most serious limitation, however, of the analyses carried out on demand in project mode relates not to the restricted range of techniques envisaged, but rather to the deliberately **static** perspective in which we have chosen to position ourselves. In a summary note prepared for the research action steered by Burgeap (RA 2), Henri Coing explains that, "... any over-anticipation of demand (the volume consumed, or by over-ambitious programmes for individual connections) leads to failure. Conversely, any static definition of demand fails to take account of demographic and spatial dynamics...". He therefore recommends that **the systems envisaged should be capable of change and that the ways in which these changes could occur should be anticipated from the outset**.

This is in fact a well known principle of economic rationality. Economic efficiency, after all, means notably supplying the service at the lowest possible cost thanks to optimal investment planning. Such economic optimisation, however, requires that the size of the system infrastructure should be calculated with a view to minimising the total, up-dated costs of the additional investments

necessary to increase its capacity when demand increases. The estimated demand at the time the system is put into service will therefore always be too low. It is in fact **changing demand over the whole life-time of the equipment installed** which needs to be estimated in order to determine its size. Depending on each case (economies of scale vary according to the nature of the equipment), this might be done in the light of demand at the end of this life-time, or in several stages, by anticipating for each of these a short-term sizing policy. This principle, however, is very commonly set aside by projects, particularly when they involve or cover areas where socio-demographic and spatial change can be rapid and unpredictable, which is often the case for secondary centres and above all peri-urban areas.

The problem is far from simple. Models including dates and optimal expansion sizes have certainly been developed for the various kinds of equipment (pumping, treatment, storage, distribution) needed for drinking water supply systems. As they stand at present, however, these are unable to take into account the often major uncertainty surrounding changes in the very economic parameters which are fed into them (since specific consumption changes with living standards, and with demographic growth, but also with unit costs and frequency of up-dating).

■ *The impact of what we have learnt on setting optimal tariffs*

"Social" policies, based on various financial incentive mechanisms, have failed to allow low-income population groups to benefit to any significant or sustainable extent from household service levels. For the past twenty years or so, so-called "social" water policies have relied on three instruments, massively adopted by distribution companies: an incremental tariff structure, an initial subsidised tariff band, and connections subsidised or paid for on credit. These have, however, proved ineffective in sub-Saharan Africa, or, more seriously, have had the opposite effect to the objective in mind.

A first question therefore arises and was debated in the Ouagadougou seminar workshop on research focus 1 of the programme: **How far can one go in lowering the initial cost of connection to the user?**

Taking as their starting point the principle that the initial cost of a connection acts as a major deterrent (since it frequently represents several months' income for over half the population), many countries have chosen to pass only a fraction of this cost on to the user, or to allow the user to pay it off on credit. In all cases, the low savings capacity of households in informal or evolving housing areas prevents most of them from being able to benefit from such measures.

In a city such as Abidjan, for example, over 60% of householders state that they cannot save. Connection policies based on these principles are therefore more akin to a policy of faster catching up with demand – as yet unmet but capable of paying – than to a genuine social policy. Moreover, while a large proportion of homes remain unconnected, the equity of such policies is questionable, since the mechanism for subsidising connections by the State or the communes in question lead inevitably to their being partly financed by the very households which are unable to benefit from them.

Finally, the example of Côte d'Ivoire, which since the mid-70s has successfully followed a policy of subsidised connections, clearly shows that resolving the problem of the initial connection cost is not enough, since when faced with paying the bill for the water consumed, these new customers find it so difficult to regularly scrape together the amounts they owe, that their service is frequently suspended or disconnected.



Véronique Verdel

The second question the workshop considered was as follows: **Are incremental rates and a "social" band rate fair?**

When tariffs fail to cover the operating costs of drinking water supply systems, subsidies have to be provided by the State or sometimes by municipalities to keep the service going. These subsidies are, however, proportional to the water consumed. As better-off families consume the largest quantities of water, such subsidies in fact benefit the richer sections of society at the expense of the poorer. The need

for a certain amount of redistribution of income through tariff structures has not however escaped distribution companies since most of them have chosen to use an incremental tariff structure.

Whatever the variations within the tariff structure, the first band, generally known as the "social" band, is supposedly designed to allow the richest households to subsidise the consumption of the poorest. The principle rests on the generally observed correlation between levels of consumption and income. Unfortunately, here again, indirect effects lead to the reverse distribution of income from the poor to the rich, contrary to the objective in mind. Research undertaken has shown for example that in densely populated areas several households living around a single courtyard frequently share a common tap and split the bill between them. Incremental tariffs therefore mean that these households pay more for their water than a better-off family which has its own connection. Finally, several case studies documented during the programme (e.g. PA 5) have described situations in which several poor families buy water from a neighbour who has a connection, increasing the consumption of that connection and consequently the unit cost of the water: the seller passes these prices on to the buyers who are then subsidising the consumption of better-off customers who can benefit from the social band.

Given these observations, the workshop participants quite rightly pointed out that it is now a matter of urgency to question the logic of the principles of the tariff structures commonly in use in Africa, in order to re-establish an apparently forgotten compromise between efficiency and equity in drinking water tariffs.

Reports relating to this summary

ADELINÉ et al., 1998. *Rapport final de l'AP 1.*

COLLIGNON et al., 1998. *Rapport final de l'AR 9.*

ETIENNE J. et al., 1998. *Rapport final de l'AR 2.*

MOREL À L'HUISSIER A. et al., 1998. *Rapport final de l'AR 3.*

MOREL À L'HUISSIER A. et VERDEIL V., 1996. *Gestion des bornes-fontaines : étude comparative et évaluation de projets réalisés ou en cours de réalisation (villes de Kayes, Ségou, Mopti).* Published by Cergrene. 200 p.

ROMANN D. et al., 1998. *Rapport final de l'AR 1.*

SHARED MANAGEMENT SYSTEMS FOR DRINKING WATER SERVICES AND USER PARTICIPATION

Research focus 2: Summary of the lessons learnt from the programme, by Bernard Collignon (HydroConseil) and Xavier Crépin (Isted), with contributions from Denis Dakouré (DRH Bobo Dioulasso), Ahmed Ould Weddady (DH Nouakchott) and from research team n° 2²

Water service actors in small centres and peri-urban areas

■ A rapidly changing picture

The institutional landscape of the drinking water sector in African cities has become noticeably denser over the past ten years. At the end of the 80s, it consisted simply of overall control by public water distribution companies, over which municipalities had no control and which were seriously concerned only with meeting demand from middle income families.

Partly as a result of the withdrawal of the State, new actors have now appeared in the urban service field (user associations, NGOs, small businesses, etc.) or existing actors (such as local authorities) have become more autonomous. These have therefore sought to extend their activities and have naturally come up against somewhat rigid monopolistic situations inherited from previous periods. The following is a rapid review of these new actors.

■ Local authorities

For a long time local authorities have been restricted to playing the role of "driving belt" for central powers. This is particularly striking in countries such as Mali, Burundi or Togo, where locally elected representatives seemed to have no control over public services such as drinking water. Amongst the French-speaking African countries, only in Ruanda did the communes (through their by-laws) have any real power over water services. Over the past six years, many countries have begun a process of decentralisation, giving local authorities important prerogatives (if not resources) to ensure public water services.



Christophe Le Jallig

■ Community-based associations

In the underprivileged areas of large cities (such as Port-au-Prince, Bamako or Dakar), to compensate for the weakness and inefficiency of municipal structures, civil society is organising itself into a large variety of associations (church; youth, women's or neighbourhood associations, etc.). The vast majority of these are attracted by the idea of entering the arena of major public services

² Janique Etienne (Burgeap), Alain Morel à l'Huissier (Cergrene), Hervé Conan (RêA), Michel Tamiatto, Henri Coing (LATS), Sylvie Jaglin (IFU-LTMU).

(water, education, health, roads, etc.) to give some impetus to their aims, even if this kind of service does not actually form part of their social objective.

■ **Water distribution network management committees**

At the end of many projects for building drinking water supply systems, the project's promoters introduce a new structure, which is then responsible for running the system. This structure is often chosen following a process of co-opting, which sometimes involves a large proportion of the inhabitants concerned. It therefore has genuine "elective" legitimacy, frequently reinforced by the presence of traditionally respected members of the community. This has certain advantages (such as genuine influence over the users of the distribution network), but also disadvantages (i.e. a degree of conservatism and the exclusion of certain social groups: users with no other choice, women, young people, foreigners, etc.).

The role of these *ad hoc* committees (i.e. set up by projects, principally to serve the objectives of sustainability defined by projects – cf. Tanawa, RA 8) is particularly significant in small centres, where customary links and the importance of family bonds outweigh all other considerations. These bonds still play an important role in a town of 50,000 inhabitants, such as Mopti (cf. Bouju, RA 10) but this tends to weaken in large metropolises such as Dakar (cf. Champetier and Durand, RA 9).

■ **Delegated enterprises**

These are businesses or individuals who negotiate a concession, a lease or the delegated management of a water distribution system with the State or local authorities. This type of operator makes no claim to represent the users or to speak on their behalf, but rather to provide them with a good quality service, well-suited to the demand.

In Mauritania, Tidiane Koita (RA 9) interviewed these concessionaires and his report paints a detailed picture of their activities, their expectations and their demands. He clearly shows their frustration at having no legal legitimacy, either *vis-à-vis* the central administration or the local authorities, despite carrying out most of the tasks which allow water to be supplied to the inhabitants.

■ **Mediation organisations**

These are newcomers on the water distribution scene. Given the lack of communication and of negotiation between representatives of the State and of users, NGOs and consultants are occupying a central position in negotiating new ways of managing public services in large centres such as Bamenda (cf. De Boismenu, PA 6) or Port-au-Prince (cf. the summary of the study steered by HydroConseil, RA 9).

Comparative analysis of the performances of different delegated management systems for public water collection points

The case studies and the surveys carried out during the first phase of the research activity steered by Burgeap (RA 2) highlighted the wide range of institutional solutions being used in various contexts. (The following paragraphs draw freely on the summary of the research steered by Burgeap). Given

this diversity, the research team successfully focused on structuring a consistent approach to the organisation of the service, the role of the users, who covered which costs, links between the service and local bodies, links between projects and national policy, and finally links between the various stakeholders involved.

■ ***Long ignored "intermediate" spaces***

In most of the countries studied, urban areas can be distinguished from rural areas by the way in which drinking water services are organised. Small centres and peri-urban areas have the particularity of being intermediate areas as far as previously defined categories are concerned, areas neglected by institutional organisations and as a result coming under the responsibility of either urban management bodies or government departments in charge of rural areas.

■ ***The management failure of the first generation of projects and disseminating delegated management systems***

The management results of the first generation of village hydraulic projects were poor: either the rapid failure of pumps caused users to turn back to traditional water collection points, or the way in which the new installations operated failed to attract the inhabitants away from their previous water supply practices. The disastrous results of many municipal standpost networks is also well-known. Many were abandoned in the 70s or closed in the 80s because municipalities had accumulated significant levels of debt with the water companies, and because of the deterioration of many installations as a result of lack of maintenance.

As for the spread of delegated management in peri-urban areas, this results from two main factors: funders' recommendations on paying for water (in line with recommendations made by structural adjustment programmes) and recognition of private customers' practices of re-selling water which became widespread in the 70s.

■ ***From rural model to community management "model"***

The community model is mainly found in rural areas and in small centres (less than 10,000 inhabitants) where traditional bonds and authority are still strong. A group of inhabitants, represented by a committee or an association, is responsible for providing the water production/distribution service, using installations often financed by a project, and nearly always belonging to the State. Responsibility for selling the water is with water vendors, who are either salaried or paid at a marginal rate, while the committee or the association sometimes uses a service provider for maintenance. Relationships between the various actors are rarely set out clearly in a written document (contract). This is the most widespread model and is particularly marked in Senegal, where more than 800 networks are managed in this way.

The theoretical advantages of this model are that it ensures the "participation" of the inhabitants, i.e. that they are responsible for the installation and represented, and the sustainability of the system by specifically anticipating how maintenance and operating costs are to be financed (tariffs and cost recovery methods) and sometimes how the cost of partially replacing installations are to be covered (from savings schemes which are to a greater or lesser extent compulsory). This system also has the advantage of keeping down management costs (since management delegates are often voluntary), but this runs the risk of being at the expense of the performances of the

system. The professionalism of the members of the management committee is therefore an important factor, and has been very thoroughly addressed in the pilot activity of AFVP and ISF in Senegal (PA 2).

■ ***From urban model to delegated distribution “model”***

Delegating standpost distribution to private managers tends to be spreading in the urban and peri-urban areas of black Africa, where traditional bonds are less strong, the inhabitants more individualist, and therefore community actions more difficult to implement (cf. Tanawa RA 8). The enterprise (public or private) holding the water service concession at national level fulfils the roles of production, transport and distribution, but sub-contracts the final stage of the distribution chain.

Responsibility for selling the water to customers and for maintaining distribution points is delegated to a commercial, usually private, operator (but sometimes to a non-profit organisation). These responsibilities are generally mutually agreed and signed in a contract which may vary in detail. Imposed on the leasee, or the manager, by the concessionary body, it is designed more to protect the latter's interests than to ensure the quality of service to the user. The service is in fact often provided by a water vendor, recruited by the manager and paid by him (at either a flat rate or a marginal rate), and who is as a result outside the formal contractual relationship.

There are two main advantages to this system: it improves the neighbourhood service by passing responsibility to a third party close to the users and potentially subject to pressure from them; and it reduces the management costs of the authority awarding the concession by distancing it from the unpredictable nature of operating the service.

Norms for the quality of the distribution service are not covered by any contract and not regulated: no body is officially charged with defining the level of services to be provided, with translating these into a task specification and with ensuring that this is respected. The absence of this regulatory role is in fact one of the key features highlighted by a great many case studies. On the other hand, the security provided by transferring the risk of commercial exploitation is genuine, and there are a whole series of mechanisms (security deposits, recall of the security deposit, shutting off the meter) enabling the authority awarding the concession to monitor the commercial activity of the concessionaire (and this is amply illustrated by the results of the pilot activity carried out by the twin towns in Mali, PA 5).

■ ***Malfunctions and closing the gap between the two “models”***

The main malfunctions identified can be classified into three main categories:

- those resulting from faults in the design of the system for supplying customers;
- those resulting from practices before delegated management was organised which still persist and which interfere with the way it operates;
- those resulting from a frequent gap between the formal definition of roles and tasks on the one hand, and responsibilities and forms of usage empirically built up in the field on the other.

In the face of these difficulties, the current tendency seems to be to attempt to take “the best” from each of the two “models”, without going so far as to “standardise” public water collection point management models, urban or rural, since the constraints of each differ too widely.

Based on the principles of leasing, these new methods of commercial exploitation depend on “dismantling” the management chain (several operators share the various roles between them), in-

creasing contractualisation of roles (sometimes in the form of a pyramid of contracts: leasing, retail selling, maintenance) and seeking stable triangular links which encourage the involvement of a third party in the way the service is regulated.

■ ***A broader range of actors and initiatives, but often poorly defined roles***

In diagrammatic terms, there are five roles: contracting the built structures, monitoring and regulation, commercial exploitation, selling to the consumer and maintenance. One of the main features of delegated management of public water collection points is thus splitting responsibilities between actors which differ widely in their nature and in their statutes – central and local State departments, private enterprises, non-profit bodies (user committees and associations), individuals (water vendors, private managers under contract) – all of whom have potentially divergent or even antagonistic approaches. This carries some risks, since the efficiency and the reliability of the system depend on how well the whole system is co-ordinated and regulated, as well as on inferred transaction costs, which are difficult to control, and which can be as high as the previous structural costs. Case studies also reveal that the apparently clear division of roles is often “blurred”. There are several reasons behind this confusion and these need to be highlighted:

– *the way in which the investment is made creates lasting confusion about the distribution of roles, with responsibility for contracting work apparently often partially absent. In response to these difficulties, many countries are using ways of transferring, in whole or in part, the contracting role to local bodies;*

– *the limited means at the disposal of public departments make it impossible for them to carry out the monitoring and regulation role they are supposed to fulfil, and the very lax presence of the State leaves the field open to other “informal” monitoring authorities;*

– *the place and the role of water collection point committees in the “community” management model are riddled with uncertainties, the principle of voluntary contributions posing problems when the commercial exploitation of the system becomes too complicated;*

– *generally speaking, overlapping between more or less completed and partially contradictory reforms contributes to the confusion.*

The limitations of public involvement open the way to greater involvement on the part of private operators and underline the need to structure their links with other stakeholders within the framework of operational agreements.

■ ***User-payers... and some uncertainties***

All of the examples studied included the end-users paying for their water, but the way in which payments are calculated and recovered vary widely.

– It is universally agreed that tariffs should cover as a minimum operating and maintenance costs.

– Given the cost of infrastructures in low population density areas (villages, small centres and urban peripheral areas) and the low average purchasing power of their inhabitants, there is a prevailing idea that basic investments must be borne by the State or a national body with an adequate financial footing, with the help of external funders (loans or aid).

– This cost-sharing should not, however, disguise areas of interdependency. Thus the technical choices which determine the cost of the initial investment, also affect operating costs: a “cheap” investment could for example lead to high recurrent costs.

– The greatest uncertainties relate to financing the costs of renewing and extending networks, and the question of changing built structures (e.g. possibilities of individual connections) and physically extending these to supply new urbanised perimeter areas is rarely explicitly raised.

The efficiency of the service provided is closely linked to taking account of the actual demand: the user reasons like a consumer in judging the cost of the service/supply, but also from a commercial point of view where maintenance and renewal costs are concerned when user associations, management committees or water collection point committees exist.



Cedric Etienne

Changing national policies, implementing them, and project approaches

■ *The results of decentralisation policies*

Most African countries have embarked on a relatively firm policy of decentralisation of water services, transferring certain State service responsibilities to the communes. The latter have not, however, been given any additional resources (notably financial) and this transfer is therefore sometimes seen as the State “jettisoning” a service it could no longer afford to provide.

■ *Towards the privatisation of public enterprises*

Most African countries have started to privatise the public enterprise which had the monopoly of water distribution in major cities. This process is perfectly consistent with policies of structural adjustment and is being nurtured by all the funding agencies. This transfer is not necessarily occurring at the same time as an extension of water services (towards smaller cities) or restricting the service to users who are “good payers”, as might have been feared from the “liberal” doctrine which underlies these processes.

What we can observe in the field is more akin to “unchanged perimeter” privatisation. This can be explained by the enormous cost of the investment which would be required to install new networks, costs which the new private enterprises refuse to bear by themselves. Privatisation there-

fore affects only the use of existing networks, which often remain the property of the State, whose interests are sometimes represented by a State heritage company. Responsibility for any future extensions remains with the State.

■ *The growth of local private operators*

Alongside national scale enterprises, we find other private enterprises appearing and rapidly growing, and these form a specific link in the water service chain (repairers, standpost managers, small network concessionaires, water cart and lorry-drivers, etc.). These were the subject of particular study in the research activity steered by HydroConseil (RA 9), and they appear in practically all the studies as being particularly important, although national policies fail to take them adequately into account.

The growth of these actors seems to stem from the same principle as that which underlies the privatisation of national enterprises, but there are still many obstacles in their path:

- a legal framework (in fiscal and social terms) poorly suited to small enterprises;
- the lack of an efficient commercial legislature;
- abuse of their dominant position by recently privatised public enterprises;
- civil servants' mistrust of private operators;
- the absence of regulatory organisations the authority of which is universally recognised, which would define the "rules of the game" and ensure that they were respected.

■ *The constraints of poorly controlled urbanisation*

In large cities, public authorities have very little control over urbanisation, as most houses are built without land titles and without planning permission (cf. Tanawa, RA 8 and Valfrey RA 9). It is difficult to supply water to popular areas, which often have no service roads, according to the usual norms for urban areas, particularly as their inhabitants have a standard of living which bars them from access to the classic home service.

It is therefore now urgent to implement more realistic public service policies, taking account of the needs of all users (including those of the very poor) and of all the water collection points they use (including the most precarious of these, such as wells and springs). This area, which has been very little explored to date, was studied in the course of the pilot activities in Yaoundé (cf. Adeline, PA 1) and in Kindia (cf. Romann, RA 1).

■ *Transcending the "project" approach*

Projects often tend to be introspective. To avoid the unexpected and to satisfy their masters (funders and central administrations), they remain fairly insensitive to their environment and to demand from population groups:

- multiplying the number of uncoordinated projects increases the risks of inequalities between regions or cities;
- lack of co-ordination also jeopardises the setting up of a consistent national policy on water services;
- projects tend to reason strictly within "their own" area of intervention, which is not necessarily the most relevant as far as the management dynamics they are attempting to promote are concerned;

- the project implementor is required to produce a quantitative result which encourages him to "skip" important stages (such as the co-financing of the system by the users) to satisfy his client (Tanawa, RA 8);

- the project implementor tends to prolong the project's existence through artificial structures which are set up for that one occasion and which are probably not viable.

In a field which is changing as rapidly as that of water and sanitation in small centres and peri-urban areas, one of the key challenges for States and funders will therefore be to manage to "transcend" "project" approaches. This implies three things:

- including all the activities being financed by various funders in consistent national policies, thanks to major legislative and institutional efforts;

- making project implementors set less rigid objectives, and demanding that they genuinely take demand from local actors into account;

- limiting the danger of introspection, encouraging projects which create contractual links between several local actors, by avoiding setting up new structures the survival of which is directly linked to that of the project.

The legitimacy and the strategies of new actors in the water sector claiming to be collectively representative

■ What form of legitimacy?

LEGITIMACY? WHAT FOR ?

Why should we raise the question of the legitimacy of new actors in the field of drinking water? Despite the influence they have on social life, we do not question the legitimacy of grain sellers or of *griots*³.

The legitimacy of actors in the field of water is a sensitive issue for the following reasons:

- water is a basic public service, which has shaped the structure of many human societies;
- the quality of this service has a major impact on public health;
- the service generates an important volume of activity, in terms of turnover and jobs; it therefore has major economic implications;
- understanding urban development means understanding the services which structure this, such as drinking water; it therefore has important political implications.

The question scarcely arose while this service was provided by the State and municipalities, and while no-one called their legitimacy into question (through lack of any opposition, or because all opposition had been suppressed). But over the last ten years or so, the political and institutional landscape has become much denser in Africa, and new actors demanding to be allowed to play an increasing role in the management of public service have come onto the scene. Several claiming different sources of legitimacy can even find themselves in competition with each other.

³ Itinerant poet-musicians; key figures in maintaining oral traditions in West Africa.

ELECTIVE LEGITIMACY

It is extremely difficult to organise elections in towns and cities where the population is largely illiterate, poorly informed and where there is little reliable census information.

Direct universal suffrage elections to structures representing users is therefore just as rare in Africa as it is in Europe. The few rare examples are generally in small communities of a few dozen families. In cities, where population numbers are too high, the tendency is to use partial ballots (only those who wish to take part in the AGM vote) or indirect ballots (standpost delegates, the

committee, the permanent officers of an association).

TRADITIONAL LEGITIMACY

The approval of elders (cf. Bouju, RA 10, who studied the case of Mopti) or of religious dignitaries is often a very effective way of acquiring a certain legitimacy. These respected members of the community are therefore often courted by projects and by *ad hoc* committees, without always being too careful to check any possible conflict of interest between them (as owners of land, of springs, etc.) and the public service.



Cédric Sève

OFFICIAL LEGITIMACY

For a long time, the legitimacy of enterprises managing water rested only on the unfailing support they received from the State, which guaranteed them a monopolistic situation. The consent of the civil service is indeed still regarded as a major source of legitimacy and this explains the predominant role that it can play when concessions for standposts are being awarded (cf. Champetier and Durand, RA 9, for the example of Dakar or Morel à l'Huissier and Verdeil, PA 5, for that of the Malian towns).

Finally, and slightly paradoxically, the support of international funders is an effective way of acquiring a certain local legitimacy, although these funders do not in themselves have legitimacy in the countries in which they are funding projects. For example, the company which has won a lease bid following a call for tenders validated by an international funder enjoys a strong position, guaranteed by the monitoring of the call for tenders carried out by the funder's experts.

■ **Strategies for gaining legitimacy**

PROVIDING A GOOD QUALITY SERVICE

Contrary to what there is sometimes a tendency to state, the inhabitants of popular neighbourhoods are not simply pawns in the hands of more or less manipulative players. They are first and foremost users, heads of families confronted daily by the difficulties of obtaining water. Anyone who can provide them with a good quality service, at a price they can afford, will therefore always enjoy undeniable legitimacy for their part. The private concessionaires of small water distribution systems in Maurita-

nia, who enjoy no legal protection, rely largely on this type of support to guarantee their job and in practice, so far no conscientious concessionary has ever been thrown out of his job. The support of satisfied users is therefore an extremely strong source of legitimacy.

PROVIDING A MODERATELY PRICED SERVICE

Instead of using quality of service as an argument, certain water sector operators sometimes try to play on the price of the service. By bending the rules ensuring the quality of the water, production costs can indeed be reduced. They thus acquire a genuine form of legitimacy (it is they who are providing the lowest cost service), but one which is poorly compatible with public health.

MOBILISING USERS

For a new arrival on the institutional stage, the most "legitimate" way of acquiring legitimacy is to mobilise users around one's programme or one's activities. Operators of the "user association, management committee, etc." type therefore tend to organise many meetings and formal assemblies of the population (cf. Tanawa, RA 8) and not infrequently new leaders go on to make a political career.

There is always some danger of straying down the "populist" path in this kind of exercise, but conversely, anyone organising an open meeting is exposing himself to criticism, and many studies have shown that it is the least efficient actors (and the least scrupulous) who avoid this risk, both in large cities (as in Port-au-Prince, where some water committees are reluctant to present their accounts at an AGM) and in small centres.

SUBSIDISING WATER SERVICES OR PASSING THE COST ON TO OTHERS

For a politician, a good way to ensure one's popularity has always been to provide a free or heavily subsidised public service, whilst passing on the bulk of the costs to be covered to others (the State, future generations, etc.). This type of strategy is frequently adopted by some politicians seeking election, and it then poses a major difficulty when introducing efficient cost recovery policies. Thus, in some countries, internal political considerations can ruin the rationalisation efforts of distribution companies.

INVOLVING LOCAL POLITICAL LEADERS

Many water distribution management committees include locally elected representatives (mayors, deputies, etc.). Their participation is obviously an advantage when the committee needs to negotiate a subsidy, a new piece of equipment, an electricity connection, etc. with the State. But in general it is very difficult to judge who profits the most from this type of legitimacy: the committee which benefits from the network of influence of a political leader, or the latter, who claims to have the popular support of user associations that he has in some respects infiltrated.

NEGOTIATING RECOGNITION FROM OTHER ACTORS

In the absence of direct legitimacy (i.e. provided by the population concerned), certain actors concentrate their efforts on obtaining recognition of their importance from other influential actors in the same sector. This process of "reciprocal legitimacy" is extremely dangerous, as it enables actors with no legitimacy whatsoever to prop each other up until they "fill the whole stage".

This type of procedure is fairly widespread in cities where the situation is one of conflict to such an extent that it seems set to last indefinitely. Several rival actors can then find it of mutual benefit to each recognise a certain degree of legitimacy in the other, in exchange for power-sharing.

This occurs regularly in Port-au-Prince, between community-based organisations affiliated to political parties in considerable conflict with each other (cf. Mathieusand, RA 5, and Valfrey, RA 9). This would also seem to be one of the ways in which dialogue could start up in Bamenda (cf. de Boismenu).

FORCING ONE'S WAY IN

From a moral point of view, a powerful body which imposes its predominance through violence seems totally lacking in legitimacy. It would, however, be naive to overlook the fact that the legitimacy of many regimes has been built on violence. If such regimes then wish to achieve a certain stability, they obviously need to provide a certain quality of public service. But a small dose of violence tends to work and notoriously inefficient regimes (such as Mobuto's in Zaire or Duvalier's in Haiti) have been able to survive for several decades, basing their legitimacy on a judicious blend of corruption and physical violence.

Physical violence is also very widely used by certain private operators wishing to hold onto the advantages of a captive market. Thus, in Port-au-Prince, the managers of standposts have long been "*tontons-macoutes*⁴". And one can easily imagine the fights between armed gangs around pumping stations in Mogadiscio or Freetown.

■ *The importance attached to contractualisation*

Contractualisation between the various actors is a subject being taken more and more seriously in water supply programmes. Nor is this specific to water services. Research and pilot activities carried out under this programme have thus very often culminated in the negotiation of contracts.

The great importance attached to the process of contractualisation is relatively new. For example, plans for contracts made by the Department for operation and maintenance in Senegal (as early as 1984) to delegate the management of motorised pumping stations, have never been put into effect without this seeming to bother anyone unduly.

Contractualisation is also a process of reciprocal legitimacy between the various parties to the contract. Each explicitly recognises the importance of the other and each agrees to share authority with the other party. It would be naive to believe that there is never an ulterior motive. Moreover, there is a prevailing impression that contracts are drawn up mainly to control the activity of the weakest link in the chain and that the dominant operator seizes for himself the roles of defining, monitoring and sanctioning (cf. Jaglin, RA 2).

Signing a contract, like any formalisation process, tends to freeze the existing situation, at the expense of the flexibility necessary to adapt to a fast changing economic and social context. Contractualisation should therefore preferably be seen as a process of on-going negotiation, and the use of "off-the-shelf" pro forma contracts should be avoided. As stressed by Henri Coing (RA 2) during the workshop, the process of negotiating between the parties to the contract in fact also appears to be as important as the contract itself.

⁴ Ruthless men of violence.

■ **Preferred strategies for various types of actors**

PUBLIC WATER DISTRIBUTION COMPANIES

The main strategy used by public companies holding water service concessions is to obtain a monopolistic position, through the Water Code or their concession contract. This legal legitimacy has very clear limitations as far as their customers are concerned, and nothing will stop them from looking elsewhere for the service which suits them, when it suits them, and at a price they are prepared to pay. This is why "clamping down on black market water vendors" has very little success in any country.

Civil servant departments naturally tend to rest their case on the legitimacy of the State ("it is we who represent the State, which has the monopoly of water production and distribution"). It is on this basis that some SNEC managers (cf. Adeline et al., PA 1) propose to tax private wells and users of springs, in the name of the supposed water "monopoly". This supposition is even more outrageous when we consider that the same companies are demanding greater autonomy in management, in setting tariffs, etc., distancing themselves even further from their objective of providing water to all families, including the very poor.

PRIVATE ENTERPRISES HOLDING WATER SERVICE CONCESSIONS

The situation of concessionary companies has been changing rapidly over the past few years against the overall background of the privatisation of public enterprises. The legitimacy they can acquire from their natural monopoly (as representatives of the State) is diminishing. They therefore tend to compensate for this formal loss of legitimacy by pursuing a better image *vis-à-vis* their clients (e.g. improving the service, the quality of the water, relations with their clients), as shown by SODECI's successful experiment in Côte d'Ivoire.

The privatisation process generally gives rise to international calls for tender, which gives some guarantee of transparency and can bestow a certain legitimacy on the successful bidder. However, the private monopoly situation on a country-wide scale thus acquired is by definition "illegitimate", since a private enterprise should be in a competitive environment. The fact that the main shareholders of these new concessionaries are generally foreign companies moreover reinforces this lack of legitimacy.

The monopoly they acquire can result in abuses, especially in countries where the State has few effective means of controlling the activities of large enterprises, and especially if these are operating on an international scale. (The turnover of the three main companies involved in these privatisation processes – Lyonnaise des Eaux, the Vivendi group and the Bouygues group – is after all equivalent to five times the GNP of all the countries of the Sahel put together).

MUNICIPALITIES

Municipalities (and the deputies who represent their interests at national level) have for some years been arguing for the adoption of new codes for local authorities (laws relating to decentralisation) conferring on them greater responsibilities and powers over water services and over municipal income from the sale of water (direct sales, patents, a tax per cubic metre, etc.). This is a highly "legal" legitimacy, but one which is in fact an important means of acquiring power given that such municipalities' main rival remains the central administration itself, and particularly departments of hydraulics, concentrated in capital cities, which have until very recently held all the reins of power in this field (cf. Hinojosa, PA 5).

The experience of the 60s (when many municipalities managed water services with direct authority from the State) was nevertheless a disappointing one, both for the consumers (who received a poor service) and for the communes (which made a loss – cf. Tanawa, RA 8). Will their new political, economic and institutional situation enable them to provide better water services? Nothing suggests that this is the case, but it is fairly understandable that they demand to manage these services, both for financial reasons (drinking water is now universally seen as a paid service, which was not the case in 1960), and for reasons of legitimacy (what could give a municipality a better image than improving public services?).

USER ASSOCIATIONS

User associations can obtain legal recognition (a formal status) enabling them to own assets (such as pumping installations), to open bank accounts and to initiate legal proceedings. They are not, however, very keen to acquire legal recognition and do so most often only at the instigation of projects themselves (cf. Valfrey or Collignon, RA 9, or Estienne, PA 2). Associations are in fact fearful of being over-burdened by administrative or fiscal requirements. They therefore look for simple statutes outside fiscal control:

- co-operatives in Mauritania, such as the co-operative members of the Nassim federation;
- *GIE*⁵ in Senegal;
- user associations (planned as part of the management reform of motorised tubewells in Senegal);
- non-profit associations (rather than co-operatives) in Port-au-Prince.

Legal recognition does not in itself make such associations more representative of the population. Elections are always difficult to organise and an effective committee is rarely possible without involving traditional respected members of the community (cf. Bouju, RA 10), even if the latter fail to represent all sections of society.

The legitimacy bestowed by legal recognition is often used by members of management committees to justify the payment of fees, which can be quite high, especially in villages where an agricultural wage is less than 5 French francs per day. Senegal's experience, however, proves that legal recognition is not essential for this.

SMALL CONCESSIONARIES

Concessionaries of small water distribution networks (in small centres or popular neighbourhoods) know that their legitimacy depends above all on the support of satisfied customers. They would probably like to strengthen this through concession contracts making their position more secure, for longer periods for example (in Mauritania concessions cannot be awarded for longer than one month – cf. Koita, RA 9).

MEDIATION ORGANISATIONS

Some organisations concentrate on mediating between stakeholder groups whose existence is unavoidable, but which find it difficult to collaborate or even simply to dialogue with each other (State technical services and user associations, for example). Their legitimacy rests on their being accepted by the various groups for which they are helping to establish a dialogue. They therefore find themselves continually walking a tightrope between positions which are difficult to reconcile.

⁵ *Groupement d'Intérêt Économique* or economic benefit group.

The intervention of these types of organisations is by definition temporary. They are supposed to withdraw as soon as mechanisms for negotiation between local actors have been set up and their efficiency should therefore be measured in terms of how quickly they can achieve this. Experience shows, however, that all actors find it useful to be able to turn to a neutral "referee" when a conflict occurs. Mediation organisations are therefore often called upon to play this role, which largely exceeds their stated mission.

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THE IMPACT OF DRINKING WATER SUPPLY AND SANITATION CONDITIONS ON PUBLIC HEALTH

Research focus 3: Summary of the lessons learnt from the programme, by Jean-Paul Duchemin (IFU) and Marie-France Couillot (Médecine, Paris VIII, with contributions from Cheikh Touré (Crepa) and Pascal Revault (GRDR)

Introduction

This frequently raised issue is based on the **supposedly close link between the supply of drinking water and improved health**. Apart from a few studies which correlate certain specific aspects, such as the regression of dracontiosis with clean water supplies, few studies in real situations have been able to scientifically prove this link and in particular measure precisely the effects of one on the other.

Three observations can be made:

1. The opposite proposition, i.e. "deterioration in health linked to a cut in the supply of drinking water", is, alas, all too often illustrated. The brutal reality of certain exceptional circumstances, ecological or human in origin, which make it impossible to obtain drinking water supports this link (e.g. Bangladesh, which is regularly subject to disastrous flooding, or war-torn southern Iraq).

Both the many eye-witness accounts and the clinical data collected have demonstrated the deterioration in the health of the population groups concerned and particularly in that of their most vulnerable members: children and old people. Water-related diseases in these instances played a significant part in increasing mortality amongst these population groups.

When we say "water pollution seriously affects your health", this is therefore proven and universally acknowledged.

2. The reverse proposition, in the form "health depends on a supply of drinking water" is very often applied. Although used with the best possible intentions, it does in fact appear to be a fallacy, an extension of the argument, the scientific foundation of which is in fact rarely established. Although as early as 1885 Snow showed that a change in the way water was treated in London correlated to a fall in the number of deaths due to cholera, what exactly the correlation was and how it could be replicated elsewhere remains to be defined, before the observation can be generalised.

Bearing in mind that the absence of drinking water generally correlates fairly strongly to poverty, the difficulty in demonstrating a link between water and health can be easily understood.

Although experts agree on the large number of factors affecting the health of a population and on the complexity with which these inter-relate, the need to obtain comparative data has led to the use of relatively "blunt" measuring tools, i.e. health indicators such as life expectancy, infant mortality, etc. These, however, measure a situation at a given moment. Epidemiologists differentiate between health indicators (e.g. the widespread practice of measuring the number of cases of an illness at a given moment) and health determinants (e.g. the physical environment due to chemical and/or biological agents). Linking health indicators and health determinants enables us to assess the risks, i.e. the probability of an unfortunate event (including illness) occurring linked to risk factors, which include in our case water risks.

3. Our first assumption contains two terms "water pollution" and "health".

This raises problems about how these terms are defined and the tools used to measure them. Although the definition of water pollution no longer poses any semantic problem, the same cannot be said of "health".

Methodologies for analysing water are today well established, even if the sophistication of current methods requires equipment which the public authorities of developing countries cannot always afford. Some suggestions for defining analyses which are simple and cheap to use, whilst remaining reliable, are indeed provided in the programme reports. The debate relates both to the need for measuring and how it is done, and the advantage taken and utilisation made of the information obtained. The reliability of the results cannot be the sole objective. The usefulness of the information obtained remains an open question. This highlights the importance, when designing research, of accurately stating at the outset the questions the survey should answer, with whom it will be conducted and on behalf of whom.

As for defining the state of health of a given population, this is like trying to fit a square peg in a round hole. Thus, the WHO's definition: "health is a complete state of physical, mental and social well-being, and not merely the absence of illness" seems of little practical value; it defines not norms, but an objective to be attained. This definition in fact reflects the observation made above on the limitations of a "reverse" definition: the absence of illness. Latent health problems which remain undiagnosed, or unperceived by the patient or do not give rise to any demand, multiple pathologies, etc., make this exercise particularly difficult.

Drinking water "as such" can be defined. The health of a population, however, is gauged in comparative terms: between one group and another, one population group and another. There are no yardsticks, no norms in this area.

Such tools for comparison have undoubtedly the advantage of being simple to establish, provided that of course one has reliable population and health statistics. Mortality, infant mortality, life expectancy, age pyramids, etc. together provide a picture of the state of a population. But as we have seen, measuring this picture does not explain why we are doing so.

On this subject, the most interesting indicators require a series of measurements over a long period of time. This being the case, measuring the effects of a clean water supply can only be achieved using these indicators in the very long term and it seems very difficult to isolate this from other factors improving people's health.

A further issue is the importance of involving local actors and key figures in defining the level at which each should be active within a monitoring unit or even a scientific council. The role of this monitoring unit would be:

- to seek to resolve the questions raised by the research;
- to discuss any modifications;
- to interpret the results;
- to move on to the operational phase, i.e. practical application of the results (deciding how water is used, changing behavioural patterns).

The lessons we learn are more often a rational confirmation of our previous knowledge than genuinely original contributions. Some, however, do emerge:

How we relate to water: a key element in our cultures

Several of the reports highlight how far water is from being a neutral object. The place, the role of water, and how it is used, are factors which shape our cultures.

The "sayings" recorded by researchers take the form of allegations, affirmations, and judgements. Nearly always, reference is made not so much to empirical knowledge (which is a form of scientific knowledge: "a given kind of water is known to make one ill"), but rather to a fact dating back to a more or less remote past. However frequently stated, only rarely do these "popular" sayings have any genuinely scientific justification. Their roots lie in a different form of legitimacy, that of a culture passed down through history. As an integral and important part of the store of knowledge and meanings of a society, deeply buried in its cultural substrata, such knowledge can be analysed and decoded only by observing it through an external lens (in this case, anthropology).

Careful analysis of the place of water in a given culture is less important than a thorough understanding of the effects of this knowledge on the way in which water is used, the "constraints" burdening the consumer, but also, the advantages he will have *vis-à-vis* a clean water supply. When possible, water resources are used in the light of the properties attributed to them.

This knowledge is reflected principally in two factors: water's properties and its taste. **The properties attributed to water are three-fold: its "healing", its "washing" and its "drinking" qualities.** Within these, sometimes very fine distinctions specify how the resource is used.

1. Not all water is active or "healing", and those waters which are "healing" do not heal everything. Although it would be prudent to check



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that such water is at least not harmful, its consumption for healing purposes is very limited. With the exception of exclusive use, or very high priority use, as drinking water, this form of consumption is negligible from the point of view of a drinking water supply project.

2. Washing bodies, food, kitchen utensils, clothes, floors... all are different uses for which specific qualities may suffice or may be required. Depending on how broad a range of sources of supply is available, these will be used differently.

Because these activities generate a considerable level of consumption, people will look for close and free access. Mains water often fails to qualify, both because of its cost and because of its qualities, or rather its lack of quality: "it doesn't lather with soap, and water which won't lather doesn't wash". On the other hand, curiously, it is used for washing kitchen utensils more than for washing food.

3. Making the ground drink, making man drink, making animals drink, here too, different properties are required.

For irrigation purposes, a particular quality is rarely, if ever, required; the most "discredited" kinds of water can be used. Water for cattle, however, already raises a different requirement, proportional to the symbolic and/or economic importance of the herd. In pastoral regions, herds-men have their own rating of the quality of water, and certain so-called "modern" watering points have thus also failed to qualify.

With regard to human consumption, some kinds of water are regarded as "good to drink", others not fit to drink. These "labels" of quality rarely have anything to do with a scientific assessment of whether the water is potable. What is being referred to is the history of the source. This "quality" is moreover not permanently acquired. An accident, an event, an act – real or imaginary moreover – can result in the water being tainted, again, in reality or in the imagination. Once tainted, the source may then be struck off the list, and become unfit for human consumption.

The qualities expected of water which is "good to drink" are rarely explained in detail, excepting perhaps that it should be clear and cool. Turbid water is regarded with suspicion, as if drinking water could be recognised by its transparency. In most civilisations, including ours, ingestion represents crossing the final barrier, that of the body, between "the outside", where lie all possible dangers and aggressions, and "the inside" of the self, the integrity of which must be protected. We have to see what we eat or what we drink. The desire to eliminate turbidity is reflected in filtering processes, clearly suggesting that the content should be "visible".

These themes – "filtering", "purifying" – should serve to underpin health messages.

Hygiene specialists should base their arguments on a thorough understanding of practises and a willingness to use these. We need a better appreciation of the social problems which can be caused by new "improvements" to water collection points. In civilisations where illness is often interpreted as resulting from an aggression on the part of an invisible force, destroying this invisible force in water could be used in a health information message. This has already been tried with – to say the least – mixed results, but is it the reference to the invisible or to other factors which makes it so difficult to change people's perception of water quality?

The same is true of coolness, and the practices which result from seeking this quality: keeping water in the shade, covering the receptacle, reserving a particular receptacle for drinking water, clay pots or evaporation cooling jars, rapidly changing the water... all these can be used with a view to improving conservation in given local conditions.

And finally, taste comes into play in water which is “good to drink”: take the familiar example of water from the nearby seasonal pond being preferred, as water to drink, to that from the well dug in the village by a development project to provide drinking water.

■ *Lessons learnt*

Whether in the course of a water supply project or when upgrading water collection points, the preceding considerations taken as a whole lead us to stress the following:

- the multiple nature of sources of supply, leading to both constraints and liberty of choice;
- understanding people's perceptions, attitudes and practices with regard to water;
- understanding the ways in which different sources are used and the constraints which follow on from these;
- basing health arguments on practices, by exploiting these and encouraging them to change;
- using perceptions and expectations to underpin health messages relating to drinking water distribution.

Turning to anthropology should not lead us to imagine that if modernisation arrives with mains water, the latter will become something neutral to swallow. In France, not so long ago, spring or fountain water was worth making an effort to obtain, being preferred as drinking water to tap water. We are familiar with the influential lobby of the thermal treatment establishments; “healing waters” are part of the treatment in a precise, quasi-religious ritual. France's widespread consumption of so-called mineral or spring water harks back to the same perceived archetypes. Here too, science plays no part, either in the reasons behind the consumer's choice, or in the producer's sales pitch. A brief glimpse of the publicity shots for such waters is revealing: from the natural filter of the granite of the Auvergne region to the unspoiled nature of the mountains of the Alps. This inevitably to some extent “devalues” mains water, whatever in fact its actual origin.

Cultures are, however, perpetually changing, adopting new patterns of behaviour and new images and symbols they have acquired from elsewhere. This is the second lesson we need to learn.

Mains water: recently acquired within African cultures

Mains water now forms part of people's perceptions and patterns of behaviour.

It enjoys a **major and remarkable advantage**, reflecting a fundamental change in how water quality is perceived: not only is it “good to drink”, it is “drinkable” or “drinking” water. The sudden eruption in the field of semantics of this term is like a trump card for public health activities. From a negative perception – water which is “good to drink” is not dangerous – there has been a shift to a positive perception of mains water. The latter is perceived as much more than water containing no dangerous germs; it is the water which prevents illness: “if you drink it, you won't be ill”.

Although this new resource is only one in a range of sources of supply, it enjoys a completely separate status. It is this “aura” more than anything else which initially makes inhabitants willing to pay for it. Although the owner of a natural water collection point (a well, a spring, a river, a lake etc.) can lay down rules on how it is used (e.g. the quantity and how it is extracted) – rules which can lead to a person failing to respect them being excluded – he cannot decently refuse a request to use it.

The person with a mains water connection on the other hand can reserve it for his exclusive use, make it available to his family or more widely to his influential clients or even set himself up as a water vendor, without the legitimacy of his behaviour being called into question. The resource is clearly appropriated, and this appropriation is linked more to its "subjective" than to its measured quality.

■ *Lessons learnt*

It is water's potable quality which gives it its commercial value, but over and above this, it is its life-giving value which leads to competition between actors seeking to control its management.

Maintaining the "quality" of mains water would seem to be of vital importance. That the water should be drinkable is without doubt the inescapable factor to be maintained from a public health point of view. In people's perceptions, however, other characteristics help to maintain this aura: clearness and coolness.

Several examples are cited of mains water being "demoted": the presence of organic debris, of soil, of rust particles, or cloudiness. These "secondary" characteristics, coolness but above all clearness, thus take on their full significance.

Hygiene: slowly learning from experience interspersed with debates and models

Health education, although often lacking a long-term perspective, is one of the ongoing activities of health services. It focuses on various themes: the cleanliness of the water collection point, removing household rubbish and wastewater, latrines, how to use water within the concession, how to store drinking water, etc. It also addresses several target audiences: children through their schools, women in associations, whole populations in major campaigns, etc. Health education comes in every possible form: in schools, in small to medium enterprises and in health structures,



as part of water or sanitation projects, major campaigns, etc. After many years, there is now a genuine awareness of the dangers linked to lack of hygiene, particularly amongst women.

As far as health is concerned, the connection between "dirt" and illness, or at least the risk

of illness, has been made, even though this connection is not often based on a well-understood scientific culture (where indeed is this ever the case?). This "knowledge" has built up from an accumulation of messages, but also from empirical observations. Today, what people most need is "know-how". Contrary to "knowledge" which can be taught, "know-how" presupposes experimentation and demonstration.

Even though health education, the poor relation, paradoxically often serves to justify the benefits of a project, the modest scope of the activities undertaken and the difficulty in evaluating them makes them difficult to integrate into major national and international funding efforts. Such

activities, which must imperatively be as close as possible to the people, currently tend to be implemented through non-profit associations.

In the lifetime of a single generation, Europe has witnessed a major change. The new model for life and values as well as the image of the body and of one's health which the media have promoted (the cult of youth, of healthy bodies, leisure nature and sea sports, etc.) has been as important, if not more so, than the very numerous anti-tobacco campaigns, or campaigns to reduce alcohol consumption. We even use the term "a healthy life-style".

Measuring the real impact of a health education campaign appears to be extremely difficult. What is due to the campaign? What is instead the result of changes in behaviour reflecting models which are clearly in many cases the result of, or linked to, increased income and cultural assets? Does the fact that in our country we no longer preach this particular message mean that hygiene practices are considered to have been permanently assimilated? Or rather, that it is up to the family to make sure that they are practised?

It is the impact of know-how much more than of knowledge which should be measured, from the point of view of actual practices, and continuously. Washing one's hands is one example: children know or have been told why this is important, but how many regularly do it unprompted? Nevertheless, health education activities which are more *ad hoc* but which seek to change behaviour patterns in a highly pragmatic way, particularly by designing tools or change-inducing methods, can be evaluated by the extent to which these practices and tools have spread.

■ *Lessons learnt*

Health education should be continuously aimed at the target groups most likely to absorb the messages it seeks to transmit. It should make use of transactional analyses and be conducted differently for each target group in question whilst remaining within a global strategy. The impact of such education can only be measured in the long term through practices acquired and continuously implemented and changes in demand for clean water, and not through acquiring knowledge.

Sanitation: the poor relation invited to the feast

Sanitation is indeed "the poor relation" for two reasons:

- of all the responses to the call for research proposals selected, only one focused on this subject;
- like health education, sanitation is a project afterthought. The importance of cleanliness around water collection points is stressed, particularly in rehabilitation projects. Distances to be respected for the location of latrines are indicated, etc.

And yet all the analyses carried out show that it is faecal contamination which is **the** problem encountered. Other forms of pollution, of a chemical nature, do not appear *a priori* to exist to any significant extent.

Stool analyses carried out provide a series of data:

- contamination essentially of faecal origin appears to be responsible for certain pathological symptoms, notably in children;
- human contamination can occur in a number of ways: not only by drinking contaminated water, but also by ingesting soiled food, directly or while it is being prepared, notably through the water used for washing, but also outside the food chain;

– this being the case, it is virtually impossible to establish a direct link between water supply and morbidity and even more so to measure to what extent water is to blame compared with the many other forms of contamination.

These considerations prove, if proof were needed, that **in terms of public health**, activities aimed at improving sanitation in living areas are the most urgently needed. As for health education, activities should be continuous. Here too, a culture of cleanliness needs to be encouraged to emerge and this will result from messages and above all from activities gradually “settling”.

Any sanitation policy also requires resources. In general, however, few funds are devoted to this area. It is as if funders were hesitant to fund activities which are necessarily not very visible, as they are often small scale, are particularly difficult to assess in terms of health impact, and have a zero return on investment.

The demand for sanitation is high, and people are prepared to devote resources, including monetary resources, to this, provided they obtain a tangible and **sustainable** result. Having been all too often disappointed, they are mistrustful, and this proviso means that communities must be closely involved.

■ **Lessons learnt**

Sanitation is of the greatest importance for public health. Like health education, sanitation activities should be carried out consistently and continuously, **and with the means necessary** to achieve this.

Sanitation should occur in close symbiosis with the demand and the expectations of population groups, even if these are not always clearly formulated. There are still few anthropological works on the themes of “clean” and “dirty” in Africa, if any (Alain Epelbouin's work with the Pygmies for example), and these should be encouraged.

Associations, which are close to the people, are capable of mobilising them and likely to implement modest and visible projects. Funders should agree to allocate funds to associations, but also accept the “risk” of failure or inefficiency.

Even more than water supply projects, sanitation activities must be carried out alongside health education. Their joint impact can be measured only in the long-term.

It is difficult to judge the relative impact of sanitation activities and of health education. Funders could usefully concede that the many inter-related factors which come into play when there is an observable improvement in health in fact makes it impossible to measure the relative effect of one or other activity. In consequence, they should no longer require cost/benefit analyses or measurements of the direct impacts on public health of water supply, sanitation or even health education activities in a given sector.

This should not prevent, however, any possibility of evaluating activities carried out. To do this, it would be wise to seek to build up a system of reliable measures of long-term changes in a population group's health and practices.



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Rather than seeking to measure the impact of each of their projects, funders could together fund a system of "reiterative" type measures, enabling changes to be measured at regular intervals.

In reality, the need to set up and maintain a process for accumulating knowledge and know-how, linked with activities that are ongoing and efforts that are constant, calls into question the concept of "project" as is the preferred method of funding. The project, which is by definition short-term and "evaluable", is the very antithesis of what should be done.

In these areas – sanitation/health education/water supply – funding long-term policies (National action plans), on the basis of objectives to be achieved, with regular evaluations, should be the sole method of funding.

THE CENTRAL ROLE OF THE STATE MUST NOT BE OVERLOOKED

At national level, the management of the resource falls to the State. This shared asset may be rare. Its implementation, even when delegated, can be very costly. Co-ordinating activities, monitoring their implementation and the quality of the water produced, protecting the resource and regulating its use, giving impetus to educating people in how to use water and the vital need for sanitation, are all the State's responsibility. It should fulfil this responsibility, not certainly by being the sole operator, but by fully exercising its prerogatives of education, steering, co-ordination and control.

Health bodies, of which there are few, should be involved as independent bodies for monitoring and control and should receive the means to achieve this independence.

Funders must be convinced that the tripartite approach of "drinking water supply, sanitation and health education" needs to be readjusted in favour of the latter two imperatives. Some have recommended that at least 30% of future resources devoted to water supply should be allocated to sanitation and health education.

Local actors (individuals, NGOs, local authorities) are inevitably the channels for implementing such a national policy, being as close as possible to the people. Given the State's main roles of co-ordinating, steering, controlling and regulating, local authorities should be closely involved in defining national policy, since it is they who are responsible for implementing it locally. These local actors should be allowed great freedom in the way in which they organise themselves and find the best possible channels for dialogue. They are the ones who will fulfil the all-important roles of awareness-raising, informing, training and dialogue.

Are cuts in supply a permanent feature?

In the daily life of a consumer, access to water in Africa is one long series of shortages: shortages of supply and shortages of money to pay for it.

Piped water networks are no exception, and there are frequent complaints of cuts in supply. These can often be traced back to the distribution company: low intakes, particularly in the dry seasons, pumping station and treatment plant break-downs, burst pipes, cuts in the power supplies needed for pumping, treating, and distributing the water, etc. Cost constraints can also lead to a cut in service. A client's inability to pay a bill when it is presented, or his often temporary inability to get together the whole of the amount needed, leads *ipso facto* to his water supply being cut off.

Such cuts are one of the main arguments in favour of having a range of sources of supply and of all upgrading operations. As far as public health is concerned, each time there is a cut, there is a potential contamination risk factor: people resort to another source without knowing or being sure of its quality, they have to handle the water during extraction, transportation, delivery, etc.

It is highly unlikely that in the coming years water services, however they are provided, will achieve the level of continuity which allows the original quality to be maintained, from producer to consumer. This being the case, **in health terms**, and given that such cuts cannot be avoided in the medium term, it is vital that water for drinking should be fit for this purpose at the moment of ingestion.

Apart from using a tap directly in the case of network distribution to individual homes, water stored for drinking needs to be protected or treated, even if the risk of contamination at the time of extracting it remains high. There are simple ways of sterilising or rendering water potable in the home, but these are not yet widespread in Africa. It is noteworthy that water chlorination, an efficient system which has occasionally been advocated, but which is still very little used, does not receive the attention and the funding which would enable it to be more widely introduced.

■ **Lessons learnt**

Cuts in supply should be reduced as much as possible.

One of the main themes of health education should relate to how water is extracted and stored.

Filtering and/or disinfecting water for drinking to maintain its quality should be researched and promoted (cf. the drinking water taps developed by East or the filters made available in Brazil, for example).

Any system for sterilising water at the ultimate stage before ingestion should be encouraged (chlorination in particular).

The dual debate on measurement

This debate revolves around two points:

- the advantage of having water analyses available;
- the nature of health surveys and how they are conducted.

■ **What use are water analyses?**

Many current activities make use of water analyses, and this seems to reflect three concerns:

1. obtaining irrefutable scientific data on the quality of water from alternative sources in order to understand where action needs to be taken to protect the resource and to improve the quality of the water;
2. building up confidence in water services by being completely transparent *vis-à-vis* consumer groups. This objective, essential for some, is even more important given that many alternative water supply projects are set up at the initiative of neighbourhood associations. We should bear in mind that this requirement is partly the result of the difficulty in obtaining reliable information on the quality of mains (piped) water;

3. acquiring legitimacy. When an alternative water supply project is launched, the authorities' reaction is generally to cast doubt on the quality of the water distributed. There is also a certain suspicion about the ability of the associations launching such initiatives to continuously monitor the quality of the water, and to acquire the means of doing so. Curiously, the reports rarely mention health bodies. It is rather the bodies responsible for hydraulics generally (equipment and upgrading) which, in a symbiotic alliance with the distribution companies, put forward these arguments.

It is scarcely surprising then that some projects attempt to refute this argument for disqualification by using scientific analyses of the quality of the water produced. Some go further, and have the network water analysed in an attempt to prove that the water they produce is at least as good, if not better, than that of the network.

This search for legitimacy is also perhaps at the heart of the question raised by the growth of these practises which provide an alternative to the network. For the vast majority of decision-makers, there is no doubt about the present assumption that in the long-term the only solution which is **viable in terms of health** is a piped mains water supply.

What will happen if it becomes clear in the long-term that networks can only ever supply a minority of the population? Or that the alternative systems (promoted by this programme) cover the supply of a major proportion of the population?

Who then will have to certify the quality of the resource, wherever it comes from? Today, the heavy burden of "proof" is in fact required only of non-profit associations. Most have very few financial resources; but it is also clear, from the number of projects having analyses carried out, that they have received the message loud and clear. Some projects are even trying to set up their own laboratory for analysis!

One could certainly argue that it is up to those seeking to show the advantage of other sources of supply to provide the "proof", that these sources are good or at least that they are not harmful. Here, as in so many other fields, central powers are faced with this major ambiguity. They are closely linked with the distribution companies, which are still very often public or para-public. They support them on two counts:

- the demand for a universal public service, or one which aims at this; does the State not have an obligation to ensure that all have access to drinking water?
- the pursuit of financial break-even, which is made extremely difficult by fixed prices for the sale of water, a heavy investment requirement, insufficient income and difficulty in collecting income due.

And it is because of this that a monopoly for production and distribution seems to central powers to be the logical solution to these difficulties. This being the case, central powers no longer exercise their supreme role of quality control, or if they do so, only very partially, and that too by demanding from alternative projects what they no longer dare require of their national company. Significantly, in many cases, quality control of the water produced is delegated to the distribution company.

Conversely, if network water is shown to be inadequate, does this not present a major risk of destabilising the perception which has been achieved?

These questions immediately raise two series of issues:

- the nature of the analysis: what is measured and how it relates to the norm;
- how the measure is used: what should be done with it? at whom should it be aimed? what data? in what form? and if necessary, what injunctions should be made?

Virtually all analyses are of contamination indicators, i.e. colon bacilli and faecal streptococci. It is important to remember that these are merely indicators and that there is no **simple** link between ingesting contaminated water and falling ill. Other factors come into play, notably the greater or lesser virulence of associated pathogenic germs and the variable resistance of individuals.

The debate then turned to what attitude to adopt towards WHO directives: drinking water should contain no colon bacilli or faecal streptococci. It was quickly agreed that this norm should remain untouched. In particular, it should be checked and applied when introducing new boreholes or captations.

It is a different matter when upgrading water collection points (essentially springs) widely used by population groups who for various reasons have no access to the network (their area is not covered, they are too far from the network tap, network water costs too much for them, etc.).

Without denying the advantage and the importance of the directives which must remain the reference, it is suggested that a scale of contamination defining bands of decreasing quality should be established to evaluate and monitor the quality of the various sources. For each band, depending on its degree of contamination, certain measures would be recommended, which could be protective or monitoring measures, or various types of interventions, or even a prohibition.

This proposal, which is entirely pragmatic, could be interpreted as an attempt (or a temptation) to "demote" what is considered to be "the norm". This is far from what its author had in mind, since rather than rejecting or demoting it, the intention is to find ways of achieving it.

So how should one regard this norm? Can it be only a distant objective? A long-term requirement? How can one obtain the resources for this permanent and continuous pursuit of quality? Who, in this event, would be responsible for this requirement: associations alone, private companies subject to no overall control, a reluctant State? In the vacuum created when a public service becomes private, what regulatory body will exist, what powers will it have, and where will it find the resources to be independent?

We were reminded by some that "the norm" is only a so-called scientific response to the concerns of a population which accepts that this is one way of defining the scale of risks it finds acceptable.



Acteur - Magpi

Is knowing the risk through the results of analyses, this "scientific knowledge", in fact the way, the "right" way, to stimulate active awareness? When are active consumer associations going to appear? And if the norm does become bands of relative contamination, what norm should producers be required to respect? The same norm for all producers, the powerful national company, the municipality starved of means, the non-profit upgrading association, etc.? For this requirement to be imposed, can one be both producer and consumer? How then can this requirement be managed?

Most researchers and technicians are in favour of making the results of analyses known, but also recognise that these results cannot be handed over as they stand. Some are in favour of restricting their circulation to project managers, others argue for consumer information. In both cases, it is clear that results should always be accompanied by a commentary, and that this commentary must be carefully considered: should one simply record the state of the resource, or use the results merely as a defence against external criticism?

What might be the reaction of population groups who are told, however carefully, that the water they are drinking is contaminated? Suggesting that consumers should use certain resources may be helpful or even necessary, but is this enough?

To set off a more positive process, should one not introduce a genuine system of regular quality controls? If so, the intention of some projects to set up a laboratory for analyses is understandable.

Wouldn't regular monitoring enable trends to be measured, trends which could provide encouragement when justifying efforts made to improve quality, or which could act as an alarm signal when quality falls? This would require the contractors and funders of such projects to allow not only for its initial funding, but also for long-term monitoring.

And once again we return to the question already raised: how can one set up a reliable monitoring system which is independent of pressures of all kinds? How can its sustainable operation be financed? Once again, does not project-based funding prove inadequate?

■ *The difficulty in tracing states of health*

We have already observed the extent to which tools to measure the health of a population were of little operational value over short periods.

Two types of survey have been carried out: those relating to the frequency of occurrence of diarrhoea-type symptoms "affecting" an individual (stomach ache, diarrhoea, with or without accompanying nausea, vomiting and even dysentery) and those attempting to relate this occurrence to infestation by a pathogenic agent.

In the first kind of survey, the appearance of symptoms is recorded, without being able to determine what has caused them. Such symptoms, however, can be set off by any number of causes, infectious or not. Water is certainly one vector for infectious germs, but it is not the only one, far from it.

We have already indicated other mechanisms of contamination: those linked to the food chain like the ingestion of soiled food, directly or while preparing it, or insufficient cooking in particular; but also those outside the food chain, like contamination through direct contact with infected subjects, carriers – both ill and healthy –, or through accidental contact with their excrement, through self re-infection or through contact and trans-cutaneous penetration from soiled floors or water, etc. Amongst young children, direct contamination certainly seems to be by far the most significant.

Most of these surveys are carried out in the form of a questionnaire used by a survey agent. However careful the latter may be, a number of flaws can occur (confusion over symptoms, the exact nature of the event recorded, etc.). This highlights the need to work with epidemiology experts in order to avoid "patching together" surveys which would then be unusable.

In most cases, local conditions preclude carrying out epidemiological work with all the precision required: lack of means, agents who generally have no medical background, the difficulty in finding control groups, etc. To take one recorded example, infants (under three months old) were included in the category of children; infant diarrhoea, which is the most dangerous as it can be fatal, is only very rarely due to ingesting water (except when bottle-feeding which is not yet widespread). Such surveys suggest, at best, the prevalence of diarrhoeal infections.

The second type of survey already provide a richer source of information. The stool analyses which are often carried out at the same time can highlight contamination of faecal origin, or even certain infectious agents.

Bacteriological and parasitological examinations have been carried out, but there has been no virological examination (these three types of research require very demanding protocols). In fact, such research is carried out not to determine a "state of health", but rather to diagnose an illness.

Few laboratories in Africa are equipped to carry out these three types of research, which are indeed very onerous. In addition, such diagnostic laboratories are unable to meet the demand for a large number of analyses (the RA 6 team found it extremely difficult to complete these analyses despite the existence of a laboratory). The results of the RA 6 team are however interesting. Only one third of the samples revealed the presence of bacteria or of parasites. Louse-borne diseases were by far the most prevalent (33% of samples compared with 3% infected by bacteria); but we know nothing about viral infections. A significant proportion of these louse-borne diseases are also transmitted by direct contact. This may even be the main way in which they are transmitted amongst groups of children.

As with water analyses, the results of these two kinds of survey fail to suggest that there is a certain link between a water supply operation and a "state of health", which would be indicated, at best, by evidence of gastro-intestinal infections, mainly amongst groups of children.

What indicators can then be used?

In the context studied, we have seen how changes in behaviour seem most likely to lead to improvements in health. If this is the case, would it not be useful to seek to measure this change in hygiene practices? Do we have the necessary conceptual tools? The methodologies?

Instead of seeking to prove, the impossible, which is the impact of a water supply operation on health, would it not be sensible at the outset of any operation, in keeping with the expectations of the population group, to set oneself an objective of **reducing a certain risk**, rather than a health objective?

We have deliberately not defined a "water supply operation", because we are convinced that an objective improvement in health can be achieved only by putting into effect the three-fold approach: "sanitation, water supply, health education". This will not necessarily guarantee the end-result. In this time scale, other important inter-related factors could come into play with reverse effects, a deterioration in the quantity or the quality of food for example. During the same period, a typhoid vaccination campaign would, by contrast have a positive effect. And here it is worth

remembering that the greater or lesser resistance of individuals also depends on factors other than the virulence of pathogenic germs alone.

If an operation linking sanitation, water supply and health education is put into effect, ways of checking that the risk reduction objective set at the outset has been achieved can be included. This assessment in terms of risk reduction cannot, however, replace an overall assessment of the operation. The latter is measured in terms of the behavioural patterns and practices which have been definitively adopted, and the structures actually made and/or used, such as latrines, removing rubbish, laying drinking water taps, etc.

For any kind of operation the objective of which is clearly a public health objective (e.g. a vaccination campaign), adequate resources are sought to achieve the objective. They depend on the objective rather than the reverse. The goal of public health is imprecise, resources for achieving it are not clearly "marked off", the objectives are in fact of a different nature and relating results achieved to the public health goal is very difficult, if not impossible, to prove.

One could on the other hand set a risk reduction objective alongside the project objectives. The risk of faecal contamination could then with justification be quoted. By convincing the population that they should mobilise around this risk reduction objective, one is able to build in a much higher chance of success.

The strict rules of epidemiological survey must then be respected and experts should be called upon to achieve this. It goes without saying that the risk reduction objective will need to be defined in the light of the local epidemiological context. At that stage, indicators will be defined on that basis. These indicators will need to be monitored by a unit representing the various local and national actors in order for the surveys to be locally relevant and included in an overall evaluation strategy.

Reports relating to this summary

- ADELINE et al., 1998. *Rapport final de l'AP 1.*
- BEMMO et al., 1998. *Rapport final de l'AR 4.*
- BACHIMON et al., 1998. *Rapport final de l'AR 7.*
- MONJOUR et al., 1998. *Rapport final de l'AP 4.*
- MONJOUR et al., 1998. *Rapport final de l'AR 6.*
- ROMANN D. et al., 1998. *Rapport final de l'AR 1.*
- TANAWA et al., 1998. *Rapport final de l'AR 8.*

TOWARDS LOCAL OR MUNICIPAL WATER SERVICES

Local contracting of water supplies by and for urban populations: the changes needed

Research focus 4: Summary of the lessons learnt from the programme, by Ta Thu Thuy, based on pilot and research activity reports

Introduction: Urbanisation and access to drinking water in Africa

■ *The scale of the urban demographic phenomenon in Africa*

In overall terms, urbanisation is a recent phenomenon in sub-Saharan Africa: approximately 15% of the population lived in cities in 1960 and 30% in 1990 (for the same years in industrialised countries the figures were 61% and 73% respectively). Since countries have acquired independence, the rate of urbanisation has been dramatic and it continues to be so.

Some figures on the towns and cities studied under the programme steered by pS-Eau:

- Kindia (Guinea) grew from 55,000 inhabitants in 1987 to 100,000 in 1996;
- Port-au-Prince (Haiti) has grown from 500,000 inhabitants in 1970 to nearly 2 million today;
- the peripheral communes of Pikine and Guédiawaye, within the urban community of Dakar (Senegal), increased from 130,000 inhabitants in 1970 to 900,000 by 1995, and today outstrip the central commune of Dakar;
- Nouakchott (Mauritania) had 140,000 inhabitants in 1977 and 700,000 in 1997.

This urbanisation is characterised by the extreme disparity between sprawling capital cities (approaching or exceeding a million inhabitants) and a network of significantly smaller towns (with some tens of thousands of inhabitants, at most a hundred thousand). It is also characterised by the high proportion of spontaneous and illegal housing, the low population density of urbanised spaces and their great heterogeneity. Around a city centre identifiable by infrastructures dating back to its colonial past, suburbs spread out in the form of low-rise housing, often interspersed with wide natural or market-gardening areas, or sometimes insalubrious seasonal marshes or lakes. The low population density of these urban patterns partly explains why it is difficult to supply them with collective services. However, this mixture of life styles, urban and rural, in the same area, makes it easier for their disinherited populations to survive.

More figures from the programme illustrate Africa's urban sprawl:

- Nouakchott has spread from 1,800 hectares in 1970 to over 8,500 in 1992;
- in Yaoundé (Cameroon), the rate of demographic growth is 5%, and the rate of spatial spread 3%.

Apart from the demographic shift in capital and medium-sized cities, the other major phenomenon is the demographic change in rural areas towards an increasing number of semi-



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rural towns (2,000 to 20,000 inhabitants). Here, there is a gradual shift from rural behavioural patterns to more urban behaviour in terms of the demand for a drinking water service. An exploratory study in western Burkina Faso, for example, shows that the number of semi-rural towns (already 200, with virtually no mini-piped water supplies today) could increase by 50% over the next ten years.

■ *A brief history of municipal control of drinking water services*

It is interesting to consider parallel changes in municipal control of drinking water services (cf. Collignon, RA 9).

Between 1950 and 1970, when a number of African cities were beginning to grow, municipalities first played a direct part in water distribution (municipal control) and were responsible for operating the network and billing the subscribers. Subsequently, faced with acute deficits, most municipalities sub-contracted water services to a national public enterprise, whilst retaining in most countries the management of standposts, thanks to which they provided a minimal, but free public service, intended for the poorest sections of the population. Financially, these were covered by collecting municipal taxes.

For the past ten years or so, municipalities have been abandoning the direct operation of standposts, since their low levels of fiscal income no longer enable them to pay for the "standpost service". They are therefore allowing concessionary companies to gradually close down public standposts.

In most countries (such as Mali, Senegal, Mauritania,) some standposts have been reopened and conceded to private managers. Municipalities currently play practically no further role, not even in setting tariffs or planning infrastructures.

■ *The gap between access to drinking water and urban populations*

The proportion of urban households connected to a drinking water network varies widely between cities. It is, however, highly inadequate everywhere today: 17% in Port-au-Prince, 25% in Nouakchott, 54% in Dakar. But above all, it is sometimes overtaken by urban growth: for example, in 1976, 80% of the population of Yaoundé was supplied by SNEC (including 56% through standposts), compared with 64% in 1994, including 10% through standposts (cf. Adeline, PA 1).

■ *The facts, the challenge*

The urban demographic figures clearly show the challenge facing Africa: from an essentially rural civilisation at the time of their independence, they now face urban concentrations which are rapidly catching up with world metropolises. With an overall rate of urban growth estimated at 5%, long-term forecast studies for West Africa state that the present 80 million urban dwellers will reach approximately 250 million over the next twenty-five years.

This represents an unprecedented pace of change within a single generation, which has had to learn a vast amount, and the next generation is facing the same prospect...

The history of Africa's municipal control of water distribution and its gradual disappearance, and the deficiencies of the current insufficient levels of supply (which will probably worsen) pro-

vided by public water companies reflects not so much the failure of these management systems as their limitations in being able to match or catch up with the demographic growth of African cities. And quite clearly, this is even less likely to occur now. Are these limitations not simply those of centralised systems for decision-making, investment and management, responding to the African urban challenge, i.e. systems centralised at municipal level, or worse still, at national level?

Attempted responses to the new water access needs of urban populations

We can list at least four responses, very different in origin, to the water access needs generated by continually growing urban populations:

- responses attempted by the public authorities;
- responses tried in the field by various kinds of organisations (notably community-based or charities);
- responses explored by private, mostly informal operators;
- and "make-shift" responses from the people themselves.

■ *Responses attempted by the public authorities*

Here we consider only one of the forms of response of public authorities, that which relates to their overall policies. In practically all the countries, national drinking water supply policies are being revised with a view to making populations more responsible for financing water services, and with a view to increasing the number of actors in the provision of new services (e.g. by delegating some of the water service functions to be fulfilled).

One of the major features of these current revisions, however, which is universally apparent in all the countries, is the paradox between these new water policies and the politics of decentralisation, which is also currently occurring practically everywhere (cf. Etienne, RA 2). This paradox is currently blurring the lines of responsibility of municipalities in a great many countries (cf. the Ségou seminar, PA 5), and the reasons for this and for the ensuing obstacles merit discussion.

■ *Responses tried in the field by various kinds of organisations (notably community-based or charities)*

The programme steered by pS-Eau has identified various structures for drinking water supply projects (initiatives on the part of individuals, neighbourhood associations or local development committees, NGOs, religious bodies, or State initiatives with responsibility for the management of built structures given to the communities, etc.).

Analysing these in the present case of Cameroon (cf. Tanawa, RA 8) has shown that these perform very unevenly in the design of the project and of built structures (technical studies), in the way in which they mobilise investment funds (from funders or from the beneficiaries), in the quality of construction of the built structures, and in managing these (involvement of the population, mobilising contributions, transparency in management of funds, arbitrating between conflicting parties).

■ ***Responses explored by private, mostly informal operators***

Several programme activities studied private operators in detail: the form they took, the scope and size of their activities, and how they functioned. In economic significance alone, in the cities studied in detail in the programme (cf. Collignon, RA 9), private operators today account for between 21 and 84% of the added value of the water production and distribution chain, despite being for the most part in the informal sector.

■ ***"Make-shift" responses from the people themselves: the complementary nature of various forms of access to water***

In the face of a severe lack of organised services (public or private) to meet all of their various needs for water, in cities with the good fortune to enjoy adequate rainfall and hydrology, urban populations have spontaneously made use of all the water resources available: rivers, wells, springs, etc.

Several of the programme activities highlighted the fact that people did not use the various resources available to them at random, but demonstrated real individual strategies, in economic, health, and cultural terms, in using these resources in a complementary manner (cf. Bouju, RA 10 – Adeline, PA 1 – Romann, RA 1).

■ ***A general observation on these responses: the lack of city-wide consistency***

There are still very few responses which involve national and local actors in a consistent, imaginative and determined manner. The programme identified attempts currently being developed in Senegal. By contrast, generally speaking, most of the programme activities revealed the absence of any global vision of the problems of water and sanitation in a city, and the absence of any global vision in the activities being undertaken in these fields in any given city.

Some activities analysed the harmful effects of this lack of a forum for consistent action, and called for greater involvement on the part of municipal leaders. In particular, the lack of links between local water collection point committees and municipal leaders, and between urban plans and projects being set up in the urban water sector was one of the defects identified.

Some activities attempted to lay the foundations for local governance in water and sanitation (cf. Estienne, PA 2 – The network of three towns in Mali, PA 5 – de Boismenu, PA 6).



Christophe de Jolis

On what can local contracting and local regulation be based?

■ *The possible roles of local contracting bodies and municipalities*

Centralised methods of decision-making, investment and management of urban public services have shown their limitations in matching the demographic and spatial growth of African cities, but the emergence of decentralised and delocalised methods poses different problems, often of a different nature, which need to be well understood and mastered.

The contracting body is the individual or institutional body which expresses the intention to build a structure, explains its requirements, in terms of objectives and constraints, and selects and sub-contracts the construction of structure to others. At local level, municipalities, but also water collection point management committees can be genuine contracting bodies for projects, for which they assume the entire responsibility vis-à-vis the community and all the partners involved in their activities. This is then referred to as local contracting (cf. Estienne, PA 2).

Such transfers of authority, coupled with their own resources, i.e. either adequate financial means, or capacities to control these financial resources, represent new challenges for networks of local power and networks of patronage (cf. Bouju, RA 10).

In addition, although decentralisation processes aim to bring an end to the monopoly of skills at national level, the intention is not for this monopoly to be recreated at municipal level: municipalities are expected to take account of the emergence of other actors (the private sector, civil society, community institutions, aid and development institutions, etc.) which they should engage in a joint approach, within a clearly defined institutional framework and with legal tools for clarification and for formalising the drawing up of contracts (cf. the Ségou seminar, PA 5).

The greatest possible number of actors and a good part of local authorities' skills must be involved. Municipalities must become the place where all the parties and all the initiatives of the other actors can come together, a space for negotiation and for explicit agreements, about which the public as a whole is fully informed (i.e. the requirement for transparency).

■ *Public space, public service, common forms of solidarity and individual benefits*

The recent history of African countries and of their international context, notably with interference from international institutions and funders, has resulted in an unstable environment for the emergence of local public responsibilities and local contracting bodies, which can be characterised as follows (cf. Bouju, RA 10):

- "institutional proliferation" and a proliferation of norms generating uncertainty;
- a crisis in notions of "common benefit" and "public service" reflecting the absence of a citizen's concept of public space, and which result in the "mining" of resources;
- widespread small-scale corruption at all levels in society.

The challenge and the main difficulty is to encourage a "local public space" to emerge, i.e. a space shared by all to the advantage of all, and outside the private and narrowly community-based reasoning which currently prevails.

■ ***Learning to regulate between social actors: using contractualisation as a tool***

The need to find changing or evolving solutions was highlighted both from a technical and an economic point of view, and this need is just as great in terms of institutional and organisational aspects. The aim is to gradually build up real local operators, public or private, with professional skills. What contractualisation brings to local water services in Africa is not maintaining the balance of a system, but creating one. It represents the development, and the joint and gradual invention of a framework and a management tool for urban services, and universally recognised rules of the game. At the same time it forms social actors capable of playing their part. The contract should form part of a dynamic learning process, gradually adapting not only to changing situations, but above all to the new positions in which actors place themselves as they increasingly understand their role and what is at stake.

It is probably not therefore a question of knowing first if the municipality can or should assume responsibility for the management of installations, but of helping it to build up its primary responsibility, that of ensuring the service and respect for the negotiated rules of the game. This can lead to local quasi-contracts, multi-partnerships, the real nature of which is not so much legal as political, and which then enable more specific and precise contracts to be drawn up (cf. Coing, RA 2).

■ ***Financial considerations of local control***

The contracting body is generally responsible for the financial structure of the investment, and may even partly finance built structures, and it must ensure the preservation of these structures by checking that they are being correctly used and maintained.

When considering the sustainability of installations and water services, the sharing of roles to enable the water service to function correctly and above all a clear division of costs are key factors.

With the transfer of responsibilities and control from the State to local level, this sharing of roles and responsibilities has completely changed and is currently very far from being clear or stabilised. Notably, the question of who owns water production and distribution installations is rarely resolved without a struggle. As a result, although some things are clear regarding the sharing of certain costs, there are still uncertainties over covering "intermediate" costs (renewing equipment, significant extensions, etc.). And can we be sure that each actor, in addition to his position in relation to the operation of the whole system, is capable of meeting the costs he is expected to cover?

This is the focus of a discussion led on "who does what, who pays for what, who can afford what?" (cf. Conan, RA 2).

Encouraging an awareness of urban consistency to emerge

■ ***The water cycle and urban development: the need for a comprehensive understanding of water issues throughout urban areas***

Municipal decision-makers and inhabitants rarely know about the hydrology and the hydro-geology of a site being urbanised; even urbanisation and upgrading experts sometimes know little about these. And yet, the subsequent interactions between water cycles and the conditions of

daily life for urban populations are considerable: whether they will have a supply of water (not necessarily drinking water), water pollution and health risks, flooding and the risk of certain areas being cut off, etc.

A comprehensive understanding of water issues throughout urban areas includes knowledge of both a scientific nature (quantity and quality of the water available, the nature of water run-off) and of a socio-economic nature (how water is perceived and used, by the people and for economic activities). Several programme activities have prepared the ground for acquiring this comprehensive understanding (cf. Romann, RA 1 – Adeline, PA 1 – Tanawa, RA 8 – de Boismenu, PA 6).

Mapping all the information gradually obtained about a town or city is also a major advantage, making it easier to transmit knowledge and messages. One of the activities even tested the impact of this mapped data on the awareness of local authorities. Others went on to complement water cycle data with quality measurements (the quality of the mains drinking water and of water from alternative supplies such as springs and wells).

■ *The impact of this comprehensive knowledge on the behaviour of local actors*

The programme activities mentioned above have above all shown the considerable impact this comprehensive, rigorous and detailed understanding – which has been widely disseminated amongst populations groups and the various sections making up civil society, as well as amongst local decision-makers and funders – could have on altering people's behaviour both with regard to water resources and to their responsibilities.

A particularly dynamic process of dialogue in a Cameroon town was based on, and launched by this kind of comprehensive knowledge (cf. de Boismenu, PA 6).

It is also – once finally acquired and accurately fed back – in some cases calling into question projects currently at the preparation stage. Thanks to such knowledge, external aid (decentralised co-operation for example) can be better (and more) mobilised, by providing a well-founded argument on which to base their contribution (cf. Romann, RA 1).

Operational tools to improve local actors' knowledge and know-how

Any response to the challenge of urban growth and to the limitations of centralised and uniform responses (connecting households to a public water distribution network), inevitably means diversifying responses of all kinds: technical, financial, institutional and organisational.

To do this, we need to restore the balance of our technical understanding of all the technologies available (improving standposts, improving springs, improving the upgrading and the use of wells, etc.); we need to restore the balance of the knowledge and know-how of new local operators in the water sector (nascent local contracting bodies, informal private operators, etc.).

The pS-Eau steered programme paved the way for at least three ways of restoring this balance:

- the function of standposts in the overall approach to providing urban population groups with access to water;

- improving access to water in ways complementary to the drinking water network;
- specific education and training tools intended for local actors.

■ ***The function of standposts in an overall approach to providing urban population groups with access to drinking water***

Standposts can play a considerable part in providing urban populations groups with access to drinking water (46% in Dakar, an estimated 75% of the population served by EDM's networks in Mali). Several programme activities have, however, highlighted the absence in certain countries of specific or adequate procedures for the individual subscriber operating a standpost (cf. Romann, RA 1 – Ségou seminar, PA 5).

When a specific contractual statute has been introduced, as in Niger, it still requires much improvement in the way in which new standposts are introduced and allocated, their technical design and the way in which they are kept clean, their financial management and billing, their monitoring and management follow-up, etc.

Without taking on either the investment, or their direct management, municipalities could recover an important role of mediation and improving procedures between the private managers of standposts and the concessionary company of the drinking water supply (cf. Municipality of Ségou, PA 5).

■ ***Technical skills to improve access to alternative water resources other than the centralised network, and how to protect these***

In surveys on people's water supply practices, one programme activity identified seven types of access: upgraded public springs, upgraded private springs, non-upgraded springs, upgraded public wells, upgraded private wells, public standposts charging for water, and private standposts (cf. Tanawa, PA 8).

Protecting water resources is vital to alternative ways of accessing water. This programme activity therefore specifically considered and suggests a protection strategy resting on two forms of activity: firstly the choice of sites and defining protection boundaries, and secondly upgrading the actual built structures.

In order to identify the various forms of improvement they required, the programme activity divided structures into three types: upgraded, summarily upgraded and non-upgraded. Another activity then studied in detail the technical skills for improving these structures (cf. Adeline, PA 1).

These new skills can moreover provide an opportunity for allowing a local industry for contracting and implementing such improvements to emerge (cf. Romann, RA 1).

New forms of activity and support for local emergent contracting bodies: the increasing power of social contractors

If the principle contractors in the field of water supply for urban populations are to shift from State level to local or municipal level, this means real changes in behaviour at all levels. Such changes can be accelerated by a certain number of measures taking place simultaneously (education, training, advice and assistance, etc.).

To stress the extent to which these simultaneous activities are no longer secondary, but on the contrary sometimes central, some professionals have given them the generic name of "social contracting".

■ ***Specific education and training tools intended for local actors. The emergence of a market for advice and assistance and of social contracting***

Two of the programme's pilot activities specifically aimed to turn local actors into main contractors: one involved neighbourhood associations in peri-urban areas, the other management committees in small urban centres (cf. Adeline, PA 1 – Estienne, PA 2). They draw extremely rich and promising conclusions from the real-life experience of the education and training required by these new local actors.

On the eve of major reforms in national policies on supplying drinking water to populations, a potential market is beginning to emerge for local consultancies advising future contractors, i.e. water collection point management committees, water service user associations, and municipalities.

The pilot activities of the programme, however, highlighted the alarming absence of local service providers in the field of water services management, including training and technical advice and assistance, training and advice and assistance in financial and organisational management, etc. For local skills to develop and local water services to be sustainable, the skills acquired in social contracting must be transferred to nationals (cf. Estienne, PA 2).

■ ***Changes in State de-concentrated services: from direct contracting to assisting local contracting***

Debates on the inadequacies of African municipalities in playing their present or future role as contractors and local regulators in the field of water have shed light on the inadequacies inherent in de-concentrated State services, which generally have the best technical skills.

In the dual context of the decentralisation and the privatisation of certain urban services, including drinking water services, the State is abandoning a certain number of its prerogatives. In the water sector, where the socio-political stakes are high, national civil servants often regard this as a loss of power being imposed upon them.

In fact, these national departments can also expect to find themselves on a real learning curve in the politics of forthcoming decentralisation, in terms of technical assistance and transferring skills and know-how. This means adjusting central administrative bodies by handing the initiative to local actors and working to strengthen the latter's ability to take initiatives and action. A shift in this direction does seem to be underway in some countries, such as Mali or Burkina Faso (cf. Ségou seminar, PA 5).



Christophe Le Jolle

■ ***Dialogue and co-ordination around local contractors, yet to be created or strengthened***

Practically all the programme's activities highlighted the dramatic lack of co-ordination and dialogue between actors concerned or involved in the urban drinking water sector, without, however, suggesting possible ways in which these could be launched and made operational.

Some promising leads have been uncovered in the course of discussions conducted between three Malian towns. These were centred around how to exploit their past, a mixed experience of dialogue, and a new concept of joint strategic planning (cf. Ségou seminar, PA 5).

Taken together, basic studies and strategic choices can be used to draw up an overall diagrammatic plan for universal, decent access to drinking water on a city-scale. Such a plan, however, will be followed only if it has been understood and accepted by all involved. To make this easier, information and training activities can be suggested. But it is the process of dialogue conducted throughout the planning stage which proves most effective.

Throughout the world, experience shows that a master plan without broad consultation has little chance of being effective, as it is appropriated and defended by very few local actors. On the other hand, consultation which does rest on a strong leading idea and a structured approach runs the risk of getting dangerously out of hand verbally, and of re-inforcing conflicts. Both foundation stones have to be laid simultaneously: structured consultation around a strategic planning process (also known as orientation planning).

Apart from being a management tool, strategic planning is first and foremost a tool for teaching, information, and joint discussion. Drawing up a strategic plan should provide the opportunity for a great deal of consultation and many discussions (often stormy to start with) between all who are involved in water and sanitation issues within the conglomeration.

Only one of the programme's pilot activities explicitly cleared the way for consultation on the scale of a major city: at present, this is still in the preliminary stage of collecting basic information and disseminating this widely at the first public events stressing the joint benefits. But already, this new form of activity has excited considerable interest and enthusiasm (cf. de Boismenu, PA 6).

■ ***Setting up specific projects to advise and assist local contractors***

If we assume that the State will really withdraw from this field, can water services be fully ensured by user associations in small urban centres? One of the programme's pilot activities offered training (in community management, accounting and financial management, servicing and maintenance) and an advisory and assistance service, but no financial support for operating, maintaining, renewing or extending networks. The whole project consisted of educating, training and monitoring management committees, and this enabled it to design and validate simple management tools, education packages and adaptable training modules, which are likely to be widely distributed (cf. Estienne, PA 2).

The success of this pilot activity and its conclusions show that it is now extremely relevant for funders to set up specific projects of assistance to local contractors, without necessarily needing to invest in infrastructure.

This form of assistance given only to social contractors seems poised to play a considerable role in accelerating changing practices in supplying drinking water in small urban centres and peri-urban areas.

Conclusion. Providing universal decent access to drinking water: an opportunity to improve local governance

■ *Creating fresh links between new water supply dynamics and those of decentralisation, and paving the way for “markers” for municipal managers*

It is perhaps not by chance that there is currently a paradox between national policies on drinking water supply which are being revised, and decentralisation policies which are being elaborated. This may simply illustrate the conceptual difficulties national decision-makers have in finding “markers” for municipal action with a view to providing decent access to water for all.

Can we interpret the few attempts to approach these issues in a global perspective highlighted by the programme as indicating future concrete concerns in implementing decentralisation in African cities?

How can these indications be followed up and exploited to ensure that ideas and lessons learnt are not forgotten, and how can exchanges and training for municipal staff be arranged so that they can avoid each other's mistakes and learn from the tools which have been tried and tested by others? (cf. Ségou seminar, PA 5)

■ *An opportunity for decentralised co-operation*

The programme steered by pS-Eau has provided the opportunity to highlight the potentials and weaknesses of decentralised aid in the field of water, a favourite area for support on the part of communes of the North for their twin towns in Africa. The weaknesses often lie in identifying the demand, under-estimating the pre-project studies required, and insufficient integration of assistance being provided on a city-wide scale with the inter-linked sectors of water, sanitation, health and education.

Given what we have stated above on foundations to be laid for local contracting or local regulation, in the “local public space” which is often still to be created, should the local authorities of the North not focus on providing methodological assistance to their partner communes in the South, rather than on fulfilling the role of delegated contractor?

At this still embryonic stage of decentralisation, elected municipal representatives and even more so municipal staff, above all need help in learning their “craft” in urban management and the basic tools of this form of management.

This is where partners of the North can excel. They could also supplement the lack of skills in central African administrations by taking on this role (cf. Morel à l’Huissier, PA 5).

■ *New approaches from funders to setting up water distribution projects in urban areas*

It is time to inject the urban dimension (in the sense of comprehensive urban consistency, discussed above) and the municipal and local dimension (in the sense of responsibility for local contracting, discussed above) into water supply programmes for urban population groups. It is time to improve “all” the complementary opportunities enabling water to be supplied to continuously growing urban populations i.e. to exploit the technical complementarity of water supply sources and distribution methods, and the organisational complementarity of public and private actors. It

is time to give African states and local actors the ways and means of ensuring behavioural change at all levels, and above all at the most local levels. These are vital for the shift from centralised traditional responses to new decentralised and de-localised responses to occur, the latter being the only ones at present capable of one day matching the urban demographic explosion.

The programme steered by pS-Eau has opened up a large number of avenues for debate and above all for behavioural experimentation in these directions. Further debate is required to validate the first avenues opened up and to suggest how these messages can be disseminated and lessons multiplied amongst those shaping and deciding national policies in Africa, and amongst their funders.

In particular, certain aspects of the programme should enable objectives for future assistance to the urban drinking water sector in Africa to be reformulated and to establish terms of reference for preparatory studies which better reflect new demands, such as social contracting and a comprehensive urban vision.

Reports relating to this summary

- ADELIN T. et al., 1998. *Rapport final de l'AP 1.*
- DE BOISMENU I. et al., 1998. *Rapport final de l'AP 6.*
- DE BOISMENU I. et al., 1998. *Rapport final de l'AR 5.*
- BOUJU J. et al., 1998. *Rapport final de l'AR 10.*
- COLLIGNON B. et al., 1998. *Rapport final de l'AR 9.*
- ESTIENNE C. et al., 1998. *Rapport final de l'AP 2.*
- ÉTIENNE J. et al., 1998. *Rapport final de l'AR 2.*
- HINOJOSA et al., 1998. *Rapport final de l'AP 5.*
- ROMANN et al., 1998. *Rapport final de l'AR 1.*
- TANAWA E. et al., 1998. *Rapport final de l'AR 8.*

SUMMARY NOTE

By Jean-Pierre Elong Mbassi (PDM)

This note draws largely on the minutes of Workshop 4⁶ of the Ouagadougou seminar. The team responsible for co-ordinating this publication felt that this text presented not only a formal record of the workshop, but also a representative summary of all of the discussions and debates of the Ouagadougou seminar.

The three background factors which seem to exert the most influence on supplying peri-urban areas and small centres are urbanisation, the economic difficulties confronting States, and the institutional changes occurring as a result. Urban growth remains very rapid, leading everywhere to urban populations and urbanised areas doubling every ten to fifteen years. This urban growth results in the emergence of an increasing number of small urban centres and the uncontrolled spread

of spontaneous neighbourhoods on the periphery of large cities. Over half of future urban growth is estimated to be located in such areas. This makes it unrealistic to expect in the short or medium term to be able to make up the shortfall in supplying drinking water using centralised networks and a single operator.

Almost everywhere, people with access to drinking water are in a minority. In some cases, the proportion of the population being served by the drinking water network is even falling: in Yaoundé, for example, this proportion represented 80% of the population in 1976 (including 56% from standposts); by 1994, this had fallen to 64% (10% from standposts). In other words, using a range of drinking water supply systems will in future be the rule rather than the exception.

The economic difficulties confronting States are making them gradually abandon their free water policy, often resulting in seeking alternative solutions which all tend towards the beneficiary of the service assuming greater responsibility for it. Consequently, States need to develop decentralised sector policies in the field of water, drawing on village water experience to do so. It is thought that the institutional structures of the latter can be adapted to small centres, and even to the peripheral areas of large conglomerations. This sector de-

centralisation is occurring at the very same time as institutional decentralisation policies are almost everywhere being defined and implemented.

This overall shift to decentralisation tends to promote a shift in responsibility for the service to bodies as close as possible to the people, calling on local actors to play an increased role in managing water production and distribution. This can moreover be seen as a just reversal of roles, since until around the 1970s, the drinking water service was a municipal prerogative operated



Pascal Revault

⁶ Workshop 4: Towards a local or municipal water service: shifts to be made for local contracting of drinking water services for urban population groups.

at the time under direct State control. And even when, confronted with financial difficulties, municipalities were forced to concede the service to a national enterprise, they retained the management of standposts, thus ensuring a minimum public service, at no charge, intended for the very poor. The weakness of the local resources capable of enabling municipalities to ensure the regular funding of this minimum service has led them to gradually abandon it, without simultaneously shifting their position in the production and distribution chain, or even taking on the role of setting tariffs or in planning infrastructure.

Today, we are therefore witnessing a proliferation of initiatives and actors to bridge the gap in demand for drinking water in peri-urban areas and small towns. Some interpret this as reflecting the latent capacities for local adaptation and response of the populations of Africa's towns and cities. Others see it as a dangerous abandonment of the notion of a public water service, which all are agreed in recognising as a vital need, which as a result is akin to a basic human right.

This being the case, participants could not avoid the ongoing debate between those who see water as a commercial asset, and those who see it as a public asset. It is most certainly a commercial asset, especially in those peri-urban areas or small centres which are not covered by the formal water supply system. Bruno Valfrey (RA 9) showed that in Port-au-Prince, this market represented no less than 2,000 operators. Everywhere it represents between three quarters and four fifths of the added value of the production and distribution chain as a whole, providing three to fifteen times more jobs than concessionary companies, i.e. 1 to 3% of permanent urban jobs. The problem with this market is how to control the quality, the level and the cost of the service. The question of regulation and of solvency is therefore central.

Because of this very fact, supplying water to peri-urban areas and small centres cannot be dealt with by using private sector mechanisms alone. Drinking water is also a public asset, and for it to be supplied regularly and efficiently, it requires the involvement of an actor from the public sector.

The participants naturally considered that this public actor could be the local authority, given that decentralisation confers on the latter a pre-eminent role in the management of local affairs, and as has been said above, this would only be a just reversal of roles. It was pointed out, however, that local public authorities did not yet have the legitimacy, the credibility and the skills required to fully play this role of regulation and ensuring consistency.

In the first place, local public authorities are not the only powers providing a structure to local social space. They even often resemble institutional "juniors", having to bow to older, more deeply rooted powers, which by virtue of coming first enjoy an essentially inherent right over the many resources (notably water and land resources) on which the lives of populations depend.

In addition, institutional decentralisation has not always given local authorities the means to carry out their tasks, so much so that the latter seem unable to contribute a great deal to local social transactions. The low level of local resources and of local tax revenue is a sign both of this incomplete decentralisation and of elected representatives' failure to inspire confidence in a space in which the population's points of reference tend to be ethnic and vertical rather than citizen oriented and horizontal. The tendency of civil society to be based to too great an extent on communities hampers the potential for the emergence of a system of shared common norms beyond those originating in family and extended family ties. Everything has to be negotiated between network heads, and the mayor is invited to take part in such "non democratic" negotiations, or

run the risk of being completely isolated. In this context, the law is very often ignored, in favour of local compromises of varying degrees of efficiency.

The temptation is therefore very great, given the weakness we have noted within municipalities, to turn first to the State to play this regulatory role. As a result, many States are currently struggling to define ways of intervening in the water sector. Current debates have made more progress for small (2,000 to 20,000 inhabitants) centres than for medium-sized towns or for the peri-urban areas of large cities. Apart from Benin, Mauritania and Mali, who explicitly expect local authorities to play a role in water production and distribution management, everywhere else, the State seems to regard water user associations and water collection point committees as the preferred key actors.

Drawing up a contract between partners is becoming an inherent part of the process. Although an examination of such contracts showed that clauses were not always respected, the "contract culture" has allowed real progress to be made in clearly defining rights and responsibilities.

One of the ways of improving contracts is to draw them up not between two parties, but between three, with the representative of the public authorities (as local as possible) acting as guarantor that commitments made will be executed. The role of the State should remain a major one to ensure a consistent policy on the management of the resource and the national spread of production and distribution infrastructure. But what States want is to no longer play any direct part in the production and distribution chain.

Choosing to move towards privatisation poses the problem of the public water service in new terms. The principle of "social tariff bands", notably in favour of small centres and peri-urban areas and of poorer sections of the population, is now a critical issue, and it is far from clear how this can be resolved without local contracting of water services.

Participants were divided on the question of local contracting. Some wanted the group to declare itself in favour of interpreting this as above all a task for local public authorities, which are democratically responsible for ensuring consistency between actors and activities within the area under their control. Others felt that at the present time and in the areas in question, credibility was on the side of field operators and beneficiary organisations and that efforts should therefore be directed towards them. This is particularly so as it is thanks to their intervention with local public authorities that the latter may hopefully pay more attention to the service to the population, which is not yet clearly the case. All, however, were in agreement that there was certainly room for all comers and that what was urgent was rather to introduce a framework for consultation ensuring the participation of the various actors.

The framework for consultation should provide the forum *par excellence* for sharing skills and knowledge and raising the level of these amongst actors, and a platform for dialogue to plan joint projects. It should also enable actors to be jointly involved in preparing a certain number of data tools, notably maps and demographic, economic and sociological information, and to distribute data enabling actors to make their activities consistent, including for example information about the water cycle, or the waste cycle.

The participants placed great stress on the need for investment, as the foundation stone for mobilisation and consultation. But they also highlighted the role of mediation and assistance organisations in helping to "build" actors, to move negotiations between them forward and to make them more acutely aware of the challenges they jointly face, and to take part in introducing transparent mechanisms for sharing responsibilities between actors and for formalising the links between them.

Such social contracting requires a supply of local consultancy services. Progress is slow in the absence of a clearly identified demand and funding specifically for this activity, despite its being recognised as essential. The participants followed with interest the Malian authorities' attempts to provide a response to this problem: in anticipation of decentralisation, the latter have introduced a service providing assistance at a cost estimated at 20 CFA francs per cubic metre of water produced, which has already been accepted by the beneficiaries.

In conclusion, the participants felt that it was above all important to be modest in the light of the results of the research and of the lessons learnt with regard to the institutional organisation needing to be introduced in drinking water supply services in Africa's peri-urban areas and small centres.

Only now are we beginning to realise that water supplies in African towns and cities cannot be provided by a single system. Multiple systems and actors capable of utilising their complementarity within the management of the production and distribution chain will be the rule for the foreseeable future.

Only now are we beginning to perceive the immense need for regulation and for social and spatial harmonisation which the new movement towards decentralisation and privatisation requires, and which in turn requires public authorities and notably local public powers to play a new role.

We are only dimly aware that it is difficult to efficiently manage drinking water, an undeniably local asset, at one single level of governance, and that mechanisms enabling levels of governance to work in harmony have yet to be invented in this field in Africa.

The inhabitants of small centres and peri-urban areas are only just beginning to be aware of the fact that paying for water is not a temporary, but a permanent situation, and that in paying for this service, they have the right to demand in return quality and continuity.

Municipalities are becoming aware that they can no longer stand aside from water services which are becoming not only one of their inhabitants' major preoccupations, but also a potential resource for raising local income.

It is therefore more than likely that many changes will continue to occur in this area. It would be useful if the interest aroused on these issues by the pS-Eau programme, and the need for continued watchfulness, would result in a concerted effort to devise means to pursue these aspects.

OVERALL COMMENTARY

By *Émile Le Bris*, Director of Research, IRD (formerly Orstom)

Water and sanitation in small centres and the underprivileged areas of major cities: fallow ground in the fields of research and experimentation?

Throughout the pS-Eau co-ordinated programme, it was up to the group responsible for synthesising progress to both pinpoint problem areas at the outset and to bring out the “lines of force”, the main areas emerging in favour of the operations launched. We took three series of questions as our starting point.

◆ How can we define the singularity of our approach to a subject which is *a priori* both difficult and not often addressed?

– We are exploring the “interstices” (underprivileged areas, small towns) which are generally neglected by national decision-makers and by the main international operators. In these “intermediate” areas, the technological models of both urban and village hydraulics reach the limits of their application. Is it possible, however, to understand what is going on in these “interstices” without taking account of much vaster urbanised areas? and is there not a danger, when considering overall issues, of drawing risky conclusions from investigations of these singular zones?



Cristophe Le Bail

– A precise study of the user/distributor relationship was proposed. It was fairly quickly agreed that there was a need to focus rather on the user/operator/elected representative triangle.

– We ask the question “exchange or transfer?”. This question, which is at the heart of any aid activity, finds a particularly interesting field of application here, insofar as it brings into play actors other than public actors in important roles.

Taking as their starting point a basic assumption which explicitly reflects an economic problem, the programme initiators have paradoxically led the teams to highlight the difficulty in attributing an economic value to environmental resources. This is a problem central to the question of sustainable development.

◆ How do questions of water supply in small centres and underprivileged areas relate to wider urban development issues?

Certain “all-embracing” issues are directly linked to improving drinking water supply systems in the underprivileged areas of large cities and small centres (I am thinking here particularly of private-public links and of decentralisation). Other preoccupations at the heart of urban research in both the North and the South on the other hand, seem at first sight to be further removed from the

issues the programme addresses: what city models and what urban forms need to be found? Can "urban pillage" be combated by reconciling the requirements of "good governance", of citizenship and of democracy? These questions raise at best ambivalent answers in a world in which ideological convictions override scientific analysis.

It will no doubt also be necessary to suggest some international comparisons shedding light on the choices being made (or to be made) in Africa.

◆ **Do operators really need research?**

The programme probably raised more new questions than it proved capable of answering! In this lies the eternal paradox of research, particularly in the economic and social sciences. Everything suggests that, rather than research in the strict sense of the word, operators need their own "collective expertise", within a very short time scale, to review results acquired beforehand by researchers in the area they are interested in. Such "collective expertise" does, however, need to be continually nourished by new research, for which it is increasingly difficult to find long-term funding in the regions of the South.

The following observations are presented in the light of the key moments of the programme: the phase of capitalising on the results of research and experimentation on the one hand, and the view from a slightly different perspective of the contents of the Ouagadougou symposium on the other. In conclusion, we attempt to explore how to follow on from an enterprise which all are unanimous in recognising as having been particularly fruitful.

Providing a framework for interpreting the lessons of the programme: putting water issues into perspective

If the International Water Conference held in Paris in March 1998 is to be believed, one human being in four is short of water and half the inhabitants of the planet lack any adequate sanitation. While the world population has increased three-fold this century, demand for water has increased seven times over and irrigated water surfaces six times over. Over the last fifty years, aquifer pollution has reduced water stocks by one third. Finally, water is being supplied to metropolises, a demand which implies exponential service and treatment costs. Access to water resources is therefore potentially a source of conflict which can be overcome if water problems are made part of economic and social development plans which include preserving ecosystems at regional and no doubt at global level.

Taking only the urban areas of the South, the scale of investment required is such that we need to achieve in a few years what has occurred elsewhere over several decades. On a global scale, expected investment in the field of water is in the order to 600 to 800 billion dollars over the next decade. Some estimate that for a few billion dollars per year for just over ten years, between 2.5 and 3 billion taps could be made available to those who urgently need them. Such wide gaps in the figures reflect perhaps the fact that most funders and public decision-makers curiously exempt such investments, however heavy, from the economic evaluations required in other sectors such as housing and transport.

Optimal investment planning in the final event assumes that demand assessed at the time infrastructure comes into service will be outstripped, and that one must assume that demand will

continue to increase throughout the life of the infrastructure. How can such a requirement be reconciled with the speed of urban and spatial growth of the urban areas involved (and our poor understanding of these dynamics in real time)?

We are today witnessing a **withdrawal on the part of the State** in favour of privatisation and a reallocation of responsibilities. The basic idea is as follows: although water is to be seen as a public asset, it should be privately managed. In 1997, the United Nations report on changes in the world's freshwater resources stated that we "should have a more market-oriented approach to managing water supplies, and water should be a commodity the price of which is set by supply and demand". In more precise terms, in the areas addressed by the programme, the tendency is towards privatising the maintenance of means of extraction currently monopolised by State services and formalising the links which private, "informal" distributors have with public authorities.

Can water – a life-giving force charged with symbolism, culture and spirituality – be treated in Africa merely like any other commodity? Moreover, any water supply initiative inevitably modifies our approaches to self-interest and social compromise. Without doubting the need for consultation practices, we need to take into account the social struggles aimed at concentrating investment on the most needy. On a world scale, opinions differ, but all are agreed on the need to implement a "world water contract" (Lisbon group, 1995), to promote a "water ethic" capable of removing any confusion between the value and the price of water.

Protecting the resource is also at the heart of many debates. Supplying vast human concentrations today assumes that one can think on both a micro scale and in terms of vast areas crossing State boundaries, not to mention boundaries between local administrative areas.

I have chosen to compare the results of the programme's research and pilot operations with the analyses produced by researchers in three main areas.

■ *What are the links between the private and public sectors?*

This question is most often raised in terms relating to major cities as a whole. Research funded by the Ministry of Co-operation shows, however, that it is also relevant to the areas addressed by this programme.

SCENARIO N° 1

The problems raised are on the scale of **major private operators operating on an international scale**. And yet, the phenomenon of the major urban enterprise is relatively new in Africa and fresh partnerships need to be constructed between these international enterprises and local governments. In a field where "market laws" do not apply directly, contractual relationships between partners should increase in a **global regulatory environment** the principle features of which are as follows:

- the **legitimacy of locally elected representatives** assumed to guarantee the principles of equality and continuity of the public service in the face of enterprises whose approach is to focus on big, financially viable consumers;
- the precise definition of the **public domain** reflecting the principle of the indivisible nature of networks;
- **legal frameworks** regulating conflicts and guaranteeing very heavy investments with very slow returns on investment.

The partial or total **delegation of public services**, not to mention privatisation, gives the enterprise great freedom of action, but it cannot operate in isolation from local public authorities, which decide – through the type of contract they choose – the optimal organisation of the socio-technical system enabling the best levels of user satisfaction in the long-term. Monopoly markets must then be monitored to prevent the enterprise from abusing its dominant position. It is important to recognise that monitoring costs money and that the independence of the monitoring organisation cannot be guaranteed over time (it may be influenced or corrupt). This risk increases significantly when the public interest is confused with the private interest of a select political *élite*. Finally, the danger of monitoring criteria being restricted to the financial point of view alone is all the greater when the structures are dictated by international funding.

SCENARIO N° 2

In such circumstances, it is hard to imagine the transfer, pure and simple, of the model cited above, to places where moreover a great many citizens live in the most precarious circumstances and have a tendency to believe that “everything public is free”. Can we imagine **alternative scenarios** in which local “collective actors” capable of combining entrepreneurial efficiency, international funding and the mobilisation of populations can replace big international enterprises? The rapidity of urban growth indeed suggests that certain alternative forms of supply (springs, wells, ponds, etc.) will ultimately represent only back-up solutions.

For the International Syndicate of Public services (ISP, 1993), “the best solution is to make public authorities responsible for water services and for operating them”, given that it is inescapable that “unlimited competition in the field of the supply and treatment of water is against the public interest”. Others within the programme believe that even if the market is incapable of dealing with the question of public assets, it is a good thing that centralised systems of decision-making, investment and management, including at municipal level, are being called into question. The solutions envisaged are based on solidarity and active subsidiary links which allow all the actors to express themselves and which are attentive to local skills and knowledge. How can links between all these actors be regulated? Bearing in mind that the notion of a written contract reflects an alien culture, it is suggested that “contracts should form part of the dynamic learning curve of a new kind of relationships between actors”. Water services could then be fully ensured by user associations, prefiguring genuine “social contracting”.

Finally, we can consider what becomes of private-public links in a **project perspective** imposed by funders. The latter recognise only the State level public interlocutor, even when they preach “popular participation”. In addition, the limited horizon of the project does not lend itself easily to far-reaching learning curves in social and institutional fields. Such an approach even generates “institutional proliferation”, leading to inconsistency and uncertainty.

■ **Decentralisation and “good governance”**

Immediately following their independence, most French-speaking African countries handed over to their public authorities (through State companies) responsibility for managing water supply problems. Underprivileged areas and small centres were largely ignored by these public operators. The failure of municipal water management experiments in the 60s no doubt today weighs heavily against repeating such experiments. So the neo-patrimonial, centralising State is to be succeeded by **multi-polar local authorities**. The question then is how such local authori-

ties can take charge of public interest tasks. The question is even more relevant given that the technological and financial adventure of network modernisation is in itself part of the reorganisation of local power.

Decentralisation and dawning democracies have often been the result in sub-Saharan Africa of external pressures. One workshop reporter notes the current paradox between national water policies and decentralisation policies. Wrongly thought to be one and the same, the dual processes of decentralisation and democratisation have nevertheless played their part, as a result of occurring simultaneously, in a shift towards diversifying approaches to partnership in conducting the affairs of a city.

Networks of widely differing actors representing specific social interests have entered the scene. They have formed **coalitions of interest**, mostly of a temporary nature, the effect of which has been to aggravate the **political fluidity** of African cities. In such conditions, it is difficult to assume that such cities could have a capacity to integrate multiple actors into a single collective body of significant weight, capable of defending its own strategies to both the State and to international funding bodies. Taken as a whole, *commune* budgets barely total 5% of the State budget (compared with 50% in European countries). Even more, the failure of public authorities over the last few decades to create **spaces for extra-community citizen-based identification and security** to a large extent explains this inaptitude.

So how, this being the case, can public action be made effective in "marginal areas", ensuring a minimum of continuity in what one dares hardly call a "public service"? The answers are most often based on a model of governability reflecting "participatory democracy" enshrined in project logic, which is called upon to form in effect the "basic" form of the social link. Increasingly frequent recourse within the programme to non-profit structures, leads one to question their technical skills. Is such a mode of management economically and technically relevant, or does it spring from ideological choices?

Foreign practitioners for their part "sell" the idea of political modernity, epitomised in the figure of the city manager where decentralisation in fact only encourages renewed locally-based partisanship. This results in concentric circles of social systems co-existing and operating each according to their own logic – i.e. in the absence of any citizenship-based notion of space and of public services – and working alongside each other without ever making contact. Only small, local, family firms, operating through nepotism and favouritism, skilled in managing their "primitive accumulation" using opportunities provided by international aid, move freely between these social systems. These actors operate on their own level a "mining exploitation" of water resources. The key question is whether they will be capable of consolidating into a social class capable of imposing the new rules of the game. Many are content for the moment to "chase contracts", an undreamed of source of legitimacy. It is doubtful, in the event, that such "rules" will be in line with those of urban governments calling for democratic participation on the part of citizen-city dwellers, or even that they could underpin a sustainable consensus around a political power in and over the city.



Isabelle de Boynard (Cinet)

■ *City models and approaches to upgrading*

The geographic range covered by the call for tenders (underprivileged areas, small centres) calls into question Western notions of the city and suggests the need to reconsider the very meaning of the term:

- cities do not conform to the **compact and continuous model** around a **strong centralising force** from which large urban networks have sprung. Bearing in mind that the surface area of a major African city triples when its population doubles, it follows that overall population density falls, and can drop to less than ten inhabitants per hectare in distant peripheries;
- they contain no trace of the **values of citizenship** thanks to which equality before public services resembles equality before the law. It is also not easy to identify **local areas playing the role of integrating** individual interests and national sector policies;
- the values attached to forms of community solidarity, the final bastion against exclusion, when they survive, sometimes result in the city becoming sectioned off into **sealed areas**, highly self-centred on the expression of their own cultures (hence the theory that cities increasingly resemble archipelagos or groups of unconnected islands).

Considering the meaning of cities is of even greater relevance in the light of the fact that many actors have highlighted the strong territorial and urban dimension of the water companies. They have shown that the solutions adopted for drinking water have secondary effects on the development of other urban infrastructures and consequently influence urban forms. The social effects (of integration or exclusion) of the resulting spatial forms can legitimately be questioned.

This need for an integrated approach is clearly highlighted when we consider the links between drinking water and health. The workshop reporter has shown that it is extremely difficult in evaluating impacts on health, to differentiate between sanitation activities, water supply operations and health education initiatives. It seems clear that sanitation is nearly always the poor relation of urban policies.

A last question deserves recalling: Can water be regarded as being "local" in nature? Apparently not addressed by the responses to the call for tenders, this question begs another: At what level of decentralisation are the ways in which the resource is managed and preserved decided? Generally speaking, *inter-communality is observed to be founded on the management of networks*, but as far as water resources are concerned, regulations governing the preservation of the environment are exercised at a higher level i.e. watershed agencies (activities on the water cycle – collecting/using/rejecting – and applying a form of taxation using the principle of "polluter pays"). These issues, which are raised here in terms of land use management, are no longer solely within the remit of power games at local level.

Flashback – three days' debate to hammer out some consensus points of view

The purpose of the Ouagadougou meeting was to conclude three years' work at the meeting point between basic research, collective expertise and experimentation. I must begin by stressing the quality of the summary presentations from each research focus of the programme. The debates which followed each of these presentations were not devoid of often interesting "arguments" – such as those opposing "water barons" and "sanitation coal face workers" – but taken as a whole, they focussed on reaching a consensus around a certain number of major issues such as:

- the need for privatisation and the merits of competition, but...
- the absolute necessity of strengthening public actors in their regulatory role and clearly defining the State/municipalities link;
- recognising community ways of managing water but also their insufficient professionalism;
- the difficulty in establishing simple cause and effect links between water and sanitation on the one hand, and water, sanitation and health on the other.

Far be it from me to wish to seek in any way to shatter this consensus, which is the fruit of a strictly scientific approach. And yet... Without calling into question some of the lessons learnt from the research and pilot activities of the programme, I would like to take the liberty, initially, of pointing out some of the gaps or biases inherent in the programme itself. I will then develop two critical points of view relating to the exchanges in which we have just taken part.

The general definition of the programme embraced a heterogeneous field: small centres and the underprivileged areas of large cities are often erroneously compared to peripheral neighbourhoods alone. Although the field of the programme was defined according to geographic criteria, it seems to me that there has been too great a tendency to diminish the territorial and urban dimension properly speaking of water issues. I would like to put forward two ideas in this regard:

- did the programme participants not "operate" taking a dual assumption as their starting point? Firstly, that of comparing small centres to village (rural) water resource production and management methods; and secondly, that of the existence of a dual city, one part of which (the "informal" city) could be addressed, without dealing with the other (the "legal" city);
- and yet, the issues addressed throughout the programme reflect the issue of urban "pillaging", and the phenomenon of the exclusion of a significant proportion of the urban population from land and services. Those who are working on this issue have shown clearly that it needed to be addressed on the scale of the entire city and not in a partial and localised manner.

I also note that the programme did not envisage addressing as such the "marginal marginals", by which I refer particularly to the homeless and other street orphans, but also to an unfortunately increasingly widespread reality on the African continent, that of refugee camps.

Finally, I would like to comment that although a great deal of attention has been paid to the question of "how to act locally", very little was paid to the need to "think globally". This need manifests itself in two ways. Firstly, within a given area it is important to create links between debates and activities relating to drinking water, sanitation and health education, but also to other types of service. Secondly, it is important not to forget the situation of dependency of the countries studied, a dependency which dictates their technological choices and where they acquire their infrastructure, but also the management choices they make.

Some of the contributions made during the Ouagadougou seminar stressed the need to **take into account in a dynamic manner challenges which are often envisaged in the short term and in a static manner**. To illustrate this, I will start with the question of the size of infrastructure requirements. If, as it happens, the choices made are often wrong, it is undoubtedly because they have not been made as part of multi-criteria scenarios of urban development. What needs in fact to be done, using data and analyses – which it is true are not always available – is to postulate a certain number of changes affecting drinking water supply both quantitatively and qualitatively:

- ◆ Demographic and spatial dynamics: can one compensate for the insufficient frequency of general population censuses by resorting to often botched local surveys? How can one take an

overview of crude numbers and extract localised data which is sufficiently accurate to clearly understand how population densities are changing?

- ◆ Land dynamics: these are very often the blind spot of major infrastructure programmes.
- ◆ Sociological changes affecting relationships between individuals and groups: it is important to take into account the increase in single parent families and changes in the role of women, who are less inclined to set aside time for obtaining water from "non-network" sources.
- ◆ Macro-economic sources: what effect do adjustment programmes and measures of a monetary nature have?
- ◆ Political backgrounds: is there stability or lack of stability at State level, is the municipal actor becoming increasingly credible or not?

We have probably failed to put these different variables into a historical perspective sufficiently to attempt to understand how they interact. It is important, in any event, to observe the extremely brutal and sometimes unpredictable nature of most change. And finally, as has been hinted, we need to devote ourselves to a rigorous criticism of "project logic", according to which the project is a forum for short term experimentation which is all too often blinkered by a technico-economic way of reasoning.

Generally speaking, I would say that we need to abandon the idea of linear chains of cause and effect, and work instead on imbalances and on the basis of uncertainty.

My feeling is that a good many **"scientific certainties" have been to too great an extent determined by all-embracing issues of an ideological nature**. I will give three examples to illustrate this.

1. It is "good form" to see the opposition of public service and the market as a non-problem, as if such an opposition did not reflect radically different choices on the part of society. Because of the genuine malfunctions of para-public monopoly companies and the ontological merits of competition, do we have to weigh the profits and losses of the principles of continuity, equality and quality which make up a public service? The participants have clearly highlighted the increasing number of actors, competing for the same role. Is this a healthy situation given that no-one is in control of it? I noted the emergence in the context of "project logic", of artificial actors who disintegrate once the project is over. This perfectly illustrates the opportunistic strategies which are all too often glorified in the name of the merits of the informal sector with regard to self-employment.
2. By contrast, there was no answer to a question which to me, however, seems essential: can water be used to raise local taxes? By insisting on regarding drinking water as a mere commodity, in the end one forgets that it is a "common asset" and no-one feels responsible any more for the albeit all-important question of protecting the resource. In particular, which authority will be responsible for applying the sound principle of "polluter pays"?
3. And according to the "off-the-shelf" thinking, decentralisation is presented to us as the best guarantee for achieving efficiency and promoting democracy. A first question deserves to be put: is democracy the product of endogenous will or is it a new way of setting conditions for international aid? On the other hand, does the absolute virtue of the principle of subsidiarity absolve one from considering what scales of decentralisation are relevant according to the tasks one is proposing to assume? How in the final analysis can one take into account the need for national water policies in a context of decentralisation and what role can be devolved to the municipal actor in this field?



The seminar participants have noted the extreme discretion of this actor in our debates. What should we think of the apparent paradox between this discreet presence and the insistence on the decentralising imperative? A lot has been said about "participatory democracy", as if this "natural village way" (?) proved to be the appropriate political form in small centres and in the underprivileged areas of major cities. For my part, I noted the forceful terms a participant used to stigmatise the "democracy of loud mouths, quick to transmute into funding guzzlers"... If we want to restore credibility to municipal actors, do we not have to reconsider the ways in which a three cornered game is played, i.e. between international bi and multilateral co-operation, NGOs blinkered by the "project logic" promoted by international aid, and municipalities largely left out of the game?

How can we fail to agree with the Latin American expert who found the idea of social contracting "baroque" where water is concerned? Dialogue is undoubtedly always useful, but local democracy will only fully come into play if locally elected representatives are directly confronted with the social struggles being led in the name of the "right to the city" and negotiate directly with those who are at the heart of this struggle.

After three days of debate at Ouagadougou, I beg leave to make a provocative suggestion. I was interested – and not a little surprised – by the stress laid by many contributors on the tandem of the "visiting card/written contract" as guarantor of a good supply of drinking water. Some did, it is true, remark that as far as regulating the service was concerned, a formal contract was

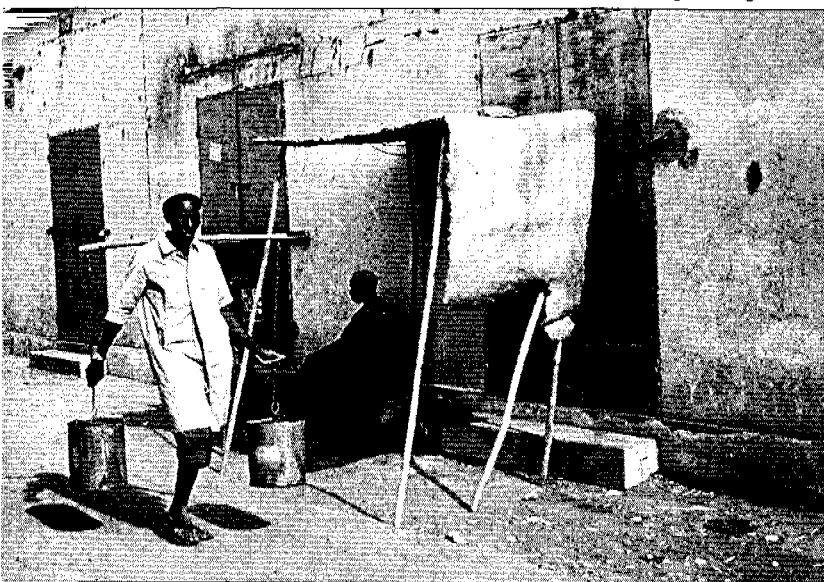
not enough. For my part, I cannot fail to recall that it was to a large extent on the basis of this tandem that the Western penetration of Africa occurred, by disqualifying the series of native representations (providing a genuine mental map) of man's relationships with the land and relationships of trust based on an oral tradition. This seminar will therefore have enabled us to witness in an unexpected manner a monumental historical U-turn.

In guise of a conclusion...

The Ouagadougou symposium has achieved its main objectives in this respect: it has enabled the lessons learnt from the

pS-Eau steered programme to be fed back to a directly concerned African audience and certain key issues to be identified in the course of our debates.

It came up against the usual obstacles of a meeting which combined academic ambitions and a desire to achieve a collective expertise intended for decision-makers and operators. We would appear to have missed two targets: large private capitalist operators and municipalities. This being the case, discussions on privatisation and on social contracting led to an inconclusive confrontation between representatives of the State (African and French) and representatives of non-profit associations. In these circumstances, how can we refer to the "appropriation by Africans



of the programme"? The question is, in launching the programme, did we meet a need explicitly expressed by Africans? Otherwise, armed with the main results of the programme, who are we trying to convince today?

In the longer term, how can we design tools to further explore the lessons we have learnt?

It seems to me that over and above its "informative" merits, such an initiative should strive to help to shed light on policies, policies implemented by local authorities in water supply systems, but also international aid policies applied in this field. A *policy paper*, put forward by the French party, would lend real significance to the launch of a Franco-African network of partners. Preparing such a document could partly make use of the results of the programme.

In addition, it seems to me that the programme should concern itself with helping training activities: pedagogical documents recapitulating a few of the driving key ideas of the programme could serve as the raw material for initial or for on-going training initiatives yet to be identified.

And finally, we need to encourage new research programmes adequately funded on a pluri-annual basis. The lessons learnt from the present programme should enable the thematic range of a future call for tenders to be tightened. Any new research undertaken should focus particularly on consolidating the capacities of African research centres.

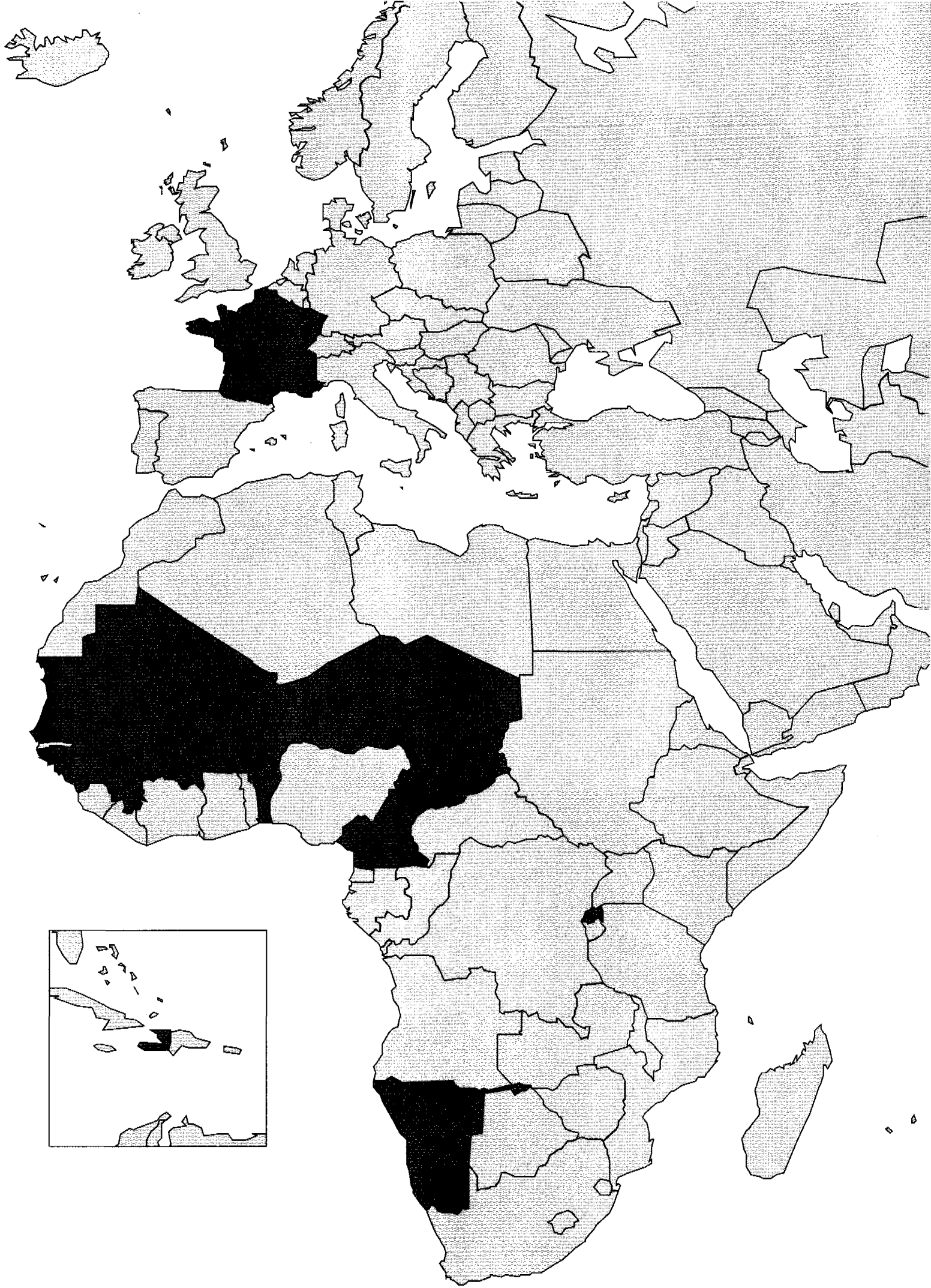
**The research
and
pilot activities**

Research activities

- p. 94 **RA 1:** The complementary nature of different forms of water supply and local infrastructure construction in Kindia (Guinea)
- p. 97 **RA 2:** Comparative analysis of the performances of various delegated management systems for shared water collection points (Senegal, Burkina Faso, Guinea, Niger, Benin, Namibia, Mali)
- p. 100 **RA 3:** Analysis of the economic parameters of water distribution for low-income population groups in peri-urban areas and small centres in Africa (Benin, Burkina Faso, Guinea, Mali, Mauritania, Niger, Senegal, Rwanda, Cape Verde, Haiti)
- p. 103 **RA 4:** Techniques used in the peri-urban areas of Yaoundé for the disposal of wastewater and human excreta and proposed appropriate systems taking account of local constraints (Cameroon)
- p. 106 **RA 5:** The legitimacy of water sector actors and their strategies (Cameroon, Haiti, Senegal, Mali)
- p. 109 **RA 6:** Does using drinking water, whether or not combined with measures to protect the environment, benefit the health and the state of health of children in tropical peri-urban areas? (Burkina Faso)
- p. 112 **RA 7:** Community mobilisation for drinking water distribution and protection in an underprivileged urban environment (Chad, Senegal)
- p. 115 **RA 8:** Water management and protecting the resource (Cameroon)
- p. 118 **RA 9:** Private water service operators in the small centres and informal areas of large metropolises (Burkina Faso, Mali, Mauritania, Senegal, Haiti)
- p. 121 **RA 10:** An anthropological approach to actors' strategies and to local power tactics surrounding water services in Bandiagara, Koro and Mopti (Mali)

Pilot activities

- p. 126 **PA 1:** Rehabilitating popular water collection points in a large metropolis: the case of Yaoundé (Cameroon)
- p. 129 **PA 2:** Making community management of piped water systems in the secondary towns of the Senegal river valley more professional (Senegal)
- p. 132 **PA 3:** Introducing a franchised water distribution system in Gabú and in São Domingos (Guinea Bissau)
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- p. 138 **PA 5:** Standpost management: a comparative study and evaluation of current or completed projects in the towns of Kayes, Mopti and Ségou
- p. 141 **PA 6:** Introducing a local body for dialogue on water and sanitation in Bamenda (Cameroon)



Research activities



Kindia-naise d'aménagement, Guinea

RA

1

GUINEA 44 / ACT CONSULTANTS

The complementary nature of different forms of water supply and local infrastructure construction in Kindia

Our research is based on a project for upgrading springs and introducing a local industry for the construction of small infrastructure being conducted in the context of a decentralised aid initiative between Kindia, a regional capital 135 km from Conakry (Guinea), and Guinea 44, which was set up by the Loire-Atlantique *département* (France).

The research analyses what water supplies are available, how the various actors position themselves, and household patterns of behaviour, and suggests possible approaches enabling different systems of supply to co-exist, the drinking water supply to be extended, and the design and management of the upgraded springs to be improved. It was conducted on behalf of Guinea 44 by ACT-Consultants and *Kindia-naise d'aménagement*¹ and draws partly on two household surveys, conducted at climatically different periods, in twelve clusters considered to be typical.

The situation as we found it

For most of the year there is a great deal of water available in Kindia in various forms (rainfall, springs, seasonal ponds, wells). The overall stan-

dard of living of the population is low, as is the level of public investment.

Water is distributed through a mains network to a minority in the central neighbourhoods, with connections to individuals (who often resell water or share their bills) and a few standposts run by private managers, who have, however, no suitable contracts, and as a result they play a very limited role. The mains network should shortly be improved (rehabilitated and extended) with funding from the French development agency.

Approximately ten of Kindia's many springs have been upgraded with assistance from Guinea 44, and this has helped a genuine local building and development industry to emerge (with the equivalent of an infrastructure company, a consultancy and monitoring group, and mini-enterprises).

Wells are used to meet family needs almost throughout Kindia. During the central months of the rainy season, rainwater is also a major source of supply.

Households classify their various sources of water, with a few variants depending on the neighbourhood, according to the water's supposed quality (mains network, followed by upgraded springs, non-upgraded springs or wells, etc.). Because of the state of the network, this rating

¹ Kindia upgrading unit.

does not always correspond to laboratory results (specific analyses were made for research purposes). The population is not informed about the quality of their water, either by the State or by the local authority.

People take their supplies of water close to their homes. Practically all households use several sources of supply. Their requirements vary according to the use to which the water is to be put: in sum, firstly, water for drinking and food, and secondly, water for other purposes.

Despite the small number of mains connections, mains water is probably used (not necessarily continuously) by nearly one third of the town's inhabitants, mainly for drinking and for cooking. This significant minority of households, who are using the network indirectly, spend only approximately 2,000 fng (10 FRF) per month on water, for 20 to 30 litres per day. The profitability of the network investment is therefore low. The network plays an important part at the end of the dry season, when rates of output of other forms of supply fall, or they sometimes dry up entirely. There are real difficulties in upgrading free access springs with help from the population: the management committees fail to take determined action, resulting in a lack of maintenance, and there is insufficient control of the boundaries to be protected from urbanisation. Technical problems are also beyond the skills available within the committees.

Householders are happy with the complementary nature of their different forms of supply. The inhabitants are just as ready to take part in building a standpost as they are in upgrading a spring, and see no contradiction in this.

Given the range of both resources and demand, there is no single body enabling programmes to be co-ordinated within a given area, making the best use of local resources, or meeting essential needs. The institutions responsible are unaware of each others' existence.

Lessons learnt

The mains network is vital when there is no nearby source of supply where the drinking quality of the water can be guaranteed or when such sources dry up. The design of a network must take competing sources of supply into account. A better understanding of people's needs should result in a more sensible use of the limited funds available.

Against a background of low and stagnant income, standposts remain of vital

importance, particularly in active and busy areas, and in low-income extension neighbourhoods, which have no other reliable source of supply. In order to extend water distribution and to contain price rises, standposts should receive a better level of service than individual connections (in terms of accessibility, output, and environment) and be managed in a particular way (tariffs set for the water supply, monitoring rates of consumption and invoices, modifying either the flat rate or the subscription rate, etc.).

Like the mains network, springs cannot do without a support system with its own adequate resources (based on paying for water rather than on subscriptions, which are unpredictable). Maintaining the investment and ensuring the quality of the water requires a high level of skill. Frequent water analyses are vital in urban areas.

Local skills in building springs are vital to their maintenance. But local building industries should be open to their environment: they should gradually be seeking diversified sources of finance and increasing competitiveness.

Controlling urbanisation in a protected perimeter area should occur before upgrading and can be achieved with the help of a good proportion of the neighbourhood. An agreement should be reached with the customary owners of the land.

Impacts

Our research gave the different actors an understanding of the various supply systems existing in the area, which should make it easier to re-configure the network. The external assessment which took place in the course of the research provides ways of launching a dialogue between actors who are unaware of each others' existence, and of taking action if there is a willingness to be involved in the long term.

"Local" actors were reassured by the findings showing the advantage of upgrading springs. Thanks to our research, the evaluation of the completed upgrading activities began and a policy was re-defined. Thus there will probably be a shift from upgrading springs to upgrading the environment and to introducing an overall management system, relying on the inhabitants' playing a more dynamic role. Investment decisions will be able to be made more rationally and the duration of installations better guaranteed.

The research provides bases for re-launching the dialogue between French co-operation actors (AFD and Guinea 44) and complementary activities, in the context of an overall policy of co-operation in water infrastructure.

Country

Guinea

Research focuses

2.2, 2.3, 4.2 (+ 1.2, 1.3, 1.4, 2.1, 3.3, 4.3)

Context

secondary centre
(100,000 inhabitants)

Duration 12 months
(21.5.96 - 20.5.98)

Cost

246,000 FRF

Guinea 44 has decided to fund activities likely to lead to better maintenance of the springs (training and information, and drawing up a plan for rehabilitating and protecting springs).

Future directions

For a public water service which is accessible to all, funding in a given area must form part of an overall approach which takes into account all of the water resources and all of the actors (local and national authorities, aid agencies).

The research activity should therefore continue in each State in which all the actors involved are present. A seminar to report back on results would enable new approaches to emerge and practical applications to be put forward.

The co-existence of different systems within urban perimeters can be achieved only by joint action from the top (the State) and from the base (dynamic localities and associations) which should demonstrate the benefits of this solution.

Local authorities and neighbourhoods must be reinstated as key actors in the public distribution system. They are independent of the various systems of supply, they are aware of the need to meet social needs, and they are needed to counterbalance the legitimate concerns of concessionaires.

The growth and autonomy of local associations and decentralisation are necessary to improving local systems of supply. Assisting decentralisation and local authority associations would allow for a more efficient approach. ■

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ALFA / BURGEAP

Comparative analysis of the performances of various delegated management systems for shared water collection points

RA
2

Our initial objective was "to devise a management tool to provide guidelines for decisions on the management organisation of shared water collection points in small centres and peri-urban areas". The aim was thus to gain a better understanding of the conditions required for the smooth operation of different delegated management systems and to assist the ways in which decisions are taken on how to manage shared water collection points.

The original features of our work consist in the variety of the cases analysed, both in terms of geographic location and in terms of the ways in which the water service is organised, and in the range of the experience and careers of each of the members of the team which therefore influences their approach to the problem posed, enriching our joint methodical debate.

In reality, this diversity in objectives and in approach, and the original expectation of "elaborating a methodological guide", gradually shifted towards less ambitious results, more akin to recommendations and pointers for future debate of a methodological nature.

To achieve the objective of the research, two types of activity took place: case studies in Burkina Faso, in Senegal and in Guinea, and working group meetings (eight in all) in Paris.

Two types of document were produced: monographs (volume 2 of the final report) and reports on particular subjects, by author, together with an overall summary and recommendations discussed in working groups (volume 1 of the final report).

From the outset, the research team chose to position itself:

- from the point of view of the overall management of the service (which tends increasingly to combine shared and individual services);
- and from the point of view of building up the systems of actors and the ways of managing the diversity of the latter (whether this includes delegation or not).

To reformulate the problem, we would say that single actor forms of management (by community or national public enterprises) do not suit the areas we are studying here. At the same time, new forms of management are springing up everywhere and need to be assessed to know under what circumstances they can result in a sustainable form of management. A number of the proposals which follow have already been tested in certain countries, some of them institutionalised and some of them also already being called into question. It is this learning process which holds promise for the future.

CONCLUSIONS AND RECOMMENDATIONS:

Introducing sustainable management mechanisms, i.e. capable of evolving and adapting to changes affecting their environment.

Developing a joint debate on small centres, small towns, and urban peripheral areas

Whereas the current tendency is to treat each of these separately and differently, strategies implemented in these different kinds of space could be better aligned with each other. This means disassociating the "project" approach and its geographical scale of operation, from the management dynamics which it tends to promote. This presupposes notably that the project should not be seen as an inward-looking, self-sufficient and self-regulated "whole", but rather as making a contribution to the following:

- a national water policy ensuring consistency between actions being undertaken across the whole of the country concerned;
- the gradual build-up, on the correct geographic scale, of professional operators, and of efficient tools for servicing and maintenance, for savings management, or even for "social" tariff bands, etc.
- the setting up of a neighbourhood, regional and local capacity for regulation, which is able to work alongside the learning processes and the increasing strength of the actors.

The debate should therefore be situated on the scale of the conglomeration or the "region". The difficulty national companies find in genuinely committing themselves to providing a service in popular peripheral areas, and their tendency to withdraw from unprofitable, small and medium-sized towns, underlines the need for devising a strategy allowing responsibility for water services to be assumed at regional or conglomeration level, and no longer merely at the level of each locality or neighbourhood. Similarly, the range of forms of management and of types of operator within the same locality, just as on a regional scale, is now a reality which has to be acknowledged. The real challenge, for both urban peripheral areas and small centres, is therefore to manage this inescapable plurality of actors, of operators and of scales of activity.

Promoting a dynamic vision of the service and of how to manage it

The intention here is to promote a dynamic vision of the demand for the service, of its ma-

nagement and of responsibility for it in the following ways:

- a dynamic vision of the service: any over-anticipation of demand (the volume consumed, or by over-ambitious programmes for individual connections) leads to failure. Conversely, any static definition of demand ignores demographic and spatial dynamics. The systems envisaged should therefore be capable of change and the ways in which these changes could occur should be anticipated from the outset;
- a dynamic vision of management: gradual clarification of guidelines for setting tariffs, of funding for renewing various types of installation, of ways of managing savings;
- a dynamic vision of responsibility for the service: the gradual readjustment of water management to the process of decentralisation and of local assumption of responsibility, and clarification of the role of the contracting body.

Clarifying the roles and the functions of the actor/operators

In order to be able to assist and work alongside the diversification of actor/operators and the increasing involvement of private actors, it is important to:

- ♦ seek stable, triangular relationships, which gradually differentiate more clearly between:
 1. responsibility for supplying the service (the management committee or the user association or the national company) which may or may not be a concession-granting authority;
 2. responsibility for the day-to-day running of the service, which is often assumed in practice by operators working in tandem e.g. manager/salaried water vendor type (or committee/water vendor, or private operator/water vendor) and which may be complemented by sub-contracting servicing and maintenance;
 3. responsibility for maintenance (a third party to be identified). But bearing in mind that there are several possible combinations;
- ♦ clarify the role and the membership of water committees which are far from easy to set up: this process needs to be assisted;
- ♦ introduce contracts for the various systems of "pyramid" delegation by encouraging teaching of how to delegate: a clear statement of duties and of the monitoring and appeal authority; realistic publication and effective implementation of sanctions; making it "worth their while" for managers to be involved in operating installations well; introducing mechanisms allowing

regular evaluation and/or re-negotiation of contracts;

- ◆ use contracts not as fixed rules, but as a learning process and a way of building up the legitimacy of each of the actors.

Encouraging the emergence of local technical and management cultures

This objective can only be obtained by gradually building up a network of professional operators, which requires:

- abandoning voluntary work as a “normal” principle when mobilising skills;
- organising the gradual “professionalisation” of the statutes of the actors involved;
- organising the technical support this professionalisation requires on the correct scale.

Breaking down the barriers between various approaches to water

Pursuing this objective requires:

- seeking economies of integration by encouraging synergies between services (multi-sector projects) and the integration of various kinds of demand (from households, from skilled tradesmen, from animal farmers, etc.);
- reporting back on the results of water research and ensuring that these results are reintegrated into the wider fields of the upgrading and urban management of small centres and of urban peripheral areas;
- ensuring that the regulation of network operators is linked to that of other forms of access to water. Identifying the body with overall responsibility (for access to water by all population groups, in all its forms, and notably the issue of population groups with no service at present: do we need to define a “right to water” in these rapidly changing spaces?).

These three issues exist at national level, but are particularly crucial at regional and local levels.

Keeping the options of “legitimate” solutions open

Given the uncertainty surrounding the future role of municipalities, of public operators, of private operators, large and small, of non-profit or co-operative associations, it is important to broaden the field of possible options. This means on the one hand contrasting the West African experience with that of other regions of the world, and on the other maintain-

ing a permanent state of watchfulness in order to be able to identify and evaluate innovative experiences – even atypical ones – and to disseminate the innovation. Elsewhere in Africa, in Latin America, and in Asia we can observe responses which differ from those found in the countries under study. This broadening of horizons and contrasting of experiences, which even funders active in several regions often fail to achieve, did not, however, form part of our remit.

This objective could form part of the follow-up to the present programme or of a new programme, and could take the form not only of research, but also of networking between the actors themselves. ■

Countries

Senegal, Burkina Faso, Guinea, Niger, Benin, Namibia, Mali

Research focuses

2.1, 4.1

Contexts

peri-urban areas and small centres

Duration 16,5 months
(16.8.96 - 31.12.97)

Cost

263,950 FRF

Contacts

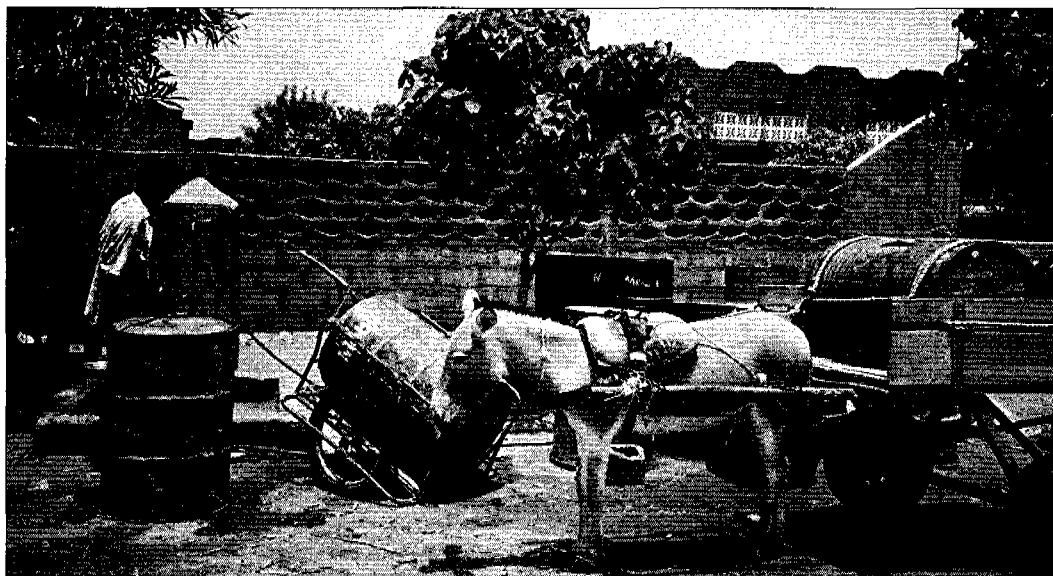
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**BENIN
BURKINA
GUINEA
MALI
MAURITANIA
NIGER
SENEGAL
RWANDA
CAPE VERDE
HAITI**



Donkey-drawn cart at the standpost, Kayes (Véronique Verdier)

**RA
3**

CERGRENE / LABAM

Analysis of the economic parameters of water distribution for low-income population groups in peri-urban areas and small centres in Africa

Brief description of objectives

◆ *Demand evaluation*

OBJECT : To study the role of demand from the inhabitants of secondary centres and peri-urban areas for improved drinking water distribution services (shared, paid water collection points, individual connections, home delivery-carrier services). To deduce operational tools for predicting such demand when conducting pre-project studies and to make practical recommendations for the implementation of these tools.

A dual approach was used to study the determinants of domestic demand in peri-urban areas and small centres: firstly, using case studies provided by the technical literature, and in particular the work of the World Bank Water Research Team; and secondly, using data from retrospective surveys conducted in a number of contrasting urban areas and small centres (Niger, Guinea, Benin, Mali) by Cegrene and Burgeap in the course of a joint research programme subsidised by the French Ministry of Co-operation.

The same surveys were used to analyse users' views of the level of service provided, and this yielded findings useful in designing water distribution systems using shared water collection points.

Finally, thanks to an essentially bibliographical analysis of willingness to pay studies, methodological and practical recommendations capable of ensuring an adequate level of demand prediction in project mode have been made.

◆ *The cost factors of various systems*

OBJECT : To break down the costs of various drinking water distribution systems using an appropriate grid analysis. This was done taking into account costs surveyed across a large number of cases covering the range of possible systems in peri-urban areas or small centres, and for a given system, of the levels of service and differentiated contexts, in order to determine the cost factors of these systems. The objective is therefore to provide a tool to help make choices between possible variants and their optimal design.

Four types of cost data sources were used. An analysis of investment costs was conducted using *ex ante* budget evaluations (from feasibility studies: Uganda, Haiti) or *ex post* evaluations (Haiti, Benin, Algeria). In addition, an analysis of the accounting records of various water management committees and municipal departments was also carried out using some recent case studies (Rwanda; Senegal, Mauritania, Mali, Haiti, Cape Verde). Finally, an analysis of the accounts

of various public maintenance departments and private enterprises which kept analytical accounting records enabled operating and installation renewal costs to be evaluated (Senegal, Mali, Mauritania). This evaluation was complemented by that of selling prices used in various equipment and spare parts import distribution chains (Guinea, Guinea Bissau, Mali).

With a view to developing a tool to aid cost analysis, the present research also finalised and adapted a programme developed by Burgeap on Cape Verde, so that the programme could provide cost calculations for all possible drinking water supply systems in any African country and meet the varied expectations and objectives of the potential users. Thus a computerised system to aid cost analysis was prepared (adapted from the Drace programme initially developed by Burgeap for water management in Cape Verde).

Results

◆ *Tools for contingency evaluation of demand for improved water services*

Demand for improved services is mainly determined by the reliability of the system, its overall costs (price + effort in terms of distance to cover and waiting time at the water collection point), as well as by the availability of alternative, free traditional sources, and by the quality of both the water and the maintenance of the water collection points. Willingness to pay for improved services is highly sensitive to how much the potential users know about these beforehand (informational bias is the main source of bias).

When one wishes to identify demand for an improved drinking water supply service from households in developing countries (a form of evaluation known as "contingency", given

that the service is hypothetical), there are two possible types of approaches: a direct approach using opinion polls (surveys known as "willingness to pay" polls, combined analyses, focus groups), and an indirect approach by applying behavioural models drawn from demand observed at another time (i.e. extrapolation) or in another place (i.e. transposition).

Amongst the direct methods, only willingness to pay surveys have been the object of scientific validation. Research conducted by the World Bank Water Research Team showed, in one particular case, that predictions of household

choices based on a willingness to pay survey can achieve great accuracy, always provided that certain methodological rules are rigorously followed. Most willingness to pay surveys conducted today are in fact seriously flawed.

Our bibliographic analysis, the experience recorded by the analysts, the sociologists and the researchers involved in the implementation of these innovative techniques, as well as the team's own experience in this field, enabled us to make detailed recommendations likely to achieve this good level of predictive performance, particularly by avoiding – or by knowing how to test for and correct – the main sources of bias which often flaw the results of such surveys. Bias can result from the questionnaire, the survey staff, the information available to those being surveyed, and it may be hypothetical, strategic and compliant.

The indirect approach has so far hardly produced any models whose field of application can be extended beyond the actual context of the site in which they were based, and they tend to fail the test of time: behaviour patterns modelled on a town or small centre cannot be transposed to other sites, and cannot even be used to reliably predict the choices which will prevail in the same town or the same centre a few years later. The most promising demand models – and amongst the most robust – are those which were developed during Cergrene/Burgeap's research using a holistic approach.

Using the results of surveys carried out in fourteen towns or secondary centres in four countries (Niger, Benin, Guinea, and Mali, i.e. over a thousand households surveyed in total), this research modelled the rates of utilisation of standposts by inhabitants not connected to a mains supply and their specific consumption at these water collection points. Using standposts for drinking water in the dry season is too widespread to allow a robust model, but the price of water being sold at standposts and the availability of wells (rare or frequent) explain 41% of the total variance in the rate of utilisation of water from standposts for washing clothes in the dry season. In the rainy season, the utilisation rate of standposts for drinking water correlates strongly to the same two variables, and to the distance to be covered: price and distance explain approximately two thirds of the variance.

From a strictly financial point of view, the high costs of contingent evaluation surveys (between 150,000 and 200,000 FRF) could be avoided if efforts to develop behavioural models were

Countries

Benin, Burkina Faso,
Guinea, Mali, Mauritania,
Niger, Senegal, Rwanda,
Cape Verde, Haiti

Research focuses

1.1, 1.2

Contexts

peri-urban areas
and small centres

Duration

1 year (21.2.97 - 20.2.98)

Cost

299,100 FRF

pursued until they achieved a predictive power at least equal to direct methods. However, contingency evaluation surveys encourage a process of dialogue, whereas the use of predetermined models on the contrary encourages the concentration of decisional powers by alienating the users and those locally responsible for the planning process.

◆ **Seeking predictive models enabling standard cost analysis for various water distribution systems**

Modelling the costs of investment and operation of various water distribution systems for predictive purposes faces insurmountable obstacles. The costs of producing and distributing water include too many parameters to meet the specifications of modelling which can be used for predictive purposes.

The various elements making up the cost of water vary widely depending on the technical choices made; calculating depreciation or provision for renewal is closely dependent on national policy in this area, which may or may not anticipate covering the costs of such renewal and transferring this to the State budget; finally certain parameters do not lend themselves easily to economic analysis, but they nevertheless play a key role in ensuring the financial break-even of commercial agents. Moreover some of these parameters are difficult to evaluate accurately: the result of calls for tender show that investment (and renewal) costs cannot be determined with more than 20% accuracy, financial charges (for loan repayments) depend closely on the State's policy in the hydraulic sector; finally the price of materials, of fuel, of spare parts, etc., is very closely linked to the local market supply and thus to the reliability of supplies (prices being highly volatile on the African market).

Modelling using "main headings" is still, however, possible and is of major benefit for technical services or research consultants required to work in this sector, both from an economic point of view (to encourage commercial agents to improve their performance) and from an educational point of view (to raise awareness amongst contracting bodies of the consequences of their technical choices).

Based on a critical analysis of the accounting records of comparable centres or neighbourhoods in which a water distribution system has been in operation for several years, good estimates of the cost of water do exist and can provide a useful management tool for individuals or

bodies commercially exploiting drinking water supply systems or for local authorities.

◆ **Computerised system**

A computerised system to assist cost analysis was developed using a common data-base programme (Microsoft Access™) and this can easily be adapted to any country. In a dedicated and user-friendly environment, this enables a series of networks and their components to be defined in order to calculate how much it will cost to operate them, to determine the average cost of the water and to compare this with the average selling price. It includes:

- a data management module in which the networks are defined;
- a simulation module allowing the formula for calculating maintenance and/or renewal costs to be built up (these costs being entirely subject to parameters which can be defined) and applied in order for example to work out the actual cost of the water produced, network by network, or for a given group of networks, and to compare this cost to average selling costs;
- a "questionnaire" module allowing the user, even if he or she has no computer skills, to respond automatically to pro forma requests in the form of lists or pre-printed forms. ■

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ENSP : Techniques used in the peri-urban areas of Yaoundé for the disposal of wastewater and human excreta and proposed appropriate systems taking account of local constraints

RA
4

Introduction

The rapid and uncontrolled growth of Yaoundé (Cameroon) has led to a proliferation of autonomous systems for the collection and disposal of wastewater, excreta and effluents in the various parts of the city. In informal housing and peri-urban areas, these systems have a major impact on the health of the inhabitants (through the sources of water they are using) and on the environment. Our research focused on assessing the current situation, and then putting forward proposals taking account of local parameters.

Objectives

◆ Objectives of the initial research activity

1. Protecting the health of the inhabitants of the peri-urban and informal housing areas of Yaoundé by controlling the management of autonomous measures for disposing of wastewater, excreta and effluents.
2. Defining criteria for choosing a sanitation system for Yaoundé, determining the characteristics of the various wastewater effluents, studying their impact on the health of the inhabitants concerned and on the environment, studying the natural assimilating capacity of the various media receiving wastewater effluents and proposing

norms for disposal, with a view to protecting the water resources available.

3. Proposing appropriate technologies for the disposal of wastewater, excreta and effluents for the areas studied.

4. Reducing surface water pollution in order to reduce the cost of treating the water used to supply the inhabitants of Yaoundé.

The scientific committee considered that the field of application of the research was very wide, insofar as it sought to achieve an overall assessment of the polluting outflows from Yaoundé into the watershed of Mfoundi which feeds the Nyong river, the city's main source of water. The scientific committee also considered that there was a mismatch between the initial research objectives and those of the programme, which is aimed at the peri-urban areas and small centres of Africa, rather than on large conglomerations, with their heavy infrastructure. The objectives were therefore revised to address "Techniques used in the peri-urban areas of Yaoundé for the disposal of wastewater and human excreta and proposed appropriate systems taking account of local constraints".

This revised objective was the basis of a field mission by Monsieur Jean Duchemin, with whom

a new flow-chart for the execution of the research activities was defined.

◆ *Objectives of the revised research activity*

The objective of the revised research activity is to make available to the inhabitants of the peri-urban and informal housing areas of Yaoundé, and to city managers, methods for designing, selecting and implementing systems for the disposal of wastewater and of excreta and for the management of domestic refuse and effluents in these areas. This is done with a view to protecting their health through improving the quality of the water resources they use daily and to protecting the environment against the negative effects of pollution.

Methodology

The methodology retained following the revision of the research activity was as follows:

- study of the sanitation of household effluents and wastewater in some of the peri-urban and informal housing areas of Yaoundé; the historical background and analysis of the existing situation by sampling. Mapping the various water collection points and other critical points (rubbish tips or effluent disposal points);
- observations and surveys;
- study of the physical-chemical and bacteriological characteristics of the water from the various water collection points used by the inhabitants of the areas studied;
- evaluation of the impact of the proximity of wastewater excreta and refuse disposal systems on the quality of the water tables and surface water used for sanitary purposes;
- hydro-geological tracing tests (e.g. latrine/spring) and tests on core samples of laterite;
- study of the rate of fill of deep-pit latrines;
- bibliography and study of the adaptability of autonomous sanitation systems for household effluents and wastewater;
- factors to take into account when defining protection boundaries around water collection points;
- seeking solutions suited to the context, rehabilitation of sanitation systems of the peri-urban areas and densely populated informal housing areas;
- additional proposals for better solid waste and effluent management in the peri-urban areas and densely populated informal housing areas.

Results

◆ *Various surveys*

- household surveys: these allowed identification of the different ways in which households

obtain their water supplies, assessment of the level of their income and the extent to which they take part in designing, building, managing and protecting the water collection points they use;

- surveys of the health of the inhabitants: these allowed the impact of polluted water on the health of the inhabitants to be measured;

– surveys of rates of fill of deep-pit latrines: these suggested the approaches that should be used when selecting systems for the disposal of wastewater and excreta appropriate to each of the different areas studied;

- water consumption surveys: the spatial location of the different water collection points and counting the number of people coming to the various sources to extract water, and estimating the quantities of water extracted have enabled the significance of each of the sources studied to be measured and the water needs of the inhabitants of the neighbourhoods studied to be assessed.

◆ Detailed knowledge of the geographic situation of the various water collection points used by the inhabitants of the neighbourhoods studied and of the physico-chemical and bacteriological characteristics of the water used.

◆ Highlighting, thanks to tests on core samples of laterite, the variability of the natural ability of soils to treat water according to the various types of soil layers and the volume of wastewater introduced; the clay-silt layer appeared to be the most effective. The greater the volume of wastewater introduced, the weaker the ability of the various layers to treat it; this explains why during the rainy season, chemical and biological pollutants are transported further than in the dry season and in short rainy seasons.

◆ A selection of more appropriate systems thanks to an inventory of the various techniques currently used for the disposal of wastewater and human excreta, combined with critical study, analysis of the costs of the various systems being used for autonomous sanitation and the study of socio-economic constraints.

◆ A proposed method for treating household waste and effluents in peri-urban areas.

Achievements compared to objectives

Hydro-geological tracer tests and the study of latrines and experimental wells with a view to defining the various protection boundaries for water collection points did not take place, as regulations forbid on the one hand, any tests on the water collection points used by the inhabitants

and on the other, the construction of wells and latrines in schools and market places. These were the sites initially chosen for the study.

Detailed impacts of the research

Disseminating the results of the work carried out should benefit the inhabitants and the local and national actors involved in the management of Cameroon's cities, particularly regarding technologies for the disposal of wastewater and excreta, and methods for treating domestic refuse and effluents.

Strengths and weaknesses of the research, difficulties encountered

◆ *Strengths of the research*

- observation and analysis of the survey data;
- critical analysis of existing technologies with regard to disposal of wastewater and excreta;
- study of domestic refuse and effluent management methods;
- tests on core samples of laterite.

◆ *Weaknesses of the research*

- the various protection boundaries for water collection points were not defined;
- limited outside contacts.

◆ *Difficulties encountered and delays in carrying out the activity*

The very late revision of the research activity carried out, which led to a loss of time and to a considerable delay in carrying out the work.

Recommendations

1. Findings of a thematic nature, relating to the key problem areas of the programme. Recommendations aimed at the local and national water sector actors and their funders:

– there should be greater participation on the part of the local actors;

– funders should involve local actors in decision-making and in designing projects or programmes.

2. Findings of an operational nature, drawn from the experience of the teams involved in the activity with regard to the way in which the activity took place and more generally, the way in which the programme as a whole took place as perceived by these teams:

– there should be a greater number of exchanges between the research teams.

Future prospects

◆ *Prospects in the areas studied*

The results of the research work undertaken will allow a better knowledge and understanding of the problems posed by other areas of the city of Yaoundé and of other cities in Cameroon, through further activities to be supported by the local authorities or other funders.

◆ *Prospects for the teams involved in the activity*

Stronger collaboration with the possibility of training young researchers in research subject areas focusing on protecting health and the environment through protecting water resources and the appropriate disposal of wastewater and excreta.

◆ *Prospects suggested to the programme and to funders*

The programme and the funders should conduct an awareness-raising exercise amongst local decision-makers, who have the ear of the local population more than researchers. In addition, researchers sometimes encounter more difficulties amongst local decision-makers when carrying out their work. For example, tracer tests could not be carried out, because they are forbidden by the authorities. ■

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Country

Ekounou I, Ekounou II, Kondengui, Vog Ada, neighbourhoods within Yaoundé, Cameroon

Research focus

3.3

Contexts

peri-urban and informal housing areas

Duration 12 months
(24.2.97 - 23.2.98)

Cost

200,000 FRF



Yaoundé, Cameroon

RA
5

GRET

The legitimacy of water sector actors and their strategies

This research is mainly qualitative by reason of its sociological approach. Using various case studies and our knowledge of projects for the alternative management of drinking water services, it aims to:

- clarify the concept of the “participatory project”;
- study the leverage effect of shared water projects;
- analyse the conditions which encourage such dynamics to emerge;
- make recommendations.

Methodology

To achieve these aims, we identified shared water management operations which were sufficiently diverse to enrich the data and to provide points of comparison meeting the objectives we had set. We selected four field locations where qualitative surveys and interviews had been conducted using a detailed grid analysis reflecting the main initial assumptions:

◆ Senegal

- Four operations were selected in Dakar:
- Enda’s “popular water” case, conducted by a branch of Enda Tiers-Monde in M’Fsabo (informal area), a commune within greater Dakar;
 - the case of the Rufisque upgrading programme

and neighbourhood project, conducted by Edna RUP (Participatory urban network);

- the Rail – informal area – project in the very centre of Dakar, conducted by Enda-Segui for Enda’s “popular water” neighbourhood project for rendering water drinkable;
- the “city project” launched in the context of PDSU in Thioraye-Genaw-Rail (a *commune* of greater Dakar), conducted by Enda Ecopop.

◆ Mali

Two operations were selected:

- the pilot rehabilitation project of the Samé neighbourhood (Bamako), revolving around the initiative of the neighbourhood association (ACDSK) with assistance from Alphalog;
- water management in Ségou, under the auspices of a co-ordination of micro-entrepreneurs (GIE¹) assisted at its launch by the local branch of Alphalog.

◆ Haiti

The study considered three successive and integrated water supply and upgrading projects or programmes conducted by Gret in slum areas; these affected fourteen Port-au-Prince neighbourhoods involving some 200,000 people:

¹ *Groupement d’intérêt économique* or Economic benefit group.

- the Echo programme (emergency programme) which lasted only eight months and which marked the start of a process;
- this was extended by a project funded by the European Union (DG 8);
- and a project funded by the CFD.

◆ **Cameroon**

The study addressed the Fourmi² programme which covers five towns and cities in Cameroon, three of which were selected in the context of this work. This programme is now entering its third and final year and includes more than two hundred projects being conducted by the inhabitants and co-funded by funding made available to them in the context of this programme. Gret is the project implementor in partnership with local NGOs:

- Yaoundé, standposts, CAD projects in Nkolmesseng (a peri-urban area) conducted with assistance from CASS/D (Centre for social and health education);
- Bafoussam, standposts in Djeleng (under-equipped neighbourhoods in a major secondary town: 150,000 inhabitants), CAD projects conducted with assistance from Cepad (Centre for popular education and development);
- Bafang, standposts in Mouenkeu (under-equipped neighbourhoods in a secondary town: 40,000 inhabitants), CAD projects conducted with assistance from CDCV (Centre for the development of village communities).

Results of the research

The study enabled operators to reflect on their own practices and to take the time to scrutinise them closely using an "objective" form of questioning. It also gave them the opportunity to benefit from seeing themselves reflected back through interviews and to broaden the range of possibilities open to them as far as methodological and strategic choices are concerned, by understanding the ways in which different decisions were made.

The scientific results are essentially of three kinds:

1. The study and the close scrutiny of the different experiences included in the sample enabled a relatively broad picture of the range of situations and of the inter-connected links between variables

which can occur in participatory water and sanitation projects, to be drawn.

2. The study showed and analysed the mechanisms according to which such projects are likely to be factors encouraging increased democracy at local level, to serve as "levers" for local development and to lead to sustainable forms of investment and services.

3. All these observations were brought together and summarised in order to be able to learn from them and draw up a (provisional) list of operational recommendations, capable of being directly re-used by local development operators and protagonists (local authorities and concessionaries).

Findings and conclusions

We were able to take advantage of the comparative richness of the four countries, which is rare in a single exercise. This enabled us to formulate recommendations which respectively address the actors involved in the implementation of this kind of project.

◆ **Project efficiency**

The dynamics of social mobilisation around water supply and sanitation projects are rich in potential but also run the risk of getting bogged down or going off at a tangent. Take the example of progressing from the initial idea of standposts to their operation: for this process to achieve not only minimal access to water, but also to create conditions for better participation on the part of the inhabitants and to strengthen local democratic processes, the assistance of an intermediate operator, working alongside the local actors, is often required.

This presupposes skills and a thorough understanding of what is at stake. We have been able to highlight some key points in this respect.

The first set of recommendations is therefore aimed at these operators and should provide them with useful indicators when carrying out their work. These include information, organising committees, their membership and their operation. This is also relevant to local contributions which often represent the factor indicating validation of the inhabitants' involvement, and requires understanding of how to collect data in ways suited to the living conditions of the inhabitants so as to gain their confidence. Finally this involves all the necessary skills to be acquired and the responsibilities to be assumed by local actors to ensure the sustainability of the management system and the optimum profitability of the standposts.

Countries

Senegal (Dakar),
Mali (Bamako, Segou),
Haiti (Port-au-Prince),
Cameroon (Yaoundé)

Research focuses

2.2, 2.3

Contexts

peri-urban areas and
small centres

Duration

17 months

Cost

262,000 FRF

² Funding for urban organisations and micro-initiatives.

◆ *Local dialogue*

Development projects are only one form of social change and as a result, cannot be taken in isolation from local actors as a whole (and notably from institutions and concessionaries) who are financially implicated. Our study of the projects selected enabled us to analyse their specific place and roles. The recommendations which can be made in this respect are not about policies. These naturally are of vital importance for the projects under consideration here, notably where decentralisation is concerned. However, this would go beyond the scope of our research and require further careful work in order to propose precise and consistent directions to follow.

We therefore focused on recommendations encouraging dialogue between actors, as we believe that it is thanks to organised dialogue that local management practices can genuinely be renewed³. Thus we have examined the way in which each actor may or may not foster this change in perspective through the ways in which he or she is involved in water supply and sanitation projects. This includes skills aspects and acquiring adequate tools for knowledge. This is also relevant to developing formal frameworks and commitments in terms of service, or even of co-funding.

◆ *Operational environment*

Implementing this type of project leads to changes in the way people go about strengthening water management mechanisms and making them not only perform better, but also foster increased responsibility at economic, social and urban levels. This will be possible only if the frameworks for intervention allow or even encourage this. We have therefore made some recommendations on the operational mechanisms which are primarily aimed at the bodies commissioning projects and which relate to acquiring knowledge, adapting financial structures and changing project mechanisms.

Future prospects

There are many future prospects open to us and these may include operators putting these recommendations to the test. Others can take shape only in the light of the material means which will be available to us. This could include using the

same approach once more and following it up in more detail to culminate in a document enabling better dissemination and contrasting of the findings and recommendations resulting from our research. ■

Contacts

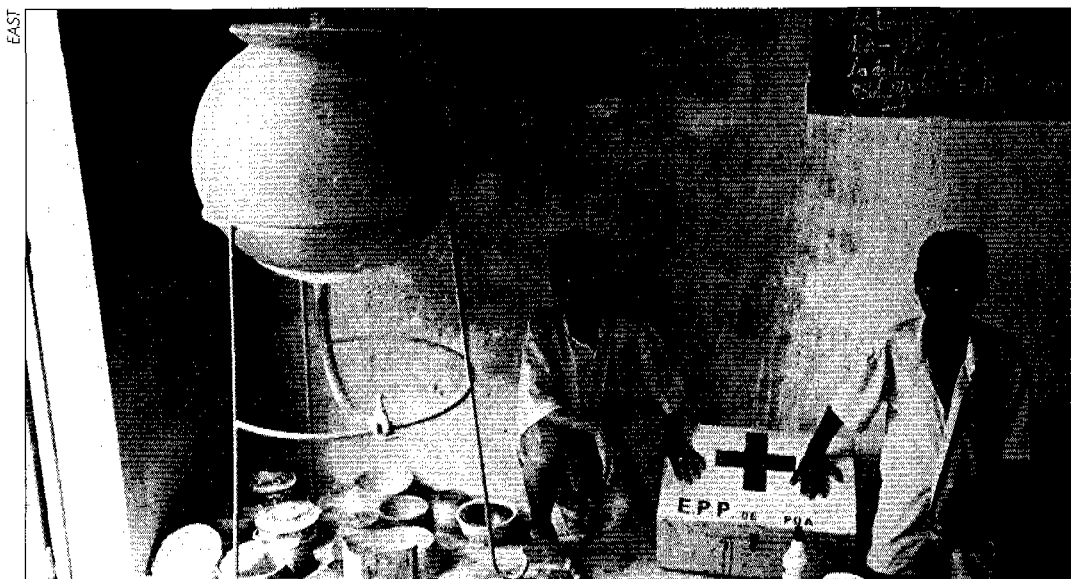
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³ We refer the reader to the report on the pilot activity conducted in Bamenda and which addresses this particular subject.



EAST : Does using drinking water, whether or not combined with measures to protect the environment, benefit the health and the state of health of children in tropical peri-urban areas?

**RA
6**

Introduction

Work on preventing diarrhoeal illnesses is mostly fragmented or incomplete. To reduce the incidence of infectious diarrhoeas, various authors recommend health education to modify behaviour patterns, or improving individual and collective hygiene or protecting the environment, or again supplying drinking water or improving sanitation practices.

The objective of our study, by considering and contrasting all these factors, was to show – using clinical and biological indicators and a sociological survey – their impact on public health, in an underprivileged area of a major African city. In addition, prevention costs were to be compared with the costs of treatment, which would have proved necessary if no preventive action had been taken.

Preliminary observations

The project took place in Ouagadougou (Burkina Faso), in the peri-urban *arrondissement*¹ of Sig-Noghin (45,000 inhabitants) where a socio-sanitary development operation is taking place (cf. PA 4). Two studies were carried out before

launching the project: bibliographic research on preventive actions against diarrhoeal illnesses; and a detailed assessment of health and hygiene conditions in Sig-Noghin, within families and in schools.

Target population groups

The study took place in three primary schools characterised by major contrasts in their socio-sanitary conditions.

- ♦ **Nakiemb-Zanga** (NZ – school 3) had mains (town network) drinking water, sanitation installations and health education programmes on the cleanliness of water and of the environment.

- ♦ **Kamboinsé B** (KB – school 1) was included only in the mains (network) drinking water and the health education aspects of the operation.

- ♦ **Somdé de Kossoghin** (SK – school 2) lacked any drinking water, sanitation installations or health education sessions on the two areas mentioned above (water and the environment).

In each of the schools, 100 pupils, girls and boys, aged between 5 and 10 and between 11 and 15 years old, were picked at random. For the sociological study, a sub-sample of 30 pupils was selected in each school.

¹ Administrative area.

Project activities

The project included French and Burkina teams with recognised skills in the following areas: epidemiology and sociology, health education, bacteriology and parasitology, bacteriological water analysis, and statistics.

◆ *Field activities*

The **East** team was responsible for the following tasks:

- enabling the teams to work closely together;
- installing drinking water installations in NZ and KB, ventilated dry pit latrines and hand-washing taps in NZ;
- providing training in health education to the teachers – either relating to both water and the environment, or solely to water – using various pedagogical methods (*Graap, l'Enfant pour l'Enfant*). At the start of the project, the pupils' habits and knowledge of hygiene and drinking water were assessed using questionnaire forms intended to allow a comparative study on how their knowledge had improved after 18 health education sessions in NK and KB;
- conducting the clinical survey, with health agents; within the sample selected (3 x 100) counting the number of cases of severe digestive problems associated with diarrhoea.

The National centre for scientific and technological research (CNRST) in Ouagadougou conducted the sociological survey on a sample of 30 pupils in each school. The objective was to monitor them outside the school context and to characterise their family environment.

◆ *Laboratories and specialised services*

The Bacteriology and parasitology laboratory of the **Muraz Centre** (Bobo-Dioulasso) and the Parasitology and mycology unit of the Department of infectious, parasitological, tropical diseases and public health of the **Pitié-Salpêtrière Hospital** (Paris) carried out coprological analyses for all the pupils, on two occasions, in the months of February and June 1997.

- Classic bacteriological examinations sought to identify *Salmonella*, *Shigella* or *Campylobacter* bacteria, *Vibrio cholerae* and *Staphylococcus aureus* in stools.
- Identifying parasitological agents (cysts, eggs and parasites) was carried out by direct coprological examination, or after coloration, and using washing/flotation methods.
- No virological examination, which is complex and very expensive, was planned by the project. The **Laboratory of health engineering, Department of preventive medicine**, Ouagadougou,

carried out bacteriological analyses of drinking water in the three schools and in the pupils' homes.

C.Clin – Paris North – Biomedical institute of Cordeliers (Paris) carried out the statistical interpretation of the data provided by the clinical monitoring of the children.

Results

By the end of the study, our findings on the schools and the families were as follows.

◆ *Nakiemb-Zanga* (NZ)

pluses: mains (town network) drinking water, sanitation installations and health education programmes on the cleanliness of both water and the environment

Water supply system: domestic water hydrants. Quality of drinking water: drinkable, however, 25% of storage reservoirs had severe bacterial pollution.

Correct answers to the questionnaire (on hygiene and drinking water): 58% in November 1996, 91% in May 1997 (after education sessions).

Social class: the highest proportion of literate parents (white collar workers and tradesmen), more than 50% of households had a monthly income of over 1,300 FRF.

Families had refrigerators and latrines, subscribed to the domestic refuse collection system, and 68% had a good understanding of sanitation. The girls were responsible for domestic hygiene tasks (cleaning the house, the WCs, the cesspits, etc.)

◆ *Somdé de Kossoghin* (SK)

minuses: no mains (town network) drinking water, no sanitation installations and no health education programmes on the cleanliness of either water and or the environment

Water supply system: wells and standposts.

Quality of drinking water: seriously polluted by faecal germs, notably during storage.

Correct answers to the questionnaire: 30% on both occasions.

Social class: less literate parents (white collar workers and tradesmen), and only 24% of households had a monthly income of over 1,300 FRF. Hygiene conditions were inadequate (old-fashioned latrines, refusal to subscribe to the refuse collection system) and few of the pupils' parents (32%) had a good understanding of sanitation. The girls were in charge of keeping the home and the latrines clean.

◆ *Kamboinsé B* (KB)

pluses: mains (network) drinking water and a health education programme on the cleanliness of water

minuses: no sanitary installations and no health education programme on the cleanliness of the environment

Water supply system: boreholes and traditional wells. Quality of drinking water: permanently contaminated, notably during storage (however, at the school, the water was clean).

Correct answers to the questionnaire: 35% in November 1996, 89% in May 1997 (after education sessions).

Social class: poorly-educated or illiterate parents, the average monthly income of two thirds of households was less than 350 FRF.

Few pupils described sanitation practices and methods (38%). Family latrines were badly maintained and refuse was littered on the ground. The girls, who were as ignorant as their parents (92%) about health hygiene, helped to clean the latrines and remove rubbish.

Understanding the socio-sanitary situations of the schools and families was conducted in parallel with a bio-clinical examination of the children included in the survey.

– Bacteriological stool analysis: In February and in June 1997, the number of children carrying pathogenic bacteria were, respectively, between 9 and 13 out of 300 (12 at KB). These results failed to explain the high incidence of diarrhoeal illnesses (see below).

– Parasitological stool analysis (detecting amoeba cysts): In February and June 1997, the number of cyst carriers was lower at NZ (38 and 42%) compared with the other sites, i.e. SK (64% and 64%) and KB (53 and 55%). The differences observed were statistically significant. In addition, contamination was more frequent in two groups: that of girls and children aged between 5 and 10 years. In fact, few potentially pathogenic agents (bacteria and parasites) were found in the stool samples, suggesting that viral infection was the cause of most of the diarrhoeas.

Gastro-enteritis was therefore the best indicator of poor socio-sanitary conditions in schools and in families. The proportion of diarrhoeas observed in NZ – school 3 – (maximum prevention), at KB – school 1 (minimal prevention), and at SK (no prevention whatsoever) were respectively 10, 36 and 53%. These proportions were significantly different. Pupils from school 1 and school 2 had respectively a relative risk of diarrhoea 3.5 to 5.2 times greater than that of children in school 3, where health education measures were the greatest.

The risk of diarrhoea therefore increases when the level of prevention falls. However, its intensity was not the same for the 5-10 year and the 11-15 year age group. The risk of diarrhoea amongst schoolchildren aged between 5 and 10 years, increased more steeply as the level of protection fell. These results are true for boys, but not of girls for whom the relative risk of diarrhoea is the same whether prevention is minimal or non-existent.

Despite the prevention measures taken at school, this could result from their daily involvement in domestic tasks in an insalubrious environment.

Our study enabled us to compare the hypothesis that "using drinking water and measures to protect the environment in peri-urban areas, are beneficial to human health". A great many inter-related factors play a key role in preventing diarrhoeal illnesses: health instruction and education for parents and for school children, how well off they are, how clean their drinking water is, individual and collective hygiene (washing one's hands, cleaning food, the use of latrines, etc.) and protecting the environment (disposing of wastewater, collecting domestic refuse, etc.). Drinking water consumption is in fact only one amongst many key factors.

Finally, there was no clear answer to the second question: "Can such preventive measures lead to savings in public health spending?". Our problem was to evaluate precisely the costs of caring for the sick and of treating gastro-enteritis, given the enormous range of therapies, useful or otherwise, and given what is left unsaid by practitioners and traditional doctors. Answering this second question will require a lengthy survey and the full involvement of public health specialists in families and in medical centres. ■

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Country

Sig-Noghin area,
Ouagadougou, Burkina Faso

Research focuses

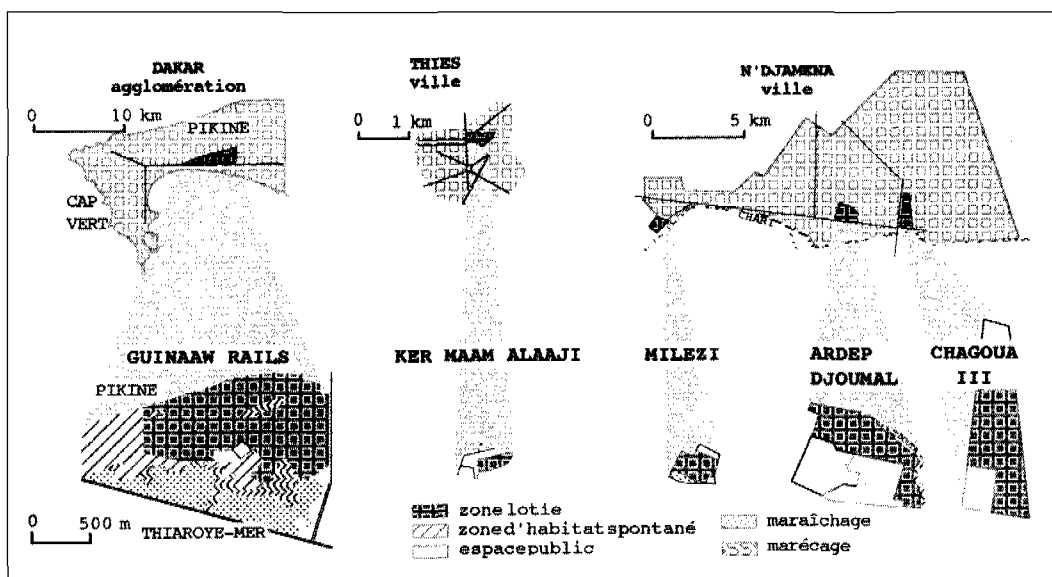
3.1, 3.2

Contexts

peri-urban areas

Duration 12 months
(24.12.96 - 31.12.97)

Cost 120,000 FRF
(+ 180,000 FRF funded
by the Seine-Normandie
Water Agency)



UNIVERSITY OF AVIGNON AND OF THE VAUCLUSE

Community mobilisation for drinking water distribution and protection in an underprivileged urban environment in Chad and in Senegal

This note presents the key aspects of the research activity that we undertook over fourteen months between November 1996 and February 1998. It describes the paths explored, the lessons learnt and the future prospects for research which took as its starting points firstly the fact that social actors find it difficult to take sustainable action on the scarcity of drinking water in the underprivileged areas of African towns and cities, and secondly a proposal to be tested, i.e. that community mobilisation, current and identified, can be a decisive factor in improving water supplies.

Setting the research objective

Our research is a response to requests expressed by our Chadian and Senegalese partners in the course of previous participatory research. Our starting point was a previous activity, part of a Swiss aid Priority environment programme (PPE), which had ultimately resulted in the funding (mainly by Unicef) of the installation of standposts in three areas of N'Djaména (Milezi, Chagoua and Ardep Djoumal). Our job was to work alongside the projects and to monitor how these evolved to achieve the sustainable management of the resource. In Dakar (Guinaaw Rails), we found a largely individual distribution system which was handicapped by serious public ser-

vice irregularities. Could re-mobilising the community provide a response to this? In Kër Maam Alaaki, a *marabou*¹ area of Thiès, the collective involvement of the inhabitants reflected their religious convictions.

For our associate partners, the scientific benefits lay in the possibility of validating (or not) the hypotheses formulated by RAF (Research Action Training), as a factor in improving water supplies. RAF facilitators, students and social workers living in the areas involved, needed to acquire credibility, by acting as project interface advisors (particularly in conflict management). Care had to be taken throughout the programme to manage the bias which could result from the lack of objectivity resulting from this very strong involvement.

The climate of trust which predated this research deepened in the course of the startup workshops at N'Djaména and Dakar. Activity synergies were exploited in real time using the principles of de-programming and re-programming as presented in the following matrix.

One of the strengths of our RAF approach proved to be setting up a network of actors invol-

¹ Religious wise man, often a traditional healer and teacher.

Positioning the activity within our field of intervention	Finding out about the resources	Accounts and documentation	Findings expressed in the form of hypotheses	Activities to test the hypotheses		New findings New hypotheses	Re-assessment of our field of intervention
What? Where? When?	November 96-January 97 1 st organisation meeting Planning at N'Djaména		January-February N'Djaména workshop	March-July Activities in N'Djaména and Dakar	August-September Dakar and Thiès workshops	September-December	January-Feb. 98 Workshops in N'Djaména pS-Eau report
Interactions	Team building	Water in people's daily lives	Hypotheses on the activities (standpost surveys)	Surveys on: - health - the way water is used - demand	Results <i>Expected</i> (feedback) <i>Unexpected</i> (consistent lead content of water)	Operational revision of planning in five neighbourhoods	Field of activity: evolving actors, situations, resources
	Site visits	Water in the neighbourhoods					
	Institutional contacts <i>in situ</i> (CFD, Town Hall, etc.)	People's perceptions of water	Hypotheses on organisation (RAF geographic and thematic groups)	Organisation of meetings in the neighbourhoods	Unforeseen (delays in Unicef standposts in Chagoua and Milezi)	Conceptual revision on the SIBC, the CUE, and cuts in service	Field of debate: new uncertainties, questions, perceptions
	Planning	Water actors					
	NGO symposium Bordeaux	Bibliography	Hypotheses on community participation/mobilisation		Deviations (sanitation consumers)		Future prospects: prolongation, continuations

ved in water, in the various areas of research, particularly by cross-fertilising theoretical and practical skills as well as the various experiences. The most widely used tools were the neighbourhood and block meetings, visits from external actors, continuous feed-back to funders, the authorities and neighbourhood actors, using the approach modelled in the diagram on the following page.

The key lessons learnt related to four main points:

- ◆ Taking account of perceptions and realities about drinking water (which we entered into a data base) as a key factor in participatory exchanges between actors provided an entry point allowing for modifications in hazardous forms of use.
- ◆ The appropriation by all parties of the concept of the urban water cycle and the complexity of its management, despite starting out from fragmented and conflictual approaches. During workshops and while accumulating experience in the field, we were able to take into account issues of drinking water and community mobilisation, and the question of effective scales of treatment of the former thanks to the

latter. RAF focused on exposing and dealing with the main theoretical and practical obstacles i.e. problems resulting from the scalar relevance and links between areas. In particular, the initial scale of community mobilisation, which aimed to equip a whole neighbourhood,

SOME PERCEPTIONS OF DRINKING WATER

agreed upon in the research areas, and subjected to criticism and modification

- ◆ During the typhoid fever epidemic of December 1997 which apparently affected the children of the better-off classes of N'Djaména, there was a rumour that all those affected subscribed to STEE, and that their tap water was responsible for this pathology. Even if the explanation of this inverse discrimination is a simple one – i.e. everyone was affected, but only those who could afford to paid for treatment and therefore had their illness identified – nevertheless it is clear that this was followed by a shift towards mistrusting tap water.
- ◆ In Milézi in an informal interview (document 23, p.12), we learnt that well and river water could have medicinal properties capable of healing stomach ache and malaria. In the same area, the surveyors had noted that clear, running water was considered less nourishing than well-water or water from the murkiest river. Similarly, rainwater is prized for its taste.
- ◆ In Guinaaw Rails, during public meetings, various people complained about the quality of tap water, the prohibitive costs of connections, and over-charging.

Countries
Chad, Senegal

Research focuses
2.2, 2.3

Contexts
peri-urban areas

Duration 18 months
(10.10.96 - 9.4.98)

Cost
182,000 FRF

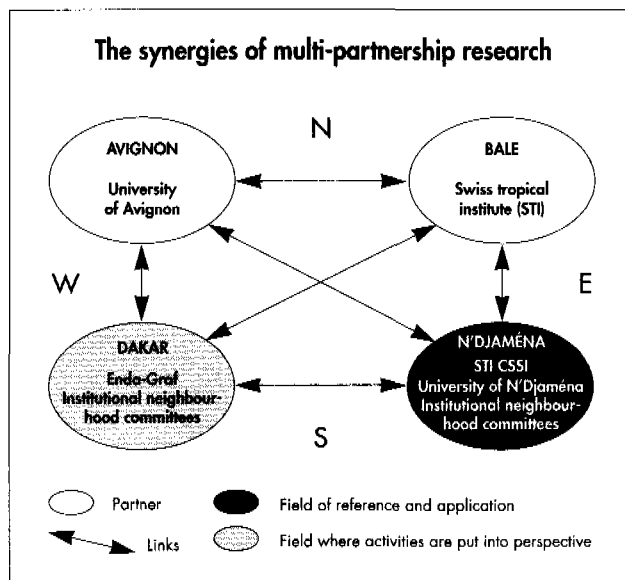
had to be uncoupled from that of management, aimed at a sustainable service, such as that provided by the standpost or an individual connection. Other much wider areas than before were taken into account, such as in Senegal with re-mobilisation (in response to a demand for social connections, sanitation networks and consumer rights).

♦ Reduced water supply cuts. Since cuts occur mainly at the point of transition from the formal mains network economy to the informal redistribution economy, they were identified as encouraging high-risk storage habits, erratic price movements and additional costs in drinking water for the very poor (from four to ten times as much between the cost to the subscriber, at the spring or from the water vendor). Following this identification, cuts were the object of information widely disseminated and exchanged between the different sites, to underpin collective awareness on which to base major mobilisation, which was not always in fact consistent throughout the programme.

♦ Thus, partly also to avoid drying up of dialogue between actors leading to stalemates and *de facto* privatisation of water, our research devised a Basic community information system which was tested. The main strengths of this information system are as follows:

- it is a data-base capable of evolving (containing data provided by the project), made available to water partners (local, institutional and intermediate actors);
- it works like a water memory bank, which can be held by a committee, but is above all capable of being used in all circumstances;
- it provides a virtual (or physical) forum for dialogue where meetings between water actors can be expected to take part at the request of one or other of them. It can therefore become a management tool for resolving real or imagined conflicts;
- it provides a training ground for local actors in management and for institutional staff in users' perceptions and day-to-day experiences;
- it can become an instrument for introducing consultative management of water, relying on the definition of a water code describing the reciprocal rights and responsibilities of the user and of formal and informal distributors.

This kind of tool, which still needs fine-tuning and replicating on a wider scale in a subsequent phase of research, should lead to a sustainable form of water management. ■



Water storage methods in the three RAF neighbourhoods of N'Djaména (1997)

Receptacles	Number	%
Jar	158	75,6
Various	22	10,5
Vat	13	6,2
Jerry-can	5	2,4
Basin	2	1
Buckets	2	1
Other	7	3,3
Total	209	100

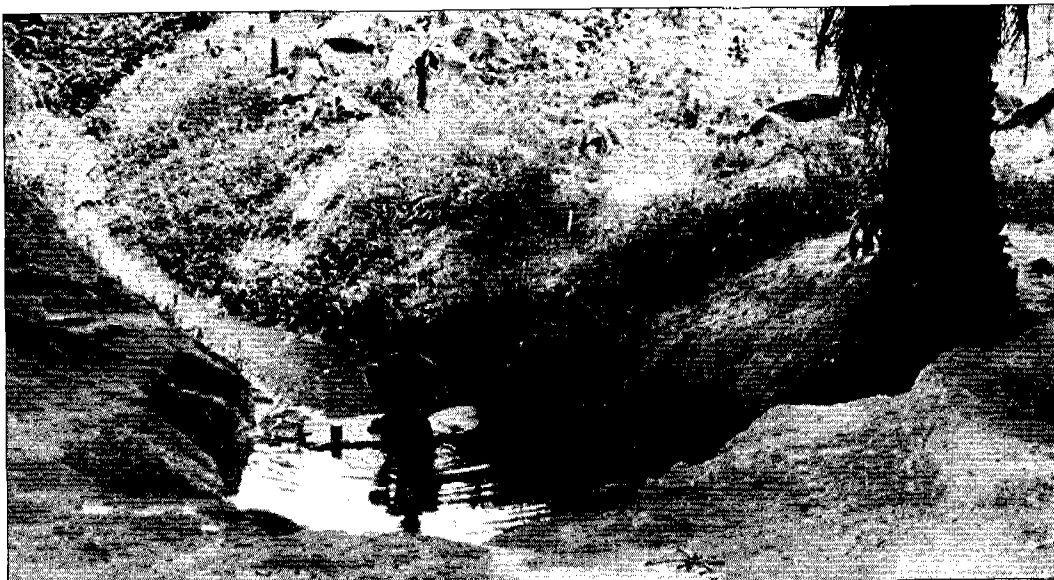
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ENSP

Water management and protecting the resource

RA
8

A background marked by the withdrawal of the public authorities and the emergence of various non-government actors in drinking water supply fields...

In the peri-urban areas of Cameroon's major cities, as well as in its small urban centres, only 60% of the population are served by mains (network) drinking water distribution. 40% of households have no direct access to mains water. They have to obtain their drinking water by "making do" using other ways and means.

Although the public authorities have taken fairly extensive steps to supply drinking water in rural areas, the same cannot be said of urban areas which do not benefit from a mains network. In practice, no action is being taken to develop alternative methods for providing drinking water supplies in urban areas: the attitude of the fragmented bodies of the Ministry of Mines, of Water and of Energy together with the municipalities is to tolerate the practices which have developed to date at the initiative of the population groups and the various non-government actors active in the field, but without getting involved in them.

Research shows, however, that people are organising themselves and seeking appropriate structures to find solutions – of varying degrees of usefulness – to their drinking water supply problems.

Apart from a few isolated networks built here and there, or paying standposts, generally the inhabitants and other non-government actors introduce village hydraulic systems into urban areas by upgrading a large number of wells and springs. However, both municipalities and the technical departments of the Ministry of Water take it as read that in urban areas wells and springs are bound to produce water of very poor bacteriological quality, because of the high housing density and the presence of many potential sources of pollution. The scale of this problem today is such that it requires much more careful attention before deciding on what position to adopt when considering upgrading a well or a spring in an urban area. Technical solutions do exist, but they will only achieve the results expected if the intentions of the actors involved in implementing them are thoroughly understood by all.

On average, 86% of households use individual sanitation systems (soakaway pits or septic tanks with no bacterial floc), which makes it important to protect water resources in peri-urban areas and small centres.

Focuses of research regarded as relevant by both researchers and field actors...

The two main areas of research we pursued were as follows: "Shared management systems

for drinking water services and the participation of the inhabitants” and “The impacts of drinking water supply conditions: protecting water resources”. Analysing the context enabled us to formulate questions which were validated by our partners in the field.

These questions were as follows:

- How were the bodies set up and/or steered by our assistance-projects persuaded to take an interest in them? How are they organised and on what bases?
- How do these bodies function, what are the difficulties they face and how do they overcome these?
- Under what circumstances are the experiments we consider to have been successful, replicable?
- What practical measures can be taken to protect water resources in peri-urban areas and small centres?
- How can protecting water resources be taken into account when setting up drinking water supply projects in the context of our study?

A rich and varied research field...

To answer the research questions we formulated, the team focused on assistance operations taking place in four localities: the peri-urban areas of the 4th *arrondissement*¹ of the city of Yaoundé (the capital of Cameroon with a population of approximately 1.2 million), two secondary towns, Bafang (37,000 inhabitants) and Bafia (38,000 inhabitants) and projects being conducted by the Otéle diocese as part of their well-digging programme, particularly in rural areas, but also in a few cases in urban areas. The research area was selected because of the wide range of drinking water supply projects, i.e. the range of actors involved, of sources and methods of funding, of organisations set up and introduced to ensure that built structures were sustainable, of techniques used to make drinking water available to the populations (wells, springs, paying standposts, mini mains water networks).

Research results which call on the public authorities...

1. Not all upgraded wells and springs in urban areas produce water of poor bacteriological quality. In this respect, there is a need to differentiate between good and bad wells and springs and to take measures to protect those producing good quality water.

¹ Administrative area.

2. When upgrading a water collection point, analysing the quality of the water is just as important as the civil engineering aspect.

3. The right of access to drinking water which people demand is also the right to pay a fair price for water.

4. Actions taken by the population complement those of network concessionaries and should be seen as such by the public authorities.

5. The public authorities should have a clearer policy on alternative drinking water supply systems and encourage the fragmented State departments to be more active in the field, working in conjunction with people's practices; this means encouraging good practices and combating poor practices. The low level of coverage of urban areas by conventional mains networks, the growth of urban poverty, with the corollary of poor rates of access to drinking water, clearly show that current practices are going to spread further (see map).

Replicability indicators for positive actions...

1. Community management works less well in urban areas than in rural areas. Those projects which have achieved a certain degree of success take place in peri-urban areas, and generate a minimum level of income enabling maintenance costs to be covered.

2. The fact that local actors are unable to find out about the quality of the water they are extracting from the water collection points they have upgraded themselves acts as a brake on pursuing the debate at local level. In the case of projects which have been fairly successful, the beneficiaries want to know about the quality of their water as well as any measures they may need to take to improve it.

3. The projects which work best are those in which there has been a fairly high degree of participation by the population (60 to 100%) and for which there is a monitoring committee and a methodical social education effort. In such cases, there is a fairly rich background of association-type organisations and activities (meetings, tontines, etc.). Often in these cases, women, men and young people each consider a given problem independently and then pool their ideas *when the time is ripe*.

4. Church groups or church-assisted groups seem fairly effective, but virtually all their funding is external and what they build may be robust, but is also very expensive. However, people do follow trends launched by the churches and take on the tasks they are responsible for.

5. Actions taken unilaterally by the institutional sector, taking minimal account of the population, either in selecting the type of structure required or in the management and location of water collection points, give poor results as far as their sustainability is concerned.

6. In addition to having a credible management committee, it is absolutely vital to take concrete measures within the committee to prevent funds being misappropriated. Measures such as opening a bank account requiring two signatures, limiting the number of officers and the length of their mandate, and keeping project accounting records has given good results.

7. Funding is not the sole key to the sustainability of a drinking water supply project. Clumsily introduced funding, involving too many actors who are strangers in the field, trampling on the dignity of the inhabitants living there can end up strangling local initiatives and in doing so hampering genuine development for an indefinite length of time.

Protective measures to be taken into account when designing drinking water supply projects. Changing certain sanitation practices to preserve the quality of water tables...

Protective measures to be taken relate to housing (and notably to the way in which the plot of land is occupied in the case of a private structure), to the location of water collection points in relation to various sources of pollution and to wastewater sanitation practices.

◆ Housing

The way in which the plot of land is occupied is a key factor in protecting water resources: in plots in the areas under study, there is generally both a well and a wet pit latrine; contamination occurs faster particularly when the plots are small in size; there is a case for introducing local monitoring of sanitation methods in plots and forbidding the building of wells on small plots.

◆ The location of built structures

- Check that wells and springs are at least 20 metres from potential sources of pollution, regardless of whether these are latrines, rubbish dumps, or cesspits.
- Protect installations from water run-off (rainwater, leaching, etc.).
- Prevent animals from being able to reach water collection points.

◆ Household practices

- Do not throw wastewater into toilet pits; this accelerates the speed of transmission of pathogenic germs to water tables.
- Wherever possible, use dry pit latrines rather than those which reach the water table.

Further research is needed... through:

1. Closer partnerships in drinking water supply systems initiatives between researchers and others active in the sub-region.
2. Continued experimentation, starting out from what already exists in the field:
 - transmission capacity tests using tracers *in situ*; this would require taking precautions to avoid upsetting the susceptibilities of the population groups and obtaining their agreement to "isolate" the installations being monitored for the duration of the experiment;
 - identifying projects in which upgrading activities are planned; taking samples before and after the upgrading, having first worked on the design of the built structures and the protective measures envisaged.
3. Validating the protection perimeters which we defined in our research.
4. Developing a geographic information system on a small urban centre which could serve as an observatory on the subject in question.
5. Studying the particular problems of protecting water resources at high risk from sites such as rubbish dumps, areas of high industrial and polluting activity, etc. ■

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- Thomas Adeline and Philippe Amirault (AFVP)

Country

Cameroon

Research focuses

2.1, 2.2, 2.3, 3.3

Contexts

peri-urban areas and small centres

Duration

18 months

(16.10.96 - 15.4.98)

Cost

215,000 FRF



Dakar, Senegal (Cédric Estienne)

HYDROCONSEIL

Private water service operators in the small centres and informal areas of large metropolises

Summary

Large concessionary companies find it difficult to provide water services in small centres and the informal areas of large cities, since their structure and their marketing policy are poorly suited to these marginal or not very profitable areas. And yet, these areas shelter a large and fast-growing proportion of the population of the countries of the South, and without a "modern" water service, an alternative water service is obviously being provided by private operators generally belonging to the informal sector.

HydroConseil has conducted studies on the latter in five countries. These reveal their great dynamism, their marketing skills and their overwhelming economic significance in the sector, in terms of jobs, of turnover and of the number of families they serve. Any water supply programme must include these private operators, all too long ignored because project approaches, borrowed from water service operations in the countries of the North, find it difficult to take them into account.

Key words: Private operator - Informal - Drinking water - Water services - Small centre - Informal neighbourhood

Why conduct research on private operators?

Our research programme related to the poorly defined (in terms of land plots), informal or peripheral areas of three capital cities (Port-au-Prince, Haiti; Dakar, Senegal; and Nouakchott, Mauritania) and of two large cities (Kayes, Mali; and Bobo Dioulasso, Burkina Faso). It also considered the secondary centres of four countries (Mali, Senegal, Mauritania and Burkina Faso). We were able to bring together and exploit the experience of eight organisations (NGOs and consultancies) involved in water supply programmes in these countries, including HydroConseil, AFVP, GRDR, Gret, Faq, Epureh, Ifan, and Tenmiya.

The number and the range of operators contacted during field surveys provided *post hoc* confirmation of the initial hypothesis of our research activity, i.e. that a large proportion of water services (and virtually all sanitation services) is being provided by private operators (mostly in the informal sector), even though these operators had been until now "invisible" and had been the object of only very rare studies.

		Niangologo	Kayes	Bobo Dioulasso	Dakar	Port-au-Prince
Population		12,000	55,000	450,000	2,000,000	2,000,000
Country		Burkina Faso	Mali	Burkina Faso	Senegal	Haiti
Water attribution (in litres per day and per person) and volumes distributed						
Average attribution	l/day/inhab.	11.1	28.1	24.5	-	55.0
Volume distributed	m ³ /day	133	1,544	11,036	75,400	110,000
Domestic connection proportion	% volume	37 %	64 %	74 %	86 %	24 %
Standposts proportion	% volume	63 %	36 %	26 %	14 %	1 %
Annual turnover						
T/O public enterprises	FF	138,600	469,500	15,170,000	65,540,000	11,000,000
Proportion of total T/O	%	32 %	31 %	67 %	79 %	16 %
Standpost T/O	FF	76,420	450,700	2,573,733	16,550,000	1,400,000
Water carrier T/O	FF	216,000	587,200	4,800,000	918,600	3,900,000
Cistern manager T/O	FF	0	0	0	0	30,000,000
Lorry T/O	FF	0	0	0	0	18,800,000
Private boreholes T/O	FF	0	0	0	0	4,000,000
Proportion of total T/O	%	68 %	69 %	33 %	21 %	84 %

An original approach: obtaining an overall picture of "micro" and "macro" operators

Private operators' activities were addressed, wherever possible, on two levels: a macro-economic level (to assess the significance of these actors in the drinking water sector on the scale of a whole city) and a micro-economic level (to analyse each enterprise's own dynamics). The original feature of our approach lay in bringing together the data obtained from these two analyses, and combining them to achieve a consistent whole.

Private operators are of major economic significance

By analysing the turnover of operators in five cities (see table above), we showed that the average budget spent on drinking water ranged from 4 to 9 US \$ per person per year, i.e. 2 to 3% of the GNP per inhabitant in these countries. Small private operators (water carriers, cart drivers, standpost managers, lorry drivers, water vendors selling from cisterns and boreholes, etc.) represent between 21% and 84%

of the added value of the production and distribution chain, despite most of them being in the informal sector. No serious economic analysis of water services can therefore afford to turn a blind eye to these private operators.

The proportion accounted for by private operators (in terms of volume distributed and added value) is generally greater in small centres than in large cities. Port-au-Prince is the exception to the rule here, because of the complete atrophy of the public sector.

Distributing water in small quantities is also an activity which generates a great many jobs. There are far more jobs amongst private water distribution operators (3 to 15 times as many!) than within concessionary companies (public or private). Staff employed represent 2 to 4 per thousand of the population of the cities concerned, i.e. 1 to 3% of regular jobs.

A service complementary to that of public enterprises

The service provided by private operators complements that of concessionary companies, which fail to meet the demand from low-income families adequately. Private operators are on the increase precisely in the "interstices" of the public service, i.e. they fill the gaps in the services provided by national enterprises (public or private), notably by meeting fragmented demand for very small quantities in underprivileged or recently installed areas.

In addition, it is clear that the proportion of the water market and of jobs occupied by private operators is in inverse proportion to the performances of the national water service concessionary company. An enterprise such as SDE in Dakar, now private and free from the burden of funding infrastructure (which is borne by Sonnes), provides a high quality service in practically all the areas of the city. The informal sector operators are therefore active only on the edges of SDE's operations, supplying water to building sites or doorto-door delivery. In this case, the turnover of the private sector in water distribution accounts for only 20% of the total. By contrast, an enterprise such as Camep, in Port-au-Prince,

Countries

Burkina Faso, Mali,
Mauritania, Senegal, Haiti

Research focus

1.3

Contexts

peri-urban areas and
small centres

Duration 11 months
(28.11.96 -30.10.97)

Cost

349,800 FRF

serves only half of the city and 13% of its families. In addition, the network has enough pressure for only a few hours per week in each area. Under these circumstances, private operators play a much greater part and their activities represent 80% of the turnover of the sector.

Dynamic operators, occupying all the segments left vacant by others

In certain situations where the service provided by the national operator is particularly poor, private operators may occupy all the segments of the "drinking water" production and distribution chain, forming a chain parallel to that of the national operator. The best example of this is Port-au-Prince, where the gradual deterioration of the metropolitan public service has led to the rise of private water producers (boreholes on the periphery of the city), of private water transporters (lorries delivering water to areas poorly served – if at all – by the national operator), and finally of private water vendors.

The transition to the formal sector does not necessarily lead to improved quality of service

The idea is sometimes advanced that to improve the service provided by these private operators (better quality, more stable prices, etc.), they must be made to join the formal sector, making it easier to structure and train them. Not one of the findings of our research confirmed this hypothesis. "Formalisation" is a major constraint for operators whose survival depends first and foremost on being able to adapt to an irregular and minutely fragmented market.

Acquiring a formal status with its baggage of constraints therefore leads most often to increased costs (additional charges) and a deterioration in the service (less adaptability to demand). The best example of this is when it is forbidden to resell water within a neighbourhood, which most frequently results in putting the "formal" standpost in a monopoly situation, without, however, providing any additional guarantees on the quality of the service.

Knowing how to choose between a real and an ideal operator

In whichever country, the most marked feature is the dynamism of these operators and the range of the strategies they adopt. In drinking water supply projects, there is often a tendency to turn a blind eye to existing operators (somewhat has-

tily declared to be "not competent") and to promote an ideal, but fictional operator, supposed to serve as a model for the production and distribution chain as a whole. Generally speaking, this "made to measure" operator fails to survive the project which spawned it.

Do we need to set up projects to "promote" private operators?

Despite the scale of importance of these private operators, "project" type dynamics find it difficult to provide them with effective support:

- what projects can offer does not match the needs which the enterprises feel they have;
- the white collar workers who design and steer projects are national or international civil servants who find it difficult to put themselves in entrepreneurs' shoes;
- the rigidity of the decision-making criteria of "project" structures encourages enterprises to provisionally adopt "project" vocabulary and its assumptions, without these representing any genuine internal shift on the part of the enterprise.

Requests for help expressed by the alternative operators we met therefore related not so much to financial aid (subsidies or loans) but rather to better access to public markets (calls for tender suited to entrepreneurial realities, flexible forms of contract, regular disbursements, etc.) and better legal security against abuses on the part of the central administration or certain competitors (sometimes artificially placed in monopoly situations by the very projects themselves). ■

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SHADYC

An anthropological approach to actors' strategies and to local power tactics surrounding water services in Bandiagara, Koro and Mopti

RA
10

As initially defined, the overall objective of our research consisted in "furthering our knowledge and understanding of the fundamental aspects of water management" through an "Anthropological analysis of the institutional and inter-relational issues raised by water distribution in three small Malian centres".

The issue

The hypothesis underlying this research focus was that in these Sudano-Sahelian regions, over and above technical and economic considerations, drinking water was a strategic resource for urban populations and that as a result controlling its distribution could become a major factor in local power stakes.

We therefore attempted to investigate local power tactics and the strategies of the actors closely or remotely involved in drinking water services (in Bandiagara and in Koro) and in sanitation services (in Mopti, where for geographic reasons specific to this town, sanitation is locally more significant a challenge than piped water). In the three small urban centres studied, we found an urban population the vast majority of whom respect traditions which are rural in origin, and have very low monetary income, whilst at the

same time experiencing a weakening of community solidarity links. This particular situation poses a problem of what is the appropriate way to behave – which we can term "neo-traditional" – with regard to water supply and sanitation practices, since these "city-dwellers" continue to manage the links between their domestic space (the "courtyard") and the outside (the passageway, the road or the path) in the light of the social codes of a peasant culture.

Scientific methodology: anthropological approach

The specific benefits of the anthropological method were, firstly, to contribute to the objective of furthering our knowledge and understanding using a contextualised analysis of the problems and secondly to be particularly well-suited to the qualitative study of social phenomena. Our method used Rapid anthropological survey¹ techniques which we had already tested and validated in the field (cf. bibliography) and which consist in observing in the field actual social practices and in analysing the ideas developed

¹ *Enquête anthropologique rapide (EAR)* in the original French.

by local strategic actors in response to these very practices. The anthropological survey uses the following procedures:

- interviews with the various local actors, most often in their own language;
- direct observation of their actual practices (descriptions *in situ*);
- indirect observation of strategic activities (censuses, narratives, counting).

In addition, as the researchers involved already had a long experience of research in the proposed areas, Research activity n° 10 could benefit from the knowledge they had acquired previously which led us to expect to be able to make optimal use of our knowledge and to save time in the duration of the survey.

Results obtained

◆ *Research focus 1 of the final report on Water services in Bandiagara and in Koro: a description*

Our surveys to a large extent provided an answer to the question of the “enduring and negotiated co-existence of multiple systems in the same urban area (4.2)”. Initially, we therefore proceeded to describe, and then to analyse the ways in which the various systems for supplying water on common land co-existed. This enabled us to observe that adapting to the context led to using practices reflecting forms of knowledge, social rules and symbolic ways of thinking which make complete sense of the way in which users choose to use one rather than another of the sources of water (ponds, lakes, “taps”) available. We were also able to identify local factors enabling us to record competing and complementary approaches working alongside these (location within the urban space, the taste of water, seasonal factors, domestic uses of water, etc.).

◆ *Research focus 2 of the final report on Domestic uses of water: social practices and cultural concepts*

We then attempted to pinpoint indicators of shifting or breaking away from the cultural concepts and actual practices to be found in urban contexts and those which still prevail in rural areas. Our investigation into the area of “religious connotations and cultural representations of water” showed the simultaneous existence of a wide range of concepts reflecting different cultures at micro-local levels.

“Water” is the object of various kinds of symbolic representations reflecting both different

deep historical roots and differing religious and cultural concepts. By contrast, such local cultural concepts in no way form an obstacle to the development of drinking water services.

◆ *Research focus 3 of the final report on Local power tactics surrounding water services in Bandiagara, Koro and Mopti*

This third pole of research, which was more precisely aimed at future prospects for governance by local authorities in the context of administrative decentralisation, consisted in investigating potential conditions for a form of “mutual benefit” for a common water and sanitation service. This issue of water and sanitation services being seen as a “communal public service” in the communal political space at Bandiagara and Mopti yielded the most remarkable and the richest results of our study. Whether through controlling the drinking water supply system of the towns of Bandiagara and of Koro, or through religious dominance of the sacred wells east of Koro, we were able to show that controlling water had always conferred power on the controller. In 1997, this power was invested in networks of nepotism or favouritism which in practice were reflected in various forms of petty corruption (Koro) or more serious corruption (Mopti, Bandiagara).

The survey also showed that there is permanent confusion between the notion of “common interest”, as formulated by the leading members of the community, descended from the founding families of the town (who, as a result, consider themselves to be its “owners”) and that of “general interest” (there are significant gaps between the meaning intended by regulatory texts and prevailing popular concepts). Indeed, this “common interest” is in fact particular to the founding families and excludes the interests of citizens of “non-native” origin. The “common” interest of the native citizens has therefore nothing to do in any shape or form with the “general interest” which by definition is public i.e. “common to all” within the administrative area of the *commune*.

This confusion linked to the deliberate misinterpretation of notions of general interest and of public service regularly “trotted out” by local leading members of the community leads to overall uncertainty and an increased sense of insecurity on the part of the users. Above all it perpetuates a widespread practice of political favouritism which makes it difficult for a forum for democratic decision-making and citizens’ information to emerge against a background of new forms

of local governance. In sum, our findings were as follows:

- the virtual non-existence of the notion of a “public forum”, much less a “public service”;
- local authorities operating entirely on favouritism or nepotism;
- the widespread “mining” approach to using resources;
- a proliferation of norms which maintains confusion from an organisational and management point of view and provides a climate in which petty corruption can thrive;
- the vital importance of local negotiation procedures and informal arrangements.

In the light of these results, we have made the following recommendations to funders:

- that the capacities of local public offices to provide norms for, to regulate and to monitor water and sanitation services should be strengthened, in order to lower levels of uncertainty surrounding norms (what is needed is not “less State” but “better State”);
- that technical assistance on the part of the French communes involved in the programme of decentralised co-operation should be intensified in order to improve their technical skills;
- that the emergence of local water and sanitation management organisations which are horizontal, contractual and non-profit should be encouraged.

Our analysis of “the institutional and inter-relational issues raised by water distribution” has allowed us to update and complement our factual knowledge of the specific problems of management and decision-making, to highlight factors likely to encourage or to hamper public appropriation and responsible joint management of the technical solutions in the case of water and sanitation services within the renewed framework of future local governance bodies, and to take stock of the challenges to come. ■

Country

Bandiagara, Koro
and Mopti in Mali

Research focuses

4.1, 4.2, 4.3

Contexts

small and secondary
centres

Duration 15 months
(24.12.96 -23.03.98)

Cost
150,000 FRF

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Pilot activities



Neighbourhood initiative to be assisted in Yaoundé (Thomas, Adeline, AFVP)

PA
1

Rehabilitating popular water collection points in a large metropolis: the case of Yaoundé

Modern water services reaching less than half the population of Yaoundé

The public mains water network (SNEC¹) supplies water to only part of the population of the city of Yaoundé (1 million inhabitants). In October 1997, it had 40,162 subscribers, including 34,735 individuals and 277 paying standposts. In 1992, the figures were substantially unchanged, apart from the number of standposts which had multiplied by eight in five years. The present proportion of mains network supply remains low. National statistics moreover indicate a deterioration, since the proportion of the population served has fallen from 79% in 1976 to 64% in 1994. Given the low number of subscribers, it is probably even less than 50%.

The large number of traditional water collection points

These figures confirm that a large proportion of the population obtains its water supplies, at least in part, from traditional water collection points: rainwater, wells and springs. The latter are particularly numerous in Yaoundé, a feature differentiating it from most of West Africa's major cities.

As part of this pilot activity, AFVP and the ENSP's Laboratory for environment and water sciences carried out a study in approximately fifteen of the peri-urban areas of the 4th *arrondissement*² of Yaoundé. 330 public water collection points, a not insignificant number, were identified, some of them connected to the network, some not. 80% of these are traditional water collection points: 95 springs and 167 wells, compared with 68 standposts and individual connections whose owners resell water to their neighbours. Some of these traditional water collection points have been upgraded, sometimes summarily, thanks to individual or joint initiatives and generally without external financial support. Approximately 20% of traditional water collection points have been upgraded in this way: 26 springs and 25 wells.

Traditional water collection points largely ignored by urban policies

This upgrading activity reflects the advantages to the population of Yaoundé of these traditional water collection points. They are, however, largely ignored by urban planning policies, and in Yaoundé it is taboo to recognise their exist-

¹ *Société nationale des eaux du Cameroun*: the piped water networks concessionaire in Cameroon.

² Administrative area.

tence. The issues raised by taking them into account are not, however, solely dogmatic or related to preserving the concessionaries' monopoly. They relate to the quality of the water produced and to public health, urban planning, inhabitants' involvement in decisions, taking their priorities into account, their economic and time constraints, etc.

Are these differing supply systems complementary or irreconcilable?

Given the general tendency to ignore the use of these traditional water points and even sometimes to seek to outlaw them as contrary to the public service, our pilot activity explored ways in which they could be recognised and improved, arguing that they complemented the modern service.

Our pilot project was conducted in 15 neighbourhoods of Yaoundé 4 by AFVP and the Centre for social and health education (CASS), a Cameroon NGO, joined by ENSP researchers.

Different kinds of water for differing uses

A survey carried out amongst 927 households in Yaoundé 4 showed that 40% of these regularly used springs for drinking water. By contrast, only 5% use wells, which they – quite correctly – consider to provide less good quality water.

A good many households use only a few dozen litres of water from the SNEC mains network for drinking. Traditional water points provide water for all other domestic use, including for half of SNEC's subscribers which use them at least occasionally.

This "plebeian" use of springs and wells can be explained by a number of factors: inadequate mains network cover in certain areas, people's doubts about the quality of the SNEC service (the coloration of the water distributed, its bacteriological quality, frequent network cuts and excessive repair delays, etc.). The virtually free service provided by traditional water points is apparently the clinching argument.

The water quality cannot justify outlawing traditional water collection points

A campaign to analyse the bacteriological quality of the water carried out with ENSP in 80 water collection points showed that the quality of the water varies, but that this does not justify rejecting them. 56% of the samples taken from springs were of fairly good to very

good quality. By contrast, the quality of the water drawn from wells was confirmed as average to poor (for 80% of the samples). Finally, for comparative purposes, water from the public network and from the homes of individuals with a private connection was also analysed and indicated good quality water in nearly 80% of cases. These results are very much in line with opinions surveyed amongst the population, who prefer to use mains network water or spring water rather than well water for drinking.

In this urban context, however, the quality of spring water is highly vulnerable as a result of the existence of latrines, rubbish dumps, rainwater runoff, etc. Introducing protective boundaries, ensuring latrines are located at a certain distance and forbidding or restricting new buildings in the immediate vicinity are amongst the first category of measures to be taken. One should not, however, underestimate the difficulty of achieving this, which requires local negotiation with those living close by and using the water collection points, public authority arbitration, etc.

Considering treatment of water (by chlorination for example) would seem to be of greater benefit and more promising. Users, who occasionally pour a little bleach into wells, seem to be fully aware of the health risks. The increasing monetisation of the urban economy and relatively easy access to treatment products make it realistic to consider chlorination feasible. This was not, however, tested, for two reasons: firstly, because of the very short time scale of this pilot activity, and secondly because this was not justifiable given the fairly encouraging results of the first bacteriological analyses. Such tests could form part of a second phase of the programme.

Improving the quality of the service provided by these traditional water collection points

As part of the pilot activity, test-structures were built to improve the quality of the service provided by springs (with funding from the Canadian Embassy and the French mission for co-operation and cultural activity). These included ways of extracting spring water and secondary structures requested by the users (steps, scrubbing boards, etc.).

Our pilot activity promoted simple and reliable technical models amongst neighbourhood committees and small and medium-sized enterprises. This should enable users able to invest a few thousand French francs in upgrading their spring – as they already do – to be sure of a high quality product: 3,000 to 4,000 FRF for a simpli-

Location

4th arrondissement
of Yaoundé, Cameroon

Research focuses

3.1, 4.2

Context

peri-urban areas

Duration

2 years
(21.5.96 - 20.5.98)

Cost

268,000 FRF

fied system of extraction, 10,000 to 15,000 FRF for a more comprehensive system of extraction, including steps and other measures making them easier to use commonly found in Yaoundé. In addition, the springs to be rehabilitated were selected using a list of criteria capable of being easily appropriated by local decision-makers: using maps showing the piped network to identify poorly served areas, the natural qualities of the environment, how much the spring is used, whether upgrading has already started, etc.

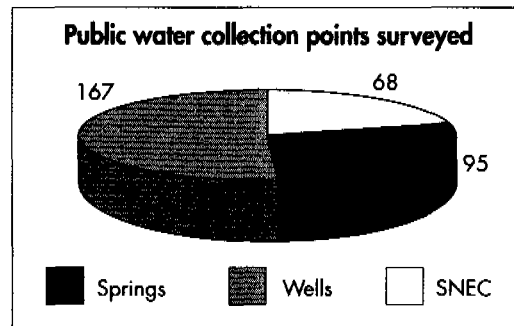
Mobilised neighbourhood associations

We chose to base our action on local contracting by neighbourhood associations. This was greatly facilitated by the fact that water initiatives have a highly mobilising effect and by the experience of CASS in this field. The respective commitments and responsibilities of the committee and of the pilot activity were clearly set out in a contract: the funding contribution of the association (10 to 15%), free manual labour, execution of technical studies, monitoring site work, organising consultation with local enterprises, etc. It is important to note that these committees have barely emerged from a project context and approach. Their present transition to a position of managing a service needs to be evaluated in a few months' time: for example, has there been any follow-up to the training provided in disinfecting a water collection point using chlorine?

How can the local dynamics of various institutions be validated and taken into account?

Modern versus traditional water collection points? Adopting pragmatic policies on "public water services" which do not consider the network to be exclusively the sole solution is a highly sensitive issue. Mobilising the various institutions is therefore an important objective of the pilot activity. Some progress was made in this respect, but much remains to be done.

At the outset of the pilot activity, SNEC, the public network concessionary, took up a neutral position, countering any idea of taking action to improve traditional water collection points with its own exclusive role as manager of State provided installations. Thanks to the dialogue organised in the course of the pilot activity, they shifted from their original position. Clearly it is not SNEC's role, nor in its interest, to promote traditional water collection points, but it is accepted that "competition" from these is inevitable without being genuinely harmful. The population,



after all, is clearly not prepared to devote a much larger proportion of its income to buying water, while technically, SNEC would find it difficult to claim to be in a position to serve 100% of the population in the very short term.

Within the Ministry of Mines, Energy and Water, although some can see the potential in helping users to improve the quality of water services, these water collection points, and more broadly the peri-urban areas, remain in a vast institutional vacuum: corresponding neither to urban hydraulics in the "proper" sense of the term, nor to rural hydraulics, they remain in effect ignored. The same is true of the municipality which was so to speak absent while the pilot activity was taking place, which may seem more surprising. After all, there is very clearly a demand from the population to which the pilot activity, as well as other non-government actors are attempting to respond. The risks for elected representatives is therefore minimal, and contacts must be maintained.

Our pilot activity provided a number of findings arguing in favour of taking traditional water collection points into account in urban and public service policies aimed at sections of the population which remain outside the reach of the network. ■

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Making community management of piped water systems in the secondary towns of the Senegal river valley more professional

PA
2

Transferring responsibility for water services in small centres to users and to their representatives

In Senegal water supplies using motorised piped systems are gradually becoming the norm in small centres (less than 200 motorised boreholes in 1983, 800 in use in 1996 and over 1,000 by the year 2000). Since the mid-80s, the State of Senegal has largely withdrawn from the management of these 800 networks, gradually transferring the financial costs of running them to users organised into elected management committees. The DEM (Ministry of Hydraulics) still, however, carries out most of the maintenance of the pumping equipment.

A study carried out in 1993-1995 by AFVP and ISF¹ had identified a number of factors militating against the management of drinking water supply systems by such committees, and in particular:

- the poor organisational skills and professionalism of management committees;
- their inadequate grasp of production, and of production costs and how to recover them;
- the limited skills of the tradesmen and enterprises providing maintenance services and their relative scarcity outside Dakar.

¹ « La gestion et la maintenance des petits réseaux d'AEP au Sénégal », Bruno Valfrey, AFVP-ISF, French Ministry of Co-operation, January 1996.

Making management committees more professional to improve water services

Our pilot activity was therefore launched in order to test, on a significant scale, a methodology for helping management committees to become more professional. It took place in two stages amongst 35 water management committees serving 2,000 to 17,000 inhabitants and between 1 and 15 villages, i.e. approximately half the networks and more than half the population of the *département*² of Matam.

The highly encouraging results led the DEM, AFVP and ISF, assisted by HydroConseil, to propose extending the activity as part of a programme of assistance to water management which would cover the whole of the Saint-Louis region (150 networks) from 1999 onwards.

The associate partners of the pilot activity³ chose a methodology based on:

- voluntary, unpaid management committees;
- providing an advisory, assistance and training service: visits to provide information and assistance in self-diagnosis of their situation; running training sessions for those responsible for

² Administrative area, corresponding broadly to a county in the United Kingdom.

³ Contracting body: DEM (Ministry of Hydraulics) and the Matam wells and boreholes Brigade. Contractor: AFVP. Associate partners: ISF and HydroConseil.

fifteen to twenty committees per session (three modules on financial management, community organisation and technical aspects);

- developing or adapting suitable management tools aimed at the management committees and the borehole managers;
- an entirely “soft” approach, i.e. with no “hard” investment for rehabilitating or strengthening the drinking water supply installations.

A programme of assistance to mobilise skills – no investment or rehabilitation

This final point was unquestionably a key to the pilot action's success. The management committees were particularly receptive to the “provision of assistance” of the pilot activity, although the programme was promising no subsidies for practical work. To varying degrees, they all committed themselves to a number of activities to improve the way they operated and managed the service.

This high level of mobilisation for a “soft” programme is all the more remarkable insofar as certain committees find themselves in charge of installations which are not functioning (as a result of deterioration and/or bad design). It had emerged from previous studies and programmes, and this was confirmed during our pilot activity, that there exists a genuine demand from users and their representatives for simple improvements in the management of the service. A programme of assistance can therefore succeed even if it does not provide subsidies for equipment. Such subsidies run contrary to the dynamics of local management of the service and subsidised rehabilitation of poorly managed structures seems almost like an encouragement for such practices.

Improving cost recovery: moving to a service-driven approach

Recovering all water services costs, at a level enabling service continuity including renewing equipment, is a major stumbling block, even though no-one now disputes the fact that water has to be paid for. As a result, in Senegal, all the actual operating costs of networks are covered by the users, as are a large proportion of servicing and maintenance work. In the Senegal river basin area, migrants have considerable savings and these are partly used for water services (especially major repairs, and network renewals and extensions).

Many committees, however, find themselves in a vicious circle in which the users refuse to pay

for a service which they find unsatisfactory. Initially, the elected representatives therefore undertook activities aimed at restoring the credibility of the committee (see below). This is particularly important given that it was quite clear during the pilot activity that the population are highly mobilised on these issues and that “difficult” decisions cannot be made unilaterally by a few elected representatives and leading figures.

Only after this could activities genuinely addressing cost recovery start. These included redefining the basis on which subscriptions were calculated, increasing the fixed charge rates, introducing sanctions against “bad payers”. Two committees now use a system of selling water by volume and two others expect to overcome the taboo surrounding this form of payment and have already bought meters.

The emergence of “professionals” within the committees

Within certain management committees, as the activity progressed a clear distinction emerged between their members: most of them retain a political role, representing the population and monitoring, whilst some of the other elected committee members or advisors involve themselves in the day-to-day management of the drinking water supply system and devote a good deal of their time to this. This is not yet delegated management (since they are not responsible for management) but their specific involvement and the new skills they bring are recognised and sometimes remunerated.

Improving servicing and maintenance services: with sufficient demand, supply will follow...

The results of the pilot activity reflect the fact that private sector operators adapt to the level of quality required by their “clients”, i.e. the committees. This is still low, and committees often opt for a cheap repair (or put it off) rather than quality and durability. Several activities started by committees do, however, suggest the increasing demand for the latter, and indicate that it is viable, e.g. first attempts at contracts with plumbers, looking for and repairing leaks, taking preventive maintenance into account, etc.

Nascent demand for assistance-advisory services

Spending on assistance-advisory services (audits, accounting, etc.) is even more sensitive. Such services are not reflected directly in the

quality of the service and their profitability is therefore not immediately apparent. They are neither required by legislation (DEM, the banks, etc.) nor by the users themselves. The pilot activity anticipated setting up its own advisor as a private operator within two years. This seems premature. His skills are, however, recognised throughout the *département* and he is beginning to receive requests for assistance from certain committees.

Towards a future federation?

At the outset, conditions were fairly unfavourable to a spirit of federation between borehole committees: the gradual appearance of the committees had failed to give them any sense of common identity and as no committee could genuinely boast of its efficient management, no one was keen to air their problems and run the risk of being discredited.

The pilot activity, which was perceived as a forum for advice and assistance, with no authority or obligation, not only broke down this reluctance to share information with others, but also, by bringing them together for the first time, positioned them as water management actors, distinct from users, private operators and DEM. Exchanges between committees occurred mainly on the subject of their internal by-laws, with no intervention from our advisor. Two villages were also put in touch with each other, one enabling the other to benefit from its experience of meter management.

There is still a long way to go as far as a federation is concerned, but the idea was launched several times by some of the committees, with the aim of achieving representation, and possibly co-operative services. This idea should return to the forefront once the need for individual recognition has been satisfied.

SOME FIGURES

Out of 35 boreholes, 17 quickly conformed to the new statutes (electing a master committee), but 4 remain handicapped by internal village politics. The transition is underway for the remaining 14 but not yet officially completed. It should be stressed that these user associations are amongst the first in Senegal to start this process of official recognition.

Drawing up their by-laws is a stage which takes much longer, but which 14 committees have already completed. For most of the others, it is mainly a case of putting them to the vote. Views on bank accounts were very divided at the outset (due to lack of confidence in the banks), but at least 12 committees have opened one (including 7 which have a high self-financing capacity). For the others, it is often a problem of convincing the population, or the small amounts of money involved do not justify using an account.

All the committees have management documents and one person trained in how to use them. Several committees, however, have a problem of literacy amongst their members, which restricts the use of documents.

The influence of the programme on the committee itself is more remarkable. In more than three quarters of the cases, the individuals attending training seminars subsequently played a greater role in the management of the borehole. In four cases, this even provided the opportunity for a genuine relaunch of the democratic process.

Some committees have also started to draw up contracts with the borehole operator and/or plumber.

tivated. The pilot project took place in close collaboration with the central services of the DEM and the Matam Brigade for wells and boreholes, and can unquestionably work alongside them during this transition. ■

Location

Matam département,
Senegal river region

Research focuses

1.3, 2.2, 2.3, 4.1, 4.3

Context

small centres

Duration

21 months
(29.5.96 - 28.2.98)

Cost

439,200 FRF

What is the role of the DEM?

Public authorities, starting with the DEM, have a key role to play in regulating and assisting operators. The reform of the management of motorised boreholes which the DEM has started places great emphasis on this.

For DEM staff, this is a genuine cultural revolution. Until now, they were recognised for their abilities to make the networks work, repair engines, renew pumps. Assisting committees, organising the sector, etc., means that they have to acquire new skills and be differently mo-

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Janique Etienne

**PA
3**

Introducing a franchised water distribution system in Gabú and in São Domingos (Burgeap)

The objective of this research was to “assist and monitor the gradual introduction of franchising into public water distribution services”, and to draw the lessons to be learnt from this experience, in order to examine to what extent it could be replicated for centres of similar size. Initially, we concentrated on the town of Gabú, where a first experience of franchising the network to a borehole company, Enafur, was being launched. The franchising contract had been signed, but the actual start-up of the operation depended on funding the rehabilitation of the drinking water supply system. This having been enormously delayed, we were obliged to find another site at the beginning of the pilot activity, São Domingos, the administrative centre of the sector, with 2,500 inhabitants equipped with a drinking water supply system, including 9 standposts and 12 individual connections.

From an operational point of view, our intention was to assist the franchisees. This assistance was provided through individual missions relating to various aspects: technical (organising the production and sale of water, monitoring leaks, etc.); financial (profit and loss accounts, keeping records, funding requests for the rehabilitation of the network); legal (negotiating and drafting the franchise contract); and educating the users. From

a research point of view, we wished to identify:

- the constraints militating against the correct operation of the franchise, in relation to the area of our study (a previously identified semi-urban centre);
- the factors contributing to the success of this form of management in São Domingos;

... in order to extract broader recommendations on conditions for introducing franchising in a semi-urban centre.

Background

Until recently in Guinea Bissau, drinking water supplies in semi-urban centres came under either the General Energy Department (DGE) or State committees (representing the government at local administrative centres).

Generally speaking, the operation of the existing networks reflected major management problems: water was distributed free and as a result there was no mechanism for ensuring the correct operation and maintenance of the equipment. This consequently led to a gradual loss of confidence amongst the users who reverted to traditional water collection points or to boreholes fitted with hand-operated pumps. As in most neighbouring countries, two forms of management were then

envisaged: user associations or delegating the drinking water supply to a private operator. A number of user associations were set up. Franchising São Domingos' drinking water supply network is the sole example of this type of management in a functioning network (it is also planned for the town of Gabú).

Methodology

Field assistance and monitoring activities took place in the following stages:

1. helping to get the system back into an operational state;
2. information and awareness-raising activities amongst the population groups;
3. organising production and distribution;
4. organising a study tour for the Director of Enafur.

Our findings were based on the following analyses:

- difficulties facing the franchisees, and attempting to identify the causes of these;
- their respective motivations and personalities;
- comparing the results obtained with other analyses underway in Guinea Bissau (various studies on Gabú, a feasibility study in the Bafata region involving 6 semi-urban centres, a CFD project in the Cacheu region involving 5 semi-urban centres, etc.).

Results

Management of São Domingos' drinking water supply network has been delegated to two businessmen who have already been involved in managing the electricity network for several years. A franchise contract, between the two franchisees and the State, was drawn up with the franchisees. The necessary links and arrangements between users, water vendors responsible for distribution and the franchisees are gradually being introduced.

◆ Main points of the experience

- mobilisation of local operators (on their own initiative);
- an alternative to the classic committee or user association management model.

Detailed impact of the activity

Our experience contributes some concrete factors to current debates on optimal management models in semi-urban centres which are not covered by national water distribution company networks.

Understanding the personalities of the franchisees, the limitations of their activities and the constraints militating against the correct operation of this management system, and comparing these factors with other studies relating to similar centres in Guinea Bissau has allowed us to make progress on two points.

◆ Defining a new category of operators

As local private operators, they can replace user associations in their role of commercial exploitation but they still share with the latter low levels of funding capacity – the problem of who is responsible for rehabilitating old networks – and the need to sub-contract maintenance to a specialised operator.

Compared to user associations, these local private operators have much more autonomy vis-à-vis the authority under which they operate (currently the DGRN) in their decision-making (technical and financial choices, selecting sub-contractors, etc.) In São Domingos, they are more motivated by the desire to establish their prominence notably to ensure future political power, than merely the financial profitability of the system.

◆ Highlighting the constraints militating against the correct operation of the system

These are essentially economic constraints, which reflect too wide a gap between individuals' levels of income and the investment required, and social constraints.

The latter are by far the most significant. In São Domingos, the legitimacy of the two businessmen has not been called into question, as they are leading members of the community who are respected by most of the users. In return, the franchisees take steps very gradually as far as their users are concerned (regarding tariffs, cost recovery methods, etc.) in order to retain their support. Regulation by the users works well in this instance.

By contrast, a feasibility study in the Bafata region has revealed great reluctance on the part of certain users to this form of management ("a private individual who is going to make money at the people's expense"). The personality of the operators is thus a key factor in the success of the system.

Strengths and weaknesses of the activity, difficulties encountered

◆ Weaknesses

Insufficient time to step back (the length of time the network has been operating) and draw

Location

Gabú and São Domingos,
Guinea Bissau

Research focuses

2.2, 2.3, 4.1

Context

secondary centres

Duration

20 months
(29.4.96 - 31.12.97)

Cost

290,769 FRF

conclusions on conditions required for operating a drinking water supply system using this form of management.

◆ **Strengths**

The dynamic links set up between the franchisees, the population and our team allowing good levels of exchange.

Recommendations

Franchising to local operators is one possible alternative to community or association type management.

In small centres, however, it can be achieved only under certain conditions:

- a contract between the franchisee and the State (in the absence of any elected municipal representation); the contract plays an important part in introducing the process, notably in clarifying the responsibilities and tasks of the franchisee;
- the existence of demand for a service in terms of both quantity and quality;
- recognition of the legitimacy of the private operators on the part of the users.

Future prospects

- Extending this form of management to other semi-urban centres.
- Structuring interventions of this kind in the light of the results obtained.
- Following up this activity, after one or two years of operation, would be extremely fruitful. ■

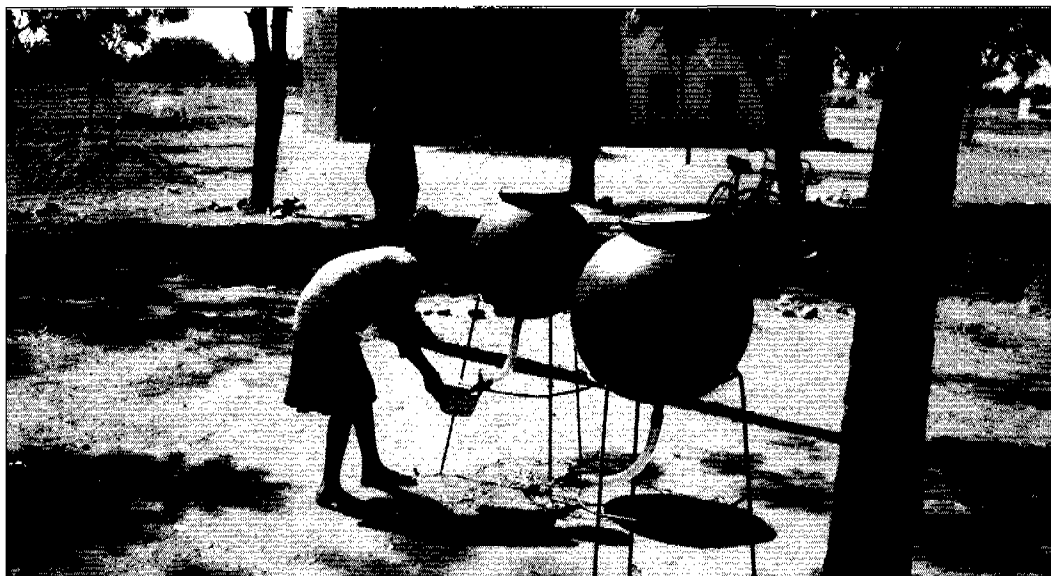
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Training neighbourhood youth committees to promote drinking water, hygiene and sanitation in peri-urban areas

Introduction

This pilot activity took place in the *arrondissement*¹ of Sig-Noghin (50,000 inhabitants) in Ouagadougou. With its high rate of unemployment, its extremely vulnerable socio-economic situation and its poor sanitation conditions, Sig-Noghin is handicapped in more ways than one. Since 1995, however, a development programme to improve the quality of life, the hygiene and the income of the population has been taking place in the parts of the *arrondissement* which are divided into formal plots. The objectives of this programme, delegated to the NGO East, were as follows: supplying and distributing drinking water, introducing services for collecting domestic refuse and wastewater, upgrading green spaces, building latrines, and awareness-raising on health issues among the population through associations and youth committee agents for health.

Youth committees for health were set up in response to families' wishes to involve children and adolescents in the neighbourhood development. Half-way through the project, a certain number of questions on how they work and their methods were raised:

- Are youth committees for health an effective way and a necessary intermediary to encourage awareness-raising on hygiene and to ensure close follow-up of populations?

- Can Information, Education and Communication (IEC) methods targeting the consumption of drinking water, individual and collective hygiene and sanitation in peri-urban areas be devised by youth committees for health?

- Can they become economically viable and integrated into institutional structures and local communities in the short or the medium term?

The pilot activity was intended to answer these questions.

Youth Committees for Health

◆ Socio-administrative structure

The initial idea was to create two types of youth committee for health, complementing each other. The first was intended for adolescents and adults who were not attending (or had not attended) school, who were already involved in local associations, and who were seeking professional training. The second was intended for children and adolescents attending school.

◆ Organisation

Youth committees for health are solidarity organisations which must find out about the needs and the expectations of the population with regard to health, hygiene and the environment. They act in concert with other relevant associations, administrative services and municipal services. Their objective is to achieve autonomy and for this they

¹ Administrative area.

need to be officially recognised. At a first step, youth committees for health needed to train themselves in health education methods. They had to devise new education techniques suited to the school children and the adults of their neighbourhoods. Very quickly, the “non school attendance” youth committees for health became a social service, mobilising and meeting demand from the population. Essentially, they were responsible for the following: advising and raising awareness amongst the public in matters of health, hygiene and the environment; taking part in preventive health activities; ensuring the cleanliness of the peri-urban areas of Sig-Noghin. Their members also received professional training. They needed to become capable of functioning independently in the medium term, by accumulating resources linked to their activities and donations. Costs incurred by the “school attendance” youth committees for health were to be covered by the schools' parent's associations.

Brakes to the project's implementation

The intended methodology changed in the light of the constraints and difficulties encountered:

- the administrative council of the “non school attendance” youth committees for health consisted at the outset entirely of adults, some of whom chose to ignore the idea of mutual social help;
- despite the Town Hall of Sig-Noghin being heavily involved, official recognition of the youth committees for health took a long time;
- many structures became involved in training the young, non school attendance agents, but without the help of the Health and social promotion centres (CSPS) despite their presence in the neighbourhood.

These successive problems nevertheless had two beneficial effects: firstly young people were invited to join the Administrative council of the non school attendance youth committees for health, and secondly closer links were established with women's associations, which are responsible for distributing water and collecting refuse in Sig-Noghin. Not all the areas divided into plots were able, however, to benefit from all of the activities initially planned, which were concentrated in the most underprivileged or most insalubrious areas.

Overview

The following factors are relevant to the three initial questions:

- ◆ ***Are youth committees for health an effective way and a necessary intermediary to encourage awareness-raising on hygiene and to en-***

sure close follow-up of the populations?

Youth committees for health have gradually earned the trust of local associations with which they conduct joint socio-economic and health activities. The latter consist essentially of women's associations, which have helped the younger people to spread their messages and helped the youth committees for health during discussion-debates held with the CSPC and at places where people traditionally meet (standposts, markets).

All agents, young and adult, and women's association members, received training and they are capable of raising awareness amongst the public and monitoring cleanliness in peri-urban areas. In a single year, five health education sessions have been organised on behalf of 4,000 inhabitants of Sig-Noghin, and this has led to a marked improvement in domestic hygiene.

Since the activities of the school attendance youth committees for health were started, there has been an improvement in the health environment in all Sig-Noghin's schools and the pupils respect cleanliness rules. The dynamism of the health youth committees has moreover been recognised by the Regional health department.

- ◆ ***Can Information, Education and Communication (IEC) methods targeting the consumption of drinking water, individual and collective hygiene and sanitation in peri-urban areas be devised by the youth committees for health?***

Classic health education methods are generally aimed at rural areas. For the Sig-Noghin project, it was decided to use the accelerated method of participatory research which allows the knowledge and know-how of local populations to be used whilst at the same time attempting to combine these with recent public health findings. Because of its complexity, however, it did not prove very satisfactory in a peri-urban area of 50,000 inhabitants.

It therefore seems necessary to design and validate new methods of education and communication, better suited to peri-urban areas, and which are satisfactory and acceptable to all. In the time allowed for the pilot activity, however (under 18 months), the methodology remained incomplete. The young agents therefore made use of tried and tested techniques, adapting them according to the circumstances and the nature of their audience.

- ◆ ***Can they become economically viable and integrated into institutional structures and local communities in the short or the medium term?***

Youth committees for health now have an official status recognised by the administration and the Town Hall. They are part of the district health

committee which is currently being set up and which aims to be a forum for discussion and dialogue between several partners: the Town Hall of Sig-Noghin, CSPS, clinics, public cleanliness associations and the youth committees for health. In the school environment, these youth committees make sure the premises and the environment are kept clean and they manage the first aid kits. 11,750 pupils have received this kind of health education session.

Youth committees for health have found the resources they need to ensure that they are capable of functioning independently, thanks to providing services, setting up commercial activities and manufacturing "drinking water reservoir" ("Poste d'Eau Potable" – PEP, see picture p. 135). Their partner women's organisations also promote the latter.

Recommendations

The setting up, organisation and success of a youth committee for health programme depends on the involvement of a number of bodies:

◆ *Institutions*

The various groups representing the population and institutions must be involved in organising the project; activity progress reports and results need to be transmitted to them throughout the duration of the programme. A list of resource organisations and persons should be made available to the project organisers. A key concern is making use of the experience which already exists.

It is vital for institutions to have confidence in youth committees for health, as this facilitates the phase of withdrawal of project support, at the end of the project. Particular care should be taken when forming the health youth committees' administrative council, which should notably involve the associations active in the neighbourhoods.

◆ *The population*

The success of a youth committee for health project will depend on understanding the demand from and the needs of the population and its involvement in socio-sanitary activities. A preliminary survey should be conducted by experienced people. At the end of the exercise this will enable the real impact of youth committee for health activities to be estimated at the level of the family, of the ambient environment, and of social life.

◆ *Associations*

Setting up youth committees for health requires strengthening the credibility of

neighbourhood associations, making them partners and providing a better guarantee of the viability of the project. Any change in the team, in the short term, damages the smooth operation of the youth committees for health and their efficiency. Young people are therefore asked to take part in social activities for at least two years. In return, programme organisers and associations must take care to involve them in local economic life.

Communication tools and strategies need to be worked out with the beneficiaries – the inhabitants of the neighbourhoods – under the guidance of professional experts. Trainers in health education need to be trained in peri-urban areas. Education techniques recommended for spreading messages are often too traditional and need to be improved. Youth committees for health and women's associations are the best neighbourhood health development actors, but the process should start in schools, where good habits and the best patterns of behaviour are formed.

In conclusion, youth committees for health provide a very important social link between generations and between different social groups. As development actors, recognised by the population and encouraged by institutions, they should however gain benefits from their mobilisation. In such a project it is highly recommended that young health agents who have not attended or are not attending school should receive professional training and that income generating activities linked to socio-sanitary development should be set up for them within the neighbourhoods. This is the price to be paid for ensuring the viability of youth committees for health in tropical peri-urban areas. ■

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- Central Town Hall of Ouagadougou
- Town Hall of the arrondissement of Sig-Noghin
- Primary education inspectorate
- Health district
- Desha, Crepa, Onea

Location

Sig-Noghin neighbourhood of Ouagadougou, Burkina Faso

Research focus

3.1

Context

peri-urban areas

Duration 18 months
(10.6.96 - 31.12.97)

Cost

430,324 FRF



Clothes washing at the standpost, Kayes Plateau (Mélanique Verdeil)

Standpost management: a comparative study and evaluation of current or completed projects in the towns of Kayes, Mopti and Ségou

Hypotheses and objectives

◆ *Hypotheses to be tested*

Using field experiments which are necessarily of a pragmatic and trial and error nature, in three different urban sites, is it possible to deduce a form of management usable in other areas of Mali, or even replicable in other contexts?

◆ *Initial objectives*

- Collecting data in the field: comparing the contexts, the strengths and weaknesses of each activity, and the levels of satisfaction of authorities and users.
- Through pilot activities, modelling an approach which will enable optimal use of the observed results.
- A written overview of these activities to be validated by the towns, and then transposed to a teaching document to be made available to the Association of the Mayors of Mali and to any intermediate organisation likely to find it useful.

◆ *Final objectives*

- Collecting data in the field: comparing the contexts, the strengths and weaknesses of each activity, and the levels of satisfaction of the authorities and the users.
- Exchanging information and experiences on legal and institutional tools for the management

of standposts and on the planning, co-ordination and funding of drinking water supplies throughout municipal areas.

Operational methodology

◆ *PHASE 1: comparative study of the management of standposts*

- Preparation of a questionnaire.
- Survey carried out by an organisation identified by the Network (Cergrene).
- Data processing by the organisation selected.
- Feed-back of the results to members of the network and to the programme.

◆ *PHASE 2: activities following the initial assessment*

- Setting up a forum for dialogue (Mopti).
- Identification and numbering of standposts (Kayes and Ségou).
- Elaboration of a plan for contracts (Kayes, Ségou and Mopti).
- Training and awareness raising (Mopti and Ségou).
- Seminar in Ségou bringing together operators from the three Malian towns.

Impacts of the activity

A seminar attended by all the actors involved in the three towns and representatives of the main

national institutions (DNHE, EDM and the Mali decentralisation mission) highlighted common points, the problems raised and the main recommendations which were reflected in the overall report of the pilot activity. A report specifically on the seminar was prepared by Madame Ta Thu Thuy.

◆ **With regard to piped water supplies**

Institutional

- The State should speed up the transfer of technical and financial skills to decentralised administrative bodies and to municipalities.
- The Ministry of Industry, Energy and Hydraulics should clarify the role of the DNHE in urban communes.
- The municipality should play its full part as coordinator of activities taking place within the area it covers. It therefore needs to train and to reorganise the departments involved.
- The poor level of dialogue between the various institutional actors: the municipality, EDM and DNHE, hinders the planning, implementation and monitoring of activities. Particular attention should be paid to such dialogue.
- The EDM should embark on their own decentralisation in order to be able to handle water problems locally.

Technical

Distribution networks or extended networks in Mali's secondary centres are often excessive in size, having been calculated on the basis of consumption of 50 litres per day per person, compared with actual consumption of between 15 and 25 litres per day per person. This technical aspect is bound to affect financial aspects in calculating the price of water.

With regard to standposts:

- there need to be two or three standard models of standposts. Setting norms for these would make it easier for local technical skills to emerge;
- similarly, preparing plans of the recommended models and organising a private manufacturing system in Mali;
- disseminating criteria for the installation of standposts. The DNHE currently does have relevant criteria, but these are not nationally distributed.

Financial

- Funding network and standpost extensions means mobilising national and foreign resources.

– The municipality must acquire an investment fund for financing this type of operation. It should appear in its principle budget. Taxes currently raised by municipalities on standposts should serve to fund the supply or the distribution of drinking water using standposts.

– Tariffs should reflect local resources and the users' economic circumstances.

– Managing a standpost requires analysing economic and financial viability taking into account the various parameters (income/expenditures) and including the number of people in charge of sharing out profits.

◆ **With regard to standpost management**

The pilot activity allowed them to work together on common themes and made it easier to summarise common factors.

The main factors identified are:

– malfunctioning in the planning, funding and co-ordination of piped drinking water and standpost projects due to:

- the large number of different actors with no clearly defined role;
- municipalities being short-circuited in current projects;
- problems in cataloguing financial resources at State and municipal level (taxes, loans, subsidies, etc.);
- EDM's not very explicit marketing and tariff policy;

– a lack of legal tools suited to tackling standpost problems:

- multiple forms of management of standposts;
- the lack of delegated management contract models;
- poor use of the documents already produced;
- the need to consider new forms of sanction for unprofitable standposts (EDM closing the standpost is not necessarily the correct solution).

The three parties taking part in this co-operation initiative would like to pursue this work, notably in the following ways:

- helping to draw up a municipal water policy;
- finalising management contracts to be validated by newly elected representatives;
- finalising the management and validation tools to be used by the newly elected representatives;
- identifying and selecting the standposts which perform the best;
- training the various actors (decentralised administrations, the municipality, and private or association managers);
- consolidating forums for dialogue.

Location

towns of Kayes, Mopti and Ségou in Mali

Research focuses

2.1, 2.2, 2.3, 4.3

Context

secondary towns

Duration 18 months

(10.6.96 - 9.12.97)

Cost

172,500 FRF

◆ **With regard to decentralised co-operation**

In Mali, our activity enabled a new impetus on a major theme to be launched in three Malian towns.

For the "City network", the pilot activity provided an opportunity to analyse the way in which the actors in the field and the members of Northern co-operation teams operated in a precise project. Despite encountering a certain number of problems linked to the political situation and to the various changes in staff and other figures in the field (Mayors, EDM operational heads, decentralised co-operation experts), for the Malian actors the result is globally positive.

Analysis and further issues

For the smoothrunning of this type of project, which combines French decentralised co-operation and local authorities of the South, it is important to have qualified technical interlocutors capable of surviving electoral deadlines and sometimes local political cleavages.

This is generally reflected in very poor mobilisation of the services involved, sometimes in total contradiction to demand. This demand came from elected representatives, but in some cases, the latter failed to give instructions to the technical departments. In other cases, this poor mobilisation was linked to the lack of qualified staff within these same services.

To encourage the emergence of qualified staff, the "City network" has embarked on a programme of assistance to decentralisation and the reorganisation of municipal services in the context of the FAC "decentralisation and urban development" of the Ministry of Co-operation.

Decentralised co-operation initiatives have no skills in managing standposts. But this subject allowed us to address more broadly the issue of water in urban areas. Each of the three decentralised co-operation parties played, to varying degrees, the role of mediator and interface between the municipality, the EDM and civil society extremely well.

Decentralised co-operation in general and the "City network" in particular have practical skills in France in planning, implementing, managing and maintaining networks. They can consequently give advice on certain points to the Malian municipalities, notably in defining a municipal policy on water and sanitation and in drawing up contracts for delegated management between the municipality and the concessionary or commercial manager. As a result,

French decentralised co-operation initiatives can play an operational role in the French development agency's future water/sanitation programmes in Africa. ■

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The "water pool", Bamenda (Isabelle de Boisjennu, Gret)



Introducing a local body for dialogue on water and sanitation in Bamenda

PA
6

Bamenda is a town with a population of approximately 200,000 and is the administrative capital of the north-west province which has a number of assets, notably financial. By contrast, it has severe water and sanitation problems. Roads are seriously and regularly damaged by rainwater, and frequently cut off by flooding. At the same time, peripheral popular areas suffer from an inadequate water supply. The inhabitants are keen to try and resolve these difficulties but they cannot resolve the problems as a whole by their efforts alone.

Hence the idea for local dialogue on water and sanitation, bringing together the various energy potentials and using individual efforts in a consistent manner in order to make this public service more efficient.

The scale of the challenge led us to suggest the possible renewal of local forms of management, particularly improving urban water and sanitation services, through more consistent implementation of activities and a more rational use of resources.

This field activity also targeted more cognitive objectives on "ways of going about things" as far as dialogue was concerned. Monitoring the various stages should enable us to formulate more precisely the correct path to follow to promote local dialogue on issues relating to the common good and to public service.

Stages in the activity

Our intervention methodology had originally planned for a succession of stages. An initial phase to assess the situation allowed us to put into perspective the overall problems experienced on a daily basis by the inhabitants so that the various protagonists involved could debate priorities for action. However, the actual implementation of the activities made us realise that an external assessment, in the event by IDF¹ and GRET, cannot play a decisive role in mobilising local people. This awareness had to come from amongst the actors themselves.

This led us to programme a turning point in the form of a "Water and sanitation forum". This event enabled the actors to appropriate their perception of the situation by expressing their own views about it, and this was followed by a commitment to jointly take on urban environment problems.

The main difficulty encountered in the course of the activity was a lack of information, insofar as there existed practically no set of up-to-date plans. We therefore had to obtain a mapping database thanks to the collaboration of the ENSP². On the other hand, we did enjoy a key

¹ Integrated Development Foundation, Gret's local partner.

² École nationale supérieure technique, Higher national polytechnic college.

advantage in developing this pilot activity i.e. our link to the Fourmi³ programme, which has funds available to the inhabitants, enabling their initiatives to become a reality. This enabled us to highlight the fact that an intention, in terms of a process of dialogue, requires a significant and sustainable financial investment.

Results

◆ *What is a "public asset"?*

As soon as one questions the background to local development, the notion of "public assets" springs up as its underlying basis. To shed more light on the operational issues underlying the pilot activity taking place in Bamenda, we had to go further into this question. There is still relatively little research into this area, and it addresses essentially environmental issues indicating a form of integrated appropriation. This contrasts with the over simplified public/private debate, although the latter in fact predominates as the form of urban service management in liberal States, and particularly in France.

The advantages of this research lies in its having highlighted many European cases where this intermediate path, which is linked to community and solidarity dimensions in a given area, survives and proves to be efficient. Examples of "common assets"⁴ and water agencies⁵ are particularly revealing, highlighting the limitations of a dualist opposition between private and public sectors and at the same time the advantages or simply the existence of alternatives.

Historical and anthropological approaches show that this notion embraces very different realities depending on each individual case. Stressing the complexity of the question of a public asset in our own society should prevent us from projecting a one-track development model, trapped in the public/private dichotomy and the formal distribution of roles. There needs to be a redistribution of skills between all the parties and this is even indispensable in aiming for sustainable solutions. But the institutionalisation of roles cannot be plucked out of thin air, or by using a model or by a "supreme body" which would be represented by the State. On the contrary it must be the fruit of the debates of local actors. Individual and joint discussion about vital issues, such as water and sanitation issues in Bamenda, can lead to the production of local norms, which alone are capable of surviving and being effective.

◆ *Setting up a data-base*

As the activity progressed, we were able to obtain qualitative and quantitative data, providing strategic tools for conducting a global approach in a given area. The household survey⁶ provides one example of such data. It provides reliable factors on the real-life situation of the inhabitants, and also mapping which gradually allowed the data collected to be synthesised into an easily usable form. This form of feed-back, which was virtually impossible to achieve until today, proved to be a key factor for both decision-makers, and for associations or neighbourhood leaders (Fons). This gradual build-up of reference material on the town was not only a rich source of information supporting the initial assessment but above all enabled it to be formulated into specific problems, i.e. highlighting potentials and difficulties but also extracting from these a few important messages. These were presented during the forum, notably when considering the "water path".

◆ *Acquiring skills and methodological tools*

Over and above its tangible results, our pilot activity allowed us to gain experience in running a household survey and to appreciate the rigorous approach that is needed at all its stages to give viable results. It also taught us how to conduct non leading interviews and how to gradually build up a network or organise an "event" on a local scale. In addition, as the project unfolded, we became convinced of the need for certain operational imperatives and we highlighted conditions for a successful process of dialogue. This consists notably in the setting up and the sustainability of a network, the object of a dialogue and adequate means for putting it into effect.

◆ *Starting off a process*

At the end of the forum, it was decided to set up a consultation committee on water and sanitation

³ *Fonds aux organisations urbaines et aux micro-initiatives* (Fund for urban organisations and micro-initiatives). Programme funded by the European Union since May 95 and covering five Cameroon towns, including Bamenda. The programme places a project fund at the disposal of inhabitants who have organised themselves and which they can access subject to certain technical and financial conditions. The existence of this programme, which is implemented by Gret, is the operational basis which inspired the submission of a pilot activity in response to the call for tenders from French co-operation, stressing the synergies which could be expected from the conjunction of these two activities.

⁴ M. Bourjol, "Les biens communaux", LGDJ, 1989.

⁵ "Les agences de l'eau et la question du patrimoine commun", article, 1996, by Dr. B. Barraqué, of the CNRS.

⁶ A survey was conducted amongst 450 households in Bamenda.

issues. This body is undeniably active. There is without doubt a determination and expectations on the part of each of its members and an interest in taking part in the committee. Within the committee itself, ideas are put forward and addressed, more information is circulated, and the positions of the various parties are clarified. These individuals, highly motivated and belonging to various organisations or structures, have also become at their level facilitators in implementing activities. The very existence of this committee is a key achievement, opening up many possibilities, starting with improving day-to-day working relations and carrying out joint activities in the town of Bamenda.

◆ *Shifting power structures*

The forum provided an opportunity to see resource persons emerging at institutional level. Neighbourhood groups, for their part, marked by their very presence the actual content of the messages by presenting the sketches or the plays they use. Their active presence, and even sometimes their demands from workshop participants, also showed the extent to which they reflect upon and are committed to these issues. All are today members of the committee and play the role of leaders whose contribution is recognised.

Weaknesses and recommendations

In reality, when we consider the unexpected nature of the changes which have occurred, it is vital for us to be fully aware of their vulnerability if they do not receive support and encouragement. The very existence of the committee marks a change from the previous situation, when questions fundamental to people's daily lives found

no avenue for expression, but this body cannot resolve all the problems at a stroke. The risks surrounding its development and its sustainability are essentially to do with its members' capacities to make this ambitious initiative move forward and to make this kind of assembly work. The fact that each of its members represents some organisation may be a second handicap; they belong to public institutions, but remain isolated in their respective departments, and above all cannot commit themselves in the name of their institutions, where only the highest level of the pyramid holds power, particularly financial power.

We could also express fears about attempts to draw political advantages from the situations in a climate in which there are strong antagonisms. Although there is good collaboration within the committee itself, we must not forget the sometimes contradictory interests of the major organisations reflecting their past history and former conflicts.

Future prospects

It would certainly be presumptuous to believe that we have achieved genuine dialogue in so short a time, even when starting out from the sound operational base provided by the Fourmi programme. This would be to under-estimate the contextual obstacles and the methodological problems. Nevertheless, the process has been launched and it has been locally appropriated. This argues in favour of continuing the process, for which a second stage could be planned as follows:

1. disseminating the main findings of the assessment in this area using local education and teaching;
2. making choices using identification of key factors in the medium term for the area;
3. designing and formulating a joint development project in the area for gradual implementation.

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Location

Bamenda, north-west province, Cameroon

Research focuses

4.1, 4.2, 4.3

Contexts

central and peri-urban under-equipped areas of a secondary town (200,000 inhabitants)

Duration

18 months (10.6.96 - 9.12.97)

Cost

418,108 FRF

Annexes

List of documents produced in the course of the programme¹

Summary documents preparatory to the Ouagadougou meeting

- ◆ Overall summary (E. Le Bris, 6 p., April 98)
- ◆ Summary of the research pole "Analysing the economic parameters of water" (A. Morel à l'Huisier, 8 p., April 98)
- ◆ Summary of the research pole "Shared management of drinking water services and the participation of the inhabitants" (B. Collignon, X. Crépin, 16 p., April 98)
- ◆ Summary of the research pole "The impact of drinking water supply and sanitation conditions on public health" (J.-P. Duchemin, 16 p., April 98)
- ◆ Summary of the research pole "Towards a local or a municipal water service" (Ta Thu Thuy, 12 p., April 98)

Workshop reports

- ◆ Workshop summary "Analysing the economic parameters of water" (B. Gbemade, S. Bouaré, May 98)
- ◆ Workshop summary "Shared management of drinking water services and the participation of the inhabitants" (A. Ould Weddady, May 98)
- ◆ Workshop summary "The impact of drinking water supply and sanitation conditions on public health" (C. Touré, May 98)
- ◆ Workshop summary "Towards a local or a municipal water service" (J.-P. Elong M'Bassi, May 98)

Pilot activity reports

Pilot activity n° 1: "Rehabilitating popular water collection points in a large metropolis" (AFVP Yaoundé/Cameroon)

- ◆ Final report (T. Adeline, March 98, 16 p.)
- ◆ Assistance mission report (R. Taisne, January 98, 80 p.)
- ◆ Video cassette "Réaménager pour survivre" [Upgrading for survival] (AFVP and Cass, 18 minutes, May 98)

Pilot activity n° 2: "Community management of piped water systems in the secondary towns of the Senegal valley region" (AFVP/ISF - Matam Département/Senegal)

- ◆ Final report (C. Estienne, S. Champetier, March 98, 48 p.)

¹ Except where stated, the following documents are currently available only in French.

- ◆ Monitoring mission report n° 1 (B. Valfrey, November 96, 60 p.)
- ◆ Monitoring mission report n° 2 (R. Taisne, November 97, 85 p.)

Pilot activity n° 3: "Introducing a franchised water distribution system in Gabú and in São Domingos" (Burgeap - Guinea Bissau)

- ◆ Final report (J. Etienne, April 98)

Pilot activity n° 4: "Training neighbourhood youth committees to promote drinking water, hygiene and sanitation in peri-urban areas" (East - Ouagadougou/Burkina Faso)

- ◆ Final report (L. Monjour, A. Kaboré, D. B. Bonkougou, K. Farhati, EAST, 41 p. + annexes, February 98)

Pilot activity n° 5: "Standpost management: a comparative study and evaluation of current or completed projects" (SAN d'Évry / the city of Angoulême / Maurepas-Action Mopti - Kayes, Ségou, Mopti/Mali)

- ◆ Standpost management: a comparative study and evaluation of current or completed projects (A. Morel à l'Huissier, V. Verdeil, November 96, 100 p.)
- ◆ Proceedings of the seminar on standpost management in Ségou (Ta Thu Thuy, February 98)
- ◆ Final report (February 98)
 - Final report: the town of Kayes (D. Traoré, 6 p., February 98)
 - Final report: the town of Ségou (A. Van Hoorebeke, 23 p., February 98)
 - Final report: the town of Mopti (S. Segal, R. Hinojosa, 16 p., February 98)
 - Final overall report (R. Hinojosa, 31 p. + annexes, February 98)

Pilot activity n° 6: "Introducing a local body for dialogue on water and sanitation" (Gret - Bamenda/Cameroon)

- ◆ Final report (I. de Boismenu, C. Hennart, 43 p., April 98)
- ◆ Proceedings of the forum "Water and sanitation in Bamenda in Cameroon", bilingual French/English publication (Gret, IDF, AYA, 40 p., April 98)

Research activity reports

RA n° 1: "Local contracting and the complementary nature of different forms of water supply in a small town: the example of Kindia" (Guinée 44 - ACT Consultants / Guinea)

- ◆ Final report (D. Romann, 74 p. + annexes 42 p., February 98)

RA n° 2: "Comparative analysis of the performances of various delegated management systems for shared water collection points" (Alfa-Burgeap / Benin, Burkina Faso, Guinea, Guinea Bissau, Namibia, Niger, Senegal, Zambia)

- ◆ Final report (J. Etienne, A. Morel à l'Huissier, H. Conan, M. Tamiatto, H. Coing, S. Jaglin, April 98)
- ◆ Case studies
 - Franchising mini drinking water supply networks in Burkina Faso (H. Conan - RéA, January 98)
 - Socio-economic study of the drinking water supply centre of Mandiana / Guinea (A. Diallo - BE Laforêt, August 1997)
 - Recent changes in the drinking water supply service in Windhoek, Namibia (S. Jaglin - LTMU-IFU)

- Case studies in Benin, Niger and Guinea (J. Etienne - Burgeap)
- Case studies in Senegal (B. S. Sy, Semis)
- Case studies of PRS villages of the SYP, in Burkina Faso (M. Tamiatto)
- Case study in Mali (A. Morel à l'Huissier - Cergrene)

RA n° 3: "Analysis of the economic parameters of water distribution for low-income population groups in peri-urban areas and small centres in Africa" (Cergrene / Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Guinea, Mali, Mauritania, Niger, Rwanda, Senegal)

- ◆ Final report (A. Morel à l'Huissier, B. Collignon, J. Etienne, S. Rey, 180 p., March 98)

RA n° 4: "The impact on human health and on the environment of current systems for the disposal of wastewater, excreta and effluents in the densely populated informal and peri-urban areas of Yaoundé" (ENSP Yaoundé / Cameroon)

- ◆ Final report (N. Bemmo, T. Njine, M. Nola, D. Nganga, May 98, 150 p.)

RA n° 5: "The legitimacy of new water sector actors, their strategies and the conditions under which they emerge; conditions for shared forms of water management to succeed and spread" (Gret/ Cameroon, Haiti, Senegal, Mali)

- ◆ Final report (I. de Boismenu, 40 p., March 98)
- ◆ *Gérer l'eau; tisser la ville* [Managing water; constructing the town] (S. Bulle, 2 volumes 119+147 p., November 97)
- ◆ Case studies
 - Study of Cameroon (A. Jouko, J. Kemmegne, L.-P. Ngeuleu, Focap, 200 p., July 97)
 - Study of Haiti (Sarah Matieusand, 130 p., April 97)

RA n° 6: "The impact of a drinking water supply, whether or not combined with measures to protect the environment, on health costs and on children's state of health in tropical peri-urban areas" (East / Burkina Faso)

- ◆ Final report (L. Monjour, 19 p., March 98)
- ◆ Report of the external evaluation of the socio-sanitary development project in peri-urban areas of Ouagadougou in Burkina Faso (Pascal Revaut, 67 p., May 97)
- ◆ Report of the sociological survey (A. Sawadogo, 5 p., December 96-May 97)

RA n° 7: "Community mobilisation for drinking water distribution and protection in an under-privileged urban environment" (University of Avignon and of the Vaucluse / Chad, Senegal)

- ◆ Final report (P. Bachimon, N. Yémadji, M. N'Diaye, 90 p., February-March 98)

RA n° 8: "Water management and protecting the resource" (ENSP Yaoundé / Cameroon, Chad)

- ◆ Final report (E. Tanawa, H.B. Djeuda Tchopnga, 182 p. + annexes, January 98)

RA n° 9: "Evaluation of the current role, the potential and the limitations of the private operators involved in distributing water in ways either complementary to or in competition with the major public service operators: in the secondary centres of the three countries of the Senegal river basin and in the informal housing areas of major third world cities" (HydroConseil / Mauritania, Senegal, Mali et Haiti)

- ◆ Final report (B. Collignon, B. Valfrey, 93 p., April 98)

- ◆ Case studies of secondary centres
 - Case study of Mali (B. Valfrey, 76 p., April-May 97)
 - Case study of Mauritania (T. Koïta, R. Carlier, 70 p., November 97)
 - Case study of Bobo-Dioulasso and Nianlogo - Burkina Faso (D. Dakouré, 14 p. + annexes, 1997)
- ◆ Case studies of informal housing areas of major third world cities
 - Case study of Dakar (S. Champetier, P. Durand, 42 p., October 97)
 - Case study of Nouakchott (T. Koïta, 63 p., November 97)
 - Case study of Port-au-Prince (B. Valfrey, 77 p., December 97)

RA n° 10: "An anthropological analysis and the institutional and inter-relational issues raised by water distribution in three small Malian towns: Bandiagara, Koro and Bankass" (Shadyc/Mali)

- ◆ Final report (J. Bouju – Shadyc, S. Tinta, B. Poudiougou, 122 p., January 98)

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ANNEXES

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Research subjects covered by the activities

	Research activities	Pilot activities
RESEARCH FOCUS 1: Analysing the economic parameters of water distribution for low-income urban populations	3 ① ③ ⑨	1 ②
Theme 1.1: Tools for contingent evaluation of the demand for improved water services	1 ③	
Theme 1.2: Provisional standard cost analysis models for the various water distribution systems in peri-urban areas and small centres	2 ① ③	
Theme 1.3: Evaluating the social and economic significance of private water distribution operators	1 ⑨	1 ②
RESEARCH FOCUS 2: Shared management of drinking water services and user participation	5 ① ② ⑤ ⑦ ⑧	3 ② ③ ⑤
Theme 2.1: Comparative analysis of the performances of various delegated management systems for communal water collection points	3 ① ② ⑧	1 ⑤
Theme 2.2: The legitimacy and the strategies of new actors in the water sector claiming to be collectively representative	4 ① ⑤ ⑦ ⑧	3 ② ③ ⑤
Theme 2.3: How these new actors (local groups, NGOs, local authorities, private enterprises) emerge and how local dynamics and initiatives spread; recommendations for "contractualising" these	4 ① ⑤ ⑦ ⑧	3 ② ③ ⑤
RESEARCH FOCUS 3: The impact of drinking water supply and sanitation conditions on public health	4 ① ④ ⑥ ⑧	2 ① ④
Theme 3.1: Prevention methods	1 ⑥	2 ① ④
Theme 3.2: Analysis of the costs and health benefits of prevention activities in the water, hygiene and sanitation sector	1 ⑥	1 ④
Theme 3.3: The impact on human health of current wastewater and effluent removal practices – Protecting water resources	3 ① ④ ⑧	0
RESEARCH FOCUS 4: Institutional and inter-relational issues	3 ① ② ⑩	5 ① ② ③ ⑤ ⑥
Theme 4.1: The nature of the services provided and classification of contractual and institutional links between suppliers and consumers	2 ② ⑩	3 ② ③ ⑥
Theme 4.2: Sustainable and negotiated coexistence of multiple systems within the same urban area: links between municipal, community and private activities	2 ① ⑩	2 ① ⑥
Theme 4.3: Strengthening local capacities for contracting or delegated contracting to set up and commercially exploit infrastructures	2 ① ⑩	3 ② ⑤ ⑥

Countries involved

	Research activities		Pilot activities	
	Number	N°s	Number	N°s
<u>French-speaking Africa</u>				
Benin	2	② ③		
Burkina Faso	4	② ③ ⑥ ⑨	1	④
Cameroon	3	④ ⑤ ⑧	1	①
Chad	2	⑦ ⑧		
Guinea	3	① ② ③		
Mali	5	② ③ ⑤ ⑨ ⑩	1	⑤
Mauritania	2	③ ⑨		
Niger	2	② ③		
Rwanda	1	③		
Senegal	5	② ③ ⑤ ⑦ ⑨	1	②
<u>English-speaking Africa</u>				
Cameroon (Bamenda)			1	⑥
Namibia	1	②		
<u>Portuguese-speaking Africa</u>				
Cape Verde	1	③		
Guinea Bissau			1	③
<u>Outside Africa</u>				
Haiti	3	③ ⑤ ⑨		

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